Investigation

Year 7 Science

Draft Template

Use this form to write a draft copy of your investigation report. Use the instructions in italics to help you know what you write in each section. The final copy of your report should include the headings (shown in bold) and your answers.
Refer to the rubric and the glossary for more information for each section.

Title: Investigating the amount of fuel in a rocket.

Aim: *Describe the purpose of the investigation. (To investigate....)*

To investigate how the amount of fuel in a rocket affects its distance of flight.

Variables: *List each of the relevant variables for your investigation.*
Independent variable: *State the variable that you are changing in the investigation.*
Amount of fuel.
Dependent variable: *State the variable that you are measuring or finding out.*
Distance of flight.
Controlled variables: *Lists the variables that you need to keep the same in the investigation. State how you are going to control each variable (MINIMUM 3)*
Size of bottle. Size of nozzle. Angle of launch. Same atmospheric conditions.

Hypothesis: *What will happen? "If I change (independent variable), then (dependent variable) will change like this."*

If the amount of fuel is changed, the rocket will fly further for small amounts and then decrease in range with increasing fuel.

Materials: *List all the materials that you will need to be able to conduct the investigate.*

1.0 L water bottle with nozzle
barbecue lighter
small pipette
methylated spirits
launch ramp
tape measure
small flask
hair dryer

Method: *Write each step that you did to complete the investigation.*

What are the steps you will follow to complete the investigation?
The method:

1. *is written in numbered steps*
2. *is written in third person and past tense*
3. *clearly changes the independent variable*
4. *accurately measures the dependent variable*
5. *controls all other variables*
6. *includes detailed steps*
7.
8.
9.
10.

Results: *Organise your data in a results table.*

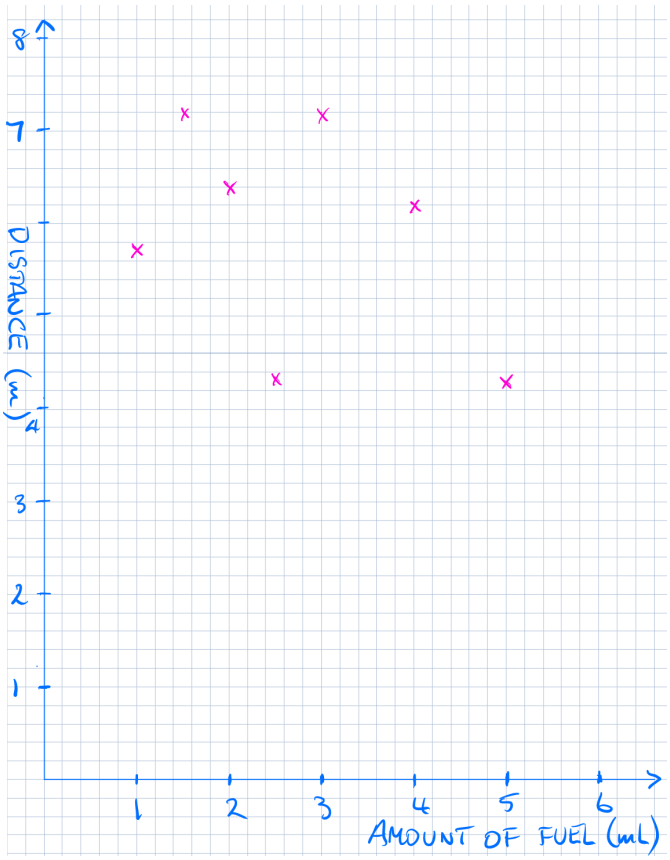
	Distance the rocket travelled (m). [Dependent Variable]			
Amount of Fuel (mL) [Independent Variable]	Trial 1	Trial 2	Trial 3	Average
0.5	7.2	0.0		
1.0	4.3	7.2		5.7
1.5	8.8	5.6		7.2
2.0	5.5	7.3		6.4
2.5	4.5	4.1		4.3
3.0	8.9	5.4		7.2
4.0 3.5	7.3	5.1		6.2
5.0 4.0	4.5	4.1		4.3

"

Graph: Graph the average of your results. This may be on graph paper, or digital.

The graph:

- has a title that includes both the IV and the DV
- has the IV on the X-axis and the DV on the Y-axis
- has both axes labelled, including units
- is a line graph if my data is continuous or a column graph if my data is discrete
- has scales that increase in even amounts
- is plotted accurately



Discussion: *State the trend between the independent and dependent variables. Use your scientific understanding to explain the reason for the trend.*

Do your results agree with your hypothesis?
What was the trend or pattern between the variables?
As the (independent variable) (describe how it changes), the (dependent variable) (describe how it changed).

Try and suggest a scientific reason for this pattern or trend?

The range seems to decrease as the fuel amount increases. A lot of fuel was blown out of the bottle for the 3-5 mL fuel loads, so this did not burn and produce any thrust.

Evaluation: *Reflect on your investigation and identify what worked well and what you could improve.*

Use a larger bottle that will allow bigger fuel loads to be used. e.g. A 2.0 L Coke bottle.

Conclusion: *Write one paragraph:*

- *explaining whether your results support your hypothesis.*
- *State the most important outcome of the investigation.*

As the fuel load increased, the flight distance increased for the fuel load up to 2.5 mL. It then decreased as the fuel load increased.

Marking Key

Title	Marks
• Full sentence • Accurately describes what the investigation is about	/ 1

Aim	Marks
• Clear and concise • Explains The purpose of the investigation	/ 1

Variables	Marks
Independent Variable: • Stated correctly	/ 1
Dependent Variable: • Stated correctly	/ 1
Control Variables: • 3 x valid controls	/ 3

Hypothesis	Marks
• Uses correct format • Clear link between independent and dependent variable	/ 2

Materials	Marks
• Comprehensive list of all materials used in the investigation • Written in bullet point format	/ 2

Method	Marks
• Written in numbered steps • Third person, past tense • Steps are concise, easy to follow and accurate • The method clearly changes the independent variable • The method clearly measures the dependent variable • The method controls all other variables	/ 3

Results	Marks
• The table has the independent variable in the first column and the dependent variable in the other columns • Headings included with units • The table includes averages	/ 3

Graph	Marks
• Title that includes the independent and dependent variables • Independent variable is on the X-axis & Dependent variable is on the Y-axis • Label and units on axis • Scale increases in even increments • Correct graph type (continuous data = line graph; discrete data = column graph) • Data plotted correctly	/ 6

Discussion	Marks
• The trend between the variables has been described • A scientific reason for the results is explained	/ 3

Evaluation	Marks
• Identify what worked well in the investigation • Identify what could be improved in the investigation .	/ 2

Conclusion	Marks
• The conclusion summarises the most important outcome of the investigation • The conclusions states whether the outcome supports the hypothesis or not	/ 2

Report Format	Marks
• The report is written in an appropriate manner with formal language • The report contains few spelling or grammatical errors	/ 2

Total	Marks
	/ 32