

Mathematics

Year 4
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 4 MATHEMATICS

This portfolio provides the following student work samples:

- Sample 1 Number: Lucy's birthday
- Sample 2 Number: Multiplication
- Sample 3 Measurement: Quadrilaterals
- Sample 4 Number: Odd and even
- Sample 5 Number: Bingo
- Sample 6 Geometry: Symmetry
- Sample 7 Number: Sentences
- Sample 8 Number: Fractions and decimals
- Sample 9 Measurement: Time word problems
- Sample 10 Number: Sausage sizzle
- Sample 11 Statistics: Data
- Sample 12 Statistics and probability: One minute challenge
- Sample 13 Geometry: Angles

COPYRIGHT

Student work samples are not licensed under the creative commons license used for other material on the Australian Curriculum website. Instead, you may view, download, display, print, reproduce (such as by making photocopies) and distribute these materials in unaltered form only for your personal, non-commercial educational purposes or for the non-commercial educational purposes of your organisation, provided that you retain this copyright notice. For the avoidance of doubt, this means that you cannot edit, modify or adapt any of these materials and you cannot sub-license any of these materials to others. Apart from any uses permitted under the Copyright Act 1968 (Cth), and those explicitly granted above, all other rights are reserved by ACARA. For further information, refer to (<http://www.australiancurriculum.edu.au/Home/copyright>).

Mathematics

Year 4
Satisfactory

This portfolio of student work shows the drawing of different quadrilaterals with the same area (WS3). The student applies strategies to solve problems using knowledge of patterning, odd and even numbers and multiplication and division facts up to 10×10 (WS1, WS2, WS5). The student adds consecutive numbers to demonstrate understanding of odd and even numbers (WS4). The student creates four-sided shapes with and without symmetry (WS6) and uses strategies to solve time word problems (WS9). The student constructs addition and subtraction number sentences to solve written problems (WS7) and identifies equivalent fractions and decimals, locates them on a number line and represents them pictorially (WS8). The student uses knowledge of multiplication and decimals to solve and justify their solution of a financial problem (WS10) and uses reasoning to ask the best question to collect data in a table and create a data display (WS11). The student identifies the likelihood of events occurring and identifies whether or not events are affected by each other (WS12). The student identifies angles found in the environment (WS13).

COPYRIGHT

Student work samples are not licensed under the creative commons license used for other material on the Australian Curriculum website. Instead, you may view, download, display, print, reproduce (such as by making photocopies) and distribute these materials in unaltered form only for your personal, non-commercial educational purposes or for the non-commercial educational purposes of your organisation, provided that you retain this copyright notice. For the avoidance of doubt, this means that you cannot edit, modify or adapt any of these materials and you cannot sub-license any of these materials to others. Apart from any uses permitted under the Copyright Act 1968 (Cth), and those explicitly granted above, all other rights are reserved by ACARA. For further information, refer to (<http://www.australiancurriculum.edu.au/Home/copyright>).

Mathematics

Year 4
Satisfactory

Number: Lucy's birthday

Year 4 Mathematics achievement standard

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

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness.

Students use the properties of odd and even numbers. They recall multiplication facts to 10×10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

Summary of task

Students had been working with patterns and number sequences. Students were given this task to complete in a half-hour time period in class:

Lucy was arranging some candles on her birthday cake.

When she placed them in 2 equal rows, there was 1 left over.

When she placed them in 3 equal rows, there were 2 left over.

How old could Lucy be turning?

Number: Lucy's birthday

11 ✓ - ✓ - 2 - = $9 + 2 = 11$

13 + ✓ + = X
 $12 + 1$

23 - ✓ 1 ✓ - = ✓

11 - because 2 rows of 5 is 10 r 1
 3 rows of 3 = 9 r 2

23 - because 2 rows of 11 = 22 r 1
 3 rows of 7 = 21 r 2

So Lucy could be 11 or 23
 There could be more numbers

Annotations

Uses arrays as a strategy to make calculations.

Uses diagrams to solve problems.

Explains answers referring to arrays.

Recognises that there are other possible solutions to the problem.

Mathematics

Year 4
Satisfactory

Number: Multiplication

Year 4 Mathematics achievement standard

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

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness.

Students use the properties of odd and even numbers. They recall multiplication facts to 10×10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

Summary of task

Students had been working with patterns formed when looking at number sequences involving multiplication. Students were given this task to complete in a half-hour time period in class.

Number: Multiplication

Can you create a multiplication number pattern that includes the number 60? My rule is $3 \times$

3, 6, 9, 12, 15, 18, 21, 24,
27, 30, 33, 36, 39, 42, 45,
48, 51, 54, 57, 60

This is the 20th term.

These are some of the numbers that would definitely be in the $3 \times$ table pattern is 90 because 30 is the tenth term and if you times that by 3 you get 90.

I new that 90 was in it so you would be able to have 2 90's in it which $90 + 90 = 180$ would add up to 180. If 180 is in it 2 180's would be in it which

$$\begin{array}{r} 180 \\ +180 \\ \hline 360 \end{array} \quad \begin{array}{r} \times 360 \\ 3 \\ \hline \hline 1080 \end{array}$$

Annotations

Creates a multiplication number pattern that includes 60.

Demonstrates and justifies an understanding of the problem.

Calculates and justifies why larger numbers are in the pattern.

Mathematics

Year 4
Satisfactory

Number: Multiplication

would add up to 360 and if 360 is in it you could times it by 3 and it would add to 1080.

1079 would not be in the 3x table pattern because I know that 1080 is in it so 1077 is three less than 1080. 1079 is just one away from 1080.

