Amazing Amusement Park: Classic Carousel

Science

2-PS1-2.
Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Technology Education

1.EL.B.1.
With teacher guidance, create a non-digital personal learning network of peers who can provide support.

1.ID.C.1.
Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

2.GC.C.1.
With teacher guidance, take on different team roles and use age-appropriate technologies to complete projects.

2.GC.D.1.
With teacher guidance, use age-appropriate technologies to work together to understand problems and suggest solutions.

P1.2.
Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.
Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.
Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.
Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.
Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.
Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.
Modify an existing artifact to improve or customize it.

P6.1.
Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.
Identify and fix errors using a systematic process.

P6.3. Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Amazing Amusement Park: Remix the Ride

Technology Education

1.EL.B.1.

With teacher guidance, create a non-digital personal learning network of peers who can provide support.

1.ID.C.1.

Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

2.GC.C.1.

With teacher guidance, take on different team roles and use age-appropriate technologies to complete projects.

2.GC.D.1.

With teacher guidance, use age-appropriate technologies to work together to understand problems and suggest solutions.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Amazing Amusement Park: Snack Stand

Mathematics

MD.1.4.

Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

MD.2.10.

Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Science

2-PS1-2.

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3.

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Technology Education

1.EL.B.1.

With teacher guidance, create a non-digital personal learning network of peers who can provide support.

1.ID.C.1.

Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

2.AP.M.1.

Break down (decompose) the steps needed to solve a problem into a precise sequence of instructions.

2.GC.C.1.

With teacher guidance, take on different team roles and use age-appropriate technologies to complete projects.

2.GC.D.1.

With teacher guidance, use age-appropriate technologies to work together to understand problems and suggest solutions.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.
P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.
P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.
P5.3.

Modify an existing artifact to improve or customize it.
P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.
P6.2.

Identify and fix errors using a systematic process.
P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Amazing Amusement Park: The Fast Lane

Science

2-PS1-2.

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Technology Education

1.EL.B.1.

With teacher guidance, create a non-digital personal learning network of peers who can provide support.

1.ID.C.1.

Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

2.AP.C.1.

Develop programs with sequences and loops, to express ideas or address a problem.

2.GC.C.1.

With teacher guidance, take on different team roles and use age-appropriate technologies to complete projects.

2.GC.D.1.

With teacher guidance, use age-appropriate technologies to work together to understand problems and suggest solutions.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Amazing Amusement Park: The Most Amazing Amusement Park

Science

2-PS1-2.

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Technology Education

1.EL.B.1.

With teacher guidance, create a non-digital personal learning network of peers who can provide support.

1.ID.C.1.

Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

2.GC.C.1.

With teacher guidance, take on different team roles and use age-appropriate technologies to complete projects.

2.GC.D.1.

With teacher guidance, use age-appropriate technologies to work together to understand problems and suggest solutions.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.
Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Amazing Amusement Park: The Perfect Swing

Science

2-PS1-2.

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Technology Education

1.EL.B.1.

With teacher guidance, create a non-digital personal learning network of peers who can provide support.

1.ID.C.1.

Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

2.AP.C.1.

Develop programs with sequences and loops, to express ideas or address a problem.

2.GC.C.1.

With teacher guidance, take on different team roles and use age-appropriate technologies to complete projects.

2.GC.D.1.

With teacher guidance, use age-appropriate technologies to work together to understand problems and suggest solutions.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Amazing Amusement Park: The Spinning Ferris Wheel

Mathematics

G.1.3.

Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

G.2.3.

Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Science

2-PS1-2.

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3.

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Technology Education

1.EL.B.1.

With teacher guidance, create a non-digital personal learning network of peers who can provide support.

1.ID.C.1.

Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

2.AP.C.1.

Develop programs with sequences and loops, to express ideas or address a problem.

2.GC.C.1.

With teacher guidance, take on different team roles and use age-appropriate technologies to complete projects.

2.GC.D.1.

With teacher guidance, use age-appropriate technologies to work together to understand problems and suggest solutions.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Amazing Amusement Park: Twirling Teacups

Science

2-PS1-2.
Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Technology Education

1.AP.PD.1.
Describe the iterative process of program development (including terminology, steps taken, and the logic of choices).

1.EL.B.1.
With teacher guidance, create a non-digital personal learning network of peers who can provide support.

1.ID.C.1.
Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

2.GC.C.1.
With teacher guidance, take on different team roles and use age-appropriate technologies to complete projects.

2.GC.D.1.
With teacher guidance, use age-appropriate technologies to work together to understand problems and suggest solutions.

P1.2.
Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.
Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.
Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.
Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.
Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.
Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.
Modify an existing artifact to improve or customize it.

