

## Mathematics

**Year 2**  
Above 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	Probability: Snakes and ladders
Sample 14	Number: Number and money

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# Mathematics

## Year 2

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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, WS14). 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 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 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

the pattern  
has three digits  
the ten number is counting backwards

In each pattern the one from 9. the number is the same

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

its counting by 3's. i mist two numbers and colored the third.

Annotations

Identifies several number sequences that increase by 10s from a three-digit starting point on a hundreds chart.

Uses place value to describe patterns identified in a number sequence.

Identifies a number sequence that increases by threes from a three-digit starting point on a hundreds chart.

Connects skip counting to the process of identifying a number sequence that increases by threes.

# Mathematics

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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.

# Mathematics

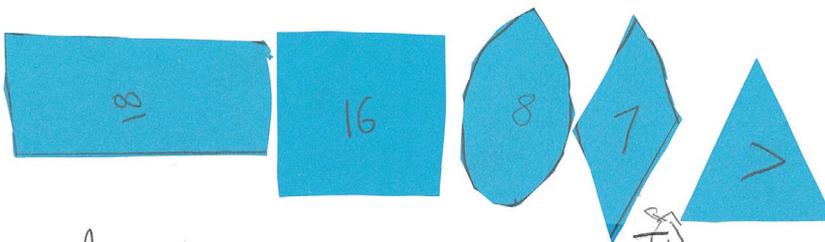
# Year 2

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## 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?



A ruler might help you or you could use maths equipment. I tried counters but they were to circle so I tried ones and they were perfect. I recorded with ones. There are other shapes that are harder probably if they are tiny or huge.

I am right because after I put the ones on I wrote how many one it took to fill the shape.

### Annotations

Draws two-dimensional shapes and orders them according to their area.

Recognises that different shapes can have the same area.

Explains why it is better to use 'ones' or a ruler to calculate the area of a shape.

# 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

I will measure with my thumb. A

I will measure with a star ball ball first 

It is 2 thumbs long. AA

I know I am right because I measured it with my thumbs. A

It jiggled a bit when I measured but I got it.

Probably, everyboy will be diferent result because thumbs are different sizes 

---

Next I will do a ruler 

It is 7 thumbs long AAAAAAA

I am right again I used my thumbs

It was easy because it was strait

Diferent result again.

---

Class sisors 3 AAA Tissue box 5AAAAA

---

ruler 7As, tissue box 5As, sisors 3As, star ball ball 2As

A

### Annotations

Chooses objects that are longer than their own thumb to measure.

Uses informal units to measure objects longer than their thumb.

Demonstrates an understanding that different thumbs have different lengths and the measurement could be inaccurate.

Orders five objects from longest to shortest using informal units.

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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.

Number: My coins

TASK 1

Tim divided these 16 coins into equal groups.



Can you describe each group as a fraction?

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?

$\frac{1}{2}$  of 16 = 8      ○○○○○○○○○○○○○○○  
 $\frac{1}{8}$  of 16 = 2      ○○○○○○○○○○○○○○○  
 $\frac{1}{4}$  of 16 = 4      ○○○○○○○○○○○○○○○  
 You can't describe numbers if it was not equal because it won't look right

Annotations

Demonstrates that 16 can be partitioned into different groups to demonstrate fractions.

Demonstrates an understanding of fractions by drawing groups and writing number sentences.

