Gears Rule	Grade 3 and 4
Gears Rule Handout	

What to do:

Gears are used to transfer motion between the parts of a mechanical device. They are useful as a machine because they can change the direction of movement or change the output speed. Gears behave in a predictable way and we can make rules to determine what will happen when gears interact.

Your task will be to create these rules using pseudo-code. Pseudo-code is simply code that has been written out and provides us with instructions we can follow.
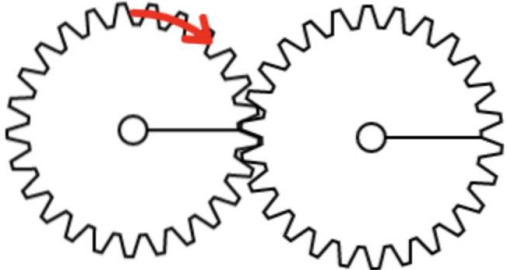
Program:

You'll be able to test each rule using the gear program **gearsket.ch**

Example:

If a gear <u>has a force applied</u> and is connected to another gear

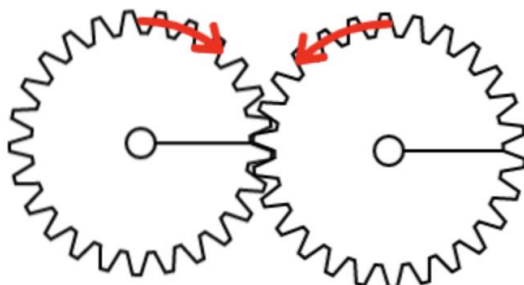   Then both gears will turn.

(Hint: turn/stay still)

Draw the rule:	Write the pseudo-code for a gear that does not have a force:
	If a gear does not have a force applied and is connected to another gear *Then both gears will stay still.*

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Rule 1:

If a gear is turning <u>clockwise</u>

 Then the gear next to it turns <u>counter-clockwise</u>.

(Hint: clockwise/counter-clockwise)
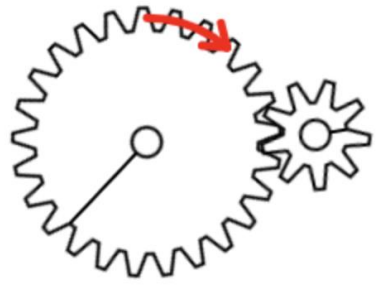
Draw the rule:	Write the pseudo-code for a gear turning counter-clockwise:
	If a gear is turning counter-clockwise *Then the gear next to it turns clockwise*

Rule 2:

If a gear is <u>smaller</u> than the gear next to it

 Then in comparison to the first gear, it moves <u>faster.</u>

(Hint: faster/slower)

Draw the rule:	Write the pseudo-code for a bigger gear:
	If a gear is bigger than the gear next to it *Then in comparison to the first gear it moves slower*

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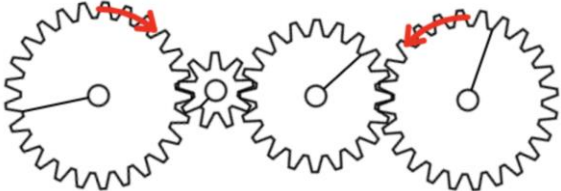a registered charity #10796 2979 RR0001.

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Rule 3:

In a gear train with no belt

If there are an <u>even number of gears</u>:

> Then the last gear moves in the <u>opposite</u> direction as the first.
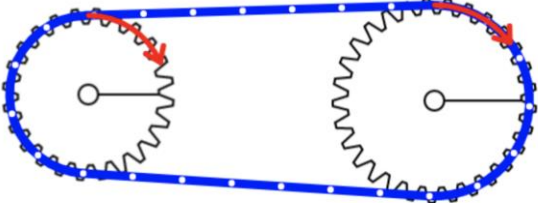
(Hint: same/opposite)

Draw the rule:	Write the pseudo-code for a rule with an odd number of gears:
	If there are an odd number of gears *Then the last gear moves in the same direction as the first.*

Rule 4:

If two gears are connected by a belt:

> Then the two gears will move in the <u>same</u> direction.
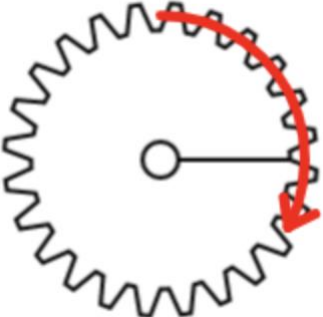
(Hint: same/opposite)

Draw the rule:

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Rule 5:

If the size of the force (arrow) <u>gets bigger</u>

      Then the speed of the gear will get relatively <u>faster</u>.

(Hint: faster/slower)

Draw the rule:	Write the pseudo-code for a rule when the force gets smaller.
	If the size of the force gets smaller *Then the speed of the gear will get relatively slower*

Rule 6:

If two gears are connected and both have a force in the same direction:

      Then the gear with the <u>bigger</u> force will determine which way the gears move.

(Hint: bigger/smaller)

Draw the rule:

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