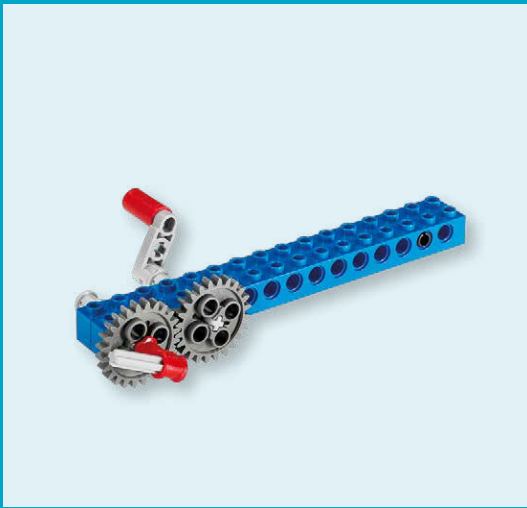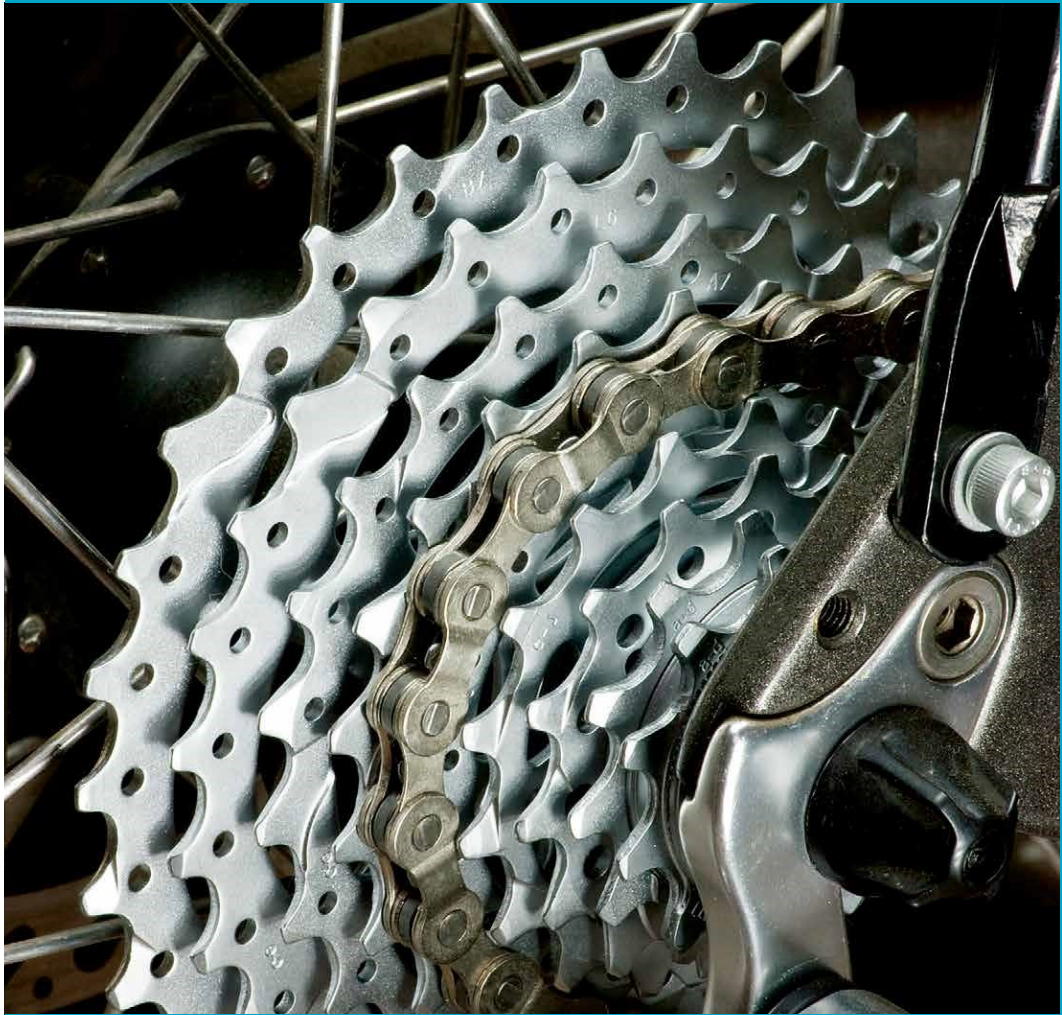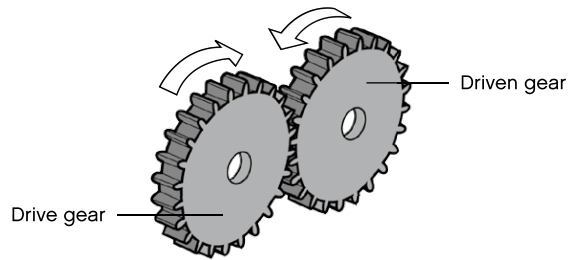# Gear