# Mathematics

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## Statistics: Graph audit

### Year 2 Mathematics achievement standard

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

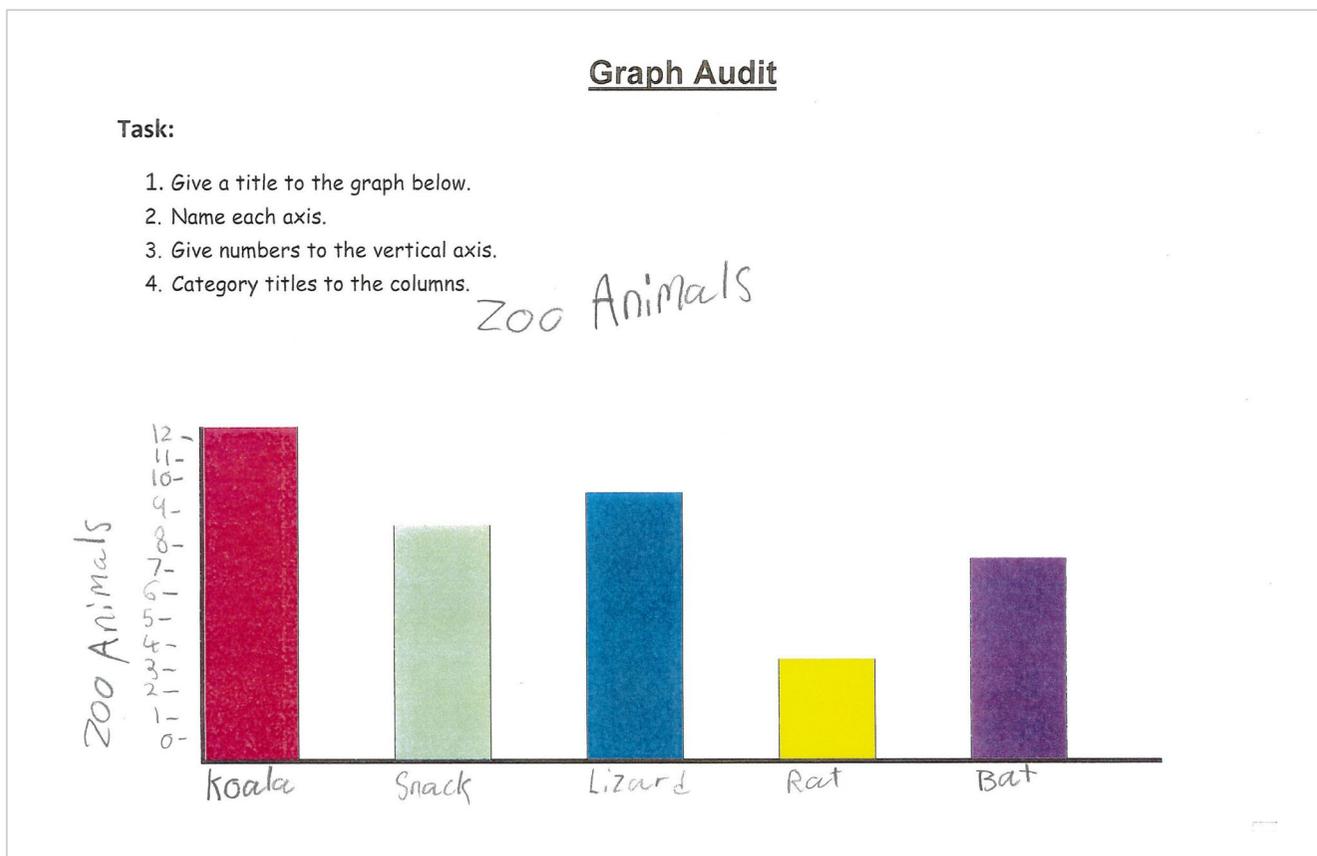
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### Summary of task

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

Statistics: Graph audit



Annotations

*Explains the graph using words and a vertical axis scale.*

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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 thing will you do for special days at the end of the year?