Annotations

Copyright

Student work samples are not licensed under the creative commons license used for other material on the Australian Curriculum website. Instead, a more restrictive licence applies. For more information, please see the first page of this set of work samples and the copyright notice on the Australian Curriculum website (<http://www.australiancurriculum.edu.au/Home/copyright>).

Measurement: Quadrilaterals

Year 4 Mathematics achievement standard

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

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness.

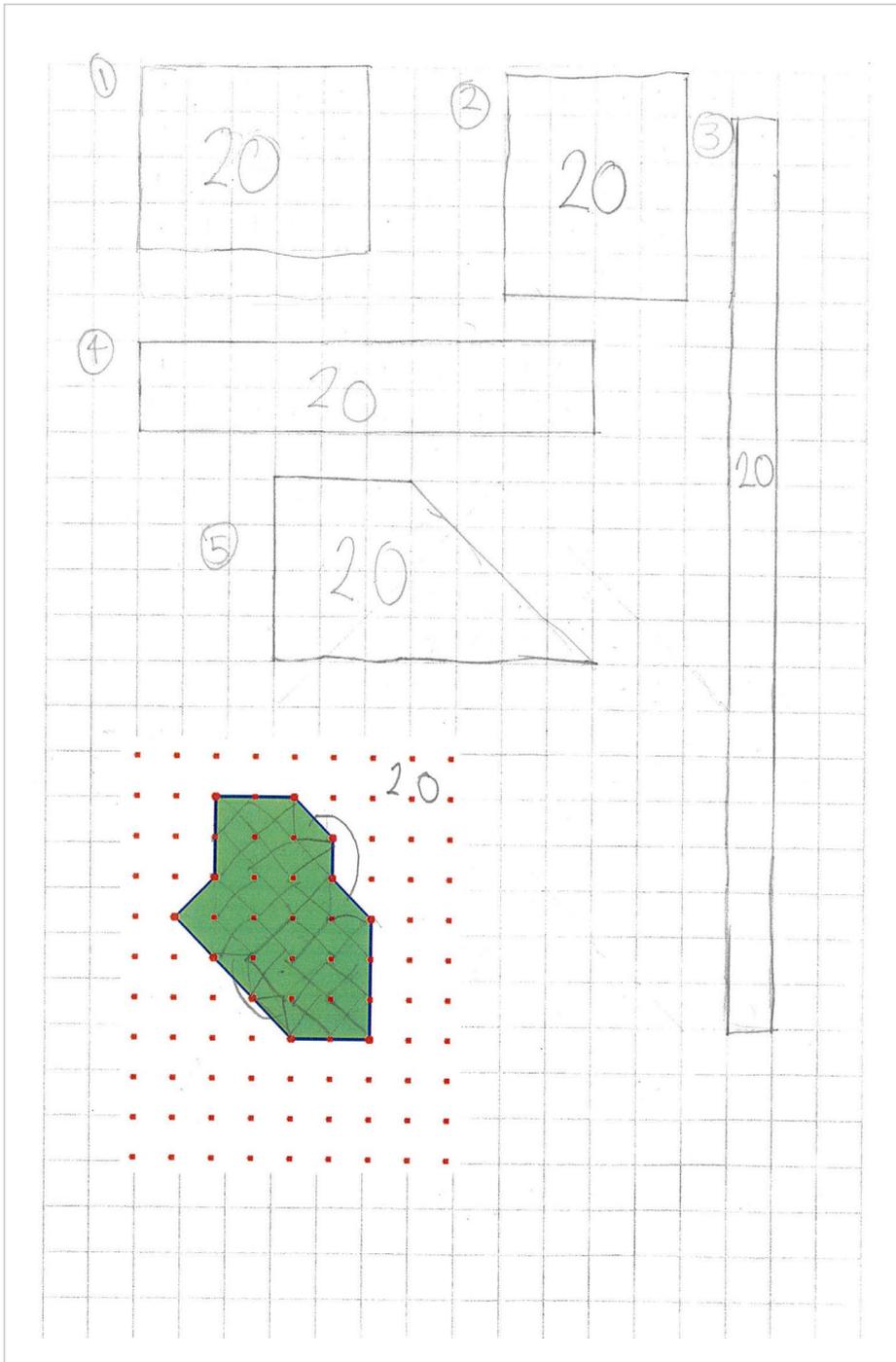
Students use the properties of odd and even numbers. They recall multiplication facts to 10×10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

Summary of task

Students had completed a unit of work on two-dimensional shapes, their properties and their area.

Students were asked to draw quadrilaterals with the same area as the given diagram.

Measurement: Quadrilaterals



Annotations

Determines the area of the irregular shape.

Draws a number of rectangles that have the same area as the irregular shape.

Draws a parallelogram that has the same area as the irregular shape.

Mathematics

Year 4
Satisfactory

Number: Odd and even

Year 4 Mathematics achievement standard

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

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness.

Students use the properties of odd and even numbers. They recall multiplication facts to 10 x 10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

Summary of task

Students had completed a unit of work on addition and subtraction of numbers, investigating combinations of odd and even numbers.

Students were given one lesson to complete this task.

Number: Odd and even

Anna added three consecutive numbers together and the answer was an odd number. What numbers might they have been?

110
111
+112

333

911
912
+913

2736

913
914
+915

2732

116
117
+118

343

119
120
+121

360

122
123
+124

370

125
126
+127

378

this one doesn't work because even.

this sum works because it is odd.

you can't add any consecutive numbers because of the odd even patterns it stops you from getting all the answers being odd or even.