P6.1.
Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Animals and Their Environments: Lesson 1 Preparing for the Weather

Mathematics

G.3.1.

Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Science

3-5-ETS1-1.

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.

Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

3-ESS3-1.

Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

Technology Education

3.ID.B.1.

Describe a variety of ways to interact and contribute to a digital product.

P1.1.

Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.

Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.

Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.

Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Animals and Their Environments: Lesson 2 Life Cycles

Mathematics

G.3.1.
Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

MD.3.3.
Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

3-LS1-1.
Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

Technology Education

3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.
Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.
Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.
Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.
Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Animals and Their Environments: Lesson 3 Animal Behavior

Mathematics

G.3.1.
Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

MD.3.6.
Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

MD.3.7(a)
Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

3-LS2-1.
Construct an argument that some animals form groups that help members survive.

Technology Education

3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.
Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.
Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.
Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.
Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Animals and Their Environments: Lesson 4 Solving Problems When Environments Change

Mathematics

G.3.1.
Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

NF.3.1.
Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.

NF.3.3(c)

Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

3-LS4-4.
Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

Technology Education

3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.
Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.
Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Animals and Their Environments: Lesson 5 Animals in Their Habitats

Mathematics

G.3.1.

Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Science

3-5-ETS1-1.

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.

Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

3-LS4-2.

Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.

3-LS4-3.

Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

Technology Education

3.ID.B.1.

Describe a variety of ways to interact and contribute to a digital product.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.

Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.

Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.

Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Crazy Carnival Games: A-Maze-Ing - Math Extension

Mathematics

MD.3.3.

Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.

NBT.5.3(b)

Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and

NF.4.7.

Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or

Science

3-5-ETS1-1.

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.

Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

3-PS2-2.

Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

4-PS3-2.

Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

4-PS3-3.

Ask questions and predict outcomes about the changes in energy that occur when objects collide.

4-PS4-3.

Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.

Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.

Work in a team to solve problems using digital tools.

3.DA.CVT.1.

Organize and present collected data visually to highlight relationships and support a claim.

3.GC.A.1.

Explore alternative solutions to and diverse perspectives on authentic problems and propose a solution using digital tools.

3.KC.D.1.

Create essential questions to guide investigation of a real-world problem using digital resources.

4.AP.PD.1.

Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.CC.C.1.

Communicate information and ideas to an intended audience using digital text, images, and audio.

4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.

Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.

Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

4.ID.D.1.

Demonstrate perseverance when working with open-ended problems.

5.AP.PD.1.
Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

5.KC.D.1.

Propose solutions to real-world problems using collected data and digital tools.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.

Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.4.

Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P6.2.

Identify and fix errors using a systematic process.

P7.1.

Select, organize, and interpret large data sets from multiple sources to support a claim.

Crazy Carnival Games: Avoid the Edge - Math Extension

Mathematics

MD.3.4.
Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units-- whole numbers, halves, or quarters.

MD.4.1.
Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...

MD.4.4.

Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.

MD.5.1.
Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

MD.5.2.
Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

3-PS2-2.
Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

4-PS3-2.
Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

4-PS3-4.

Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

4-PS4-3.

Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.

Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.

Work in a team to solve problems using digital tools.

3.DA.CVT.1.

Organize and present collected data visually to highlight relationships and support a claim.

3.GC.A.1.

Explore alternative solutions to and diverse perspectives on authentic problems and propose a solution using digital tools.

3.KC.D.1.

Create essential questions to guide investigation of a real-world problem using digital resources.

4.AP.A.1.

Test, compare, and refine multiple algorithms for the same task and determine which is the most appropriate.

4.AP.PD.1.

Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.

With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.

Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.

Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.

Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

4.ID.D.1.

Demonstrate perseverance when working with open-ended problems.

5.AP.PD.1.

Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

5.KC.D.1.

Propose solutions to real-world problems using collected data and digital tools.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.2.

Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.

Evaluate whether it is appropriate and feasible to solve a problem computationally.

P6.2.

Identify and fix errors using a systematic process.

Crazy Carnival Games: Bowling Fun

Mathematics

G.4.1.

Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

MD.4.5(a)

An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.

MD.4.5(b)

An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

MD.4.6.

Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

Science

3-5-ETS1-1.

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.

Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

3-PS2-2.

Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

4-PS3-2.

Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

4-PS3-3.

Ask questions and predict outcomes about the changes in energy that occur when objects collide.

4-PS4-3.

Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.

Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.

Work in a team to solve problems using digital tools.

3.DA.CVT.1.

Organize and present collected data visually to highlight relationships and support a claim.

3.GC.A.1.

Explore alternative solutions to and diverse perspectives on authentic problems and propose a solution using digital tools.

3.KC.D.1.

Create essential questions to guide investigation of a real-world problem using digital resources.

