

# Mathematics

Year 2  
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 2 MATHEMATICS

This portfolio provides the following student work samples:

Sample 1	Number: Counting
Sample 2	Geometry: Shapes
Sample 3	Measurement: Longer than my thumb
Sample 4	Number: My coins
Sample 5	Statistics: Graph audit
Sample 6	Number: Tooth fairy
Sample 7	Number: Block of chocolate
Sample 8	Number: Partial array
Sample 9	Geometry: Flip, slide, turn
Sample 10	Geometry: Farmyard walk
Sample 11	Geometry: 3D picture
Sample 12	Measurement: Calendar task
Sample 13	Statistics and Probability: Snakes and ladders
Sample 14	Measurement: Patterns in time

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# Mathematics

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This portfolio of student work demonstrates recognition of increasing and decreasing number sequences involving 3s, 5s and 10s, and the identification of patterns when counting (WS1). The student draws two-dimensional shapes and orders them using informal units of length or area (WS2). The student describes equal groups of objects as fractions of the whole (WS4). The student measures the length of objects using informal units (WS3) and identifies features of three-dimensional objects (WS11). The student reads and constructs a calendar and identifies the seasons (WS12). The student shows how an amount of money can be calculated using different combinations of Australian coins (WS6). The student divides a given number into equal groups and solves related problems (WS7, WS8). The student uses a map to locate objects and give directions (WS10). The student tells the time (WS14) and explains the likelihood of the occurrence of an event (WS13). The student flips, slides and turns an object (WS9). The student collects data, creates lists, tables and picture graphs and makes sense of the data collected (WS5).

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# Mathematics

# Year 2

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## Number: Counting

### Year 2 Mathematics achievement standard

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

*By the end of Year 2, students recognise increasing and decreasing number sequences involving 2s, 3s and 5s. They represent multiplication and division by grouping into sets. They associate collections of Australian coins with their value. Students identify the missing element in a number sequence. Students recognise the features of three-dimensional objects. They interpret simple maps of familiar locations. They explain the effects of one-step transformations. Students make sense of collected information.*

*Students count to and from 1000. They perform simple addition and subtraction calculations using a range of strategies. They divide collections and shapes into halves, quarters and eighths. Students order shapes and objects using informal units. They tell time to the quarter hour and use a calendar to identify the date and the months included in seasons. They draw two-dimensional shapes. They describe outcomes for everyday events. Students collect data from relevant questions to create lists, tables and picture graphs.*

### Summary of task

A unit on counting and number patterns was taught in each of semester 1 and semester 2. A counting warm-up activity occurred daily and skip counting on the calculator and hundreds chart had been completed as a class.

The teacher modelled the task and the students were given a calculator and a hundreds chart. The students were given two 20-minute sessions to complete the tasks.

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Number: Counting

Counting with a Calculator

1. Choose a two or three digit number that ends in 5 or 0.
2. Enter this number into the calculator and in the table below.
3. Press the "- 5" key and the "=" key, record.
4. Keep pressing the "-" key, writing each number shown on the calculator in the table.

5

7	3	0
7	4	5
7	4	0
7	3	5
7	32	05
7	2	05
7	1	05
7	0	5
7	0	0
6	9	5
6	9	05
6	8	5
6	8	05

5. Describe the any patterns you see.

1. Choose a two or three digit number that does NOT end in 5 or 0.
2. Enter this number into the calculator and in the table below.
3. Press the "+ 5" key and the "=" key, record.
4. Keep pressing the "+" key, writing each number shown on the calculator in the table.

+5

1	0	0
1	0	5
1	1	05
1	2	05
1	2	505
1	3	05
1	3	505
1	4	05
1	4	505
1	5	05
1	5	505
1	6	05
1	6	505
1	7	05
1	7	505

5. Describe the any patterns you see.

05

Annotations

Investigates number sequences that decrease and increase by fives from starting points that are multiples of five.

Recognises a pattern formed by a number sequence.

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Number: Counting

Counting on a Hundreds Chart

Count and colour the hundreds chart by 10's from different starting numbers

799	798	797	796	795	794	793	792	791	790
789	788	787	786	785	784	783	782	781	780
779	778	777	776	775	774	773	772	771	770
769	768	767	766	765	764	763	762	761	760
759	758	757	756	755	754	753	752	751	750
749	748	747	746	745	744	743	742	741	740
739	738	737	736	735	734	733	732	731	730
729	728	727	726	725	724	723	722	721	720
719	718	717	716	715	714	713	712	711	710
709	708	707	706	705	704	703	702	701	700

Describe any patterns you see

My pathn is Gray, perple.