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

Water Pistle day		22 23
Party		50
Sport day		7
Wheel day		3
Pj day		10

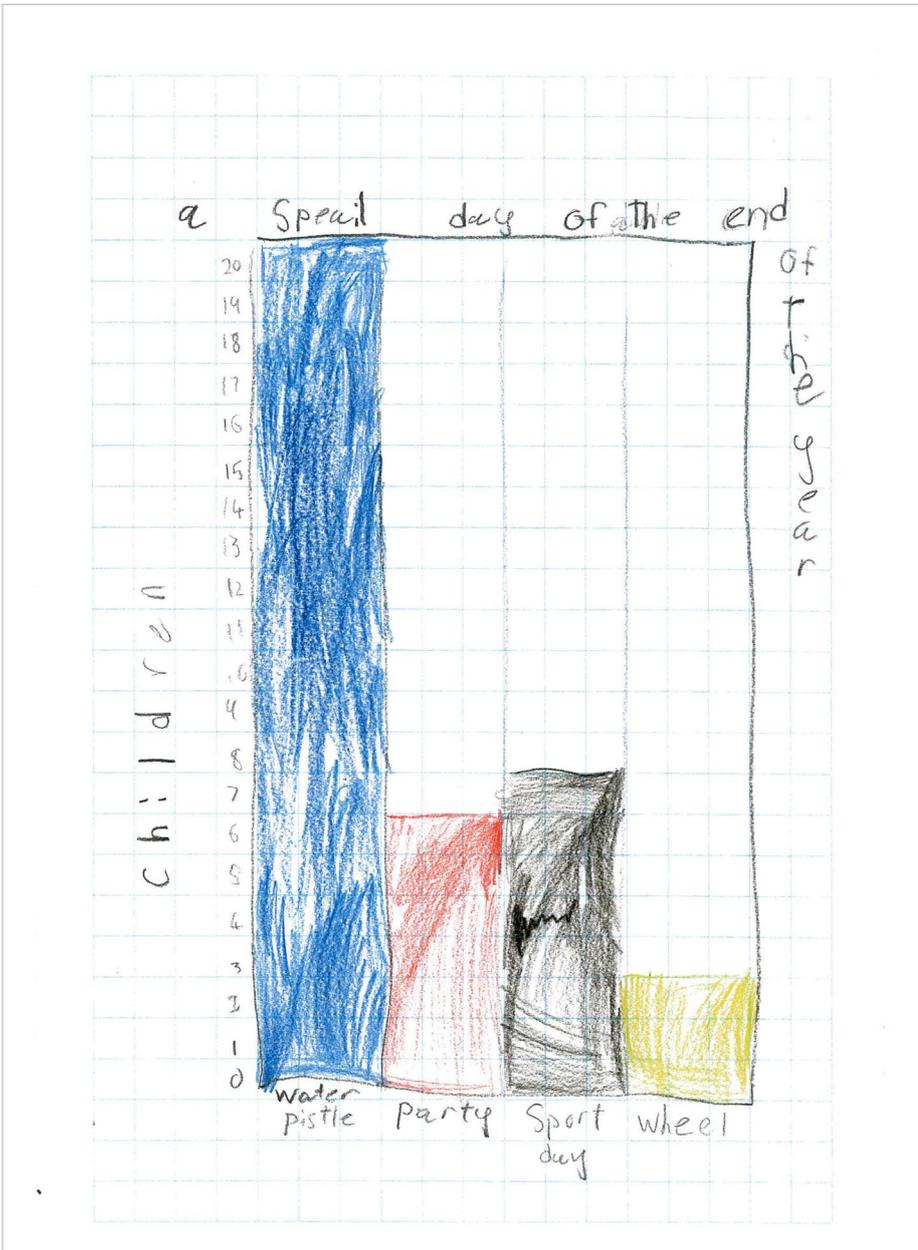
3. Display your data using graph paper

Annotations

Collects data from a developed question. Totals match tally marks in the frequency distribution table.

Statistics: Graph audit

Annotations



Labels axes correctly with an appropriate scale.

# 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.



# Mathematics

# Year 2

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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.