4.AP.M.1.

Explore how complex tasks can be decomposed into simple tasks and how simple tasks can be composed into complex tasks.

4.AP.PD.1.

Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.

With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.

Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.

Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.

Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

4.ID.D.1.

Demonstrate perseverance when working with open-ended problems.

5.AP.M.2.

Modify, incorporate, and test portions of an existing program into their own work, to develop something new or add more advanced features.

5.AP.PD.1.

Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

5.KC.D.1.

Propose solutions to real-world problems using collected data and digital tools.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.2.

Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.

Evaluate whether it is appropriate and feasible to solve a problem computationally.

P6.2.

Identify and fix errors using a systematic process.

Crazy Carnival Games: Creative Carnival Games

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

3-PS2-2.
Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

4-PS3-2.
Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

4-PS3-3.
Ask questions and predict outcomes about the changes in energy that occur when objects collide.

4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.
Work in a team to solve problems using digital tools.

3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.

3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.

4.AP.M.1.
Explore how complex tasks can be decomposed into simple tasks and how simple tasks can be composed into complex tasks.

4.AP.PD.1.
Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.
Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.
Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.M.2.
Modify, incorporate, and test portions of an existing program into their own work, to develop something new or add more advanced features.

5.AP.PD.1.

Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Crazy Carnival Games: High Stick Hockey - Math Extension

Mathematics

G.4.1.
Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

MD.4.5(a)
An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.

MD.4.5(b)
An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

MD.4.6.
Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

NF.3.1.
Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.

NF.3.3(c)

Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.

NF.4.4(a)
Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 x (1/4), recording the conclusion by the equation 5/4 = 5 x (1/4).

NF.4.5.
Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.

NF.4.6.
Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.

NF.5.3.

Interpret a fraction as division of the numerator by the denominator (a/b = a / b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

3-PS2-2.
Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

4-PS3-2.
Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
4-PS3-3.
Ask questions and predict outcomes about the changes in energy that occur when objects collide.
4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

Technology Education
3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.
3.CT.C.1.
Work in a team to solve problems using digital tools.
3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.
3.GC.A.1.
Explore alternative solutions to and diverse perspectives on authentic problems and propose a solution using digital tools.
3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.
3.KC.D.1.
Create essential questions to guide investigation of a real-world problem using digital resources.
4.AP.C.1.
Develop programs that include sequences, events, loops, and conditionals.
4.AP.PD.1.
Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.
4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.
4.EL.B.1.
Create a digital or non-digital personal learning network of peers who can provide support.
4.EL.C.1.
Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.
4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.
4.ID.D.1.
Demonstrate perseverance when working with open-ended problems.
5.AP.PD.1.
Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.
5.KC.D.1.
Propose solutions to real-world problems using collected data and digital tools.
P1.2.
Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.
P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.
P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.

Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.

Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Crazy Carnival Games: Junior Pinball

Mathematics

G.4.1.
Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

MD.4.5(a)
An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.

MD.4.5(b)
An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

MD.4.6.
Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

3-PS2-2.
Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

4-PS3-2.
Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

4-PS3-4.
Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.
Work in a team to solve problems using digital tools.

3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.

3.GC.A.1.
Explore alternative solutions to and diverse perspectives on authentic problems and propose a solution using digital tools.

3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.

3.KC.D.1.
Create essential questions to guide investigation of a real-world problem using digital resources.

4.AP.M.1.
Explore how complex tasks can be decomposed into simple tasks and how simple tasks can be composed into complex tasks.

4.AP.PD.1.
Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.
Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.
Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

4.ID.D.1.
Demonstrate perseverance when working with open-ended problems.

5.AP.M.2.
Modify, incorporate, and test portions of an existing program into their own work, to develop something new or add more advanced features.

5.AP.PD.1.
Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

5.KC.D.1.
Propose solutions to real-world problems using collected data and digital tools.

P1.2.
Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.
Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.
Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.
Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.
Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.
Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.
Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Crazy Carnival Games: Mini Mini-Golf

Mathematics

G.4.1.
Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

G.4.3.
Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

MD.4.5(a)
An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.

MD.4.5(b)
An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

MD.4.6.
Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

3-PS2-2.
Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

4-PS3-1.
Use evidence to construct an explanation relating the speed of an object to the energy of that object.

4-PS3-2.
Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.
Work in a team to solve problems using digital tools.

3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.

3.GC.A.1.
Explore alternative solutions to and diverse perspectives on authentic problems and propose a solution using digital tools.

3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.

3.KC.D.1.

Create essential questions to guide investigation of a real-world problem using digital resources.

4.AP.PD.1.

Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.CC.C.1.

Communicate information and ideas to an intended audience using digital text, images, and audio.

4.EL.A.1.

