

Mathematics

Year 2
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	Measurement: Patterns in time
Sample 15	Number: Number and money

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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, WS15). 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
Satisfactory

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.

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

20	0	0
1	9	5
1	9	0
1	8	5
1	8	0
1	7	5
1	7	0
1	6	5
1	6	0
1	5	5
1	5	0
1	4	5
1	4	0
1	3	5
1	3	0
1	2	5

5. Describe the any patterns you see.

in the middle there is 0 and in the last one the are doing
50 505050

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

2	5	2
2	5	7
2	6	7
2	7	2
2	7	7
2	8	2
2	8	7
2	9	2
2	9	7
3	0	2
3	0	7
3	1	2
3	1	7
3	2	2
3	2	7

5. Describe the any patterns you see.

in the middle there is 0 and in the last one are doing
27272727

Annotations

Investigates number sequences that decrease and increase by fives from any starting point.

Recognises some patterns formed by number sequences and describes them using everyday language.

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

there is 5 on one side and 5 on the other and that makes 10.

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

they all start with 2.

Annotations

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

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

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Geometry: Shapes

Year 2 Mathematics achievement standard

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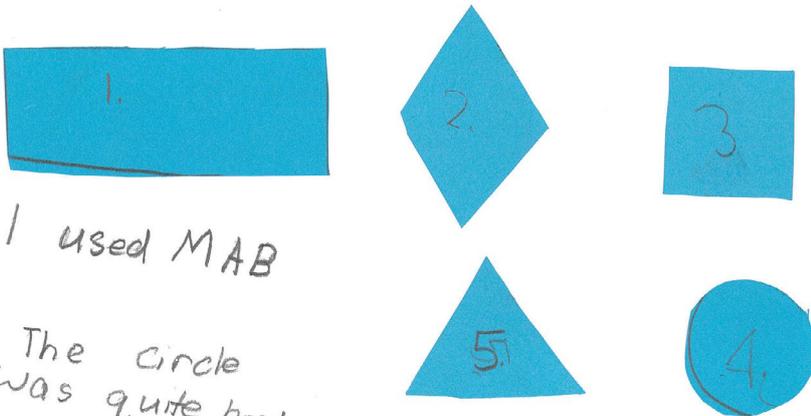
Summary of task

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 tools would be the best 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?

1. What tools might help you measure area? MAB | popsticks
counters
2. How will you record your findings?
3. Are there any shapes that are harder to measure than others?
4. How do you know you are right?



2. I used MAB

3. The circle was quite hard to measure

4. I know I was right because I used ones

Annotations

Understands that there are various informal units that could be used to compare the areas of each shape.

Draws two-dimensional shapes.

Orders two-dimensional shapes based on their area.

Recognises that measuring the area of a circle is more complicated than that of a four sided shape.

Mathematics

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Measurement: Longer than my thumb

Year 2 Mathematics achievement standard

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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

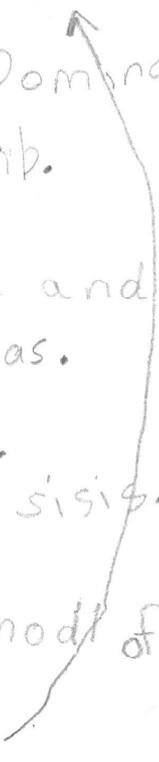
So bigst ecles book.
 Nex bigst ecles Dominoes box.
 Smalst ecles the sisis and
 my modl of a roeid hoemr.

I one mesa the Dominoes
 box with my thumb.
 ti ecles 4 thumb.

I one mesa a book and
 swashbuckling sagas.
 ti ecles 6 thumb.

I one mesa the sisis.
 ti ecles 8 thumb.

I one mesa my modl of a
 roeid hoemr.
 ti ecles 8 thumb.



Annotations

Orders four objects from longest to shortest using informal lengths.

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

Uses informal units to measure objects longer than their thumb.

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Number: My coins

Year 2 Mathematics achievement standard

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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?

Handwritten student work showing various fraction representations of 16 coins. It includes a 4x4 grid with 1/16 fractions, a 2x8 grid with 1/8 fractions, a 4x2 grid with 1/4 fractions, and a 2x4 grid with 1/4 fractions. There are also calculations like $\frac{24}{24} = 1$ and $\frac{16}{16} = 1$, and a note: "If They were not equal then = they wouldn't be fractions."

