# Science

Year 8
Below satisfactory

## WORK SAMPLE PORTFOLIO

Annotated work sample portfolios are provided to support implementation of the Foundation – Year 10 Australian Curriculum.

Each portfolio is an example of evidence of student learning in relation to the achievement standard. Three portfolios are available for each achievement standard, illustrating satisfactory, above satisfactory and below satisfactory student achievement. The set of portfolios assists teachers to make on-balance judgements about the quality of their students' achievement.

Each portfolio comprises a collection of students' work drawn from a range of assessment tasks. There is no pre-determined number of student work samples in a portfolio, nor are they sequenced in any particular order. Each work sample in the portfolio may vary in terms of how much student time was involved in undertaking the task or the degree of support provided by the teacher. The portfolios comprise authentic samples of student work and may contain errors such as spelling mistakes and other inaccuracies. Opinions expressed in student work are those of the student

The portfolios have been selected, annotated and reviewed by classroom teachers and other curriculum experts. The portfolios will be reviewed over time.

*ACARA acknowledges the contribution of Australian teachers in the development of these work sample portfolios.*

## THIS PORTFOLIO: YEAR 8 SCIENCE

This portfolio provides the following student work samples:

| | |
|---|---|
| Sample 1 | Written examination: Particle model |
| Sample 2 | Investigation report: Bouncing ball |
| Sample 3 | Analysis task: Rock samples |
| Sample 4 | Board game: Digestive system |
| Sample 5 | Written examination: Cells |
| Sample 6 | Investigation report: Coffee cup evaluation |
| Sample 7 | Research report: Science careers |
| Sample 8 | Investigation report: Mousetrap racer |
| Sample 9 | Investigation report: Classifying chemical and physical changes |
| Sample 10 | Investigation: Trebuchet design and function |
| Sample 11 | Letter: Water fluoridation |

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# Science

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In this portfolio, the student compares physical and chemical change (WS9) and uses the particle model to explain the behaviour of substances (WS1). The student identifies different forms of energy and describes how energy transformations cause change in a system (WS2, WS8, WS10).
The student describes the processes that led to formation of particular rock samples (WS3), analyses different cell types to determine the relationship between structure and function (WS5) and constructs a board game that explores structure and function at organ and body system levels (WS4). The student identifies the different science knowledge required by a science career of their choice, and researches the way in which an inspirational scientist collaborated with others to solve a contemporary problem (WS7). The student investigates the scientific evidence that underpins a science idea that is publicly contested (WS11).

The student demonstrates an ability to identify and construct a question or problem for scientific investigation (WS6, WS8, WS10) and to plan an experimental investigation (WS2, WS6, WS8), including identification of appropriate safety precautions (WS9, WS10). The student identifies variables to be changed, measured and controlled (WS2, WS6, WS10). The student constructs representations of data to reveal and analyse patterns and trends (WS2, WS3, WS6, WS8, WS10) and uses data when justifying their conclusions (WS2, WS6, WS8, WS10). The student explains how modifications to investigations could improve the quality of data (WS2, WS6, WS10) and communicates science ideas, methods and findings in a range of text types, using appropriate language and representations (WS2, WS3, WS4, WS6, WS7, WS8, W9, WS10, WS11).

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Science

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# Written test: Particle model

## Year 8 Science achievement standard

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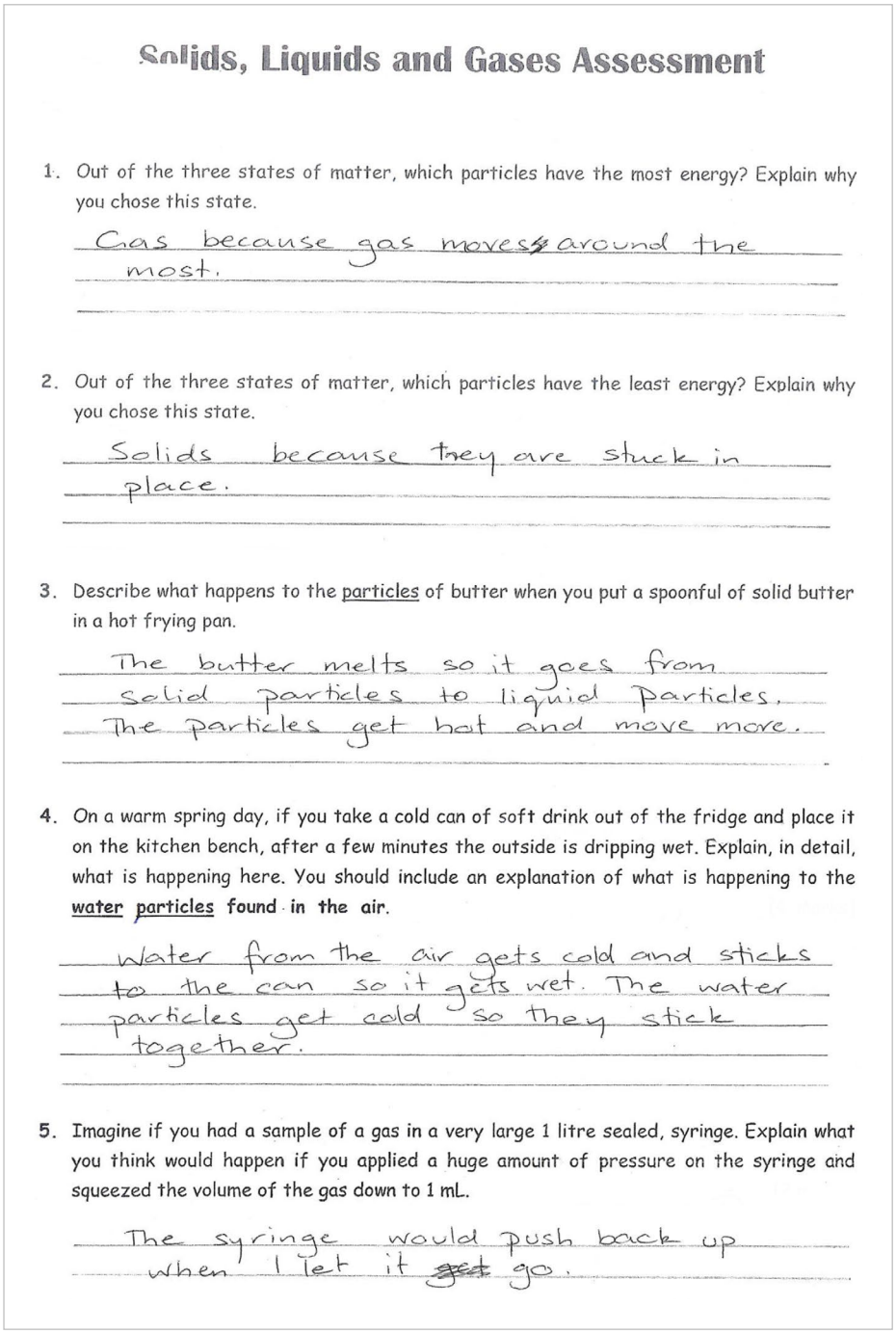
## Summary of task

Students had explored the particle model and engaged in class discussion about particle explanations of change of state. They then worked in small groups to develop a particle model representation (physical model or computer animation) of a solid, liquid and gas, and shared their representations with the class.

Following their presentation, students were asked to complete a short test to demonstrate their understanding of particle model explanations of change of state. Students completed the test in 20 minutes.

# Written test: Particle model



## Solids, Liquids and Gases Assessment

1. Out of the three states of matter, which particles have the most energy? Explain why you chose this state.

Gas because gas moves around the most.

2. Out of the three states of matter, which particles have the least energy? Explain why you chose this state.

Solids because they are stuck in place.

3. Describe what happens to the particles of butter when you put a spoonful of solid butter in a hot frying pan.

The butter melts so it goes from solid particles to liquid particles. The particles get hot and move more.

4. On a warm spring day, if you take a cold can of soft drink out of the fridge and place it on the kitchen bench, after a few minutes the outside is dripping wet. Explain, in detail, what is happening here. You should include an explanation of what is happening to the **water particles found in the air.**

Water from the air gets cold and sticks to the can so it gets wet. The water particles get cold so they stick together.

