

Y8 Learning at home activity sheet #4

Problem 1:

A goat is tied to a 5 metre long rope in the middle of a long, straight wall beside a paddock.

If it eats all the grass it can reach, what shape will the eaten part of the paddock be?

Problem 2:

I am thinking of two numbers.
Their product is 408 and their sum is 41.
What are the numbers?

Problem 3:

If $a = 2$ and $b = \frac{1}{2}$, which of these gives the smallest answer?

- $a + b$
- $a - b$
- $a \times b$
- $a \div b$

Which gives the largest answer?

Project:

Draw a map of your house. Make it as accurate as you can. Include doors and windows, and any large items of furniture. Include a scale so you can make sure that things are the right sizes.

Quick questions:

1. How many million is a billion?
2. What is the area of a rectangle 3.1cm by 4cm?
3. Write seven million using digits.
4. What is a dozen dozen?
5. What is $17.4 + 0.25$?
6. What is $4 - 7$?
7. What is $\frac{2}{5}$ as a decimal?
8. Which is bigger, $\frac{3}{4}$ or 0.7?
9. Is 27 a prime number?
10. What is $1.5 + \frac{3}{4}$?

Random numbers:

Find a way to select random numbers between 1 and 10.
Don't use a calculator or other electronic device.

Test your method to check that each number is equally likely.

Number facts:

Cut out the cards on the attached sheet and use them to practice your multiplication facts with place value.

1. Shuffle the cards.
2. Pick two randomly and multiply them together.
3. If you need to, check your answers with a calculator.

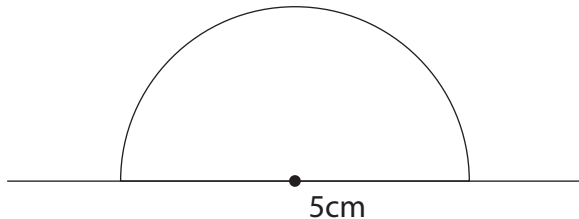
Learning at home: Notes for whānau

When your child finishes each activity, ask them to add a mouth to the face to show how they felt about that activity.



Problem 1:

If the goat pulls the rope tight and walks the line furthest from where the rope joins the wall it will make a semi-circle with a radius of the length of the rope (5 metres).



Problem 2:

This problem is best solved by trial and error, though it is helpful to be systematic. There are only 20 possible pairs of numbers that add to 41. If you start from the smallest possible first number (1), and work out the product of each pair, you will find the answer eventually.

However, $1 \times 40 = 40$ isn't very close to 408, so you may prefer to start from numbers that are closer together.

20 and 21 are the two closest together numbers that add to 41.

$20 \times 21 = 420$, which is much closer to 408 than 40 was.

$19 \times 22 = 418$

$18 \times 23 = 414$

$17 \times 24 = 408$ – so the numbers are 17 and 24.

Problem 3:

Working out each of the answers gives the following:

- $2 + \frac{1}{2} = 2\frac{1}{2}$
- $2 - \frac{1}{2} = 1\frac{1}{2}$
- $2 \times \frac{1}{2} = 1$ (the smallest answer)
- $2 \div \frac{1}{2} = 4$ (the largest answer)

If your child has trouble with the last two:

Ask them to think of $2 \times \frac{1}{2}$ as two lots of $\frac{1}{2}$. What do you have if you have two half apples?

Ask them to think of $2 \div \frac{1}{2}$ as splitting into lots of $\frac{1}{2}$. How many half apples are there in two apples?

Random numbers:

There are many ways to generate random numbers. Options that you could try:

- Use ten playing cards with the numbers 1-10. Shuffle and draw one randomly.
- Write numbers on 10 small stones (or counters, or shells, or pieces of paper) and draw them out of a bag.
- Make a spinner using cardboard and a paper clip.
- Flip to a random page in a long book and use the tens digit of the page number (note that the ones digit won't work because one side of every page is odd and the other even).

To test their method they should use it a reasonably large number of times and record the results, then check and see if each number has come up about as often. Discuss with them whether they should expect each number to come up exactly the same amount (No).

Running the tap:

Your child will need to decide on a scale for their map. To be consistent in their scale they will need to decide what length on their map to draw for a certain length in their room. For example 1 metre in their room might be represented by 1 centimetre on their map. They can represent the scale by a drawn line on the map that indicates how long it is, or they could give it as a ratio (for example 1:100).

Quick questions:

1. 1000
2. 12.4cm^2
3. 7 000 000
4. 144 (also called a gross)
5. 17.65
6. -3
7. 0.4
8. $\frac{3}{4}$
9. No (1, 3, 9 and 27 are factors of 27)
10. 2.25 or $2\frac{1}{4}$

0.1	0.2	0.3	0.4	0.5
0.6	0.7	0.8	0.9	
1	2	3	4	5
6	7	8	9	
10	20	30	40	50
60	70	80	90	
100	200	300	400	500
600	700	800	900	1000