If you add an even and an even together you get an even

If you add odd and odd together you get even.

Annotations

Selects and adds three consecutive numbers.

Investigates a variety of additions of three consecutive numbers to see which groupings give an odd or even sum.

Draws conclusions based on calculations.

Generalises the results based on calculations.

Mathematics

Year 4
Satisfactory

Number: Bingo

Year 4 Mathematics achievement standard

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

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness.

Students use the properties of odd and even numbers. They recall multiplication facts to 10×10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

Summary of task

Students had been practising their multiplication facts. Students were given this task to complete in a half-hour time period in class.

Mathematics

Year 4
Satisfactory

Number: Bingo

Bingo Assessment Task

Design your own 4x4 grid in order to maximise your chances of achieving a bingo – 4 numbers in a row – diagonally, horizontally, vertically or the four corners. The aim of the game is to achieve a bingo in as few moves (multiplication facts) as possible.

16	45	8	10
68	4	40	2
15	12	18	50
36	20	6	30

Select 4 numbers from your grid and explain why you included them.

I chose 2 to put on my grid because it is my lucky number. I also chose 16 because it appears 4 times on a 10x10 grid. 15 is on my grid because it appears 3 times. Another number I put on is 6 because it appears 3 times.

Choose 2 numbers you didn't include on your grid and write why you didn't choose them.

I didn't choose 100 because it only appears once on a 10x10 grid. I didn't want to have 13 on my grid because it doesn't appear once on the 10x10 grid.

Annotations

Selects mostly products that occur relatively frequently in the multiplication facts up to 10×10 .

Demonstrates some knowledge of which products occur more frequently in the multiplication facts up to 10×10 .

Explains why particular numbers were not chosen by identifying one of the products that occurs least frequently in the multiplication facts up to 10×10 and also by excluding a number that is not the result of a multiplication fact up to 10×10 .

Mathematics

Year 4
Satisfactory

Geometry: Symmetry

Year 4 Mathematics achievement standard

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

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness.

Students use the properties of odd and even numbers. They recall multiplication facts to 10 x 10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

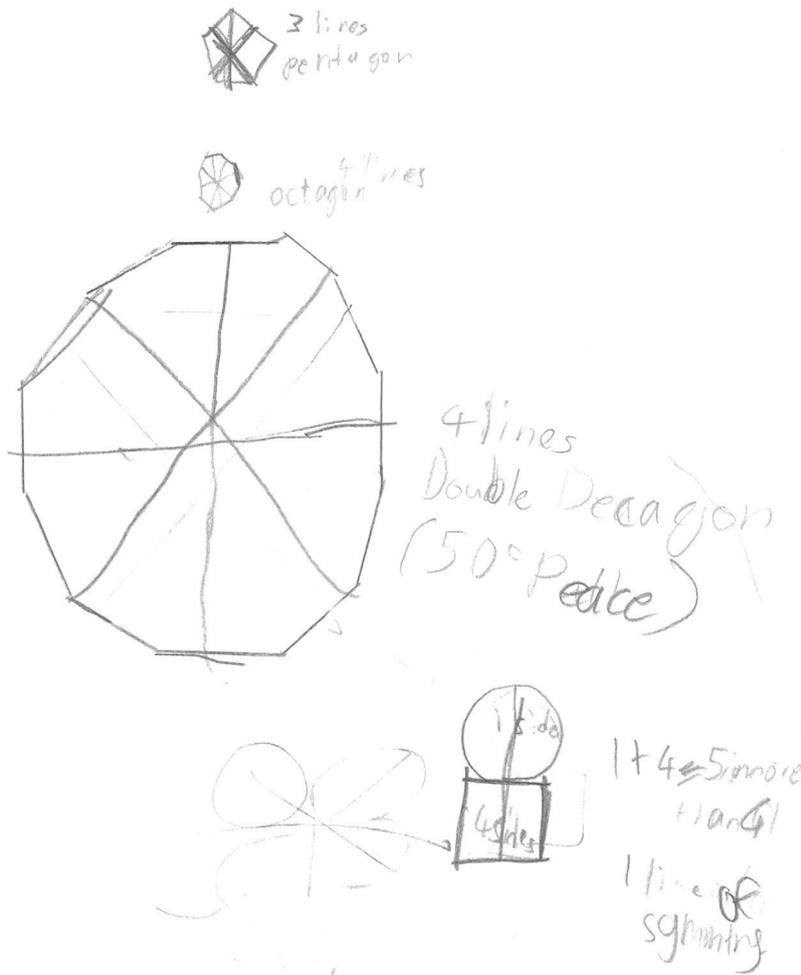
Summary of task

Students had completed a unit of work on two-dimensional shapes and their properties including symmetry.

Students were asked to draw shapes with more than four sides that had at least one line of symmetry and to create quadrilaterals that didn't have any lines of symmetry.

Geometry: Symmetry

What different shapes with more than 4 sides can you create that have at least one line of symmetry?



Annotations

Draws shapes with symmetry.

Identifies lines of symmetry of a shape.