5. Imagine if you had a sample of a gas in a very large 1 litre sealed, syringe. Explain what you think would happen if you applied a huge amount of pressure on the syringe and squeezed the volume of the gas down to 1 mL.

The syringe would push back up when I let it ~~get~~ go.

## Annotations

*Identifies that the particles in solids have less energy than the particles in gases.*

*Provides a simple particle model explanation for change of state as the result of adding heat.*

*Provides a simple explanation of how cooling water particles in the air causes condensation on a cool object.*

*Provides an everyday explanation for the phenomenon of compressing a gas.*

## Annotations (Overview)

*The student uses appropriate language to communicate science ideas.*

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# Investigation report: Bouncing ball

## Year 8 Science achievement standard

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## Summary of task

Students had investigated forms of energy and energy transfers and transformations.

As part of the unit, students were required to undertake a practical investigation to identify the relationship between drop heights and bounce heights of a variety of balls. A report planning scaffold was provided. They were required to interpret their results with reference to energy transfers and transformations. Students completed the task over two 50-minute lessons.

# Investigation report: Bouncing ball

## Year 8 Science

**Investigation**: Bouncing Ball

Student Name: _____ Class: _____

Other members of my group: _____

**Background information** –

If you drop a tennis ball onto a hard surface you notice that it bounces back to a specific height. We can change the height from which we drop the ball (Drop Height) and see the effect it has on the height the ball bounces back to (Bounce Height).

The tennis ball has energy before you drop it and it has energy at the top of its bounce.

You will investigate the effect of changing the **Drop Height** on the **Bounce Height**.

**Planning**

What is the topic of my investigation?
How high do different balls bounce from different drop hights.

What do I predict will happen (Hypothesis)?
The ball will bouce the highest on the highest drop hight.

Why I think it will happen (give some scientific reasononing –Hint energy and its transformation might help).
Because that is when the ball contains the most conestic energy.

What am I going to do? (Method)

- Drop one ball from the first drop hight
- Record bouce hight
- Drop ball one from the second drop hight
- Record bouce hight
- Drop ball one from third drop hight
- Record results

## Annotations

*Identifies that the ball has a form of energy.*

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# Investigation report: Bouncing ball

- Repeat method for to other ball

Which variables are you going to?

- Change (Independent)

The balls and the drop hightts

- Measure (Dependent)
- Keep the same (Controlled). Think of as many of these as you can.

What will I need (equipment)
2 metre rulers
Tennis ball

**Conducting**
How can I make it a fair test?
Bounce the balls on the same suface.

Results (table) – you will also need another groups results to compare.

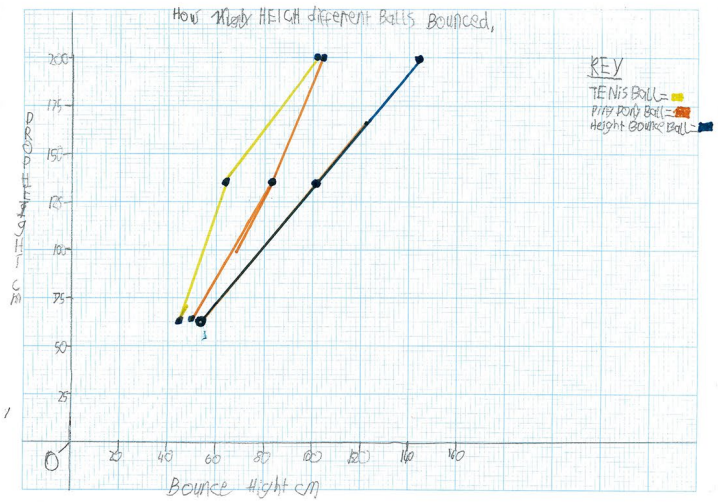
Test 1

| Drop Height | Tenis ball | Ping pong ball | Heigh bouce ball |
|---|---|---|---|
| 67cm | 45cm | 49cm | 52cm |
| 134cm | 67cm | 84cm | 103cm |
| 200cm | 102cm | 101cm | 142cm |

Test 2

| Drop Height | Tennis Ball | Ping Pong Ball | Hand Ball |
|---|---|---|---|
| 67cm | 43cm | 50cm | 51cm |
| 134cm | 66cm | 84cm | 100cm |
| 200cm | 103cm | 100cm | 142cm |

Draw a graph of your results and the other groups results onto a single graph on graph paper.




## Annotations

*Identifies the variable to be changed.*

*Identifies one variable to be controlled.*

*Designs tables to present data for analysis.*

*Constructs a line graph to present data.*

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# Investigation report: Bouncing ball

What do your results suggest you?

My results sugest to me that not all balls go up in the same amount of bounce height if you raise the drop height at the same amount in a short drop height distance.

**Data Analysis**

**Why** did you get these results? Try to use some science ideas, and your understanding so far of energy, to help explain what happened.
The reason that the balls lost boune height every time that they were droped is that they loose energy every time they bounce because of the gravitational and kenetic energy is trasfured into other energys suchas sound every time it hits the ground.

Was the outcome different from your prediction? Explain.
I predicted that the ball would go up by a sutan amount every time that the height was raised.

**Evaluating**

What difficulties did you experience in doing this investigation?
No major difficultys were foiund.

Compare your group results to the other group you chose, are their results the same or different? If there are differences then can you suggest why?

How can I improve this investigation, for example fairness and accuracy?

**Extension**

If you finish this you can explore changing the ball to a different type (one used in down ball?)

Graph the results of this on your original graph and then compare these results to those with the tennis ball.

## Annotations

*Draws conclusions from data.*

*Explains observations with reference to energy transfers in the system.*

## Annotations (Overview)

*The student uses appropriate language and representations to communicate science ideas, methods and findings.*

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# Analysis task: Rock samples

## Year 8 Science achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

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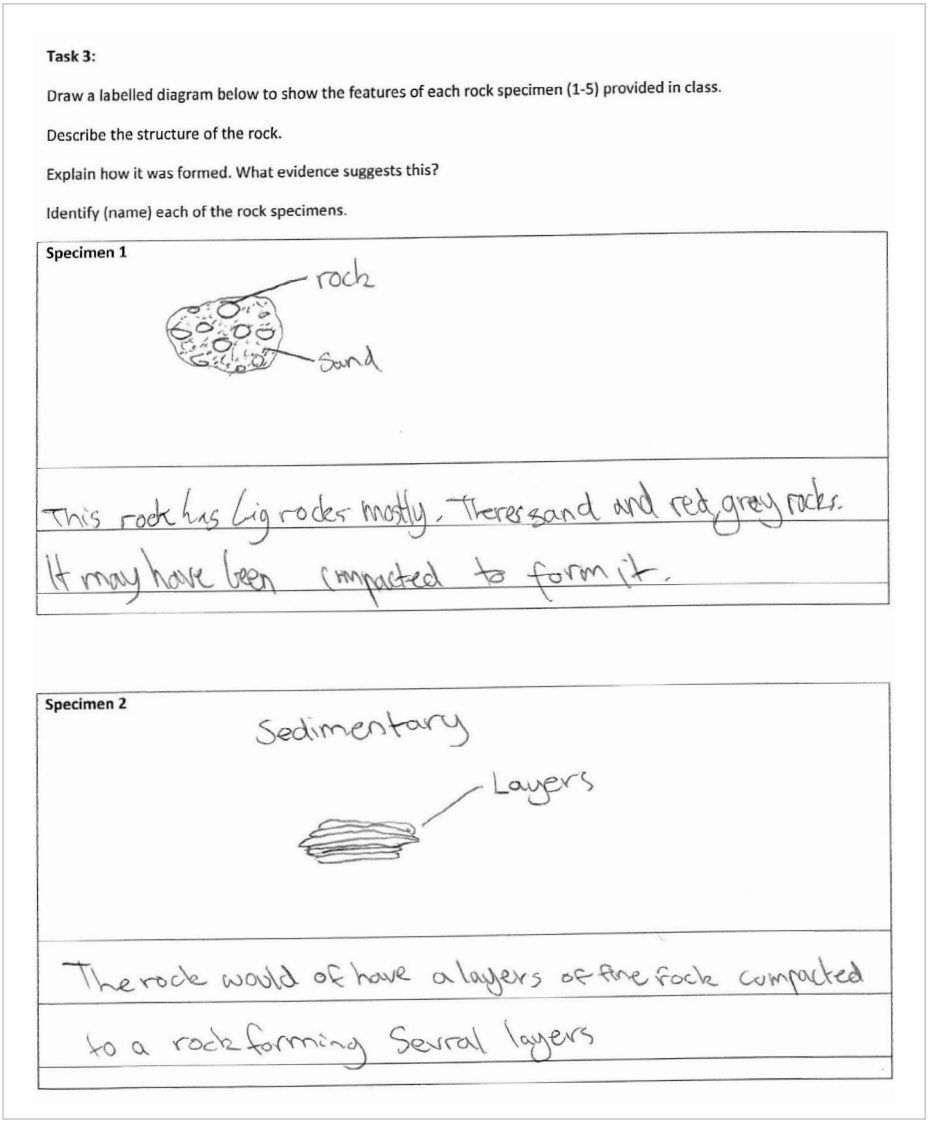
## Summary of task