Count and colour the hundreds chart by 3's from different starting numbers.

201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300

Describe any patterns you see

My pathn is Red, pink

Annotations

Identifies number sequences that increase by tens from a variety of three-digit starting points on a hundreds chart.

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## Geometry: Shapes

### Year 2 Mathematics achievement standard

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

*By the end of Year 2, students recognise increasing and decreasing number sequences involving 2s, 3s and 5s. They represent multiplication and division by grouping into sets. They associate collections of Australian coins with their value. Students identify the missing element in a number sequence. Students recognise the features of three-dimensional objects. They interpret simple maps of familiar locations. They explain the effects of one-step transformations. Students make sense of collected information.*

*Students count to and from 1000. They perform simple addition and subtraction calculations using a range of strategies. They divide collections and shapes into halves, quarters and eighths. Students order shapes and objects using informal units. They tell time to the quarter hour and use a calendar to identify the date and the months included in seasons. They draw two-dimensional shapes. They describe outcomes for everyday events. Students collect data from relevant questions to create lists, tables and picture graphs.*

### Summary of task

Students had an understanding of two-dimensional shapes and their properties from previous units. They had completed class activities on length and area. They were asked to draw five different two-dimensional shapes of different sizes and then order the shapes according to their area. Students were prompted to think about what would be the best tools to use to complete the task and how they would go about it before starting. They were given access to mathematical materials.

## Geometry: Shapes

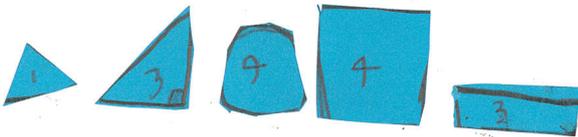
Draw 5 different shapes and cut them out.  
Can you order your shapes by area?

*What tools might help you measure area?*

*How will you record your findings?*

*Are there any shapes that are harder to measure than others?*

*How do you know you are right?*



I leaded the shaps on each other

### Annotations

*Draws two-dimensional shapes.*

*Organises some shapes in order from smallest to largest using informal measurements.*

# Mathematics

# Year 2

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## Measurement: Longer than my thumb

### Year 2 Mathematics achievement standard

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

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### Summary of task

Students were asked to collect objects from the classroom that they could measure using their thumb as a measuring device. They were required to measure the objects and order them according to their length in comparison to their thumb.

**Measurement: Longer than my thumb**

A glue sticker is longer than my finger.

A pencil is longer than my finger.

A night light is longer than my finger.

a star fruit is longer than my finger.

**Annotations**

*Chooses objects that are longer than their own finger to measure.*

# Mathematics

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## Number: My coins

### Year 2 Mathematics achievement standard

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

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### Summary of task

Students were given 16 'coins' and asked to divide them into equal groups and describe each group as a fraction of the original number. Students were asked to use number sentences to record their findings and to think of as many possibilities as they could.

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Number: My coins

Tim divided these 16 coins into equal groups.



Can you describe each group as a fraction?

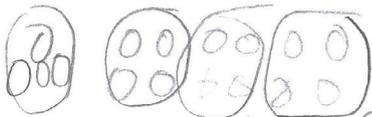
$4 \times 4 = 16$

What number sentences could help you record your findings?

Are there any other possibilities?

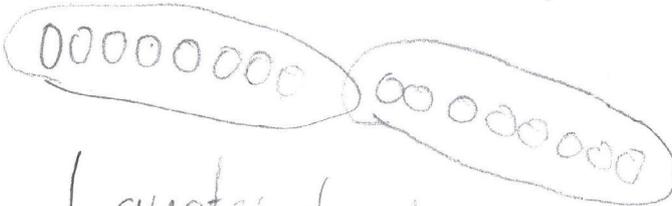
Could you still describe the groups as fractions if they were not equal? Why or why not?

What if there were 24 coins?



4 quarters of 4 = 16

1 quarter of sixteen = 4



1 quarter of sixteen = 8

They are not fractions if these not equal

Annotations

Illustrates equal groups to form a total of 16.

Explains one quarter of 16.

Illustrates one half of a group.