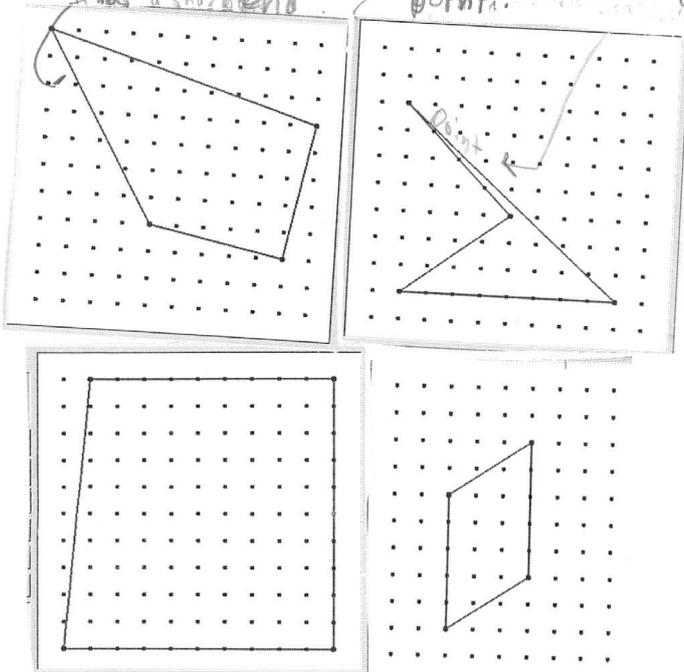
Creates a shape and identifies the line of symmetry.

Geometry: Symmetry

What different quadrilaterals can you create on a virtual geoboard that have NO lines of symmetry?

This shape is not symmetrical because it has a sharp end.

This is not a symmetrical shape because it has an even point.



this is a square with a sharp point not symmetrical.

this is a parallelogram so it can't be because its a sloped rectangle

these are all quadrilaterals because they've got four sides but there are all different shapes area length and angles

Annotations

Describes why a shape is not symmetrical.

Creates asymmetrical shapes.

Makes generalisations about the features of asymmetrical shapes.

Mathematics

Year 4
Satisfactory

Number: Sentences

Year 4 Mathematics achievement standard

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

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness.

Students use the properties of odd and even numbers. They recall multiplication facts to 10 x 10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

Summary of task

Students had completed a unit of work on addition, subtraction and identification of unknown quantities in number sentences.

Students were asked to complete a series of problems showing their visual representations to solve the problem and a number sentence with an answer.

Mathematics

Year 4
Satisfactory

Number: Sentences

Complete the grid below to solve the problems. You are able to choose how you represent the problem. You may wish to use diagrams or number sentences.

The problem	Representations	Calculator number sentence. Include your answer.				
Peter has 14 cats eye marbles and 7 pearly marbles. How many marbles does he have altogether?	<table border="1"><tr><td>14</td><td>7</td></tr><tr><td colspan="2">21</td></tr></table>	14	7	21		$14 + 7 = 21$
14	7					
21						
Sarah sorted out her pencils and threw out 12 old pencils. She ended up with 17 pencils. How many did she have to start with?	<table border="1"><tr><td>17</td><td>12</td></tr><tr><td colspan="2">29</td></tr></table>	17	12	29		$17 + 12 = 29$
17	12					
29						
The teddy bear weighs 25 grams. The toy car weighs 10 grams more than the teddy. How heavy is the car?	<table border="1"><tr><td>25</td><td>10</td></tr><tr><td colspan="2">35</td></tr></table>	25	10	35		$25 + 10 = 35$
25	10					
35						
The farmer had some cattle. She sold 8 of her cattle and she had 21 cattle left on the farm. How many cattle did she have to start with?	<table border="1"><tr><td>8</td><td>21</td></tr><tr><td colspan="2">29</td></tr></table>	8	21	29		$8 + 21 = 29$
8	21					
29						
Harry had some money saved for a new bike. He was given \$15 for his birthday and then had \$30. How much money did he have to start with?	<table border="1"><tr><td>30</td><td>15</td></tr><tr><td colspan="2">15</td></tr></table>	30	15	15		$30 - 15 = 15$
30	15					
15						

Annotations

Uses tables to collect the information needed to solve the problems.

Solves written problem using a subtraction number sentence.

Solves written problems using addition number sentences.

Copyright

Student work samples are not licensed under the creative commons license used for other material on the Australian Curriculum website. Instead, a more restrictive licence applies. For more information, please see the first page of this set of work samples and the copyright notice on the Australian Curriculum website (<http://www.australiancurriculum.edu.au/Home/copyright>).

Mathematics

Year 4
Satisfactory

Number: Sentences

The problem	Representations	Calculator number sentence. Include your answer.
There were 9 books on the shelf. At the end of silent reading the children packed away and now there are 25. How many books did they put on the shelf?		$9 + 16 = 25$
There was 30 M&M's in the bowl and when I got home from soccer there was 14. How many M&M's were eaten?		$30 - 14 = 16$
Can you write an addition and subtraction number sentence for each part/part/whole diagram?		
----- $12 + 13 = 25$ ----- $25 - 12 = 13$ -----		
----- $18 + 18 = 38$ ----- $38 - 18 = 18$ -----		

Annotations

Writes a problem and calculates the answer from given information.

Copyright
Student work samples are not licensed under the creative commons license used for other material on the Australian Curriculum website. Instead, a more restrictive licence applies. For more information, please see the first page of this set of work samples and the copyright notice on the Australian Curriculum website (<http://www.australiancurriculum.edu.au/Home/copyright>).

Number: Fractions and decimals

Year 4 Mathematics achievement standard

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

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness.

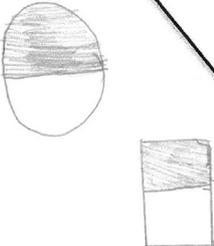
Students use the properties of odd and even numbers. They recall multiplication facts to 10 x 10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

Summary of task

Students had completed a unit of work on fractions, looking at halves, quarters, thirds, fifths, sixths, eighths and tenths of collections and a whole.