Annotations

Demonstrates an understanding of dividing objects into equal groups that allows for equivalent fractions to be written.

Shows that $\frac{8}{16}$ is the same as $\frac{1}{2}$ of the group.

Shows how each group must have the same number of items in it to represent the fraction as quarters.

Shows that $\frac{2}{16}$ is the same as $\frac{1}{8}$.

Mathematics

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Statistics: Graph audit

Year 2 Mathematics achievement standard

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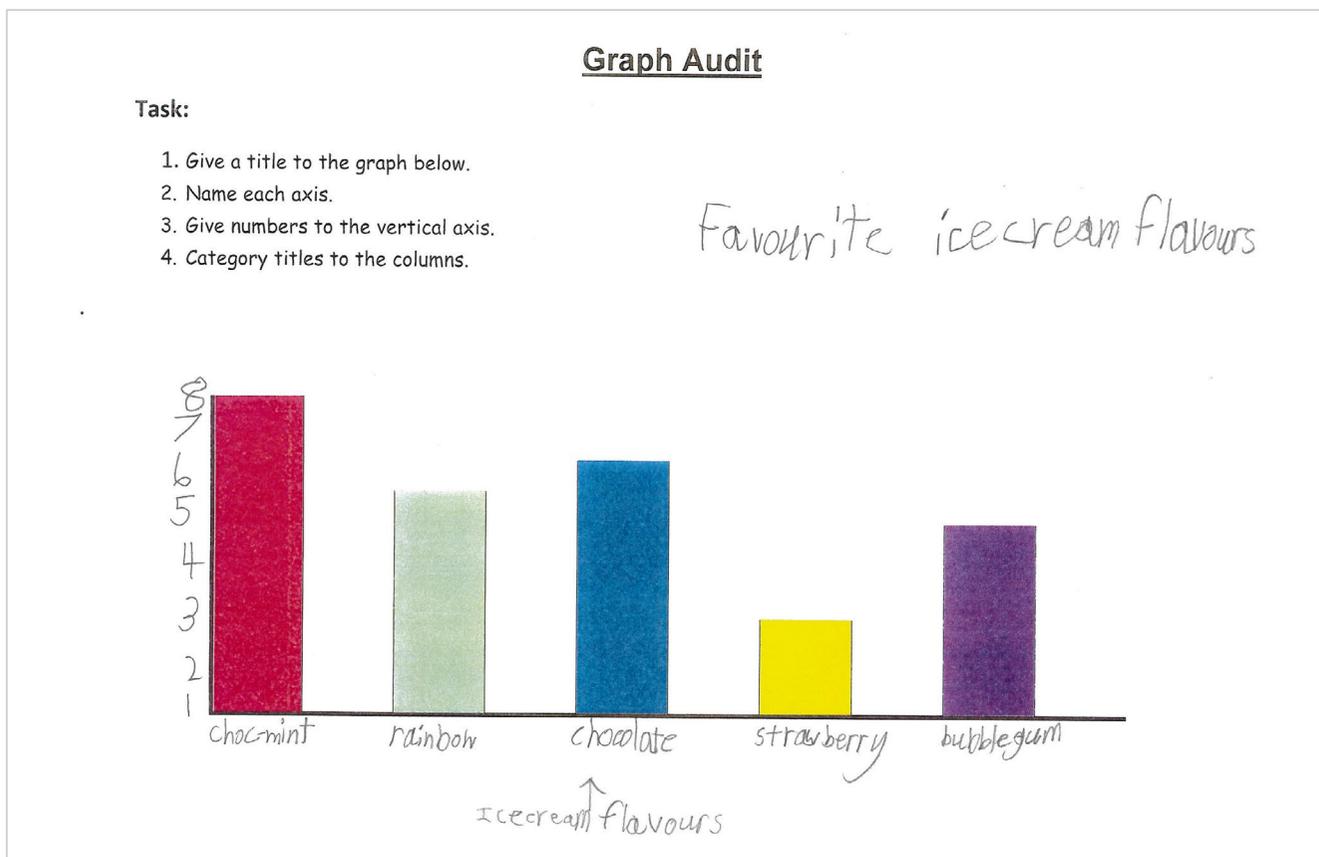
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Summary of task

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

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Statistics: Graph audit

Annotations

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.