# Number: Block of chocolate

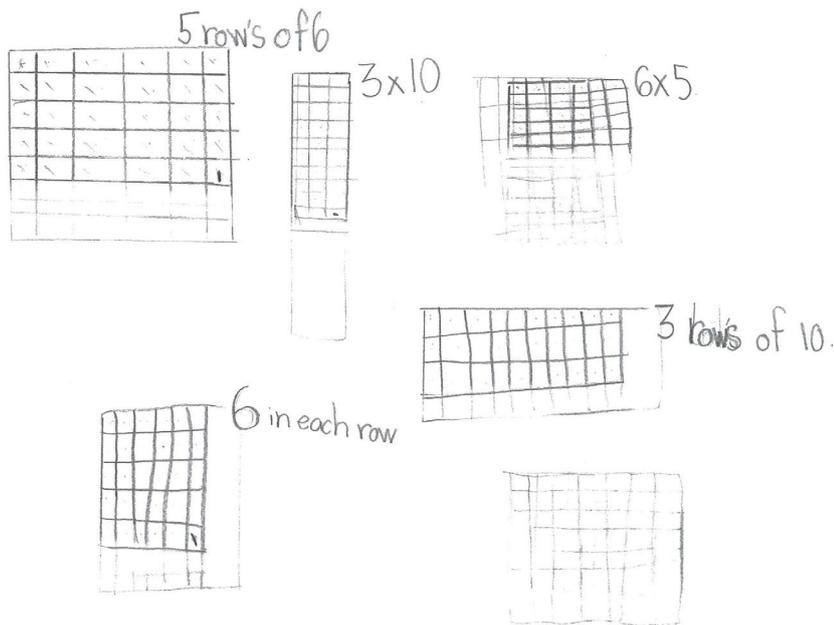
**PROBLEM 1**

I have a 30 piece block of chocolate.



What might my chocolate block look like?

Record as many possibilities as you can.



## Annotations

Recognises different ways of constructing a 30-piece block of chocolate.

## Number: Block of chocolate

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.

1. you could share it with 30 people so every one will get 1 each.
2. you could share it with 6 people. Every one will get 5 pieces each.
3. you could share it with 5 people every one <sup>will get</sup> 6 pieces each.
4. you could share it with 10 people every one will get 3 pieces each.
5. you could share it with 3 people and every one will get 10 pieces each.
6. you could share it with people

### Annotations

Explains the sharing of the chocolate in several ways.

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# Mathematics

# Year 2

Above satisfactory

## Number: Partial array

### 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.

Mathematics

Year 2

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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?  
Show how you worked it out?

35

o	o	o	o	o	o
o	o	o	o	o	o
o	o	o	o	o	o
o	o	o	o	o	o
o	o	o	o	o	o

This is what I saw in my head. And I counted in 5's

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

1) count in 1's but that would be too slow.  
2) double the 5's so they make 10, then add the last 5.  
3) count in 2's but leave the bottom row then add the last 7.

Annotations

Explains the reasoning behind the answer of 35.

Explains different strategies for reaching the solution.