Students had completed a unit on the rock cycle, linked to an analysis of rock types in the local area, and the ways in which those rocks had formed over time.

For this task, students were required to analyse five rock samples and use their observations to infer how the rock was formed. They were also required to complete a Venn diagram to highlight the similarities and differences between sedimentary, igneous and metamorphic rocks, and to apply their knowledge to an everyday situation. These tasks formed part of an in-class written examination over two class lessons.

# Analysis task: Rock samples



Task 3:

Draw a labelled diagram below to show the features of each rock specimen (1-5) provided in class.

Describe the structure of the rock.

Explain how it was formed. What evidence suggests this?

Identify (name) each of the rock specimens.

Specimen 1



This rock has big rocks mostly. There's sand and red, grey rocks.
It may have been compacted to form it.

Specimen 2



The rock would of have a layers of fine rock compacted
to a rock forming Several layers

## Annotations

*Constructs diagrammatic and textual representations of rock samples to describe features.*

*Uses knowledge of rock formation to infer some conditions in which the rock was formed.*

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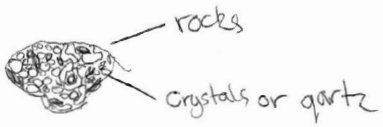
# Analysis task: Rock samples

**Specimen 3**

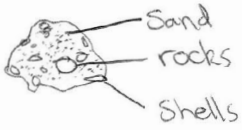
Granite




The rock looks like it has little crystals in it. There shiny rocks, large and small rocks (~~There~~) It must of been in high temp.

**Specimen 4**

Sedimentary




This rock has rock, sand and shells in it, all of the containg would of been compacted to form this rock at the beach

**Specimen 5**


This rock has a white, grey rock ~~type~~ thing in it. It may have crystals in it be cause its very shiny.

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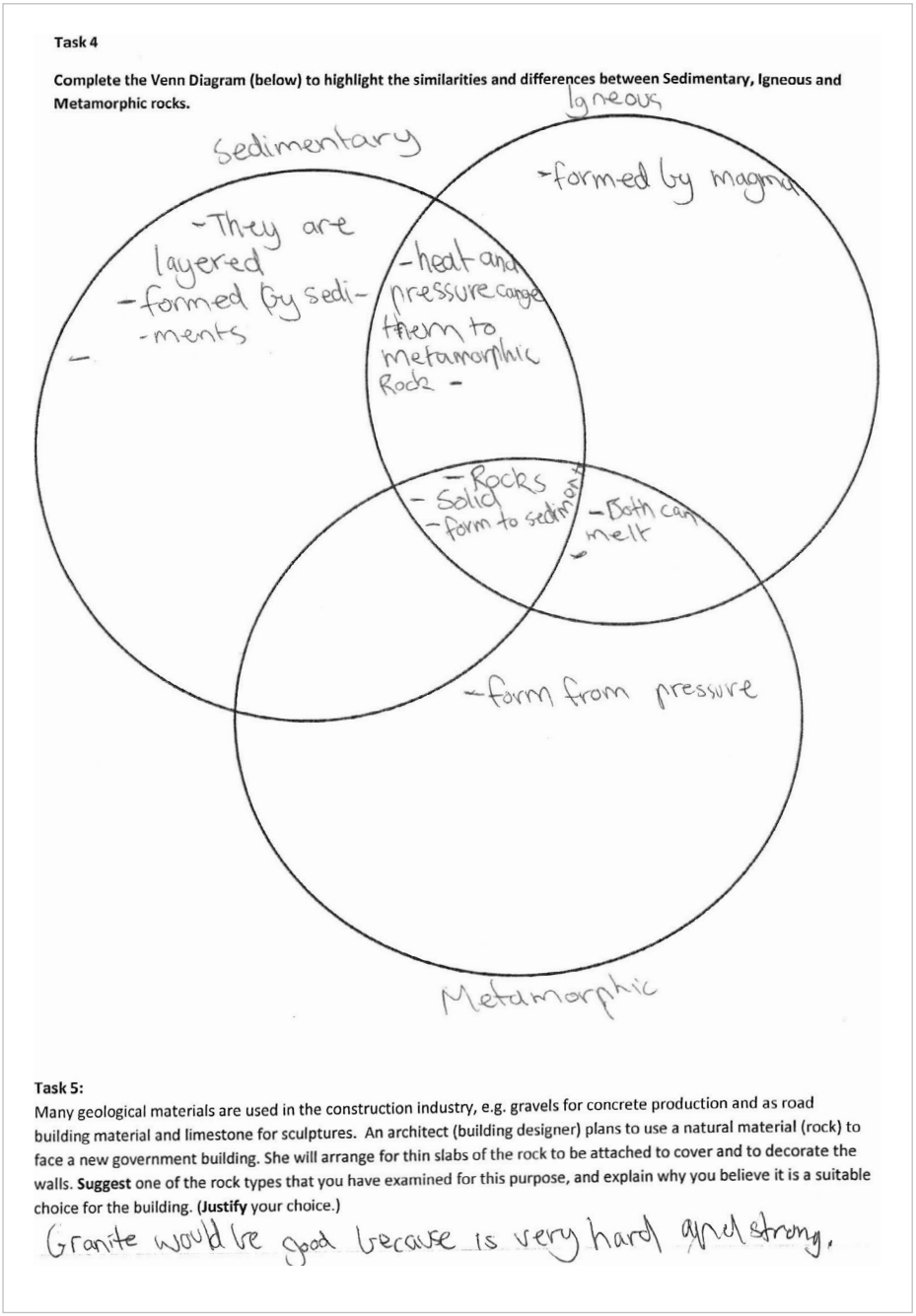
# Analysis task: Rock samples



Task 4

Complete the Venn Diagram (below) to highlight the similarities and differences between Sedimentary, Igneous and Metamorphic rocks.



Task 5:

Many geological materials are used in the construction industry, e.g. gravels for concrete production and as road building material and limestone for sculptures. An architect (building designer) plans to use a natural material (rock) to face a new government building. She will arrange for thin slabs of the rock to be attached to cover and to decorate the walls. **Suggest** one of the rock types that you have examined for this purpose, and explain why you believe it is a suitable choice for the building. **(Justify** your choice.)

Granite would be good because is very hard and strong.