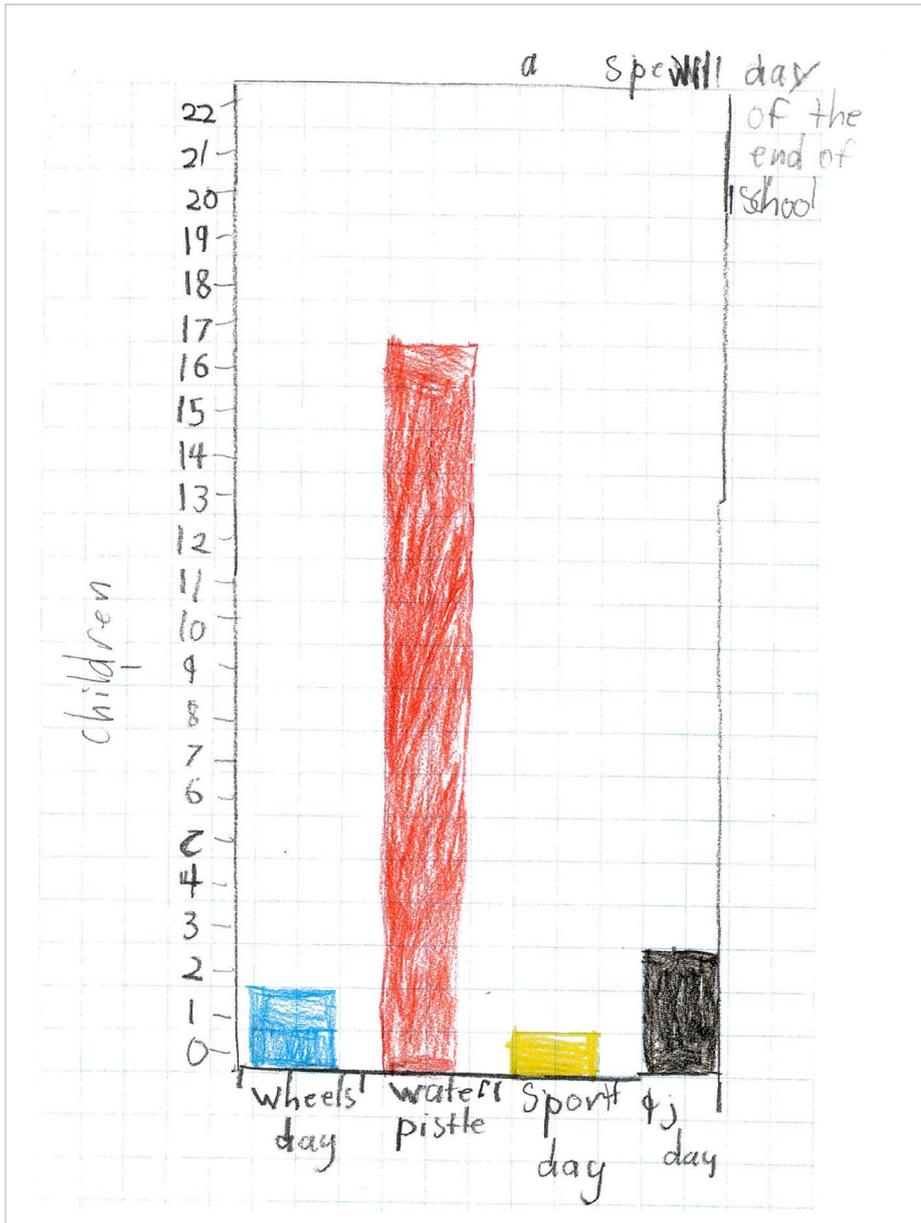
1. Write your question

what thing will you like to do on the last week of school

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

wheels day		1
water Pistle	 	10
sport day		0
Pj day		2

Statistics: Graph audit



Annotations

Draws graph but does not reflect the correct information.