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**Statistics: Graph audit****Year 2 Mathematics achievement standard**

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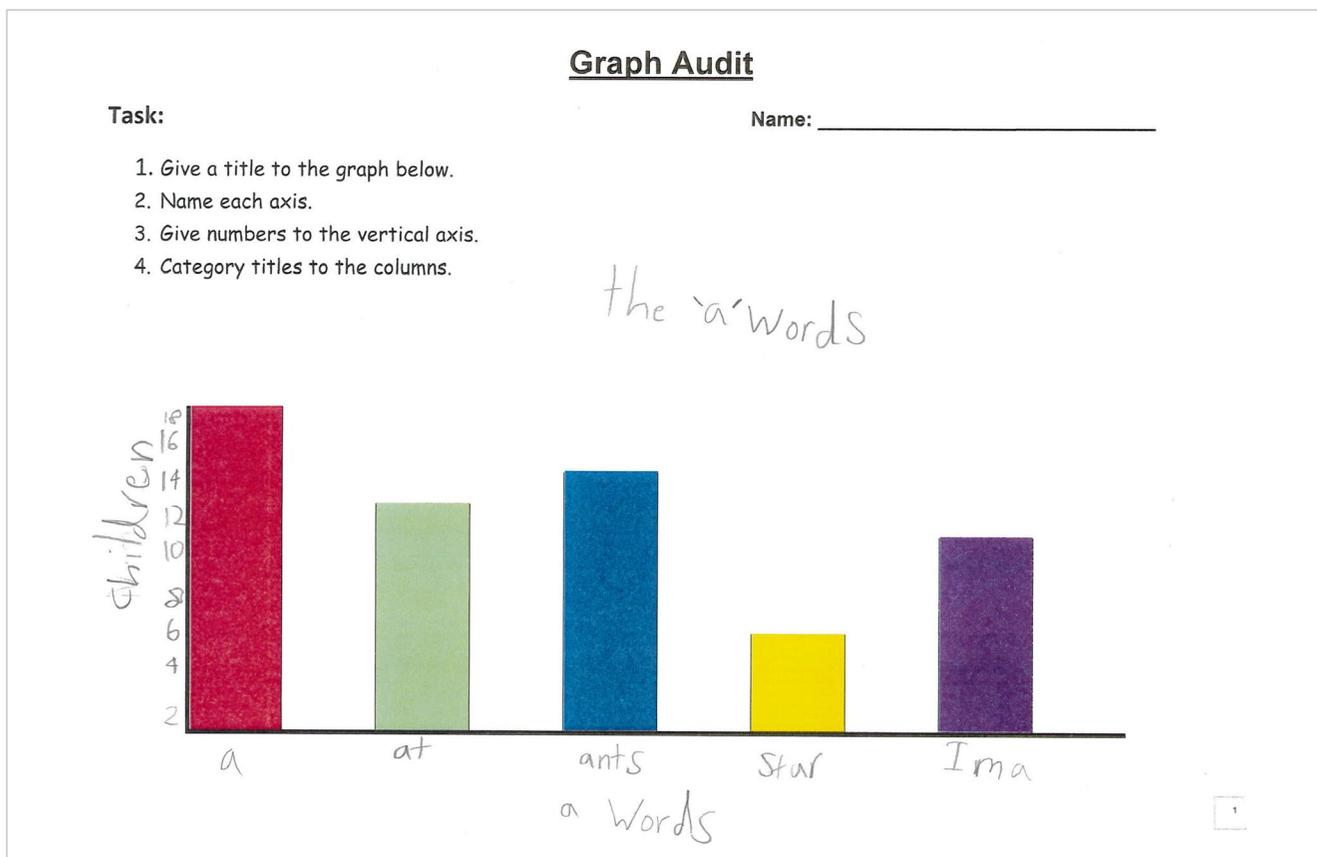
**Summary of task**

Students discussed different ways to display information that they had collected during some class activities. During class time they were asked to display some information and interpret data displays.

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## Statistics: Graph audit



### Annotations

*Shows numbers on vertical axis but not to scale.*

*Creates categories for each column.*

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Statistics: Graph audit

Data Collection and Graphing

**TASK:** Collect and graph data on what activity students in our class would like to take part in on the last week of school to celebrate the end of year.