## Annotations

*Identifies some similarities and differences in the processes of formation of sedimentary, igneous and metamorphic rocks.*

*Uses knowledge of some properties of rocks to suggest a suitable material for a stated purpose.*

## Annotations (Overview)

*The student uses appropriate language and representations to communicate science ideas, methods and findings.*

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Science

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# Board game: Digestive system

## Year 8 Science achievement standard

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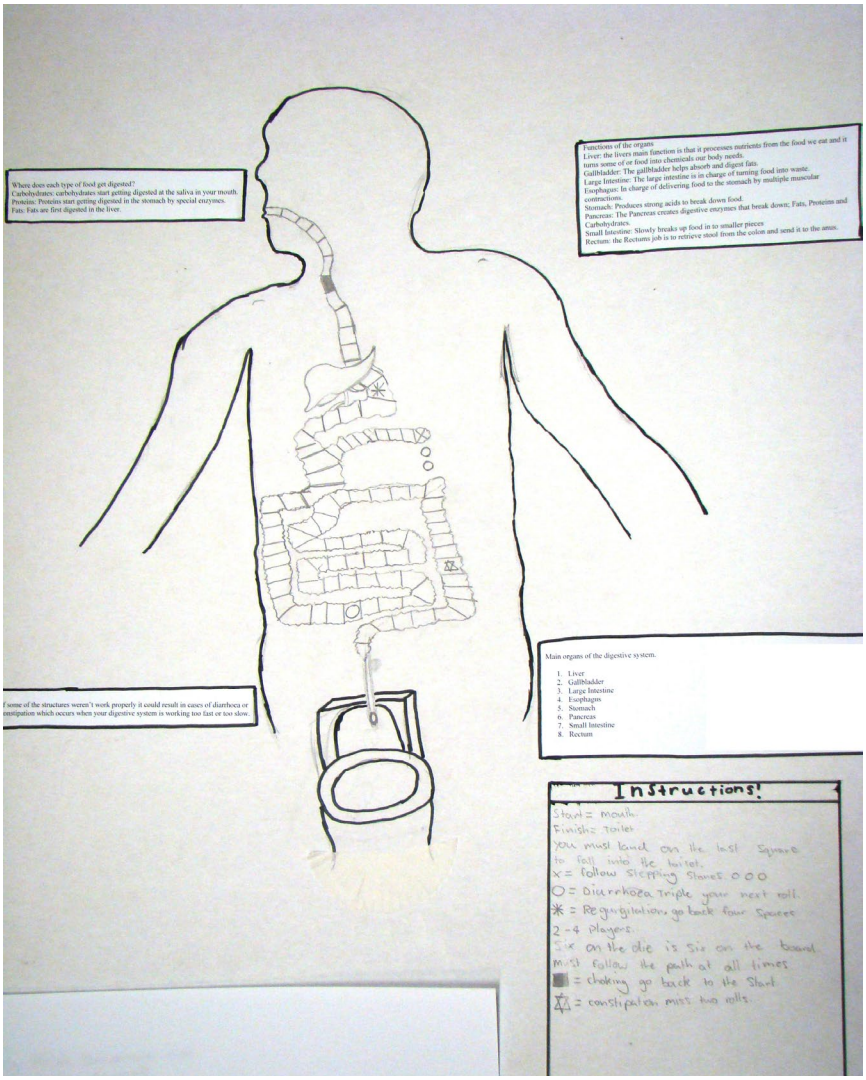
## Summary of task

Students had explored the respiratory system and reproductive system, focusing on the structure of the body systems and the function of their component organs, tissues and cells.

Students were asked to work in pairs to research the digestive system and construct a board game that demonstrated their understanding of the main organs of the system, their structure and function, and what would happen if some of the organs weren't functioning.

Students were provided with five 40-minute lessons to complete the task.

# Board game: Digestive system




## Annotations

*Identifies the component organs of the digestive system.*

*Identifies the function of each component.*

*Identifies two problems that affect the digestive system.*

## Annotations (Overview)

*The student uses language and representations to communicate science ideas through a specific text type (board game).*

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Science

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# Written test: Cells

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## Summary of task

Students had completed a unit on cell structure and function, including investigating physical and digital models of different cells, viewing a range of samples under a microscope and researching the structure and function of cells in particular tissues.

Students were required to complete a written test following completion of the unit. They completed the test over 50 minutes in closed-book conditions. A selection of test questions is included in the attached sample.

# Written test: Cells

12. a) Explain how multicellular organisms benefit from having specialised cells.

Multicellular cells benefit from having Specialised cells because every specialised cell has a special job to do

b) Pick one type of cell from the diagram below and describe how it is suited to its specialised role in the body.

Red Blood Cells carry oxygen around, through your viens, to your lungs. from your heart.

Labelled images of five different cell types

## Annotations

*Recognises that specialised cells perform particular functions.*

*Describes the role of red blood cells.*

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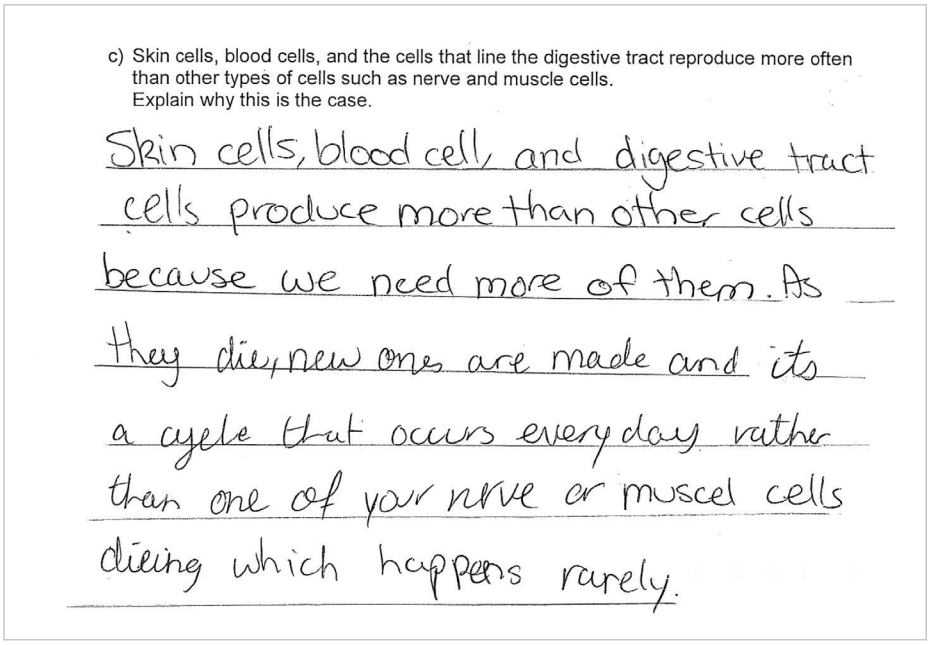
# Written test: Cells



c) Skin cells, blood cells, and the cells that line the digestive tract reproduce more often than other types of cells such as nerve and muscle cells.
Explain why this is the case.

Skin cells, blood cell, and digestive tract cells produce more than other cells because we need more of them. As they die, new ones are made and its a cycle that occurs everyday rather than one of your nerve or muscel cells dieing which happens rarely.

## Annotations

*Explains that cells that die need to be replaced.*

## Annotations (Overview)

*The student uses appropriate language to communicate science ideas.*

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# Investigation report: Coffee cup evaluation

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## Summary of task

Students were presented with a scenario in which they were required to determine the best coffee cup to be used by a local coffee shop. Students determined the variables that they thought would qualify a coffee cup as ‘the best’. They designed and carried out an investigation to test their chosen variables and presented their findings in the form of a written report. Students worked in groups over three lessons to undertake the practical and submitted an individual report completed in their own time.

# Investigation report: Coffee cup evaluation

**Which coffee cup is the best one**

Aim:

To see which coffee cup is the best one

Hypothesis:

The best coffee cup will be the one that makes the coffee stay the hottest

Materials:

Coffee cup
Thermometer
Boiling Kettle
Stop watch

Method:

1. Get the six cups
2. Stick a thermometer in their lids
3. Boil a kettle
4. Fill the cups half full with water
5. Put the lids on the cups and start stop watch
6. Record the temperature of the thermometers after 5 minutes
7. Do the experiment again

Results:

| Cup | Experiment 1 | Experiment 2 |
|---|---|---|
| 1 | 81 | 80 |
| 2 | 83 | 84 |
| 3 | 85 | 85 |
| 4 | 80 | 78 |
| 5 | 86 | 90 |
| 6 | 85 | 85 |

Conclusion:

Cup 5 is the best because the water was the hottest after 5 minutes.

