



**MINISTRY OF  
EDUCATION &  
YOUTH**



**Primary Exit Profile**  
Bringing Abilities to Light

**Grade 5  
Science Sample  
Items**

*Performance Task*

Prepared by the Student Assessment Unit  
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# **Introduction**

This booklet consists of items originally found on the 2019 administration of the Primary Exit Profile (PEP) Science Performance Task (PT). All parts of the Science PT are contained within this booklet and together they provide a guide that should support the preparation of students for the 2022 administration of the Grade 5 Science Performance Task.

**General Instructions:**

**This task has three parts: Part 1, Part 2, and Part 3.**

**Part 1 has three questions, Part 2 has two questions and Part 3 has one question. You are to answer all six questions.**

**Instructions to begin:**

**Carefully read the introduction to the task then move on.**

**NOTE:**

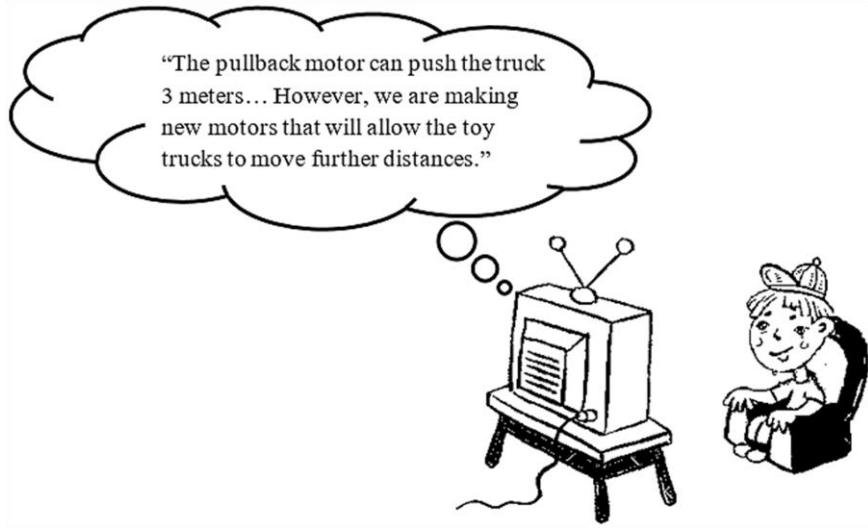
Use the ruler provided to complete question 4 in Part 2.

**General  
Instructions for  
Task**

# Grade 5 Performance Task

## Curious Tim's Investigation

Tim was watching “Tech Alert” one of his favourite television shows when he saw a report on a pullback toy truck. The truck would move forward when you pull it backwards. The toy truck had a pullback motor that **provided the pushing force to move the truck forward**.



## Introduction to Task

After watching the show, Tim asked the following question:

Will the new pullback motor produce a greater pushing force and is that why the toy trucks can move a further distance?

## Part 1: Planning the fair test

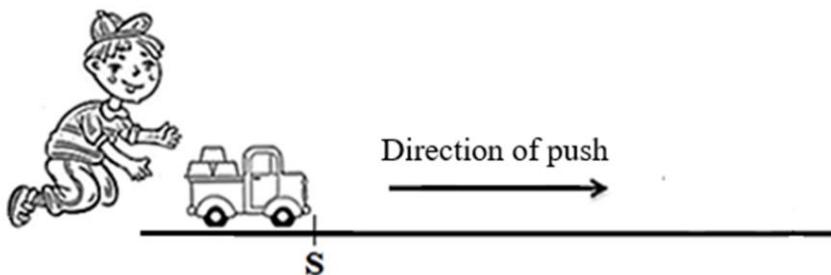
In order to answer his question Tim wanted to plan a fair test. In his fair test he wanted to find out how the size of different pushing forces would affect the distance an object moves. Tim planned to:

- put **three** blocks on a toy truck
- push the toy truck using different size forces
- measure the distance the toy truck would move after each push

**Unit:**

Force and Work

**Diagram showing the setup of Tim's Investigation**



### Question 1

Tim wrote the following steps to use when carrying out his fair test. **ONE** step is incorrect. Circle the step that should be rewritten so that his investigation represents a fair test.

A. **Step 1** Mark a point on the ground and call this point “S”

B. **Step 2** Push a toy truck from “S” using a **strong force** and measure how far it moves from point “S”

C. **Step 3** Push the same toy truck from “S” using a **medium force** and measure how far it moves from point “S”

D. **Step 4** Push a different toy truck from “S” using a **weak force** and measure how far it moves from point “S”

**Objective:**

Investigate the effects of forces (push/pull/turn)

### Item Description:

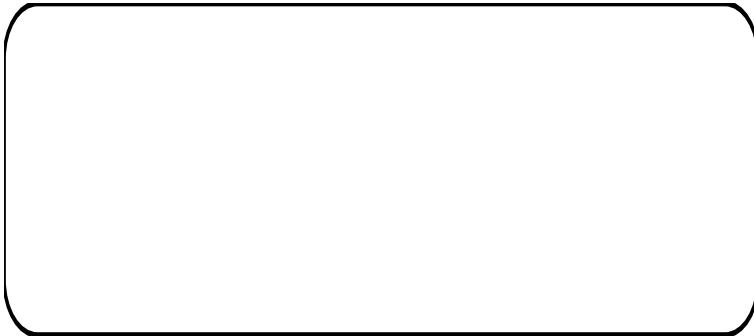
The item requires that the students apply their knowledge of fair testing (one factor is manipulated and all other factors are kept constant) to determine the step that is incorrectly written.