# Mathematics

# Year 2

Above satisfactory

## Geometry: Flip, slide, turn

### Year 2 Mathematics achievement standard

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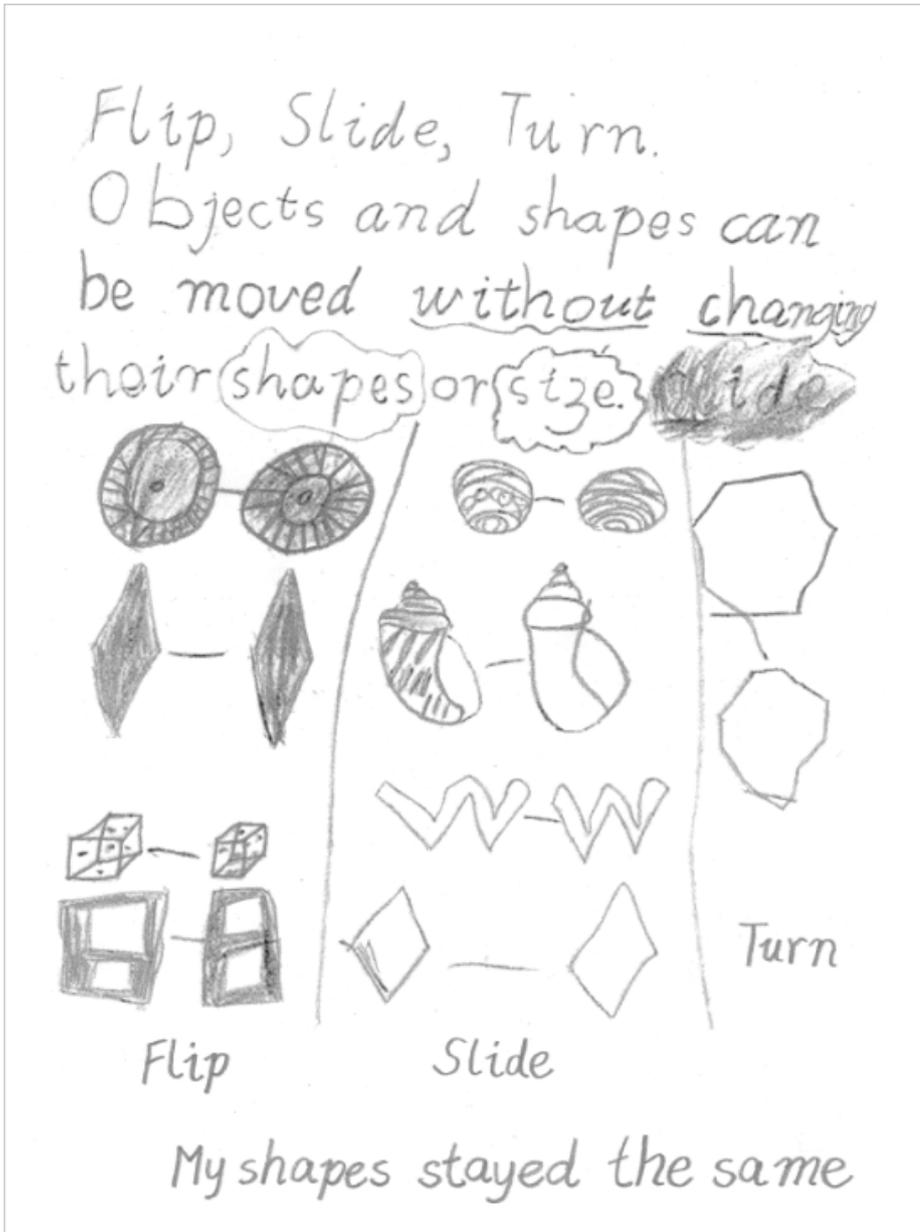
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### Summary of task

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

Geometry: Flip, slide, turn



Annotations

Demonstrates that after transformations (turn, flip and slide) the object still remains the same size, has the same area and lines are of equal length.

# Mathematics

# Year 2

Above satisfactory

## 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? Chicken
2. Below the tree is the bee hive
3. To the left of the shed is the blue flower
4. What is positioned below the windmill? The fence
5. To the right of the snail and worm is the windmill
6. What is positioned directly above the rake? The blue flower

7. Describe where the rose bush is in relation to the other objects on the map. To the right is the windmill, to the North is the haystack, diagonally down is the rosebush and the fence.

8. Explain how you would get from the shed to the haystack. You go up North 3 blocks to the frog pond then East 5 blocks and you will be there.

Can you write 3 more questions based on the location of the items on the map and then answer your questions?

Question

1. What is diagonally up from the rosebush?

Answer: Windmill, frog pond and rose.

2. What is vertically up and down from the snail and worm?

Answer: Pink flower, rosebush, haystack and fence.