## Annotations

*Identifies a factor to be investigated in order to solve a problem.*

*Represents data in the form of a table.*

*Forms a conclusion based on the data collected.*

## Annotations (Overview)

*The student uses some appropriate language and representations to communicate science ideas, methods and findings in a range of text types.*

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# Research report: Science careers

## Year 8 Science achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

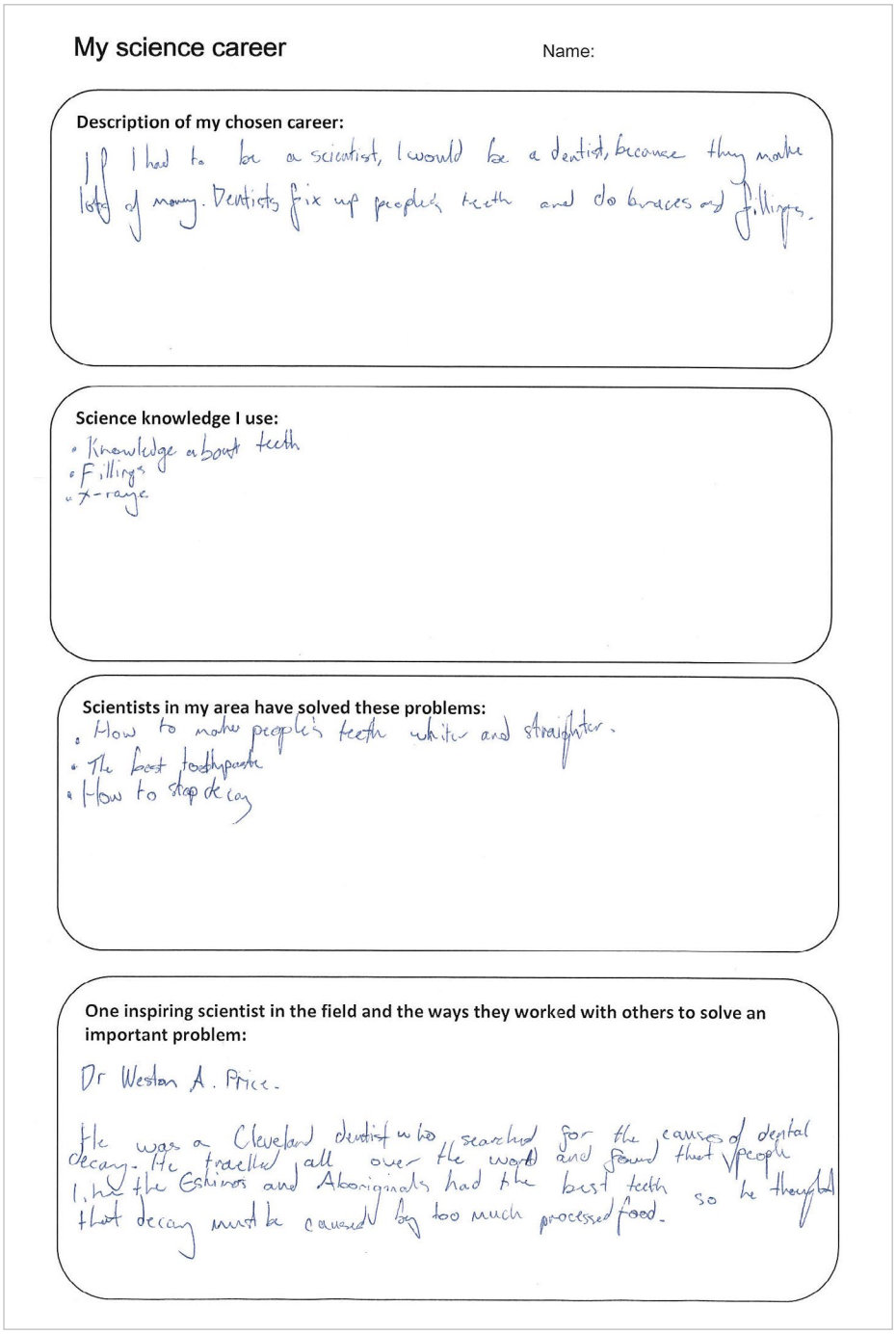
> *By the end of Year 8, students compare physical and chemical changes and use the particle model to explain and predict the properties and behaviours of substances. They identify different forms of energy and describe how energy transfers and transformations cause change in simple systems. They compare processes of rock formation, including the time scales involved. They analyse the relationship between structure and function at cell, organ and body system levels. Students examine the different science knowledge used in occupations. They explain how evidence has led to an improved understanding of a scientific idea and describe situations in which scientists collaborated to generate solutions to contemporary problems.*
>
> *Students identify and construct questions and problems that they can investigate scientifically. They consider safety and ethics when planning investigations, including designing field or experimental methods. They identify variables to be changed, measured and controlled. Students construct representations of their data to reveal and analyse patterns and trends, and use these when justifying their conclusions. They explain how modifications to methods could improve the quality of their data and apply their own scientific knowledge and investigation findings to evaluate claims made by others. They use appropriate language and representations to communicate science ideas, methods and findings in a range of text types.*

## Summary of task

Over the course of the year, students had investigated a range of science careers, prominent scientists and contemporary research related to each area of study.

For this task, students were asked to reflect on their science learning and identify a potential science career they would be interested in pursuing. They were asked to research the occupation and to identify its contributions to solving contemporary problems, including providing specific information on an 'inspirational' scientist's work.

# Research report: Science careers



My science career

Name:

**Description of my chosen career:**

If I had to be a scientist, I would be a dentist, because they make lots of money. Dentists fix up people's teeth and do braces and fillings.

**Science knowledge I use:**

- Knowledge about teeth
- Fillings
- X-rays

**Scientists in my area have solved these problems:**

- How to make people's teeth white and straighter.
- The best toothpaste
- How to stop decay

**One inspiring scientist in the field and the ways they worked with others to solve an important problem:**

Dr Weston A. Price.

He was a Cleveland dentist who searched for the causes of dental decay. He travelled all over the world and found that people like the Eskimos and Aboriginals had the best teeth so he thought that decay must be caused by too much processed food.

## Annotations

*Identifies some knowledge used in dentistry.*

*Describes how a scientist worked with a range of people to solve a problem.*

## Annotations (Overview)

*The student uses appropriate language to communicate science ideas.*

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# Investigation report: Mousetrap racer

## Year 8 Science achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

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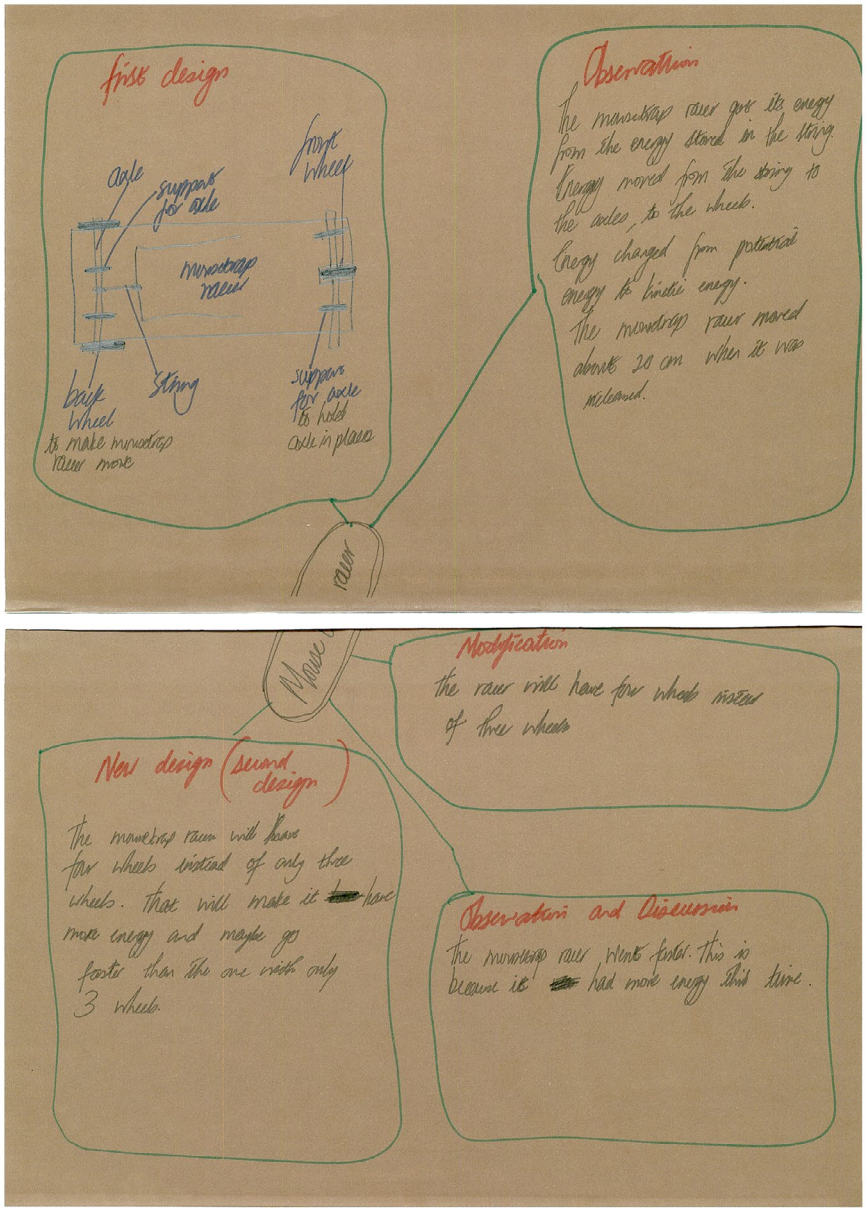
## Summary of task