With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.

Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.

Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.

Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

4.ID.D.1.

Demonstrate perseverance when working with open-ended problems.

5.AP.PD.1.

Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

5.KC.D.1.

Propose solutions to real-world problems using collected data and digital tools.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.

Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.

Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.

Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

P7.1.

Select, organize, and interpret large data sets from multiple sources to support a claim.

Essential Combined: Lesson 1 Create A Critter

Science

4-LS1-1.

Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

Technology Education

4.AP.C.1.

Develop programs that include sequences, events, loops, and conditionals.

Essential Combined: Lesson 2 Safe Crossing
Science 3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. 5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Great Adventures: Animal Alarm

Mathematics

MD.1.4.
Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Science

1-PS4-4.
Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

2-PS1-2.
Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Technology Education

1.AP.PD.1.
Describe the iterative process of program development (including terminology, steps taken, and the logic of choices).

1.EL.B.1.
With teacher guidance, create a non-digital personal learning network of peers who can provide support.

2.AP.C.1.
Develop programs with sequences and loops, to express ideas or address a problem.

2.GC.C.1.
With teacher guidance, take on different team roles and use age-appropriate technologies to complete projects.

2.GC.D.1.
With teacher guidance, use age-appropriate technologies to work together to understand problems and suggest solutions.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.
Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.
Evaluate and select technological tools that can be used to collaborate on a project.

P6.2.
Identify and fix errors using a systematic process.

Great Adventures: Arctic Ride

Mathematics

OA.1.5.

Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

Science

2-PS1-2.

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Technology Education

1.AP.PD.1.

Describe the iterative process of program development (including terminology, steps taken, and the logic of choices).

1.EL.B.1.

With teacher guidance, create a non-digital personal learning network of peers who can provide support.

2.AP.M.1.

Break down (decompose) the steps needed to solve a problem into a precise sequence of instructions.

2.GC.C.1.

With teacher guidance, take on different team roles and use age-appropriate technologies to complete projects.

2.GC.D.1.

With teacher guidance, use age-appropriate technologies to work together to understand problems and suggest solutions.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P6.2.

Identify and fix errors using a systematic process.

Great Adventures: Boat Trip

Mathematics

G.1.3.

Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

G.2.3.

Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Science

2-PS1-2.

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

2-PS1-3.

Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Technology Education

1.AP.PD.1.

Describe the iterative process of program development (including terminology, steps taken, and the logic of choices).

1.EL.B.1.

With teacher guidance, create a non-digital personal learning network of peers who can provide support.

2.GC.C.1.

With teacher guidance, take on different team roles and use age-appropriate technologies to complete projects.

2.GC.D.1.

With teacher guidance, use age-appropriate technologies to work together to understand problems and suggest solutions.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P6.2.

Identify and fix errors using a systematic process.

Great Adventures: Cave Car

Science

1-PS4-2.

Make observations to construct an evidence-based account that objects can be seen only when illuminated.

2-PS1-2.

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Technology Education

1.AP.PD.1.

Describe the iterative process of program development (including terminology, steps taken, and the logic of choices).

1.EL.B.1.

With teacher guidance, create a non-digital personal learning network of peers who can provide support.

2.GC.C.1.

With teacher guidance, take on different team roles and use age-appropriate technologies to complete projects.

2.GC.D.1.

With teacher guidance, use age-appropriate technologies to work together to understand problems and suggest solutions.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P6.2.

Identify and fix errors using a systematic process.

Great Adventures: The Great Desert Adventure

Mathematics

G.1.3.

Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

G.2.3.

Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Science

2-PS1-2.

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Technology Education

1.AP.PD.1.

Describe the iterative process of program development (including terminology, steps taken, and the logic of choices).

1.EL.B.1.

With teacher guidance, create a non-digital personal learning network of peers who can provide support.

1.ID.C.1.

Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

2.GC.C.1.

With teacher guidance, take on different team roles and use age-appropriate technologies to complete projects.

2.GC.D.1.

With teacher guidance, use age-appropriate technologies to work together to understand problems and suggest solutions.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Great Adventures: Treehouse Camp

Science

2-PS1-2.

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Technology Education

1.EL.B.1.

With teacher guidance, create a non-digital personal learning network of peers who can provide support.

1.ID.C.1.

Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

2.AP.C.1.

Develop programs with sequences and loops, to express ideas or address a problem.

2.AP.M.1.

Break down (decompose) the steps needed to solve a problem into a precise sequence of instructions.

2.GC.C.1.

With teacher guidance, take on different team roles and use age-appropriate technologies to complete projects.

2.GC.D.1.