1. Write your question

What will you choose from these <sup>activities</sup>

2. Organise how you will collect your data and survey the class to collect your information.

	pat y day	Water pistle	PJ
more day	      <del>    </del> 11	      1 12 7	     3

3. Display your data using graph paper

Annotations

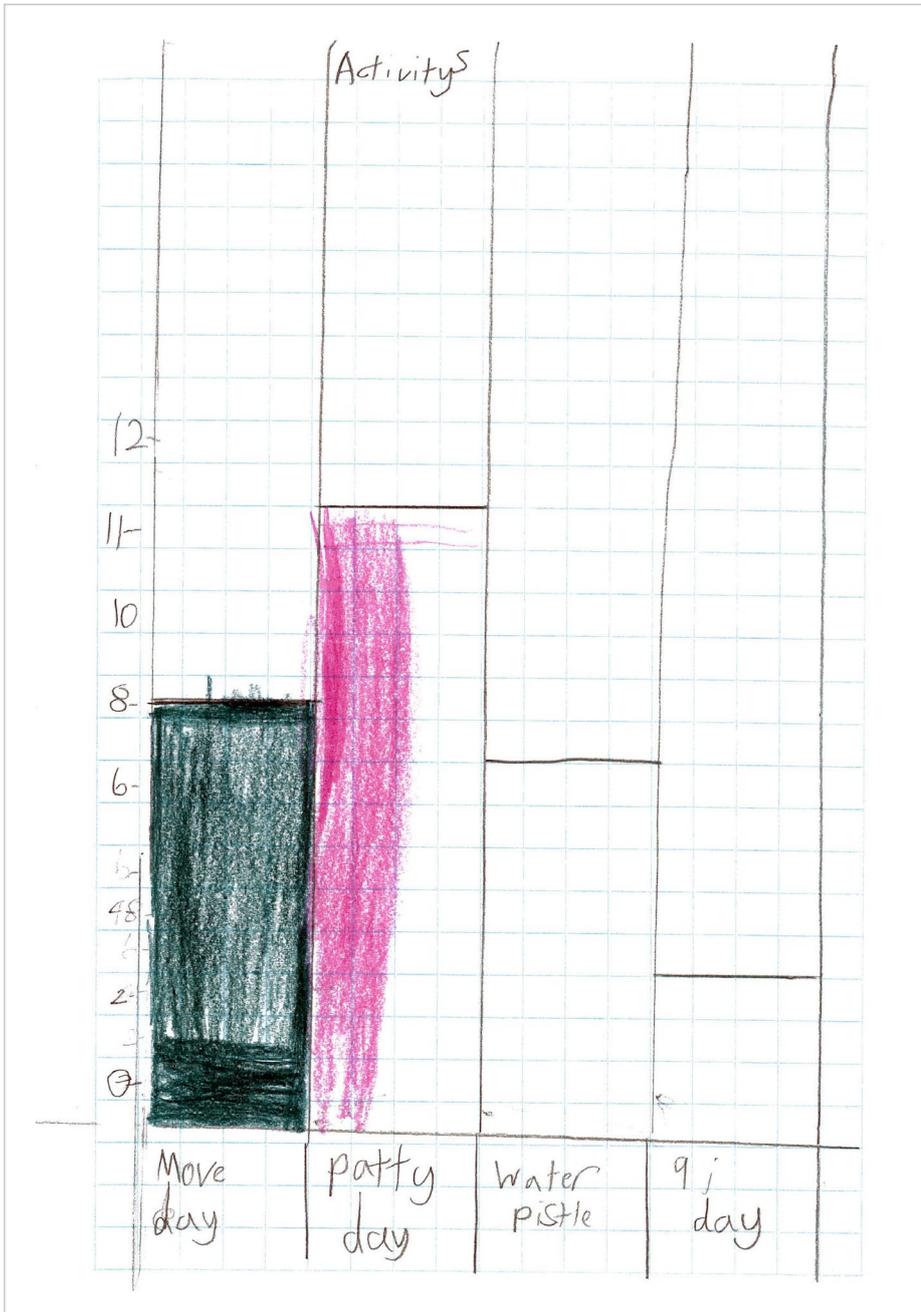
Constructs a frequency distribution table with errors in the totals of the tally marks.

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Statistics: Graph audit



Annotations

Scale on vertical axis is accurate up to 10.

Constructs columns with some degree of accuracy.

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# Mathematics

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## Number: Tooth fairy

### Year 2 Mathematics achievement standard

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### Summary of task

Students had been studying arrays and grouping. They were asked to solve a problem by using grouping and arrays.

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## Number: Tooth fairy

Tooth Fairy  
\$5  
5 gold coins

The diagram illustrates five gold coins. Above a horizontal line, five coins are drawn vertically, each containing the number 12. Below the line, four coins are drawn horizontally, containing the numbers 12, 22, 12, and 12 respectively.