Students had investigated forms of energy and energy transfers and transformations.

As part of the unit, students were required to undertake a practical investigation to build a mousetrap racer. They were asked to observe the mousetrap racer's motion when released and explain the energy transfers and transformations that take place. They were then required to modify the racer and make a prediction about how its motion might change, using their knowledge of energy transfers and transformations.

# Investigation report: Mousetrap racer




## Annotations

*Identifies different forms of energy in the system, including potential energy and kinetic energy.*

*Describes how energy transfer causes movement.*

*Suggests a modification that can be investigated scientifically.*

*Makes a prediction.*

## Annotations (Overview)

*The student uses some appropriate language and representations to communicate science ideas, methods and findings.*

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# Investigation report: Classifying chemical and physical changes

## Year 8 Science achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

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>
> *Students identify and construct questions and problems that they can investigate scientifically. They consider safety and ethics when planning investigations, including designing field or experimental methods. They identify variables to be changed, measured and controlled. Students construct representations of their data to reveal and analyse patterns and trends, and use these when justifying their conclusions. They explain how modifications to methods could improve the quality of their data and apply their own scientific knowledge and investigation findings to evaluate claims made by others. They use appropriate language and representations to communicate science ideas, methods and findings in a range of text types.*

## Summary of task

Students had studied the difference between physical changes and chemical reactions. They had engaged in a number of investigations as part of the chemistry unit and had developed a good understanding of the safety requirements of working in a laboratory environment.

For this investigation, students were provided with a number of experiments to conduct. Prior to conducting the experiments they were required to develop and obtain teacher approval for their risk assessment and safety considerations. For each experiment, they were asked to make observations, and to record their observations in an appropriate table. They were required to classify the observed change as a physical change or a chemical reaction, and to justify their classification based on their observations.

Students completed the investigation planning and practical component over two lessons in class, and constructed their report as a homework task.

# Investigation report: Classifying chemical and physical changes

The Report

Aim:

We were learning about every day reactions by doing experiments. We observed whether it was a physical or chemical changed by putting them in tables.

Introduction:

Physical reactions are when you can change it back.
Chemical reaction is when something else is formed and it can't be changed back. Equations and Classification because scientist use equation in solving real world problem because it gives them a easier route to success.

Risk Assessment:

Results:

It is on the next page

## Annotations

*Defines physical and chemical changes with reference to reversibility and formation of new substances.*

*Identifies that a risk assessment was required.*

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# Investigation report: Classifying chemical and physical changes

| Experiment summary table | | | |
|---|---|---|---|
| Exp No. | Observation. | Type. | Evidence. |
| 1.Decomposing copper carbonate | | | |
| 2.Melting chocolate | It turn in to a liquified substance | Physical | Because it has Change it form and it can be changed back |
| 3.Warming washing soda | | | |
| 4.Blow 10 big breaths into a Balloon | It start to gradually get bigger | Physical | Because it has Change it form |
| 5.Magnesium in acid | | | |
| 6. Dissolve salt in water | The salt disappeared but it was still there | Physical: | Because if you tip the water out and the water would dry up and the salt will be there |
| 7. Reacting iron with copper sulphate | It was silver then it turned brown | Chemical | Because it changed it colour |
| 8. Baking soda and hydrochloric | | | |

## Annotations

*Constructs a table to organise data.*

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# Investigation report: Classifying chemical and physical changes

| | | | |
|---|---|---|---|
| 9.Crush an aspirin tablet | It turn into a white powdered | Chemical | because it can't be changed back from a powder |
| 10. Burning Magnesium in air | It went into a bright light | Chemical | It change because it was lite and it burned |
| 11. To test tube containing 10 drops lead nitrate add, 5 drops of sodium lodide | It turn yellow and bubbled up | Chemical | because it can't be changed back |
| 12. Fold a piece of paper | It has change shape and it can be folded back | Physical | Because it can just be folded back |
| 13. Place a small amount of manganese dioxide A/B | A) It made a popping sound<br>B) It bubbled up | Physical | They are both physical because nothing really happened to them |
| 14. To a test tube 10 drops of sodium, add 5 drops of sliver nitrate | It started fizzing up and then it turned white | Chemical | Because it changed colour |

## Annotations

*Classifies chemical changes on the basis of formation of a new substance or perceived reversibility.*

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# Investigation report: Classifying chemical and physical changes

| | | | |
|---|---|---|---|
| 15. To test tube containing 10ml of copper sulphate, add piece of magnesium | It started fizzing up (Gas) it also changed colour | Chemical | Because it turn into a gas and it changed colour |
| 16. The test tubes containing 10 drops of copper sulphate, add a piece of magnesium | It turned dark green and it was warm | Chemical | Because it changed colour and got warm |
| 17. Using a straw, blow into a test tube | When it was blow it would blow bubbles and it also change colour to a cloudier colour | Chemical: because it changed colour | Because it changed colour |

## Annotations

*Identifies that colour change and heat production can indicate a chemical change.*

## Annotations (Overview)

*The student uses some appropriate language and representations to communicate science findings and ideas.*

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# Investigation: Trebuchet design and function

## Year 8 Science achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

> *By the end of Year 8, students compare physical and chemical changes and use the particle model to explain and predict the properties and behaviours of substances. They identify different forms of energy and describe how energy transfers and transformations cause change in simple systems. They compare processes of rock formation, including the time scales involved. They analyse the relationship between structure and function at cell, organ and body system levels. Students examine the different science knowledge used in occupations. They explain how evidence has led to an improved understanding of a scientific idea and describe situations in which scientists collaborated to generate solutions to contemporary problems.*
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## Summary of task

As part of a unit focused on energy transfers and transformations in simple machines, students investigated catapult design and function. In this task, students were required to build and investigate the function of a simple trebuchet.

After building and testing their trebuchet, students were required to investigate the effect of varying one variable on the function of the trebuchet. Students conducted their investigation in small groups and completed their report independently. They received some teacher feedback on their draft report, then wrote the final report under exam conditions, with access to their draft report and planning notes.

# Investigation: Trebuchet design and function

Experimenting with Trebuchets

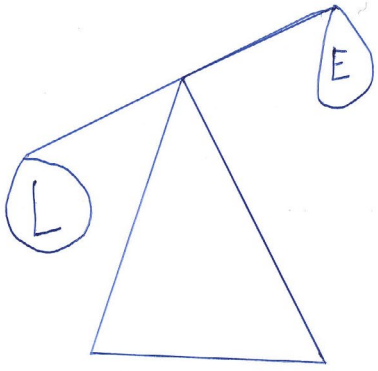
Aim of the Investigation: The aim of this investigation is to test the effect of the fulcrum poition and to test the effect of the Gravional potencial energy.

