2000470

Gymnast Replay

Lesson Plan

Explore the motion of a "gymnast" (i.e., pendulum) on wheels and predict how the forces acting on it can change its motion.
In this lesson, your students will predict how the forces acting on an object can change its motion.

30–45 Minutes | Beginner | Grades 6–8

Engage (Whole Class, 5 Minutes)
- Facilitate a quick discussion about the force that helps a gymnast swing on a horizontal bar.
- Ask questions to get your students thinking. Here are some suggestions:
  - Which type of force is required to make a gymnast move? *(Gymnasts create push and pull forces with their muscles to generate forward momentum in order to overcome the force of gravity that's pulling them down.)*
  - Why is it important for gymnasts to watch replays of their performance? *(It helps them to improve their technique.)*
- Transition your students to the building challenge.

Explore (Individual Work, 20 Minutes)
- Have your students work independently to build the Gymnast model by following the building instructions (found in the box).
- The Student Worksheet will guide them as they experiment and predict how the forces acting on the gymnast can change its movement.

Explain (Whole Class, 10 Minutes)
- Prompt your students to explain how the different swing angles of the gymnast changed its motion.
- Ask questions like these:
  - What effect did a bigger swing have on the distance the gymnast traveled? *(The 160-degree swing generated more momentum, which made it go farther.)*

Elaborate (Individual Work, 10 Minutes)
- Have your students create drawings, short action replay videos, or audio recordings explaining how the gymnast moved.

Evaluate (Individual Work)
- Ask each student to give an example of how the forces acting on the gymnast changed its motion.

LEGO education

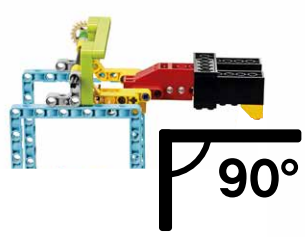
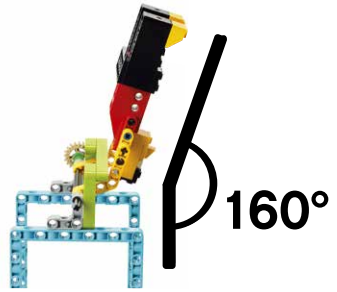
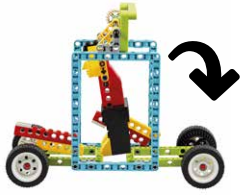
2000470

Gymnast Replay

Student Worksheet

Let's make a gymnast-powered car!

- [ ] Build your gymnast.
- [ ] Try these experiments to practice your prediction skills.

				
	?	✓	?	✓
				
				

- [ ] How were you able to predict how far the gymnast would go at 160 degrees in both directions?
- [ ] Make a drawing, action replay video, or audio recording to help you explain the gymnast's motion.