### Key Description:

The key is D

## Question 2

For the incorrect step you identified in **question 1**, rewrite the step so that his investigation will represent a fair test.



### Unit:

Force and Work

### Objective:

Investigate the effects of forces (push/pull/turn)

### Item Description:

The item requires that the students identify the factors to be kept constant and the single factor to manipulate in order to modify the incorrect step.

### Key Description:

Student indicates that toy truck should remain unchanged and pushed with a weak force from “S”

### Question 3

Tim is concerned about the accuracy of the measurements he would gather at the end of his investigation.

What should Tim do if he wants to improve the accuracy of the results he will gather at the end of his fair test?

- A. measure more than once, the distance the toy truck will move when pushed with the same size force
- B. use a centimetre ruler to measure the distance the toy truck will move
- C. countdown each time before pushing the toy truck with a different size force
- D. push the toy truck on a smooth surface

#### Unit:

Force and Work

#### Objective:

Make and repeat measurements to ensure accuracy of results

#### Item Description:

The item requires that the student recall the importance of repeated measurements in ensuring accuracy in results gathered from an investigation.

#### Key Description:

The key is A

## Part 2: Gathering the Results

### Question 4

The drawings below show the results of Tim's fair test. Use them to complete the information in the boxes to the right of each drawing.

You need to help Tim gather his results by:

- measuring and recording the **length of the arrow** in cm using the ruler provided (this is the **Drawing distance**);
- calculating the **Actual distance** moved by the toy truck.

**NOTE: the Actual distance moved is 100 times the Drawing distance.**

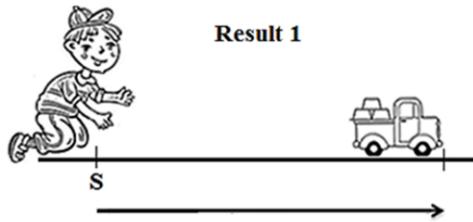
**Unit:**

Force and Work

**Objective:**

Investigate the effects of forces (push/pull/turn)

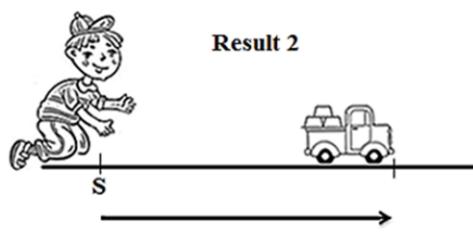
Make and repeat measurements to ensure accuracy of results



Pushing force = Strong

Drawing distance (cm) =

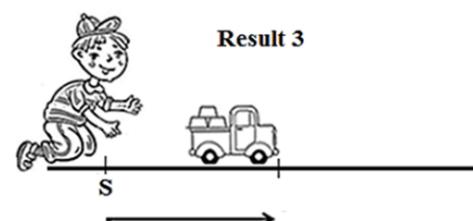
Actual distance (cm) =



Pushing force = Medium

Drawing distance (cm) =

Actual distance (cm) =



Pushing force = Weak

Drawing distance (cm) =

Actual distance (cm) =

**Item Description:**

The item requires that the students correctly manipulate the included ruler to accurately measure the distances given.

The students should also apply a conversion scale to change these distances to actual distances.

**Key Description:**

Drawing Distance measured accurately with a degree of error of  $\pm 0.1$ . Scale used to correctly calculate the Actual Distance

## Question 5

The table shown below was created by Tim. Complete the table using the information gathered from the drawings in question 4.

The table **must** display the following information:

- mass of blocks on the truck in each result
- actual distance travelled by the truck in each result
- row and column labels

*NOTE: the mass of each block was 50 g*

**Table showing the distance travelled by toy truck when pushed with different size forces**

	<b>Pushing Force Applied</b>		<b>Actual Distance</b>
<b>Result 1</b>	<u>strong</u>	-----	-----
-----	-----	-----	-----
-----	<u>weak</u>	<u>150 g</u>	-----

### Unit:

Force and Work

### Objective:

Investigate the effects of forces (push/pull/turn)

Show objectivity by using data and information to validate observations and explanations about force

### Item Description:

The item requires that the students correctly complete the table by recording the data from question 4 in the correct cells and inserting appropriate row and column titles.

### Key Description:

The student is required to provide appropriate column and row headings. The cells within the table should be completed with data from question 4.

## Part 3: Making Sense of the Results

**Below is the question Tim asked. Read Tim's question before continuing to question 6.**

**Tim's question:** Will the new pullback motor produce a greater pushing force and is that why the toy trucks can move a further distance?

### Question 6

Do the results of the investigation answer the question Tim asked? Use the results observed in the table in question 5 to support your answer.

**Unit:**

Force and Work

**Objective:**

Show objectivity by using data and information to validate observations and explanations about force

**Item Description:**

The item requires that the students state whether or not the results of the investigation can provide an answer for Tim's question and then provide evidence from the table in question 5 as support.

**Key Description:**

The student states whether or not the results can answer Tim's question. The student must also provide a full explanation that should be supported by evidence from question 5.