Variables: The variable which will be Changed (independent variable) The fulcrum position. The variable which will be measured is (dependent variable) The Distance of the load. The variable which will be (controlled variable) The effort on the Trebuchets and How much Mass is in the load.

Hypothesis: It is expected that The more away the fulcrum is the more distance gained

Materials: 1x Trebychet
1x White cap
1x 1m ruler

We have changed the position of the fulcrum. Because the load will get better Distance




## Annotations

*Identifies phenomena for investigation.*

*Identifies variables that can be changed and measured.*

*Identifies two variables to be controlled.*

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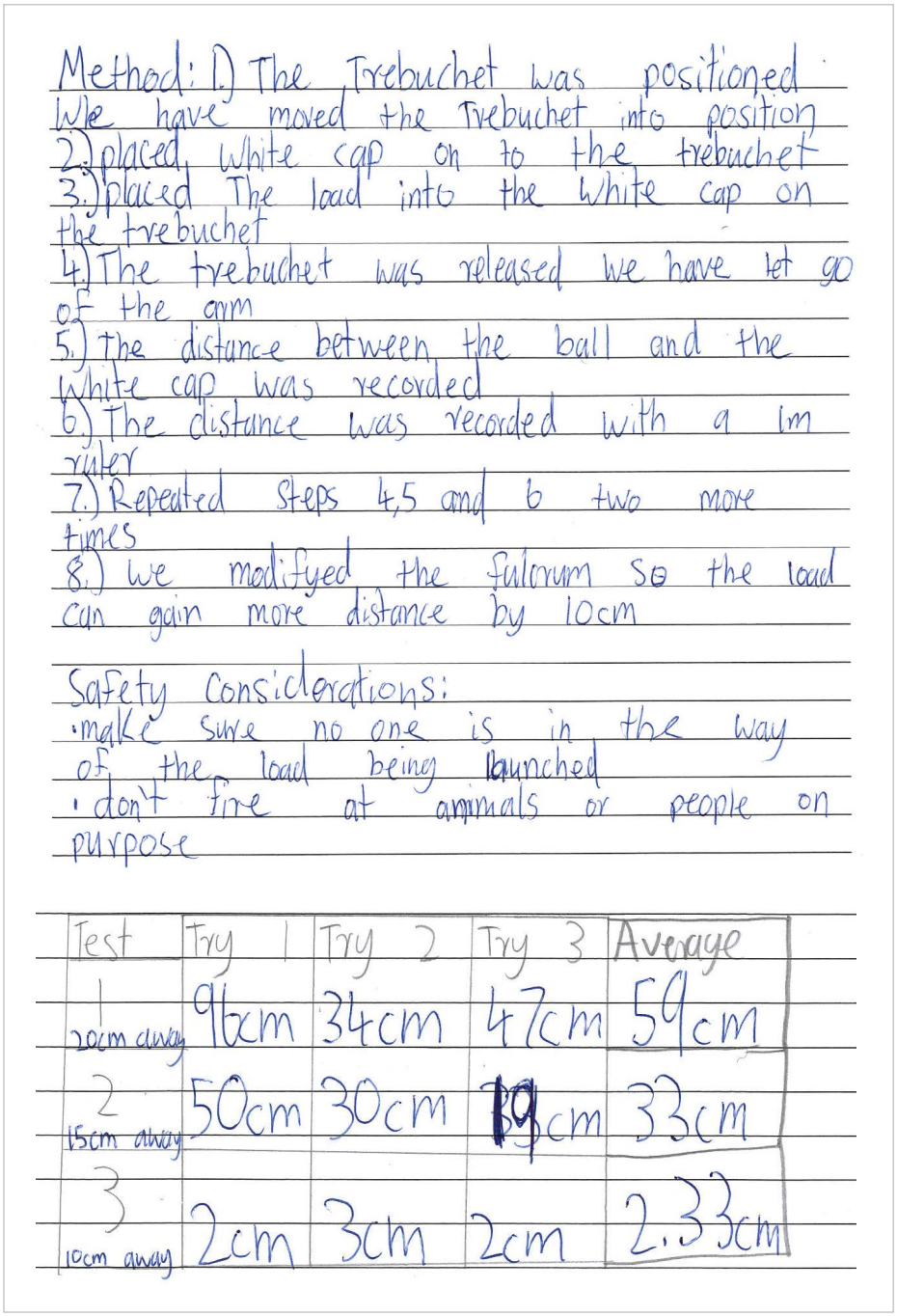
# Investigation: Trebuchet design and function



Method: 1.) The Trebuchet was positioned We have moved the Trebuchet into position
2.) placed White cap on to the trebuchet
3.) placed The load into the White cap on the trebuchet
4.) The trebuchet was released we have let go of the arm
5.) The distance between the ball and the White cap was recorded
6.) The distance was recorded with a 1m ruler
7.) Repeated steps 4,5 and 6 two more times
8.) we modifyed the fulcrum so the load can gain more distance by 10cm

Safety Considerations:
- make sure no one is in the way of the load being launched
- don't fire at animals or people on purpose

| Test | Try 1 | Try 2 | Try 3 | Average |
|---|---|---|---|---|
| 1 20cm away | 96cm | 34cm | 47cm | 59cm |
| 2 15cm away | 50cm | 30cm | 19cm | 33cm |
| 3 10cm away | 2cm | 3cm | 2cm | 2.33cm |

## Annotations

*Plans an investigation, including repeat trials.*

*Identifies some safety precautions.*

*Constructs a table to present data.*

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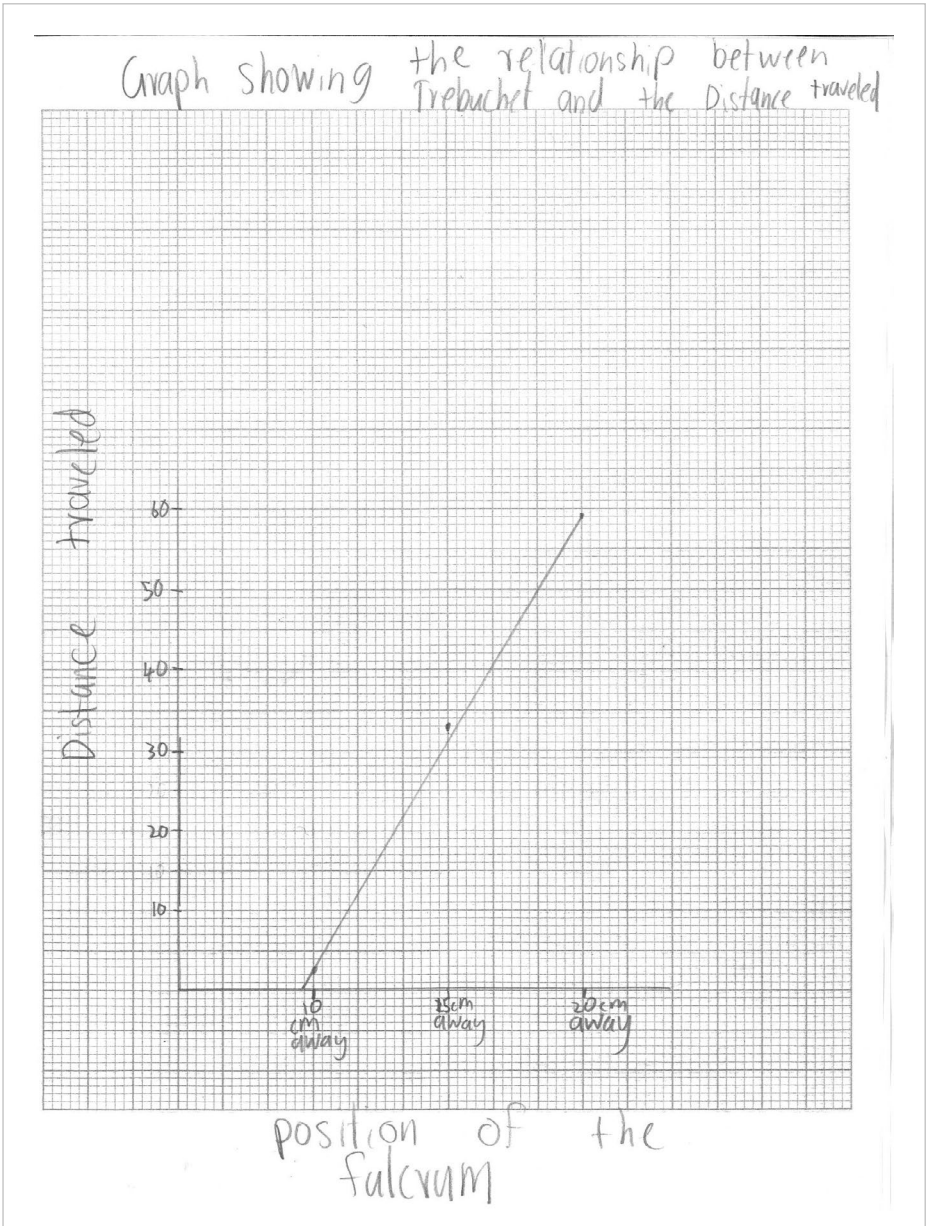
# Investigation: Trebuchet design and function




