Y6 Learning at home activity sheet #6

Problem 1:

A calculator shows digits using light bars.
The digit 3 has only one line of reflection symmetry.
How many lines of reflection symmetry do each of the digits have?

Problem 2:

Find out how many times your heart beats in 1 minute.

Make sure you are resting, not running about.

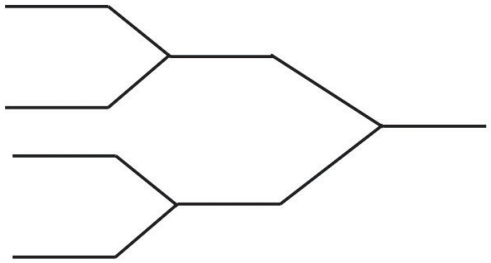
Estimate how often your heart has beated since you were born.

Problem 3:

Leah, Tia, Hone, and Sam played in a knockout tiddliwinks competition.

Use the diagram to find out who won the competition, using these clues.

- Leah did not play Tia or Sam.
- Tia beat Hone.



Grid magic:

Two squares are shaded in this multiplication grid.

6 x 4 = 24 is shaded because the answer, 24, has the digit 4 in the ones place.

8 x 7 = 56 is shaded because the answer, 56, has the digit 6 in the ones place.

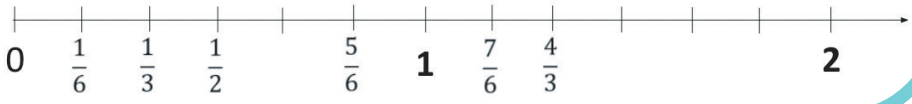
Shade any square in the grid where the product has either 4 or 6 in the ones place.

x	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4						24				
5										
6										
7								32		
8										
9										
10										

What did you notice?

Placing numbers:

Write the missing numbers on this number line.



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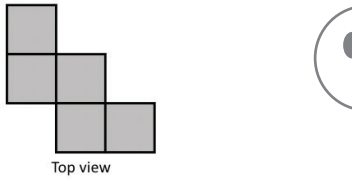
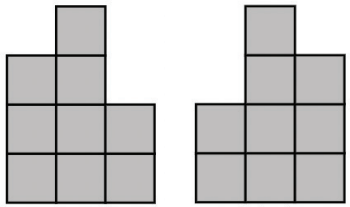
Viewpoints:

Here are three views of an apartment building made with small cubes.

What is the smallest number of cubes needed to make the building?


Top view


Bottom view

Right view

Driving Upolo:

Use the scale to estimate which is longer, the road around Upolo or the road around Savai'i.

Two kilograms:

Fill a 2-litre plastic milk bottle with water.

Feel the weight of the full bottle.
It weighs about two kilograms (2kg).

Find smaller items around the house. The items might be things like cups, potatoes, wooden blocks, toy cars, cans of food.

How many of your item weigh the same as 2kg?
For example, you might work out that about 20 wooden blocks weigh 2kg.

Pattern finding:

Here is a pattern of equations:

$$1 + 2 + 3 = 3 \times 2$$

$$2 + 3 + 4 = 3 \times 3$$

$$3 + 4 + 5 = 3 \times 4$$

$$4 + 5 + 6 = 3 \times 5$$

Write the equation that comes **next**.

Write an equation in the pattern that is a **long way down**.

Make up a **rule** for all equations in this pattern.

Make up your own pattern of equations for someone in your household to work out.

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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:

The lines of symmetry for each digit are shown below.

Problem 2:

Usually, the pulse is felt best in the wrist or high in the neck. Some electronic watches provide pulse rate.

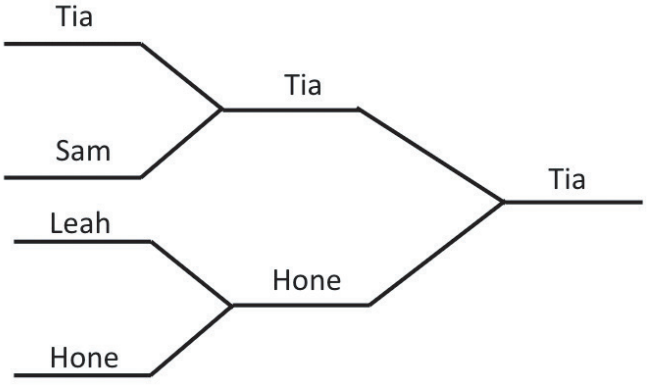
You might look up statistics for pulse rate of a 10-year-old child-pulse rates vary a lot.