### Annotations

*Demonstrates equivalent amounts of money using different coin denominations.*

# Mathematics

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## Number: Block of chocolate

### Year 2 Mathematics achievement standard

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### Summary of task

Students were asked to divide a block of chocolate into different groups to accommodate different possibilities of division of the block of chocolate.

Mathematics

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Below satisfactory

Number: Block of chocolate

**PROBLEM 2:**

I have a 30 piece block of chocolate to share equally with my friends.

How many friends can I share it equally with and how many pieces will each person receive?



Record as many possibilities as you can.

30 people 1 pieces  
 5 people 6 pieces  
 6 people 4 pieces  
 27 pieces 3 people

**Annotations**

Demonstrates two combinations to make 30.

# Mathematics

# Year 2

Below satisfactory

## Number: Partial array

### Year 2 Mathematics achievement standard

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

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### Summary of task

Students had been studying arrays and grouping. They were asked to solve a problem by using grouping and arrays.

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## Number: Partial array

I have a packet of lollies in an array.

The trouble is some of the lollies are covered by the label.



How many lollies are there altogether in the packet? 35

Show how you worked it out? I pointed and counted the lollies with my fingers. I chose this strategy because it is easy to count. I also counted the hidden dots.

Are there any other ways of working out the total amount of lollies in the packet?

Counting 2's. Count in 5's.

### Annotations

Counts the number of hidden dots in an array.

Describes one correct strategy to solve the problem.

## Mathematics

## Year 2

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## Geometry: Flip, slide, turn

## Year 2 Mathematics achievement standard

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

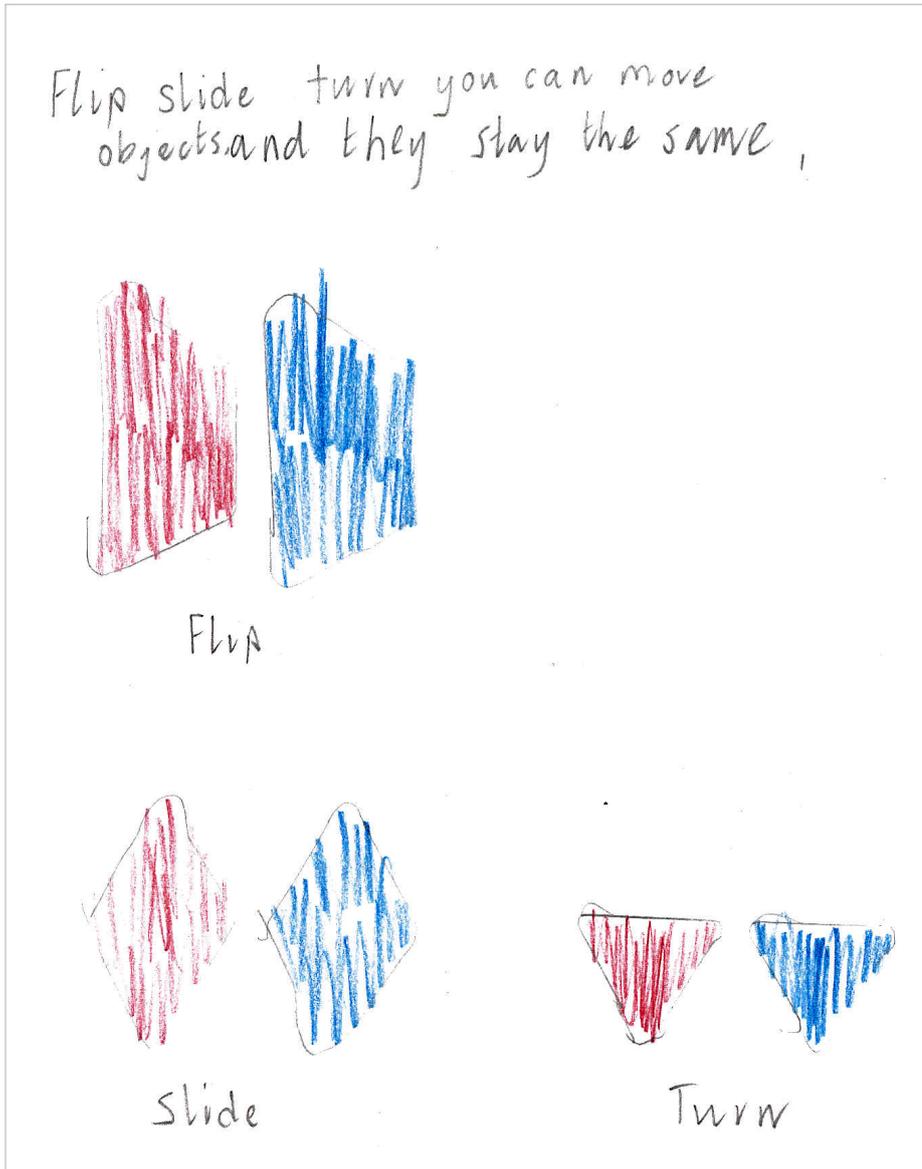
*By the end of Year 2, students recognise increasing and decreasing number sequences involving 2s, 3s and 5s. They represent multiplication and division by grouping into sets. They associate collections of Australian coins with their value. Students identify the missing element in a number sequence. Students recognise the features of three-dimensional objects. They interpret simple maps of familiar locations. They explain the effects of one-step transformations. Students make sense of collected information.*