Students were asked to choose two fractions that are equivalent and fill in the appropriate information on a think board. They also had to cut a length of string and create a blank number line, marking their fractions and decimals on it.

Number: Fractions and decimals

<p>Symbolic representation Write your equivalent fractions</p> <p>$\frac{4}{8}$ $\frac{2}{4}$</p>  <p>Whole</p>	<p>Write your equivalent fractions in words</p> <p>four eighths two quarters</p>
<p>Pictorial Representation</p> <p>Collection</p>  <p>at the shops as in it is $\frac{1}{2}$ off</p>	<p>Write in decimal form</p> <p>0.50</p>
<p>Give an example of where you might see this fraction in a real life situation</p>	

Annotations

Creates a pictorial representation of the fraction.

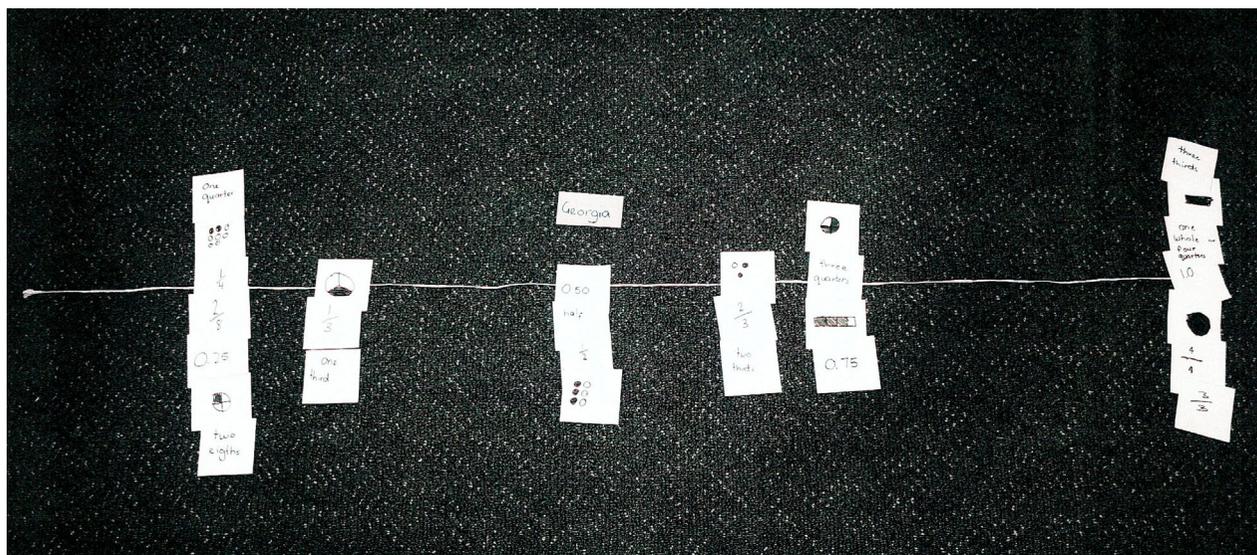
States equivalent fractions.

Writes equivalent fractions in words.

Writes the fraction in decimal form.

Identifies where fractions can be seen in everyday life.

Number: Fractions and decimals



Annotations

Locates equivalent fractions and decimals on a number line.

Copyright

Student work samples are not licensed under the creative commons license used for other material on the Australian Curriculum website. Instead, a more restrictive licence applies. For more information, please see the first page of this set of work samples and the copyright notice on the Australian Curriculum website (<http://www.australiancurriculum.edu.au/Home/copyright>).

Measurement: Time word problems

Year 4 Mathematics achievement standard

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

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness.

Students use the properties of odd and even numbers. They recall multiplication facts to 10 x 10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

Summary of task

The students had completed two units of work on time during the year, including calculating the duration of events using start and finish times and converting between units of time, such as from hours to minutes. There had also been a focus on problem-solving using different techniques, including explicit teaching of the empty number line.

The students were given the problem-solving tasks as a class and the teacher read through the problems, clarifying any questions related to meaning. The students then completed the work individually as a formal assessment task.

Measurement: Time word problems

Time Word Problems

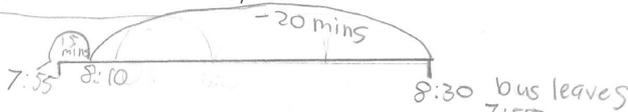
Would rather have your Sports lesson for 1 hour 10 minutes or 80 minutes? Explain why.

I would rather have sport for 80 minutes because it is longer than 1 hour and 10 minutes ~~60~~ which is 70 minute in total.

It is 9 weeks and 2 days till your classmate's birthday party. How many days do you have to wait for their birthday party?

$14 + 14 + 14 + 14 + 7 = 63 + 2 \text{ day} = 65$
 I will have to wait 65 day to fill the party party

You are going on an excursion to Elizabeth Farm and need to arrive 20 minutes before the bus leaves. It takes you 15 minutes to walk to school. The bus is leaving at 8:30am. What time do you need to leave home so that you don't miss the bus?

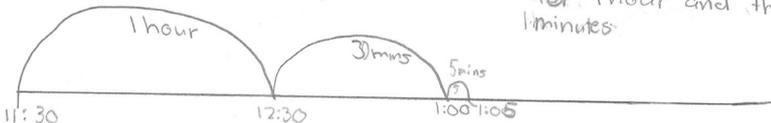


I will need to leave at seven ~~5~~

You are having a race on your bike with a friend. The race starts at 11:30am, your friend finishes at 1:05 pm and you finish 6 minutes earlier.

Calculate the time you and your friend were cycling.

My friend was cycling for 1 hour and thirty-five minutes.