A calculator will help in working out the number of beats in your lifetime. For example, on your tenth birthday you have lived 10 x 365 + 2 days or 10 x 365 + 3 days depending on how many leap years you have experienced. 3652 days is 3652 x 24 x 60 = 5 258 880 minutes. If your heart beats 70 times per minute the total number of beats in ten years is 5 258 880 x 70 = 688 121 600.

It is important to realise that this answer is only an estimate. Your pulse rate changes a lot depending on what you are doing. A sensible answer might be that in ten years your heart beats somewhere between 500 million and a billion times.

Problem 3:

The two clues give all the information needed. Leah did not play either Tia or Sam, so she was on the other side of the draw and played Hone. The only way Tia beat Hone is if both players won their first round and they met in the final.

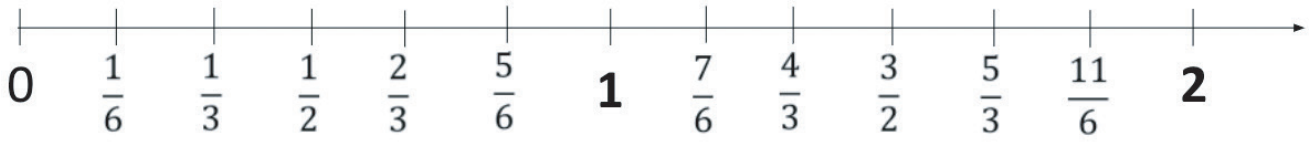


Grid magic:

This task is aimed at connecting the multiplication facts using the symmetry of the pattern.
Look for symmetry in the squares that are shaded.

x	1	2	3	4	5	6	7	8	9	10
1				■		■				
2		■	■				■	■		
3		■						■		
4	■			■		24			■	
5										
6	■			■		■			■	
7		■						56		
8		■	■				■	■		
9				■		■				
10										

Placing numbers:



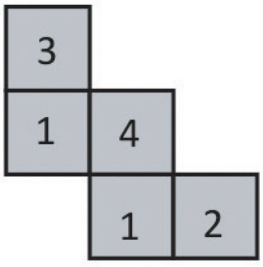
Many of the fractions are equivalents to numbers of sixths.
For example, 1 equals $\frac{6}{6}$, and $\frac{3}{2} = \frac{9}{6}$.

Viewpoints:

Your child might visualize what the building looks like but they may need support from physical objects. You might use toy blocks, sugar cubes, stock cubes, or make small cubes from plasticine or clay.

Does your child approach the task through trial and error or are they systematic?

One strategy is to get the bottom layer correct. The top view gives that layout. Then using the front view the bottom layer can be added to the match the view. Finally, your child might check their building with the right view. The smallest number of cubes is given by this building. This is the top view, and the numbers indicate the height of each tower.



Top view

Driving Upolo and Savai'i:

Discuss what a scale on a map is and where to find it. Your child needs to know that the length on the scale is a 'reduced' amount of the length in real life. The scale shows that 20km in real life is represented by a length about the width of their thumb.

How many times does your thumb width fit along the road around Upolo and Savai'i? (8 to 10 times)

If each thumb width represents 20 kilometres, how long is the real road? (160km - 200km. Actual distances are about 200km for Upolo and 180km for Savai'i)

Two kilograms:

The purpose of the task is for your child to get a sense of the weight of 2 kilograms and use that as a benchmark to estimate the weight of other objects. For example, about four cans of baked beans weigh the same as a full 2L milkbottle. Important questions to ask are:

- How many grams are in 2 kilograms? Since "kilo" means one thousand, there are 2 x 1000 = 2000 grams in 2 kilograms.
- If a full 2-litre bottle weighs 2000 grams (2000g), and four cans weigh the same, what operation tells us the weight of one can? (2000 ÷ 4 = 500g)

Pattern finding:

There are patterns running across the equations as well as patterns running down.
For example:

Patterns down:

The first numbers go up by one, so do the second numbers, and the third numbers on the left side.
The number after the equal sign is always 3.
The number multiplied by three increases by one each time.
There is always addition on the left and multiplication on the right.

Patterns across:

The left and right sides always work out to the same total (are equal).
The second number is always one more than the first number.
The third number is always two more that the first number.
The number on the right multiplied by three is the middle number on the left.

These patterns are important in answering the questions:

The next equation is 5 + 6 + 7 = 3 x 6

There are an infinite number of 'long way down' equations, like 23 + 24 + 25 = 3 x 24.

The rule for all equations can be expressed as Δ + (Δ + 1) + (Δ + 1) = 3 x (Δ + 1) if Δ represents the first number. Algebraically that can be written as n + (n + 1) + (n + 2) = 3 (n+ 1).