3. What is horizontally left from the shed?

Answer: The blue flower

### Annotations

*Identifies relative position of key features on simple maps.*

*Uses appropriate positional language ('diagonally', 'vertically up and down', 'horizontally left') to pose questions about the relative location of key features on simple maps.*

*Recognises that there can be more than one answer to the questions posed and provides multiple possible answers.*

*Describes the relative location of key features on simple maps using positional language in detail.*

*Gives clear directions from one location to another.*

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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.

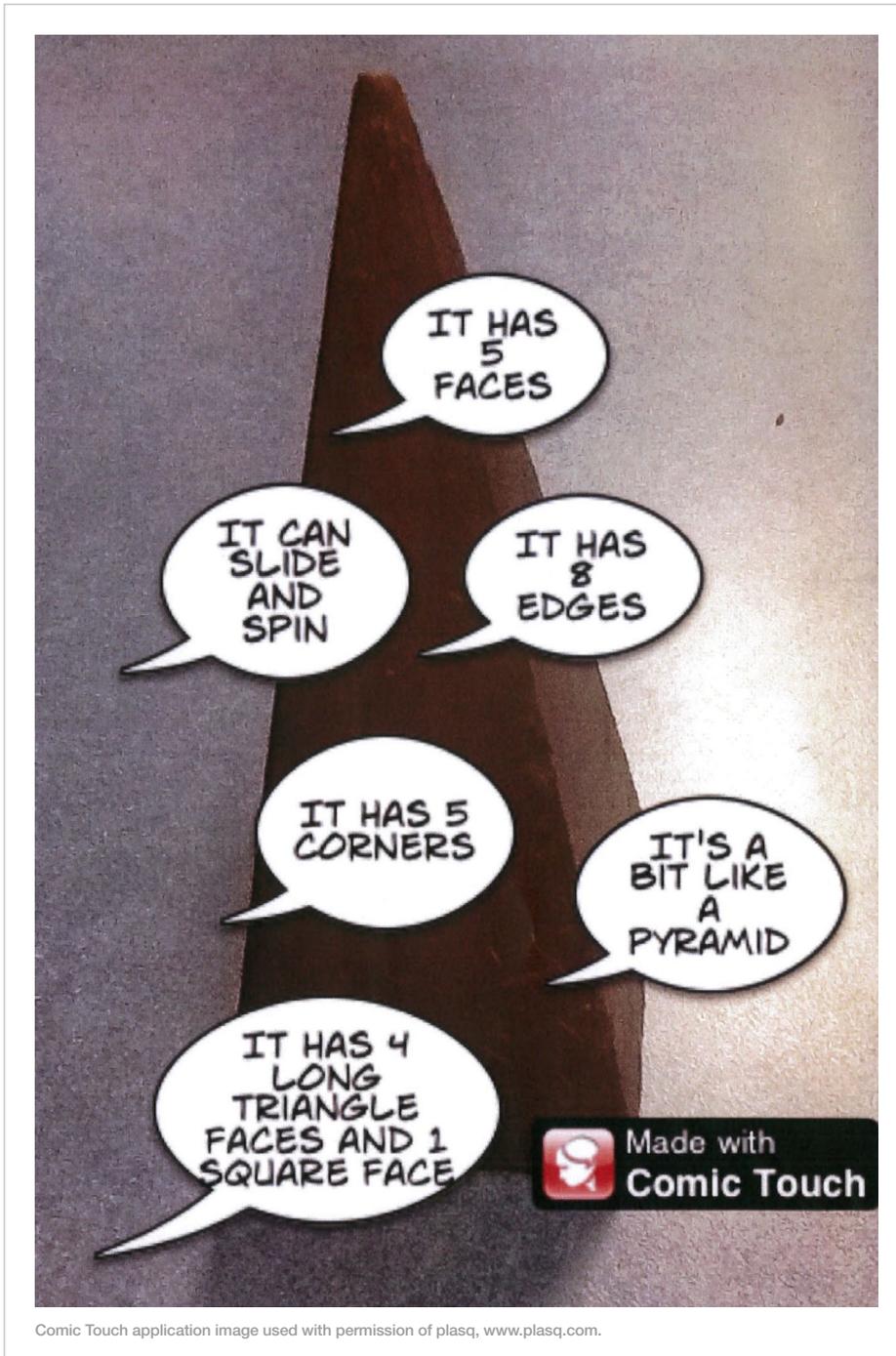
Mathematics

Year 2

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Geometry: 3D picture

Annotations



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

Identifies geometric features such as the number of faces, corners or edges on a rectangular prism and pyramid.

Uses digital technology to represent three-dimensional objects.

Recognises that flat surfaces of three-dimensional objects are two dimensional shapes and names the shapes of these surfaces.

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Geometry: 3D picture



Annotations

*Recognises and describes possible uses of everyday three-dimensional objects.*

*Recognises that three-dimensional objects can slide.*

# Mathematics

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## Measurement: Calendar task

### 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

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.

Mathematics

Year 2  
Above satisfactory

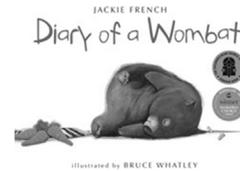
Measurement: Calendar task

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
September, 29	September, 30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	November, 1	November, 2

Annotations

*Applies knowledge of months to identify the dates before and after a given month.*

*Locates day and date on a calendar.*

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# Mathematics

Year 2  
Above satisfactory

## Measurement: Calendar task

- 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 16<sup>th</sup> October