It took you 5 minutes and 12 seconds to swim 10 laps of an Olympic swimming pool. How many seconds were you in the water for?

Approximately how long did it take you to swim each lap?

$5 \text{ minutes} = 300 \text{ seconds} + 12 \text{ seconds for } 300 \text{ seconds}$
 1 minute = 60 second
 $60 \times 5 =$
 $60 \times 5 = 300 \text{ add } 0 = 300$
 1 minute 3 seconds
 I was in the water
 It took me approx
 1 minute and
 3 seconds

Annotations

Converts time measurements into the same units to allow for comparison and to justify their answer.

Uses an additive strategy to convert between units of time.

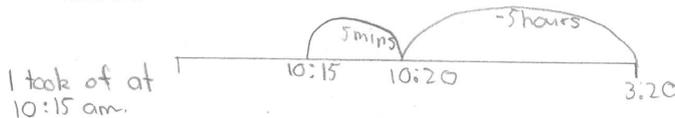
Solves a time problem by working backwards from a given time on an empty number line.

Uses an empty number line to calculate time duration.

Converts from minutes to seconds.

Measurement: Time word problems

You are going on a holiday to Fiji. You arrive in Fiji at 3:20pm (Australian Time). If the flight from Australia takes 5 hours and 5 minutes, what time did you take off from Australia?



You play for 30 hours a week. List some possible times for your play routine. How many minutes in a week do you spend 'not playing'?

1 hour at school = 5 hours
 1 hours at home on school days = 5 hours
 10 hours at home on weekends = 20 hour
 30 hours altogether

Add up the total amount of sleep you get each week. Predict how much sleep you will get tomorrow night and why?

Mon - Fri = 8:30 - 7:30 am
 Sat - Sun = 10:00 - 7:30 am
 8:30 pm
 7:30 pm

on the weekdays I get 11 hours sleep.
 on the weekends I get 9 hours and 30 minutes.

Write a time problem that involves the following times 8:00 am, 1 hour 20 min

It is 8:00 and my brother needs to get to football he will have to get there at in 1 and 20 minute. what time will he arrive?

Annotations

Applies an appropriate strategy to work backwards from a given time.

Interprets and uses am and pm notation when solving a time problem.

Lists appropriate time durations for play each day.

Calculates the amount of sleep on each day of the week, recognising that the amount of sleep varies depending on whether it is a weekday or a weekend day.

Creates a simple time problem using the information given in the question itself.

Mathematics

Year 4
Satisfactory

Number: Sausage sizzle

Year 4 Mathematics achievement standard

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

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness.

Students use the properties of odd and even numbers. They recall multiplication facts to 10 x 10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

Summary of task

A unit on money and financial mathematics linking with number, fractions and decimals was taught for two weeks. The Australian Securities and Investments Commission (ASIC) Helping Out Teaching Resource (<http://teaching.moneysmart.gov.au/mst-digital-resources/helping-out/index.html#start>) was used as a teaching tool. The assessment task was adapted from the ASIC Helping Out game. The students played the game a number of times during the unit.

Students were given one hour to complete the assessment task individually, under examination conditions at the end of the unit.

Number: Sausage sizzle

Sausage Sizzle Fundraiser

Part A:

Your Principal has asked for your help to organise the end of term BBQ fundraiser. You can borrow up to \$400 from the school to start up the fundraiser, however, it needs to be paid back.

Some information you will need:

- 400 students in the school
- Sausages will cost \$5 per kilo (10 sausages)
- Rolls will cost 25c each
- Tomato sauce will cost \$4.55 per bottle (40 serves)

Budget: How much will it cost?

Sausages	Rolls	Sauce
$\begin{array}{r} 40\text{kg sausage} \\ \times 40 \\ \underline{5} \\ 200 \\ \$200 \end{array}$	$\begin{array}{r} 400 \\ \times 25 \\ \hline 2000 \\ 8000 \\ \hline 10000 \\ \$100 \end{array}$	$\begin{array}{r} 2 \\ \times 4.55 \\ \hline 22.75 \end{array}$

Total Cost: \$322.75

Sausage: \$200	+	200.00	
Rolls: \$100		100.00	
Sauce: 22.75		22.75	
		<hr/>	
		322.75	

Price of Sausages: Explain Why?

I would make it \$2.50 because there will be enough money.

Income: What is the total amount of money you will collect after selling all the sausages? \$1000

$$\begin{array}{r} 400 \times 2.50 \\ 2000.00 \\ 2000.00 \\ 8000.00 \\ \hline 10000.00 \\ = \$1000 \end{array}$$

Profit: How much money can you make? Remember your need to pay back the start up cost.

$$\begin{array}{r} \$1000.00 \\ - 322.75 \\ \hline 677.25 \end{array}$$

Annotations

Uses algorithms to perform calculations involving the multiplication of whole numbers.

Converts the result of a multiplication in cents into dollars.

Uses an algorithm to multiply a decimal by a whole number.

Justifies the pricing of an item.

Calculates expected income from sales.

Calculates expected profit from sales.

Adapted from ASIC's MoneySmart Teaching Digital Resource:
<http://teaching.moneysmart.gov.au/resource-centre/teaching-resources/asic-helping-out?page=2&myl=0&myla=0&mya=0&myrt=146>

Mathematics

Year 4
Satisfactory

Number: Sausage sizzle

Helping Out

Part B:

Some of your profit needs to be donated to Papua New Guinea to assist their schools.
1AUD = 2.5PGK

How much PGK are you going to donate? Show your working.