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## Summary of task

Students were asked to describe a transformation by using diagrams and words.

Geometry: Flip, slide, turn



Annotations

*Slides a two-dimensional object.*

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## Geometry: Farmyard walk

## Year 2 Mathematics achievement standard

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## Summary of task

The students participated in a unit on mapping which involved locating items on maps such as zoo maps, a school map, and maps constructed from a literature focus. They followed directions to go from one location to another on maps, gave directions to a partner on how to go from one place on a map to another and explained where items on a map were in relation to other items. As part of this unit the students revisited and expanded their understanding of the language of position and direction.

To complete the task the students were given a copy of a map, its legend and a question sheet. They were given approximately 60–90 minutes to complete the task.



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Geometry: Farmyard walk

A Farmyard Walk Mapping Task

Using the map and key answer the following questions.

1. What is located between the shed and frog pond? Hen/Chicken  
chicken
2. Below the tree is the bee hive
3. To the left of the shed is blue flower
4. What is positioned below the windmill? fence
5. To the right of the snail and worm is the shed
6. What is positioned directly above the rake? shed

7. Describe where the rose bush is in relation to the other objects on the map. Windmill red flower are diagonal right

Windmill red flower are diagonal right

8. Explain how you would get from the shed to the haystack. Go up to the pond then go left to the haystack

Go up to the pond then go left to the haystack

Go up to the pond then go left to the haystack

Can you write 3 more questions based on the location of the items on the map

and then answer your questions?

Question

1. to the above of the snail and worm  
(is there? what other objects on the map?)

Answer: haystack

2. to the above of the shed is there?

Answer: Pond

3. left the tree is there?

Answer: shed

Annotations

Identifies the relative position of key features on simple maps.

Demonstrates understanding of positional language.

Uses simple positional language ('above', 'left') to write questions about the relative position of key features on simple maps.

Uses positional language.

Lists one possible answer to the question posed.

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## Geometry: 3D picture

### Year 2 Mathematics achievement standard

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### Summary of task

A unit on shape was taught in each of semester 1 and semester 2 with a focus on three-dimensional objects. Students were practised in using the Comic Touch app.

Students performed the task individually in rotational groups to enable equal access to technology. They were asked to:

1. Choose two three-dimensional objects from a container of three-dimensional objects.
2. Explore the three-dimensional objects.
3. Photograph the objects selected.
4. Use Comic Touch to record as many things about the objects as they could.

Students were given 30–40 minutes to complete the task.

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Geometry: 3D picture



Comic Touch application image used with permission of plasq, www.plasq.com.

Annotations

*Identifies that a cylinder has no corners.*

*Identifies geometrical features of a rectangular prism, including the number of faces, corners and edges.*

*Uses digital technology to represent three-dimensional objects.*

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## Measurement: Calendar task

### Year 2 Mathematics achievement standard

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### Summary of task

The students completed a unit of work that involved guided exploration of calendars examining the days in each month, sequence of months, when each day in a month begins compared to the end of the previous month, et cetera. Students were given open-ended tasks to focus their attention on calendars and their purpose.

The teacher read *Diary of a Wombat* by Jackie French to the class. After listening to the story students were given a blank calendar and had to follow the instructions to complete it. Students who needed further scaffolding were given a calendar with the dates filled in and, if required, were read the instructions. The students were given a mathematics block to complete the task, or longer if needed.

