Professional Learning – Coding Series



Land Acknowledgement

Anishinaabe Territory

Robinson-Huron Treaty

Located on the traditional lands of

Atikameksheng Anishnawbek





schools.sciencenorth.ca/virtual-learning-packages

VIRTUAL LEARNING PACKAGES

VIRTUAL LEARNING

SMALL SCHOOL PACKAGE

MEDIUM SCHOOL PACKAGE

LARGE SCHOOL PACKAGE

SYNCHRONOUS E-WORKSHOPS Science North is pleased to offer Ontario schools virtual learning packages. We understand that experiential learning is of utmost importance for students and with new guidelines and field trip restrictions in place, why not go virtual?! Purchasing a virtual learning package for your school means that all students in the school will have the opportunity to participate in dynamic live shows, engaging synchronous workshops, and be able to drive their own experience by asking our Scientists anything!

Let Science North support your curriculum with our customizable packages.





JUST FOR TEACHERS

TEACHERS

TEACHERS WORKSHOPS

SCIENCE AT HOME

TEACHERS ACCESS PASS

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TEACHERS WORKSHOPS



Science North has developed a series of dynamic teacher workshops that will bring the Ontario Science and Technology Curriculum to life. Each workshop is designed to give teachers the confidence and resources they need to investigate and explore the scientific concepts involved. These workshops involve teachers in fun, hands-on activities that are easily reproduced for the classroom at little or no cost.

COVID UPDATE

<u>schools.sciencenorth</u> <u>.ca/just-teachers</u>



education.sciencenorth.ca





Workshop Goals

Science North is dedicated to getting **students excited** and **thinking about science**. We aim to provide teachers with **innovative**, **hands-on activities** and **creative learning tools** that make learning more meaningful and fun.

Motivate students:

- Connect to their interests.
- *Highlight relevance of material.*
- Use real-world examples.
- Choose challenging activities.
- Boost confidence.

Promote active learning:

- Use a group or individual activity.
- Challenge them to solve a problem.



Gears Rule–Gr 3/4

Part 1 - November 23, 2020

- Introducing the concept
 - Lesson Plan
 - Slides
 - GearSketch
 - Gears Rule Handout/Solution
- Applying the concept
 - Lesson Plan
 - Slides
 - Gears Rule Assessment
 - GearSketch

Part 2 - November 24, 2020

- Culminating Math Activity
 - Lesson Plan
 - Slides
 - Coding Handout
 - Scratch







gearsket.ch









Rule 1:

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

Then the gear next to it turns _____

(Hint: clockwise/counter-clockwise)

Draw the rule:	Write the pseudo-code for a gear turning counter-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 _____

(Hint: faster/slower)

Draw the rule:	Write the pseudo-code for a bigger
	gear:



Gears Rule Handout

What to do:

Gears Rule

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)



gram **gearsket.ch**

Grade 3 and 4

Assessment Activity - Gear Train 1





Gears Rule	Grade 3 and 4
Gears Rule Assessment	

What to do:

Use your rules to predict what direction the last gear will be moving as well as if it will be faster or slower than the first one. Use **gearsket.ch** to test check your answer.

It will help if you draw arrows for each gear!

<u>Gear Train 1:</u>



The last gear will be moving ______. (clockwise/counterclockwise)

The last gear will be moving _____

(faster/slower)

Build the gear train in gearsket.ch. Were your predictions correct?

(Yes/No)



The last gear will be moving _____

(faster/slower)

Build the gear train in gearsket.ch. Were your predictions correct?

Bonus Activity!

Draw your own gear train on a blank piece of paper. Trade pages with a partner and see if they can predict what way the gears are turning. Use gearsket.ch to make sure your gear train works and to test your answer.



Culminating Math Activity

scratch.mit.edu





Add a gear image to Scratch





Change the size of the gear





Use a forever loop with a turn block





Create a second gear





Which direction should it go?





Test it out!











Thank You!!



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