Handwritten student work for Part B:

500.00
2.5

125000.0
100000.0

125000.0

I am going to donate 1250 PGK and keep \$177.25

1250 PGK
677.25
500.00

1777.25

What will you buy with your PGK?
Desks = 30 PGK
Chairs = 20 PGK
Exercise books = 2 PGK

I will buy 255 books, 8 desks, 15 chairs and have no left over.

Handwritten student work for Part B:

1250 x 30

500 180

120
26

120
40

520

500
180

680
91
150

570

520
520

1040

10
120

380
380

500
180

380
1060

Adapted from ASIC-Helping Out Teaching Resource

Adapted from ASIC's MoneySmart Teaching Digital Resource:
<http://teaching.moneysmart.gov.au/resource-centre/teaching-resources/asic-helping-out?page=2&myl=0&myla=0&mya=0&myrt=146>

Annotations

Converts from one currency to another using multiplication.

Uses algorithms to perform calculations involving multiplication.

Uses trial and error in an attempt to determine an appropriate quantity for each item given the amount of money available.

Copyright

Student work samples are not licensed under the creative commons license used for other material on the Australian Curriculum website. Instead, a more restrictive licence applies. For more information, please see the first page of this set of work samples and the copyright notice on the Australian Curriculum website (<http://www.australiancurriculum.edu.au/Home/copyright>).

Mathematics

Year 4
Satisfactory

Statistics: Data

Year 4 Mathematics achievement standard

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

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness.

Students use the properties of odd and even numbers. They recall multiplication facts to 10 x 10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

Summary of task

Students had completed a unit of work on collecting, representing and displaying data. This task was given to them as a task over several mathematics lessons as an end-of-unit assessment.

Students had to reflect on the best way to ask a question to collect and present data. They were asked to predict the responses, collect the data and construct a data display with the information collected.

Mathematics

Year 4
Satisfactory

Statistics: Data

Data Assessment Task Part 1

Name:

Date:

4 Green are planning a special class lunch and their teacher needs to know the most popular fast food amongst the students. The teacher has decided to survey the students.

View the two survey questions below and circle the question that will best provide the teacher with the data he /she needs.

Explain why you believe that question to be best.

What is your favourite fast food?

Mac's

My favourite fast food is:

- Mc Donald's
- KFC
- Fish And Chips
- Pizza Hut
- I Don't Like Fast Food

I chose this because

Because it would be alot easier instead of lots of different answers

Annotations

Selects an effective question to collect data.

Explains why a particular type of question is more efficient when collecting data.

Statistics: Data

Data Assessment Task Part 2

Predict the **total number** of given devices that Year 4 students have in their homes.

Devices	Number Of Devices
iPad	19
Mini iPad	5
Mobile Phone	52
Tablet	4
Laptop Computer	16
Desktop Computer	27
Gaming Device	16
TOTAL NUMBER OF DEVICES	159

Record in the table below the **actual** number of given devices that Year 4 students have in their homes

Devices	Number Of Devices
iPad	28
Mini iPad	7
Mobile Phone	69
Tablet	13
Laptop Computer	54
Desktop Computer	23
Gaming Device	68
TOTAL NUMBER OF DEVICES	

Annotations

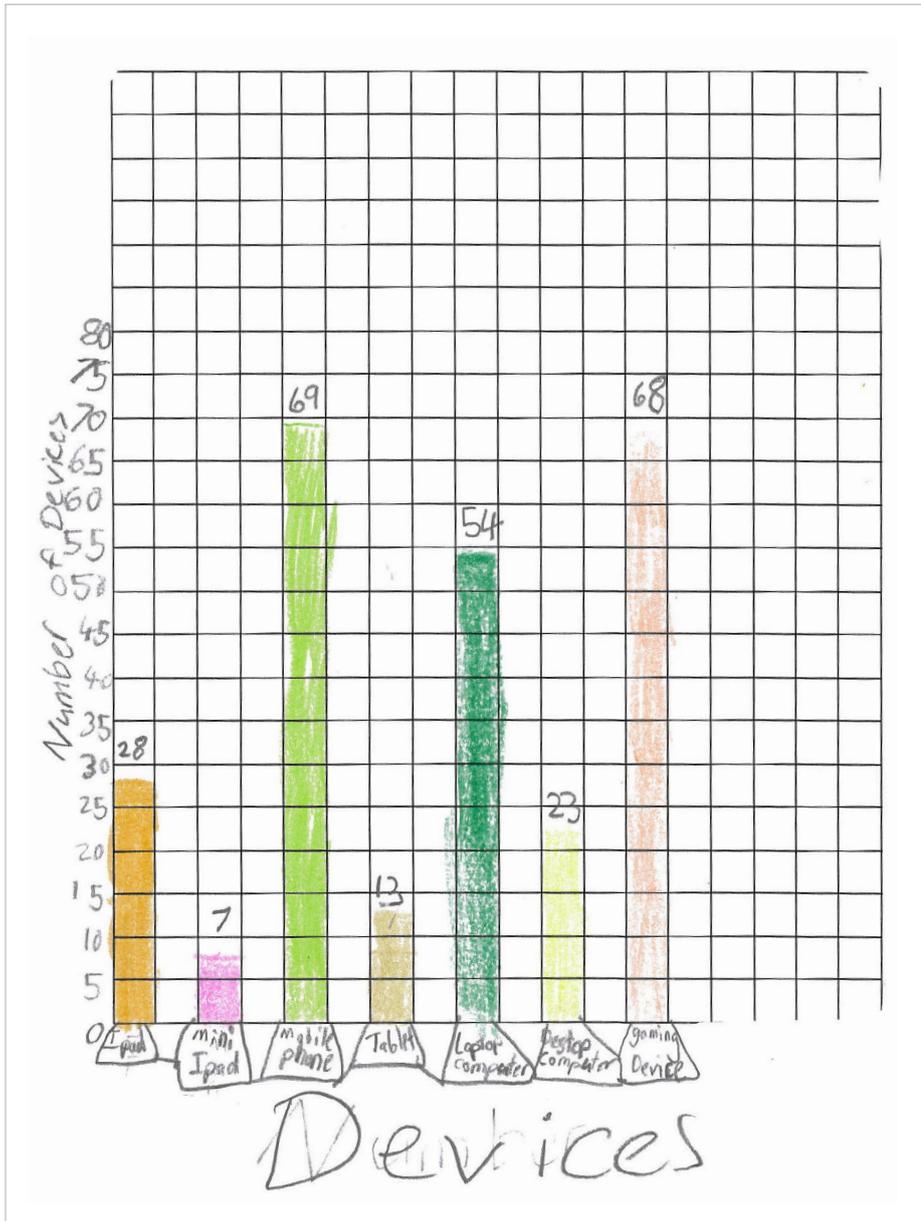
Makes predictions in investigations.