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Year 2  
Below satisfactory

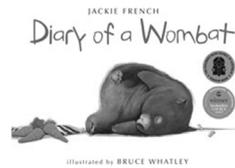
Measurement: Calendar task

Calendar Task

On the October 2013 calendar blank fill in all of the dates for the month of October. Use the information listed below from Jackie French's story, *Diary of a Wombat* to help you.

Important information:

- We meet Wombat on Tuesday 1<sup>st</sup> October.
- There are 31 days in October



French, Jackie, *Diary of a Wombat*, illustrated by Bruce Whatley, 2002. Courtesy: HarperCollins Publishers, Australia.

October 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 November	2 November	3 1	4 2	5 3	6 4	7 5
8 6	9 7	10 8 	11 9 	12 10 	13 11	14 12
15 13	16 14	17 15	18 16	19 17	20 18	21 19
22 20	23 21	24 22	25 23	26 24	27 25	28 26
29 27	30 28	31 29	1 30	2 31 November	3 November	4 November

Annotations

*Records the days of October correctly in a calendar.*

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## Measurement: Calendar task

### Annotations

1. On Tuesday, 15<sup>th</sup> October Wombat decided grass was boring and the next day she demanded a carrot. What was the day and date that she ate her first carrot? Wednesday <sup>16</sup>

2. On a Thursday Wombat bashed up a garbage can. What are the dates this might have occurred on? <sup>13</sup> <sup>10</sup> <sup>17</sup> <sup>24</sup> <sup>31</sup>

3. A week after Monday the 14<sup>th</sup> of October we discover that Wombat thinks humans are easily trained and make good pets. What day and date is this? Monday <sup>21</sup>

4. List 3 things you think Wombat might do before the end of October. Make sure you list the day and date on which she does each thing and show it on the calendar blank.

1) on Tuesday <sup>22</sup> eat a newspaper

2) on Wednesday <sup>23</sup> eat 4 PartyPie's

3) on Thursday <sup>24</sup> Mack's a piloe out of Pink fairy flos

5. There are 4 blank days / squares on your calendar can you fill in the dates and months in the squares?

6. What season is the month of October in? spring

*Identifies the day and date after a given day.*

*Lists possible dates an event could occur.*

*Uses a calendar to identify the date of a given day.*

*Identifies days and dates towards the end of the month.*

*Identifies the season of a given month.*

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## Mathematics

## Year 2

Below satisfactory

## Probability: Snakes and ladders

### Year 2 Mathematics achievement standard

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

*By the end of Year 2, students recognise increasing and decreasing number sequences involving 2s, 3s and 5s. They represent multiplication and division by grouping into sets. They associate collections of Australian coins with their value. Students identify the missing element in a number sequence. Students recognise the features of three-dimensional objects. They interpret simple maps of familiar locations. They explain the effects of one-step transformations. Students make sense of collected information.*

*Students count to and from 1000. They perform simple addition and subtraction calculations using a range of strategies. They divide collections and shapes into halves, quarters and eighths. Students order shapes and objects using informal units. They tell time to the quarter hour and use a calendar to identify the date and the months included in seasons. They draw two-dimensional shapes. They describe outcomes for everyday events. Students collect data from relevant questions to create lists, tables and picture graphs.*

### Summary of task

Students had completed a unit of work on probability including describing the likelihood of the outcomes of everyday events.

They were given the task to complete at the end of the unit during a lesson and completed the work individually. Students were given a picture of a snakes and ladders board game and had to describe the likelihood of events when a pair of dice are rolled and explain their reasoning.

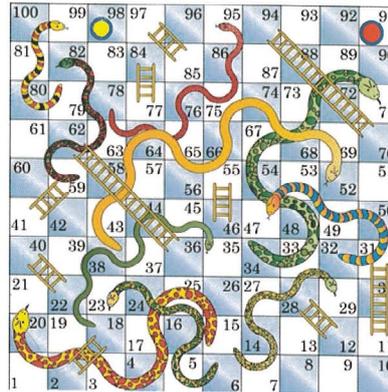
Probability: Snakes and ladders

PROBABILITY TASK

Sammy and Georgie were playing Snakes and Ladders using 2 six sided dice.

Georgie threw the die and landed on number 98. "Oh no! I bet I land on that snake next throw," she said.

Sammy said, "Don't worry, that's impossible."



Is Sammy's statement True or False? Explain your thinking.

*It's true she will not get a one*

"It's true she will not get a one."