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Number: Tooth fairy

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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

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Number: Tooth fairy

Tooth Fairy

2\$

1\$ + 1\$

50 + 50 + 50 + 50

20 20 20 20 20 20 20 20 20

50 10 20 20 50 20 20

The most coins
could have is
lots of five cents
coins

Annotations

Demonstrates equivalent amounts of money using different coin denominations.

Accurately uses an addition symbol when adding coins.

Accurately calculates \$2 using combinations of different coins.

Recognises that 5 cents is the smallest coin and would require the most coins to make \$2.

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.

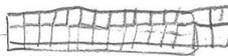


What might my chocolate block look like?

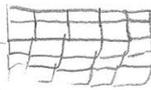
 3 rows of 10.

Record as many possibilities as you can.

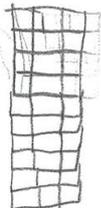
10 count in 15s 2 times



20 count in 5s 6 times



30 count in 3s 10 times



Annotations

Represents multiplication in an array.

Count by 3s and 5s to a given number.

Demonstrates an understanding that 3 rows of 10 look different to 10 rows of 3 but equal the same amount.

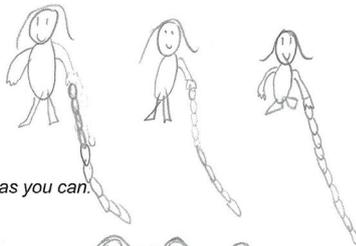
Number: Block of chocolate

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?

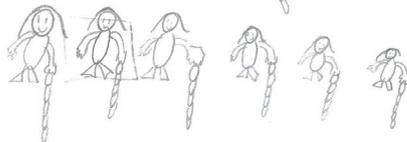


60 people half each
3 people and 10 pieces each



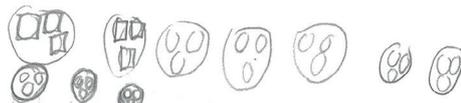
Record as many possibilities as you can.

count in 5s 6 times



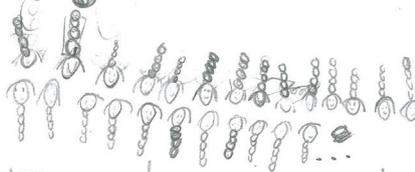
30 people 1 piece each

10 people 3 pieces each



120 people get a 1/5th of one piece

6 people 5 pieces each



15 people 2 pieces each

Annotations

Creates number sentences and pictures to show multiple solutions to a question.

Recognises that when dividing, numbers can be smaller than a whole.

Represents division by making equal groups.

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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.

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 counted in 5's in my head. I had to counted 5's 7 times.
I chose 5's because there is columns of 5's*

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

*1. counting in 7's
2. count in 2's and when you get to last row count in 1's*

Annotations

Articulates strategies used to find a solution.

Recognises that it is easier to count by 5s rather than in 7s.

Demonstrates alternative ways to solve the problem.