Student Worksheet

Mechanisms: Gear

Gears are wheels with teeth that mesh with each other. Because the teeth lock together, they can efficiently transfer force and motion.

Driven gear

Drive gear

The drive gear is the gear that is turned by an outside effort, for instance your hand or an engine. Any gear that is turned by another gear is called a driven gear or follower. The drive gear provides the input force and the driven gear delivers the output force.
Using a gear system can create change in speed, direction, and force. But there are always advantages and disadvantages. For example, you cannot have both more output force and an increase in speed at the same time.

To predict the ratio of which two meshed gears will move relative to each other, divide the number of teeth on the driven gear by the number of teeth on the drive gear. This is called the gear ratio. If a driven gear with 24 teeth is meshed with a drive gear with 48 teeth, there is a 1:2 gear ratio. That means the driven gear will turn twice as fast as the drive gear.

Gears are found in many machines where there is the need to control the speed of rotary movement and turning force. Common examples include power tools, cars, and egg beaters!
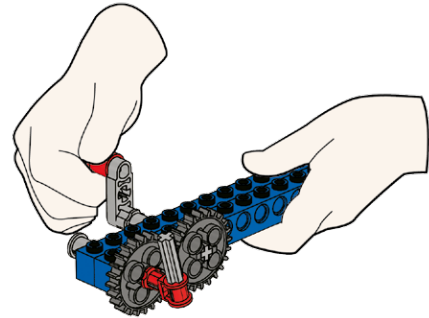
G1

Build G1 book III, page 2
Turn the handle and describe the speeds of the drive
and the driven gears. Circle and label the drive and driven
gears.

_____

_____
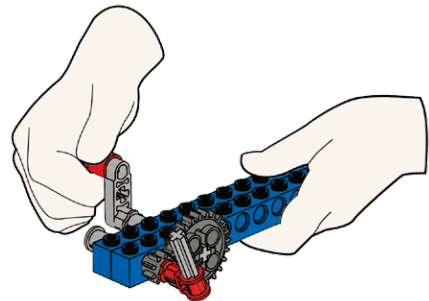
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G2

Build G2 book III, page 3
Turn the handle and describe the speeds of the drive
and driven gears. Circle and label the drive and driven
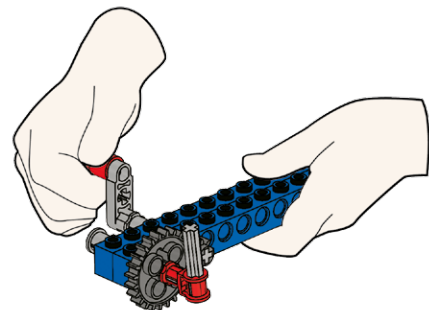gears.

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G3

Build G3 book III, page 4
Turn the handle and describe the speeds of the drive
and driven gears. Circle and label the drive and driven
gears.