Records data from a survey.

Mathematics

Year 4
Satisfactory

Statistics: Data



Annotations

Selects and constructs a column graph to represent the data collected.

Chooses an appropriate scale and labels increments evenly on the vertical axis.

Selects and uses appropriate labels for the axes.

Copyright

Student work samples are not licensed under the creative commons license used for other material on the Australian Curriculum website. Instead, a more restrictive licence applies. For more information, please see the first page of this set of work samples and the copyright notice on the Australian Curriculum website (<http://www.australiancurriculum.edu.au/Home/copyright>).

Mathematics

Year 4
Satisfactory

Statistics: Data

Data Assessment Task Part 3

Using your collated data create a visual representation that you believe most effectively displays the data.

You may choose either:

1. column graph
2. picture graph
3. electronically created graph

Data Assessment Task Part 4

Write a justification statement to support your choice of visual representation. Remember to also justify why you didn't choose an alternate visual representation.

I chose the column graph because it was easiest to read

Annotations

Justifies the selection of a column graph by referring to ease of interpretation.

Copyright

Student work samples are not licensed under the creative commons license used for other material on the Australian Curriculum website. Instead, a more restrictive licence applies. For more information, please see the first page of this set of work samples and the copyright notice on the Australian Curriculum website (<http://www.australiancurriculum.edu.au/Home/copyright>).

Statistics and probability: One minute challenge

Year 4 Mathematics achievement standard

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

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness.

Students use the properties of odd and even numbers. They recall multiplication facts to 10 x 10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

Summary of task

The students had completed work on the topic of chance twice during the year. They had participated in activities using dice, coins and spinners and had predicted the chance of events occurring and identified events that can't happen at the same time.

This assessment was given after the second series of lessons. Students were asked to independently complete a series of tasks related to chance.

Statistics and probability: One minute challenge

One Minute Challenge

Using a coin, toss it as many times as you can in one minute. Record your results below.

Results: H 	T
----------------	-------

Which result occurred the most? Heads

Can you explain why this happened? Because it is an even chance for both of them to happen.

Did the result of the previous coin toss influence the result of the next coin toss? Why or Why not? No because there are only two even sides so it will not effect the next coin toss.

A New Student

Imagine a new student is about to join the class. Order the following statements, from least likely to most likely to occur. Using the underlined key words, place them on the line. Create your own chance statement to place on the line.

- The student is a girl. 6
- The student is the same age as a majority of the students in the class. 5
- The student is 21 years old. 1
- The student has a head. 7
- The student lives in the local area. 2
- The student likes sport. 4
- The student has a sibling also coming to the school. 3

Your own: child was just born.
Has their birthday on the same day as you.

Just born

Least Likely 21 years old lives in the area sibling birthday on the same day likes sport same age girl head Most Likely

Annotations

Records the results of repeated trials in a chance experiment.

Identifies the outcome with the highest frequency in a chance experiment.

Recognises when the results of previous trials in a particular chance experiment do not affect the results of subsequent trials and provides an explanation.

Creates chance statements with different likelihoods to the given statements.

Orders events from least likely to most likely to occur.

Statistics and probability: One minute challenge

Why can't this happen?

Consider the following events, what event cannot happen if other does.

If the sun is rising it cannot Be night time at the same time.

If it is dry it cannot wet at the same time.

If I roll a 5 in a six sided die I cannot roll a 1,2,3,4,6 at the same time.

Create 2 of your own events where one cannot happen if the other happens.

If it is raining it cannot be sunny.
When your asleep you can't be awake.

Annotations

Identifies events that cannot happen at the same time as particular given events.

Describes pairs of everyday events that cannot happen at the same time as each other.

Geometry: Angles

Year 4 Mathematics achievement standard

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

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness.

Students use the properties of odd and even numbers. They recall multiplication facts to 10 x 10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

Summary of task

Students had completed a ten-lesson integrated unit of work on The Olympics and angles.

Students were asked to create a report for a TV show explaining angles in the environment. Students were given two lessons to complete the task.

Mathematics

Year 4
Satisfactory

Geometry: Angles



Annotations

Copyright
Student work samples are not licensed under the creative commons license used for other material on the Australian Curriculum website. Instead, a more restrictive licence applies. For more information, please see the first page of this set of work samples and the copyright notice on the Australian Curriculum website (<http://www.australiancurriculum.edu.au/Home/copyright>).