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Geometry: Flip, slide, turn

Year 2 Mathematics achievement standard

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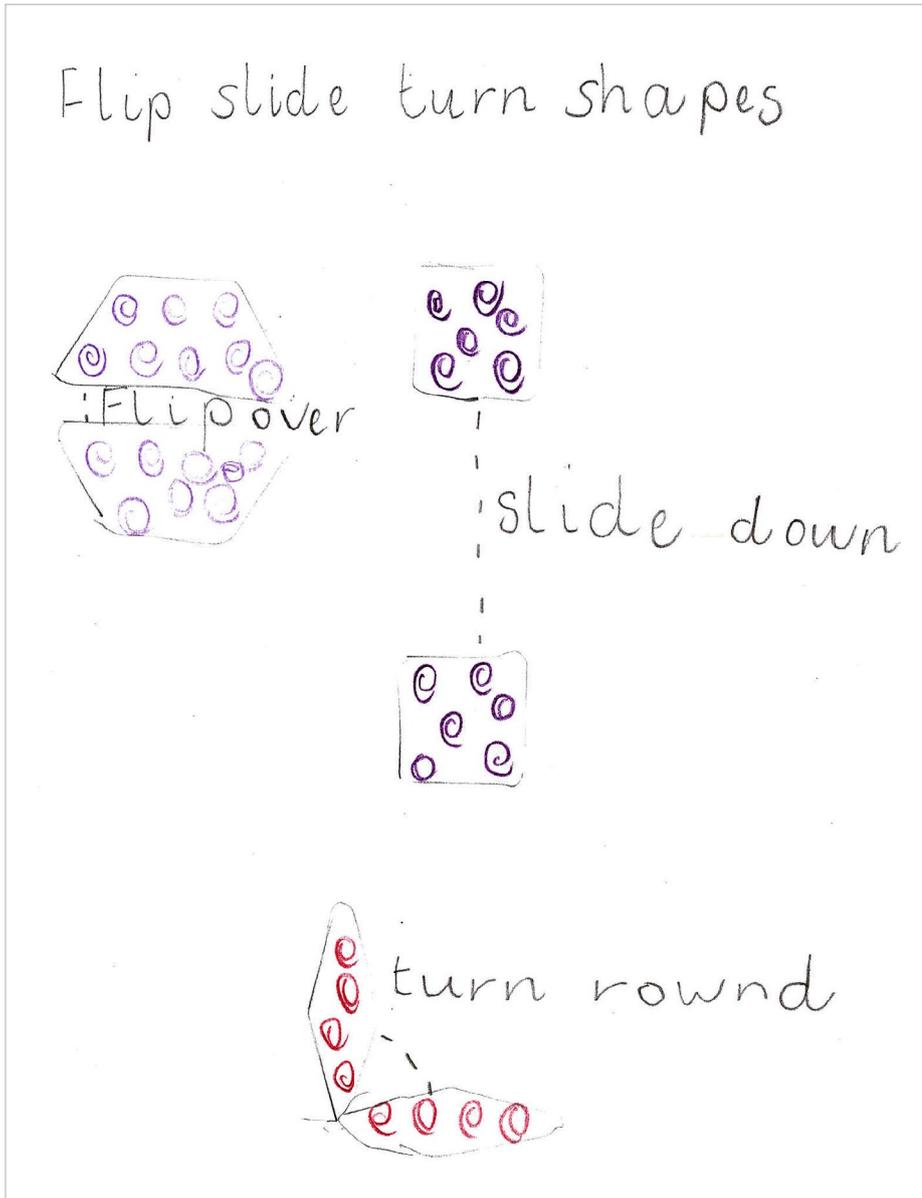
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Summary of task

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

Geometry: Flip, slide, turn



Annotations

Flips, slides and turns a two-dimensional shape.

Geometry: Farmyard walk

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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? the chicken
2. Below the tree is the Bees hives
3. To the left of the shed is one Blue flower
4. What is positioned below the windmill? the fence
5. To the right of the snail and worm is the wind mill
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. north from the Rose Bush

is the worm and snail. diagonally west from the rose bush is the tree and the frog pond.

8. Explain how you would get from the shed to the haystack. 2 steps North then turn right

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 right from the pink flower?

Answer: the fence

2. What is horizontally beside the worm and snail?

Answer: the tree and the windmill

3. What is 4 steps above the lake?

Answer: the blue flower

Annotations

Identifies relative position of key features on simple maps.

Demonstrates understanding of positional language.

Uses appropriate positional language ('diagonally', 'horizontally', 'steps') to pose questions about the relative location of key features on simple maps.

Provides answers to the questions posed.

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

Gives directions from one location to another.

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Geometry: 3D picture

Year 2 Mathematics achievement standard

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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