- On a Thursday Wombat bashed up a garbage can. What are the dates this might have occurred on? 3<sup>rd</sup>, 10<sup>th</sup>, 17<sup>th</sup>, 24<sup>th</sup>, 31<sup>st</sup>
- 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 21<sup>st</sup> October
- 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.
  - 29<sup>th</sup> Tuesday: Chased a mouse
  - 30<sup>th</sup> Wednesday: slept
  - 31<sup>st</sup> Thursday: ate 3 carrots
- There are 4 blank days / squares on your calendar can you fill in the dates and months in the squares?
- What season is the month of October in?

Summer: January, February, December  
 Autumn: March, April, May  
 Winter: June, July, August  
 Spring: September, October, November

### Annotations

*Records dates appropriately.*

*Uses a calendar to identify given days and dates.*

*Lists possible dates an event could occur.*

*Demonstrates understanding of time (day/week).*

*Makes connections between dates and position in month.*

*Identifies the months in each season.*

*Orders seasons.*

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## Mathematics

## Year 2

Above 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**

Explain your thinking.

*because you just need 1 to land on the snake, and its impossible to get a 1.*

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 and 0 are impossible because, the dice dont have any 0. And theres not numbers to add up to 1.*

**Certain** *None.*

**Likely** *8. because there are many ways to get a 8, like: 2+6, 3+5, 4+4, 5+3, 6+2. 7 because theres many ways to get a 7 like: 1+6, 2+5, 3+4, 4+3, 5+2, 6+1. 6 because theres many ways to get a 6, like: 1+5, 2+4, 3+3, 4+2, 5+1.*

**unlikely** *12 and 2. 2: need two 1s and its unlikely to have two 1s. 12: need two 6s and its unlikely to have two 6s.*

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

Annotations

*Explains why a statement of chance is correct using the language of chance.*

*Identifies particular events that have no chance of happening and explains why they are impossible.*

*Recognises that no particular result can be 'certain' when two dice are rolled.*

*Classifies particular outcomes of a chance experiment as 'likely' or 'unlikely'.*

*Provides detailed explanations to support the classification of particular outcomes as 'likely' or 'unlikely'.*