With teacher guidance, use age-appropriate technologies to work together to understand problems and suggest solutions.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Great Adventures: Underwater Quest

Science

2-PS1-2.

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Technology Education

1.AP.PD.1.

Describe the iterative process of program development (including terminology, steps taken, and the logic of choices).

1.EL.B.1.

With teacher guidance, create a non-digital personal learning network of peers who can provide support.

1.ID.C.1.

Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

2.AP.C.1.

Develop programs with sequences and loops, to express ideas or address a problem.

2.GC.C.1.

With teacher guidance, take on different team roles and use age-appropriate technologies to complete projects.

2.GC.D.1.

With teacher guidance, use age-appropriate technologies to work together to understand problems and suggest solutions.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Happy Traveler: Big Bus

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.
Work in a team to solve problems using digital tools.

3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.

3.GC.A.1.
Explore alternative solutions to and diverse perspectives on authentic problems and propose a solution using digital tools.

4.AP.PD.1.
Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.
Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.
Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.PD.1.
Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

5.GC.B.1.
Use collaborative technologies to connect with others, including peers, experts, and community members, to explore different points of view on various topics.

5.IC.C.1.
Brainstorm ways to improve the accessibility and usability of technology products for the diverse needs and wants of users.

5.IC.SI.1.
Seek diverse perspectives for the purpose of improving computational artifacts.

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P1.3.

Employ self- and peer-advocacy to address bias in interactions, product design, and development methods.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P6.2.

Identify and fix errors using a systematic process.

Happy Traveler: Cable Car

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

3-PS2-2.
Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.
Work in a team to solve problems using digital tools.

3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.

4.AP.C.1.
Develop programs that include sequences, events, loops, and conditionals.

4.AP.PD.1.
Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.
Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.
Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.PD.1.
Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.
Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.
Evaluate and select technological tools that can be used to collaborate on a project.

P6.2.
Identify and fix errors using a systematic process.

Happy Traveler: Get Around Town

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

3-PS2-2.
Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.
Work in a team to solve problems using digital tools.

3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.

3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.

4.AP.M.1.
Explore how complex tasks can be decomposed into simple tasks and how simple tasks can be composed into complex tasks.

4.AP.PD.1.
Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.
Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.
Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.M.2.
Modify, incorporate, and test portions of an existing program into their own work, to develop something new or add more advanced features.

5.AP.PD.1.
Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Happy Traveler: Hovering Helicopter

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.
Work in a team to solve problems using digital tools.

3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.

3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.

4.AP.PD.1.
Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.DA.IM.1.
Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate ideas.

4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.
Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.
Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.PD.1.
Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

5.AP.PD.2.

Describe choices made during program development using code comments, presentations, and demonstrations.

5.KC.D.1.
Propose solutions to real-world problems using collected data and digital tools.

P1.2.
Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

P7.1.

Select, organize, and interpret large data sets from multiple sources to support a claim.

Happy Traveler: River Ferry

Mathematics

MD.3.1.

Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

MD.4.2.

Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Science

3-5-ETS1-1.

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.

Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-PS4-3.

Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.

Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.

Work in a team to solve problems using digital tools.

3.DA.CVT.1.

Organize and present collected data visually to highlight relationships and support a claim.

3.ID.B.1.

Describe a variety of ways to interact and contribute to a digital product.

4.AP.M.1.

Explore how complex tasks can be decomposed into simple tasks and how simple tasks can be composed into complex tasks.

4.AP.PD.1.

Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.

With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.

Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.

Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.

Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.M.1.

Demonstrate how to decompose a task of complexity into simple tasks and compose a simple task into tasks of complexity.

5.AP.PD.1.

Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Happy Traveler: Swamp Boat

Mathematics

MD.3.3.
Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.
Work in a team to solve problems using digital tools.

3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.

3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.

4.AP.M.1.
Explore how complex tasks can be decomposed into simple tasks and how simple tasks can be composed into complex tasks.

4.AP.PD.1.
Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.
Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.
Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.M.2.
Modify, incorporate, and test portions of an existing program into their own work, to develop something new or add more advanced features.

5.AP.PD.1.
Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

P1.2.
Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.
P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.
P2.2.
Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.
P2.4.
Evaluate and select technological tools that can be used to collaborate on a project.
P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.
P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.
P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.
P5.2.
Create a computational artifact for practical intent, personal expression, or to address a societal issue.
P5.3.
Modify an existing artifact to improve or customize it.
P6.1.
Systematically test computational artifacts by considering all scenarios and using test cases.
P6.2.
Identify and fix errors using a systematic process.
P6.3.
Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Happy Traveler: Taxi! Taxi!

Mathematics

MD.3.8.

Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

MD.4.3.

Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.

Science

3-5-ETS1-1.

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.

Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-PS4-3.

Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.

Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.

Work in a team to solve problems using digital tools.

3.DA.CVT.1.

Organize and present collected data visually to highlight relationships and support a claim.

3.ID.B.1.

Describe a variety of ways to interact and contribute to a digital product.

4.AP.M.1.

Explore how complex tasks can be decomposed into simple tasks and how simple tasks can be composed into complex tasks.

4.AP.PD.1.

Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.

With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.

Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.

Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.

Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.M.1.

Demonstrate how to decompose a task of complexity into simple tasks and compose a simple task into tasks of complexity.

5.AP.PD.1.

Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Quirky Creations: Big Little Helper - Math Extension

Mathematics

G.5.1.
Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

G.5.2.
Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

5-LS1-1.
Support an argument that plants get the materials they need for growth chiefly from air and water.

Technology Education

3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.
Work in a team to solve problems using digital tools.

3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.

4.AP.A.1.
Test, compare, and refine multiple algorithms for the same task and determine which is the most appropriate.

4.AP.PD.1.
Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.
Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.
Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.PD.1.
Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P6.2.

Identify and fix errors using a systematic process.

Quirky Creations: Good Morning Machine

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.
Work in a team to solve problems using digital tools.

3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.

3.GC.A.1.
Explore alternative solutions to and diverse perspectives on authentic problems and propose a solution using digital tools.

3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.

3.KC.D.1.
Create essential questions to guide investigation of a real-world problem using digital resources.

4.AP.PD.1.
Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.
Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.
Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.PD.1.
Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

5.AP.PD.2.
Describe choices made during program development using code comments, presentations, and demonstrations.

5.KC.D.1.
Propose solutions to real-world problems using collected data and digital tools.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Quirky Creations: High-Tech Playground

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.
Work in a team to solve problems using digital tools.

3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.

3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.

4.AP.M.1.
Explore how complex tasks can be decomposed into simple tasks and how simple tasks can be composed into complex tasks.

4.AP.PD.1.
Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.
Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.
Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.M.2.
Modify, incorporate, and test portions of an existing program into their own work, to develop something new or add more advanced features.

5.AP.PD.1.
Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

P1.2.
Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Quirky Creations: Literary Randomizer

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.
Work in a team to solve problems using digital tools.

3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.

3.GC.A.1.
Explore alternative solutions to and diverse perspectives on authentic problems and propose a solution using digital tools.

3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.

3.KC.D.1.
Create essential questions to guide investigation of a real-world problem using digital resources.

4.AP.C.1.
Develop programs that include sequences, events, loops, and conditionals.

4.AP.PD.1.
Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.
Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.
Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.PD.1.
Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

5.KC.D.1.
Propose solutions to real-world problems using collected data and digital tools.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Quirky Creations: Loads of Laundry

Mathematics

MD.3.5(a)

A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.

MD.3.5(b)

A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

MD.3.6.

Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

MD.3.7(a)

Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

MD.3.7(b)

Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

MD.4.3.

Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.

MD.5.3(a)

A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.

MD.5.3(b)

A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.

MD.5.4.

Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

MD.5.5(a)

Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.

MD.5.5(b)

Apply the formulas V = l x w x h and V = b x h for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.

Technology Education

3.AP.PD.1.

Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.

Work in a team to solve problems using digital tools.

3.DA.CVT.1.

Organize and present collected data visually to highlight relationships and support a claim.

3.ID.B.1.

Describe a variety of ways to interact and contribute to a digital product.

4.AP.PD.1.

Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.

With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.

Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.

Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.

Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.PD.1.

Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Quirky Creations: Trash Monster Machine

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.
Work in a team to solve problems using digital tools.

3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.

3.GC.A.1.
Explore alternative solutions to and diverse perspectives on authentic problems and propose a solution using digital tools.

3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.

4.AP.PD.1.
Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.
Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.
Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.PD.1.
Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

5.GC.B.1.
Use collaborative technologies to connect with others, including peers, experts, and community members, to explore different points of view on various topics.

5.IC.C.1.
Brainstorm ways to improve the accessibility and usability of technology products for the diverse needs and wants of users.

5.IC.SI.1.
Seek diverse perspectives for the purpose of improving computational artifacts.

P1.1.

Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P1.2.

Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P1.3.

Employ self- and peer-advocacy to address bias in interactions, product design, and development methods.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Quirky Creations: Winning Goal

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.
Work in a team to solve problems using digital tools.

3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.

3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.

4.AP.M.1.
Explore how complex tasks can be decomposed into simple tasks and how simple tasks can be composed into complex tasks.

4.AP.PD.1.
Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.
Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.
Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.M.1.
Demonstrate how to decompose a task of complexity into simple tasks and compose a simple task into tasks of complexity.