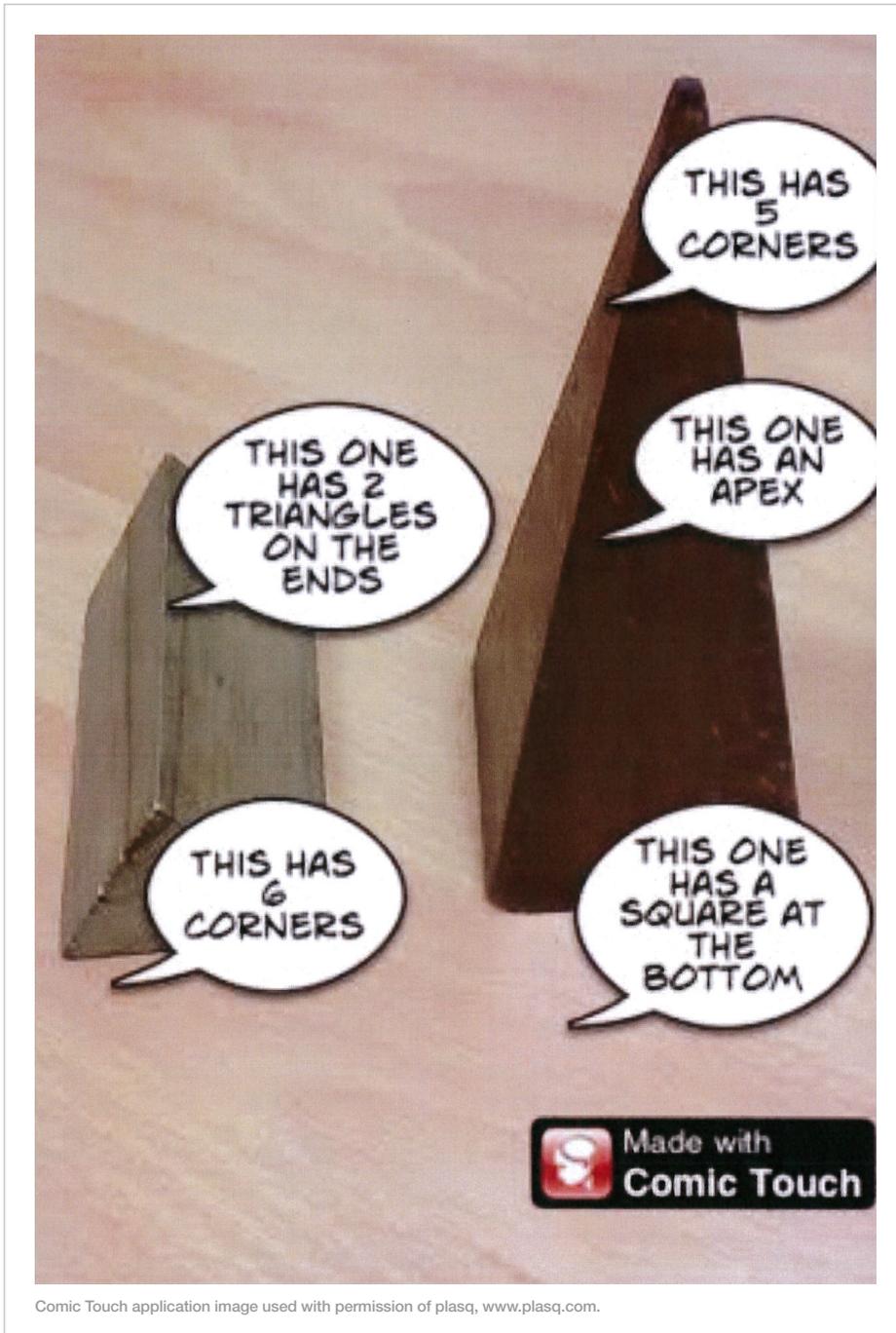
A unit on shape was taught in each of semester 1 and semester 2 with a focus on three-dimensional objects. Students were practised in using the Comic Touch app.

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.

Geometry: 3D picture



Annotations

Identifies some geometrical features of a prism and a pyramid, including the number of corners.

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

Uses digital technology to represent three-dimensional objects.

Measurement: Calendar task

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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.

Mathematics

Year 2
Satisfactory

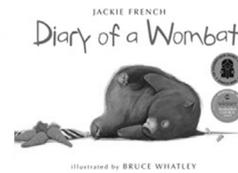
Measurement: Calendar task

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

Annotations

Identifies months before and after October.

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Measurement: Calendar task

Annotations

1. On Tuesday, 15th 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? 16 Wednesday
2. On a Thursday Wombat bashed up a garbage can. What are the dates this might have occurred on? 17 Thursday
3. A week after Monday the 14th of October we discover that Wombat thinks humans are easily trained and make good pets. What day and date is this? 21 Monday
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) he will eat wood at the 1st
 - 2) he will eat Jam 18
 - 3) he will eat Book 19
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 start in september

Identifies the date after a given day.