# Mathematics

# Year 2

Above satisfactory

## Number: Number and money

### 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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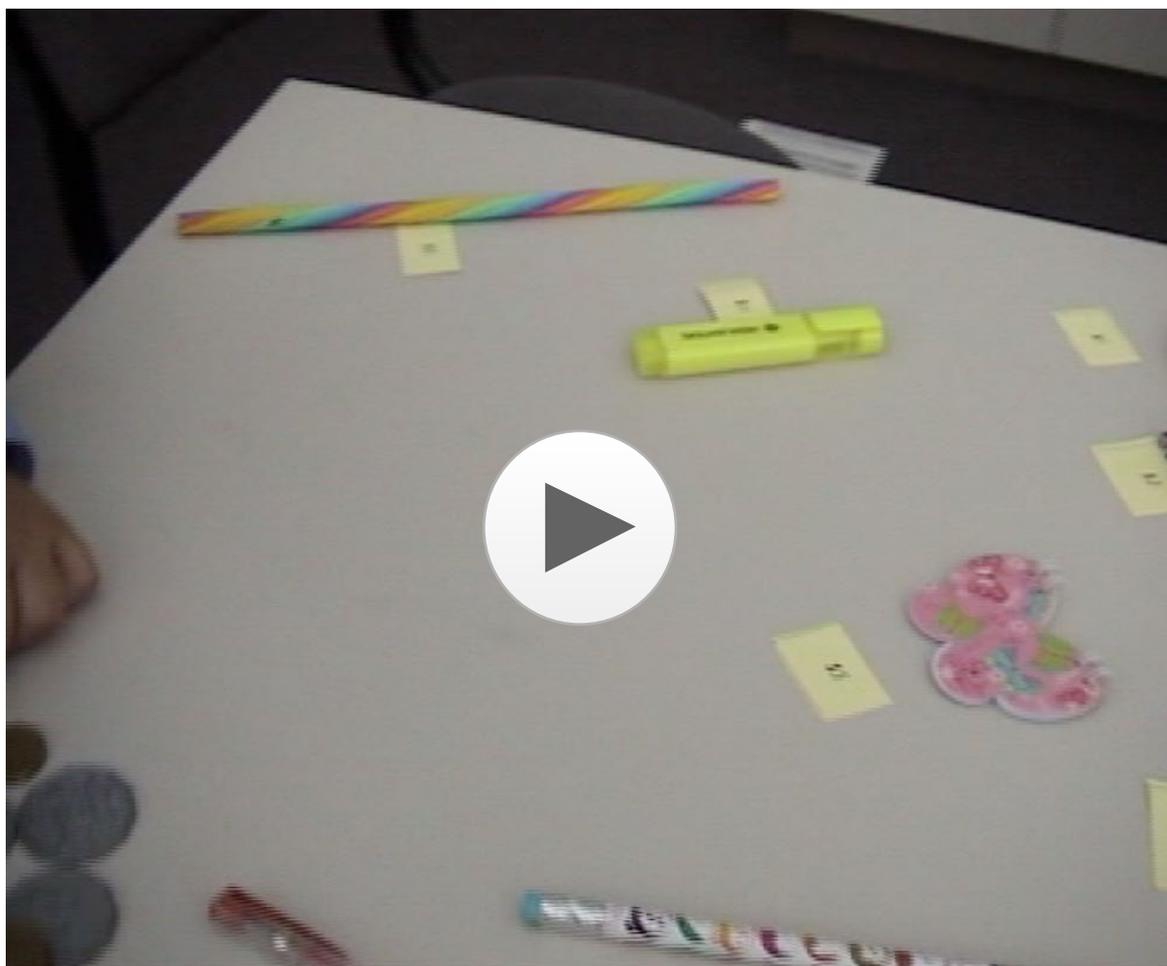
### Summary of task

Students set up a class shop with items at different prices. After working with each other purchasing, selling and calculating total prices and change given, students were assessed by their teacher. The teacher directed the transaction to assess multiple parts of the achievement standard.

# Mathematics

Year 2  
Above satisfactory

## Number: Number and money



### Annotations

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