5.AP.PD.1.
Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

P1.2.
Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Quirky Creations: Your School Creation

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-PS4-3.
Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

3.AP.PD.1.
Debug (identify and fix) errors in an algorithm or program that includes sequences and loops.

3.CT.C.1.
Work in a team to solve problems using digital tools.

3.DA.CVT.1.
Organize and present collected data visually to highlight relationships and support a claim.

3.ID.B.1.
Describe a variety of ways to interact and contribute to a digital product.

4.AP.M.1.
Explore how complex tasks can be decomposed into simple tasks and how simple tasks can be composed into complex tasks.

4.AP.PD.1.
Test and debug (identify and fix) errors in a program or algorithm to ensure it runs as intended.

4.EL.A.1.
With teacher guidance, develop learning goals, select tools to achieve them, and reflect on and revise the learning process as needed to achieve goals.

4.EL.B.1.
Create a digital or non-digital personal learning network of peers who can provide support.

4.EL.C.1.
Seek feedback from both people and digital tools, and use age-appropriate technology to share learning.

4.GC.C.1.
Perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

5.AP.M.1.
Demonstrate how to decompose a task of complexity into simple tasks and compose a simple task into tasks of complexity.

5.AP.PD.1.
Use the iterative process to develop a program to express an idea or address a problem while considering others' perspectives and preferences.

P1.2.
Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P2.2.

Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.

P2.4.

Evaluate and select technological tools that can be used to collaborate on a project.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Science Connections: Lesson 1 How Eyes See

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-LS1-2.
Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

4-PS4-2.

Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.

Technology Education

4.ID.D.1.
Demonstrate perseverance when working with open-ended problems.

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.
Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.
Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.
Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.
Modify an existing artifact to improve or customize it.

P6.1.
Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.
Identify and fix errors using a systematic process.

P6.3.
Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Science Connections: Lesson 2 Animal Structures

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-LS1-1.
Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

Technology Education

4.ID.D.1.
Demonstrate perseverance when working with open-ended problems.

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.
Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.
Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.
Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.
Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.
Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.
Modify an existing artifact to improve or customize it.

P6.1.
Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.
Identify and fix errors using a systematic process.

P6.3.
Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Science Connections: Lesson 3 Energy Resources

Mathematics

MD.4.1.
Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-ESS3-1.
Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

Technology Education

4.ID.D.1.

Demonstrate perseverance when working with open-ended problems.

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.

Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.

Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Science Connections: Lesson 4 Prepare for Natural Hazards

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-ESS3-2.
Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.

Technology Education

4.ID.D.1.
Demonstrate perseverance when working with open-ended problems.

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.
Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.
Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.
Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.
Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.
Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.
Modify an existing artifact to improve or customize it.

P6.1.
Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.
Identify and fix errors using a systematic process.

P6.3.
Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Science Connections: Lesson 5 Information Transfer

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

4-PS4-3.

Generate and compare multiple solutions that use patterns to transfer information.

Technology Education

4.ID.D.1.

Demonstrate perseverance when working with open-ended problems.

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P1.2.
Address the needs of diverse end users during the design process to produce artifacts with broad accessibility and usability.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.

Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.

Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Science in Nature and our Daily Life: Lesson 1 Habitats

Mathematics

OA.2.2.
Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Science

2-LS4-1.
Make observations of plants and animals to compare the diversity of life in different habitats[Clarification Statement: Emphasis is on the diversity of living things in each of a variety of different habitats.] [Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.]

2-PS1-2.
Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3.
Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Technology Education

2.KC.D.1.

Use digital models and simulations to explore complex systems and issues.

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.

Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.

Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Science in Nature and our Daily Life: Lesson 2 Redesigning to Make New Objects

Mathematics

MD.2.1.
Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

OA.2.2.
Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Science

2-PS1-1.
Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

2-PS1-2.
Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

2-PS1-3.
Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.

K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3.
Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Technology Education

2.KC.D.1.
Use digital models and simulations to explore complex systems and issues.

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.
Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.
Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.
Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Science in Nature and our Daily Life: Lesson 3 Pollination

Mathematics

MD.2.10.

Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

OA.2.2.

Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Science

2-LS2-2.

Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

2-PS1-2.

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3.

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Technology Education

2.KC.D.1.

Use digital models and simulations to explore complex systems and issues.

P1.1.

Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.

Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.

Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.

Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Science in Nature and our Daily Life: Lesson 4 Classify and Choose Materials

Mathematics

MD.2.1.
Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

MD.2.9.
Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

MP.2.5.
Use appropriate tools strategically.

OA.2.2.
Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Science

2-PS1-1.
Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

2-PS1-2.
Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3.
Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Technology Education

2.KC.D.1.
Use digital models and simulations to explore complex systems and issues.