Lists one date on which an event could occur.

Identifies the date a week after a given date.

Identifies the first month in Spring.

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Probability: Snakes and ladders

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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.

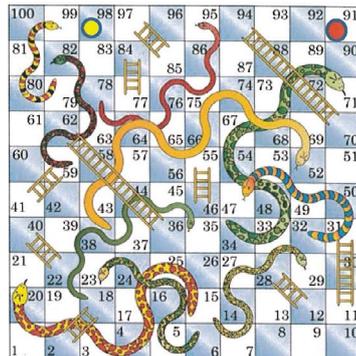
Probability: Snakes and ladders

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.

true. because you have only 2 dice and she has to have 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 01 cause you can only have 1 greater than 12

Certain no because it's a chance game

Likely 7 has 6 possibilities

Unlikely 2 12 4 because they have only a few ways

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

Annotations

Explains why a statement of chance is correct.

Identifies particular events that have no chance of happening.

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

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

Mathematics

Year 2
Satisfactory

Measurement: Patterns in time

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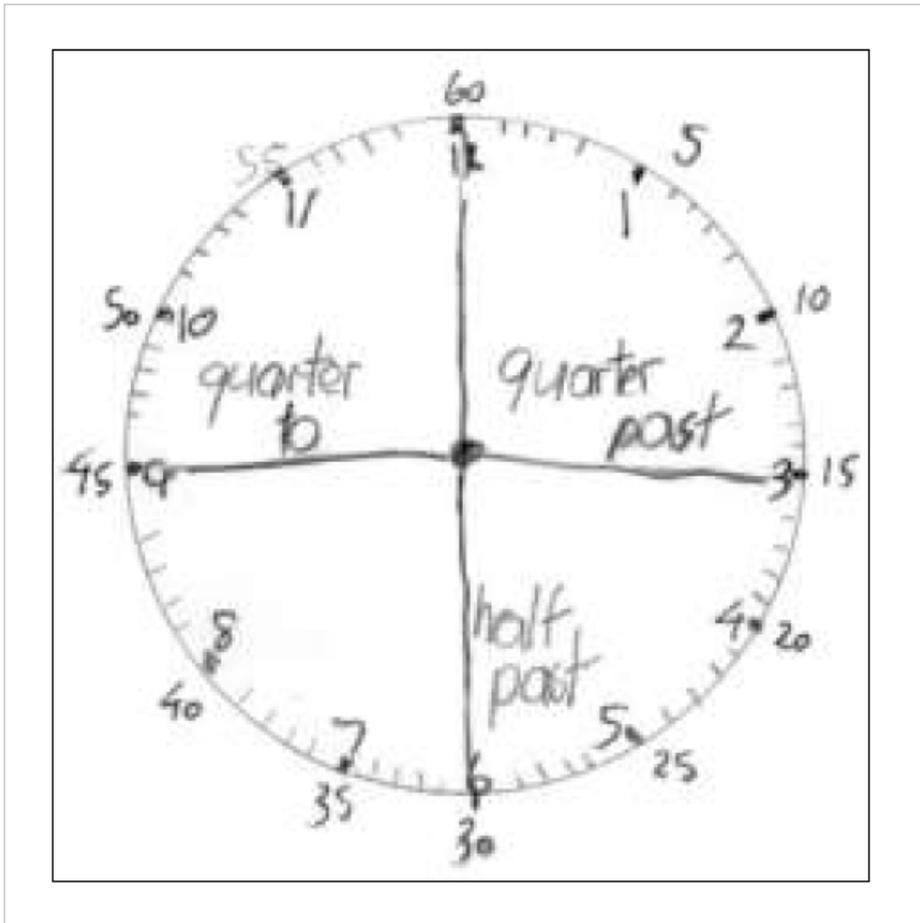
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Summary of task

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'.

Measurement: Patterns in time



Annotations

Associates the numerals 3, 6 and 9 with 15, 30 and 45 minutes and uses the terms 'quarter-past' and 'quarter-to'.

Mathematics

Year 2
Satisfactory

Number: Number and money

Year 2 Mathematics achievement standard

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Summary of task

Students had 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
Satisfactory

Number: Number and money



Annotations

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