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G4

Build G4 book III, page 5 to 6
Turn the handle and describe the speed and direction of the drive and driven gears. Circle and label the drive and driven gears.
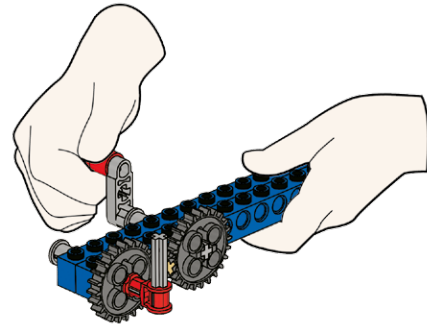

G5

Build G5 book III, page 7 to 8
Turn the handle and describe the speed and direction of the drive and driven gears. Circle and label the drive and driven gears.
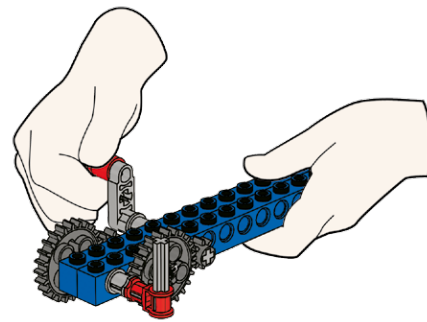

G6

Build G6 book III, page 9 to 10
Turn the handle and describe the movement of the driven gear.

G7

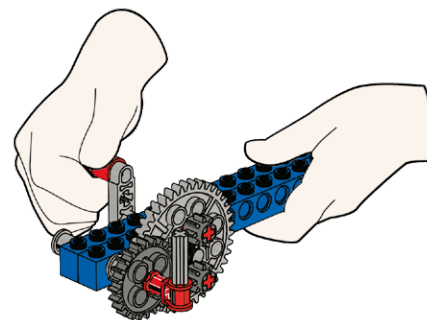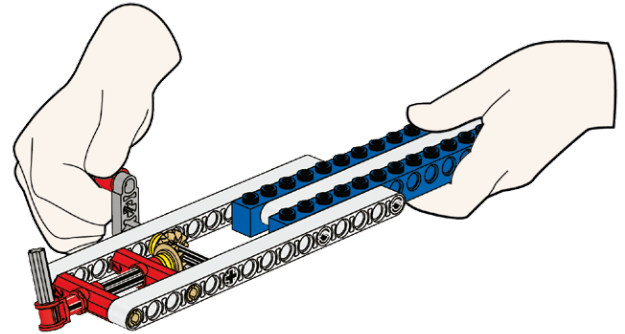**Build G7 book III, page 11 to 14**
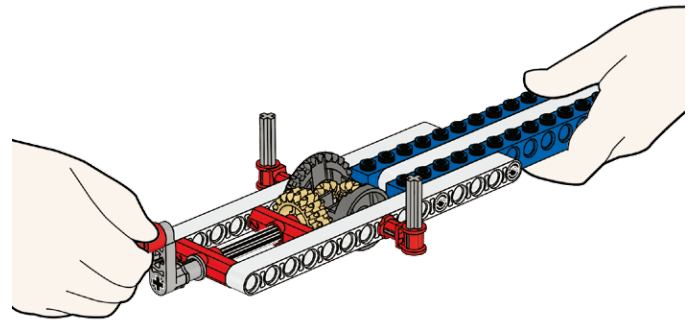Turn the handle and describe what happens.

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G8

Build G8 book III, page 15 to 18
Turn the handle and describe what happens.
What happens if you stop one of the output pointers?
What happens if you stop both output pointers?

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_____
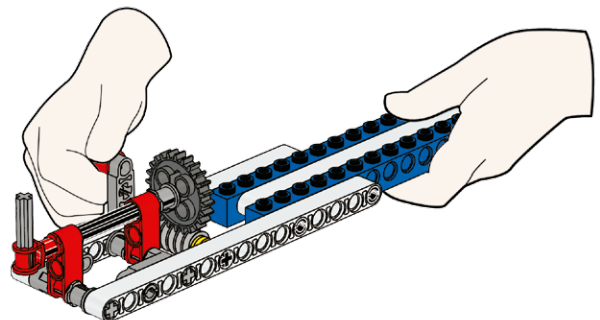
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G9

Build G9 book III, page 19 to 22
Turn the handle and describe what happens.
What happens if you try turning the output pointer?

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G10
Build G10 book III, page 23 to 25
Turn the handle and describe what happens.