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.
Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.

Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

P7.1.

Select, organize, and interpret large data sets from multiple sources to support a claim.

Science in Nature and our Daily Life: Lesson 5 Protection from Wind

Mathematics

OA.2.2.
Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Science

2-ESS1-1.
Make observations from media to construct an evidence-based account that Earth events can occur quickly or slowly.

2-ESS2-1.
Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.

2-PS1-2.
Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3.
Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Technology Education

2.KC.D.1.
Use digital models and simulations to explore complex systems and issues.

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.
Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.
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P4.4.
Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.
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P6.1.

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P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Science We Cannot See: Lesson 1 Matter

Mathematics

MD.5.1.
Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

5-PS1-1.
Develop a model to describe that matter is made of particles too small to be seen.

Technology Education

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

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P4.4.
Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.
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Create a computational artifact for practical intent, personal expression, or to address a societal issue.

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Modify an existing artifact to improve or customize it.

P6.1.
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P6.2.
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P6.3.
Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Science We Cannot See: Lesson 2 Gravity

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

5-PS2-1.
Support an argument that the gravitational force exerted by Earth on objects is directed down.

Technology Education

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

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P4.4.
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P6.1.
Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.
Identify and fix errors using a systematic process.

P6.3.
Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Science We Cannot See: Lesson 3 Daytime and Nighttime

Mathematics

MD.5.1.

Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Science

3-5-ETS1-1.

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.

Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

5-ESS1-2.

Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.

Technology Education

5.KC.D.1.

Propose solutions to real-world problems using collected data and digital tools.

P1.1.

Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.

Identify complex, interdisciplinary, real-world problems that can be solved computationally.

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P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

P7.1.

Select, organize, and interpret large data sets from multiple sources to support a claim.

Science We Cannot See: Lesson 4 Protect the Environment

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

5-ESS3-1.
Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Technology Education

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.
Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.
Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.
Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

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P6.2.
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P6.3.
Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Science We Cannot See: Lesson 5 Energy Flow

Mathematics

MD.5.2.
Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

Science

3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.
Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

5-PS3-1.
Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

Technology Education

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

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P6.3.

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See it! Hear It! Build It!: Lesson 1 Illumination

Mathematics

OA.1.3.

Apply properties of operations as strategies to add and subtract. Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)

OA.1.5.

Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

Science

1-PS4-2.

Make observations to construct an evidence-based account that objects can be seen only when illuminated.

1-PS4-3.

Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3.

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Technology Education

1.ID.C.1.

Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

P1.1.

Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.

Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2.

Create a computational artifact for practical intent, personal expression, or to address a societal issue.

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Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.
Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

See it! Hear It! Build It!: Lesson 2 Musical Vibrations

Mathematics

MD.1.3.

Tell and write time in hours and half-hours using analog and digital clocks.

OA.1.5.

Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

Science

1-PS4-1.

Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

1-PS4-4.

Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3.

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Technology Education

1.ID.C.1.

Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

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Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.

Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

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Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.
Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

See it! Hear It! Build It!: Lesson 3 Transparency

Mathematics

NBT.1.1.

Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

OA.1.5.

Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

Science

1-PS4-3.

Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3.

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Technology Education

1.ID.C.1.

Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

P1.1.

Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P4.3.

Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.

Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

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P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

See it! Hear It! Build It!: Lesson 4 Communicate with Light or Sound

Mathematics

NBT.1.1.
Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

OA.1.5.
Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

Science

1-PS4-4.
Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3.
Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Technology Education

1.CT.A.1.
With teacher guidance, use data to answer an authentic problem using digital tools.

1.ID.C.1.
Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

1.ID.D.1.
Demonstrate perseverance when working to complete a challenging task.

P1.1.
Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.
Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.
Identify complex, interdisciplinary, real-world problems that can be solved computationally.

P3.2.
Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures.

P3.3.
Evaluate whether it is appropriate and feasible to solve a problem computationally.

P4.3.
Create modules and develop points of interaction that can apply to multiple situations and reduce complexity.

P4.4.
Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

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Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3.

Modify an existing artifact to improve or customize it.

P6.1.

Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2.

Identify and fix errors using a systematic process.

P6.3.

Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

See it! Hear It! Build It!: Lesson 5 Learning from Using Ideas from Nature

Mathematics

OA.1.5.

Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

Science

1-LS1-1.

Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3.

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Technology Education

1.CT.A.1.

With teacher guidance, use data to answer an authentic problem using digital tools.

1.ID.C.1.

Use a design process to develop ideas or creations, and they test their design and redesign if necessary.

1.ID.D.1.

Demonstrate perseverance when working to complete a challenging task.

P1.1.

Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products.

P2.1.

Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.

P3.1.

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P4.4.

Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

P5.1.

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Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Grand Total