Sammy and George are going to throw two dice lots of times. Can you work out what numbers they might throw that are:

Impossible *1 & 5 is an impossible*

Certain *2 is certain*

Likely *7 because there's 5 ways to make a 7  
1+6 2+5 3+4 4+3 5+2*

Unlikely

Snakes and ladders image reproduced with permission of Presentation Magazine, www.presentationmagazine.com.

Annotations

*Explains why a statement of chance is correct.*

*Identifies an event that has no chance of happening.*

*Identifies an outcome that is 'likely' and demonstrates some understanding of why this particular outcome is likely.*

## Mathematics

## Year 2

Below satisfactory

## Units of measurement: Patterns in time

## Year 2 Mathematics achievement standard

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

*By the end of Year 2, students recognise increasing and decreasing number sequences involving 2s, 3s and 5s. They represent multiplication and division by grouping into sets. They associate collections of Australian coins with their value. Students identify the missing element in a number sequence. Students recognise the features of three-dimensional objects. They interpret simple maps of familiar locations. They explain the effects of one-step transformations. Students make sense of collected information.*

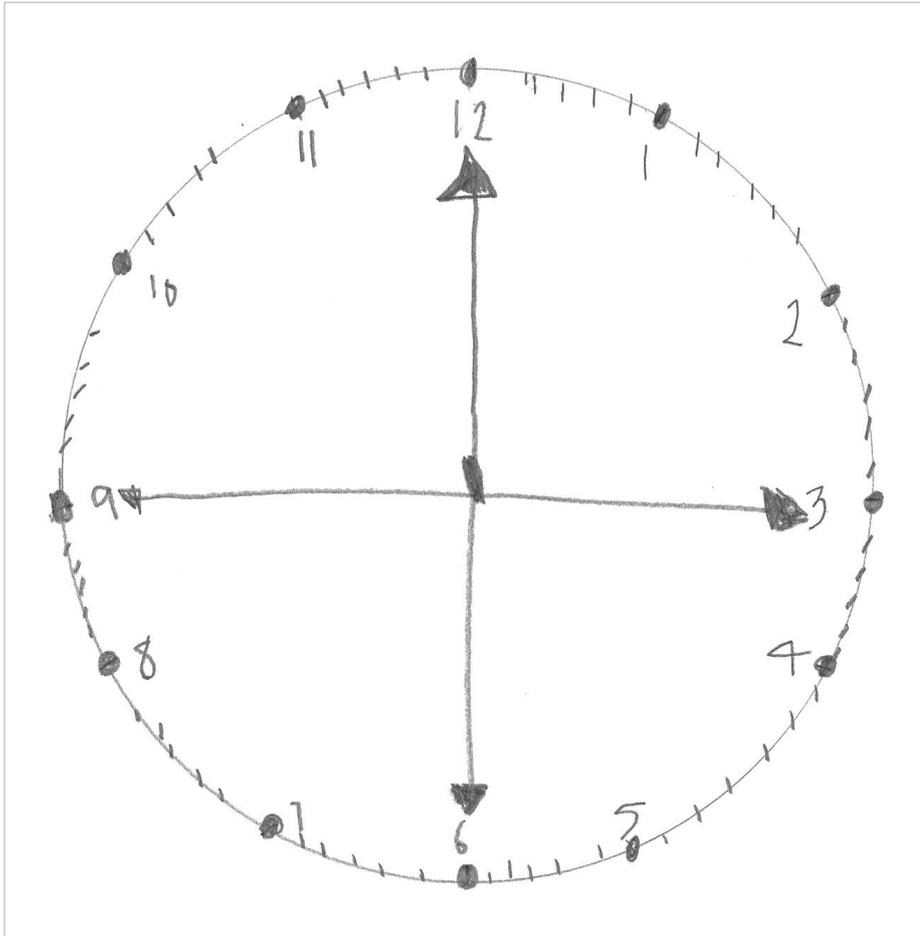
*Students count to and from 1000. They perform simple addition and subtraction calculations using a range of strategies. They divide collections and shapes into halves, quarters and eighths. Students order shapes and objects using informal units. They tell time to the quarter hour and use a calendar to identify the date and the months included in seasons. They draw two-dimensional shapes. They list outcomes for everyday events. Students collect data from relevant questions to create lists, tables and picture graphs.*

## Summary of task

Students wrote the minutes around an analog clock and described the number patterns created, for example, 5, 10, 15.

Students divided the clock into quarters and highlighted numbers related to 'half past', 'quarter to' and 'quarter past'.

Units of measurement: Patterns in time



Annotations

*Demonstrates some understanding of the concept 'o'clock'.*