## Annotations

*Represents summary data points and attempts to represent the trend graphically.*

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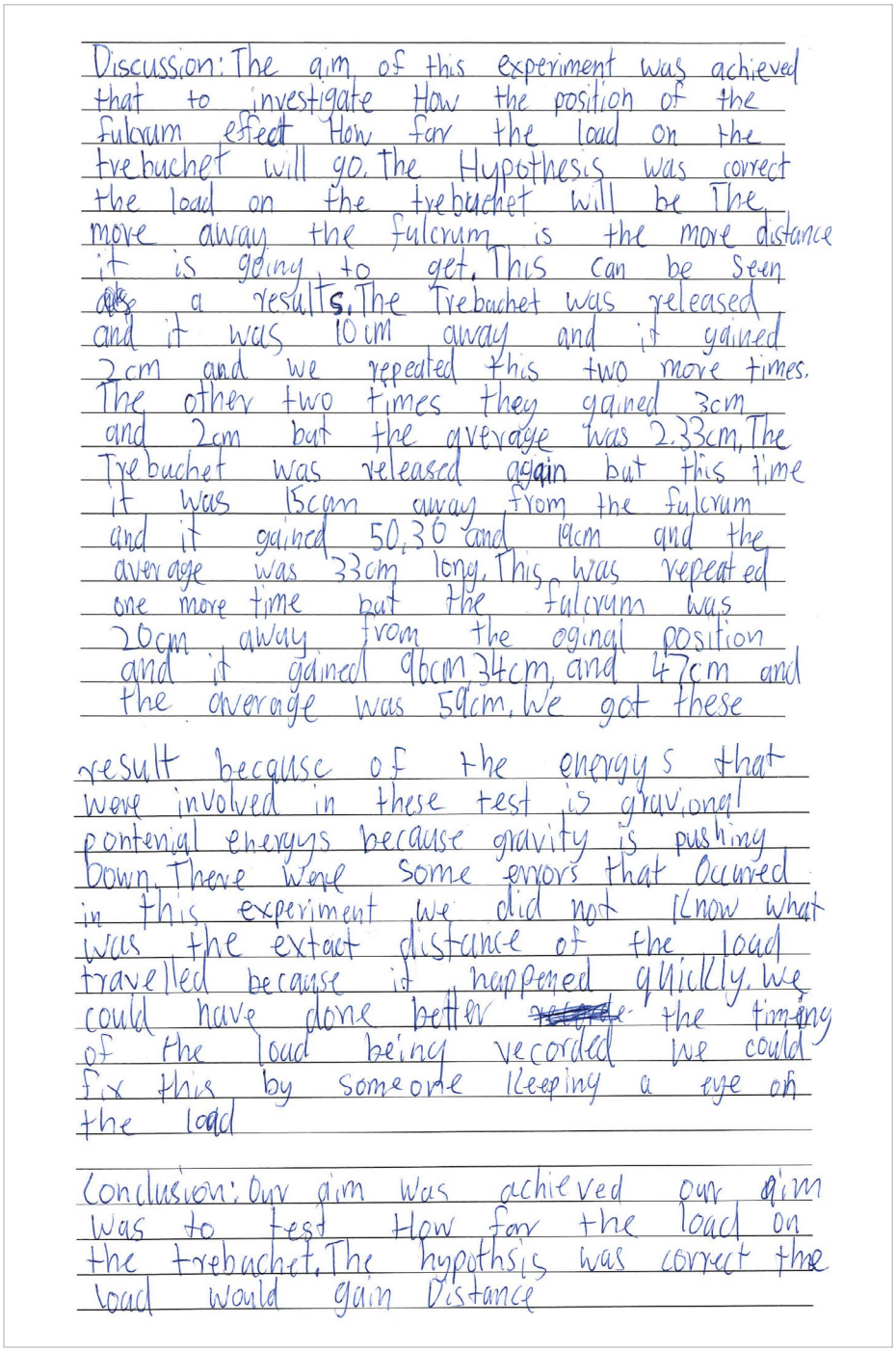
# Investigation: Trebuchet design and function



Discussion: The aim of this experiment was achieved that to investigate How the position of the fulcrum effect How far the load on the trebuchet will go. The Hypothesis was correct the load on the trebuchet will be The move away the fulcrum is the more distance it is going to get. This can be seen as a results. The Trebuchet was released and it was 10cm away and it gained 2cm and we repeated this two more times. The other two times they gained 3cm and 2cm but the averdge was 2.33cm. The Trebuchet was released again but this time it was 15cm away from the fulcrum and it gained 50, 30 and 19cm and the average was 33cm long. This was repeated one more time but the fulcrum was 20cm away from the oginal position and it gained 96cm 34cm, and 47cm and the average was 59cm. We got these result because of the energys that were involved in these test is gravional potenial energys because gravity is pushing down. There were some errors that Ocurred in this experiment we did not know what was the extact distance of the load travelled because it happened quickly. We could have done better ~~retarde~~ the timing of the load being recorded we could fix this by someone keeping a eye on the load

Conclusion: Our aim was achieved our aim was to test How far the load on the trebuchet. The hypothsis was correct the load would gain Distance

## Annotations

*Identifies that energy transfer was involved in the observed phenomena.*

*Identifies improvements in the method that could reduce human error in the data.*

*Identifies the trend in results and provides a conclusion.*

## Annotations (Overview)

*The student uses some scientific language and appropriate representations to communicate ideas, methods and findings.*

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# Letter: Water fluoridation

## Year 8 Science achievement standard

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## Summary of task

Students watched a *Catalyst* episode as a stimulus for a discussion about water fluoridation in Australia. As a whole class, they discussed why adding fluoride to water is controversial and identified the research evidence that might help them understand the positive effects and/or risks of water fluoridation.

They were then provided with a range of websites to conduct further research, and were required to write a letter to the Federal Minister for Health and Medical Research with their recommendation regarding mandatory water fluoridation. They were required to include a clear explanation of the scientific evidence that underpins their position.

# Letter: Water fluoridation

*Dear Government*

*I think that it is a great idea to add fluoride to all water in Australia because it makes your teeth stronger and much healthier. There have been lots of arguments about fluoridated water causing bone cancer and other false facts, but we have been drinking fluoridated water for over 50 years and no human being has ever been affected by drinking fluoridated water.*

*The local councils of Queensland are making the wrong decision to remove water fluoridation. They are being persuaded by community members who are being misled by incorrect information, instead of receiving real proof that it is good or bad for you. This is leading to a rise in tooth decay in Queensland. These are horrific results and we are demanding a change.*

*Kind regards*

## Annotations

*States the health benefits of fluoridation.*

*Refers to evidence to refute claims that fluoridation is unsafe.*

*Refers to the need for evidence to improve understanding of science ideas.*

## Annotations (Overview)

*The student uses appropriate language to communicate science ideas.*

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