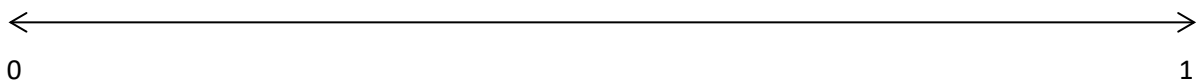
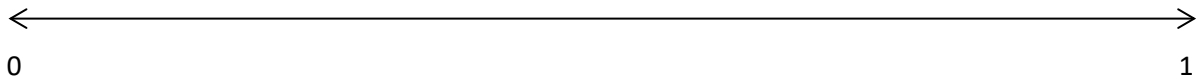
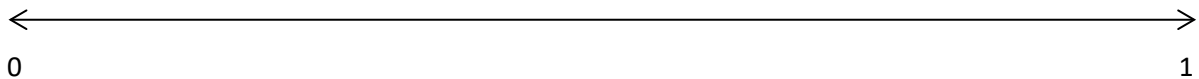


## Ordering Fractions

Find a line that stretches across your room. Label one end of the line 0 and the other end 1. Place the following fractions onto the line in their correct position:

$\frac{1}{2}$   $\frac{1}{4}$   $\frac{3}{4}$   $\frac{1}{8}$   $\frac{3}{8}$   $\frac{1}{10}$   $\frac{2}{10}$   $\frac{5}{10}$   $\frac{8}{10}$   $\frac{1}{5}$   $\frac{2}{5}$   $\frac{3}{5}$   $\frac{4}{5}$

Draw what you did here. Write each of the fractions on the lines in their correct position. You might need to try a few times, so more lines are provided. Use more paper if you need it.



Does having bigger numbers always mean that the fraction is bigger? Explain:

What would happen if your number line went from 0 to 2? Can you think of some fractions that would fit between 1 and 2? Write some here.

Why are some of the fractions in the same place even though they have different numbers? Think about what terms you used last week for fractions that are the same size.

## Fractions of a dollar as decimals

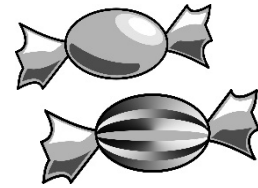
A lot of the time we tend to assume that fractions are difficult. Understanding a few connections tends to make fractions and decimals much easier. Today we are going to use what you already know about money to help us to connect fractions and decimal numbers. Work through the questions below to help.



### Half as a decimal

- I could buy two lollies for a dollar. This means that each lolly is worth half a dollar ( $\frac{1}{2}$ ).
  - How many cents is half a dollar? Circle the coin/s above in black.
  - How would you write 'half a dollar' in dollars? \$\_\_\_\_\_
 

If you leave off the \$ sign that is how you write half as a decimal.  
Write one half as a decimal number.
  - How come you would not write half a dollar as 1.2 even though it has a 1 and a 2?  
What would \$1.2 mean?



### One quarter as a decimal

- This time I could buy four lollies for a dollar. This means that each lolly is worth one quarter of a dollar ( $\frac{1}{4}$ ).
  - How many cents is  $\frac{1}{4}$  of a dollar? Circle the coin/s at the top of the page in red.
  - How would you write ' $\frac{1}{4}$  of a dollar' in dollars? \$\_\_\_\_\_
 

If you leave off the \$ sign that is how you write  $\frac{1}{4}$  as a decimal.  
Write one quarter as a decimal number.
  - How come you would not write  $\frac{1}{4}$  of a dollar as 1.4 even though it has a 1 and a 4?  
What would \$1.4 mean?
  - What would  $\frac{3}{4}$  of a dollar be? So how would we write  $\frac{3}{4}$  as a decimal?
  - What would  $\frac{2}{4}$  of a dollar be? So how would we write  $\frac{2}{4}$  as a decimal? How is this fraction related to our first question?



### One tenth as a decimal

3. This time I could buy ten lollies for a dollar. This means that each lolly is worth one tenth of a dollar ( $\frac{1}{10}$ ).

- How many cents is  $\frac{1}{10}$  of a dollar? Circle the coin/s above in black.
- How would you write  $\frac{1}{10}$  of a dollar in dollars? \$ \_\_\_\_\_  
If you leave off the \$ sign that is how you write  $\frac{1}{10}$  as a decimal.  
Write one tenth as a decimal number.
- 2.1 is called, “two and one tenth”, 0.7 is called “seven tenths”. Use this information to help you write the name for the decimal number from your last answer.  
What connection can you find to the name for  $\frac{1}{10}$ ?

### Apply what you know

Use the idea “of a dollar” to help you write each of the following fractions as decimals

Fraction	How much is this out of a dollar?	Decimal
$\frac{1}{10}$	10c or \$0.10 or \$0.1	0.1
$\frac{2}{10}$		
$\frac{5}{10}$		
$\frac{7}{10}$		
$\frac{1}{5}$		
$\frac{2}{5}$		
$\frac{3}{5}$		
$\frac{4}{5}$		

Optional challenge question if you want something trickier:

$\frac{1}{3}$		
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## Ii. Sample Space: all possible outcomes

In this activity you will learn about the Sample Space in an experiment. Look at the descriptions below to work out what the sample space is. Use this to describe the sample space for the experiments listed below.

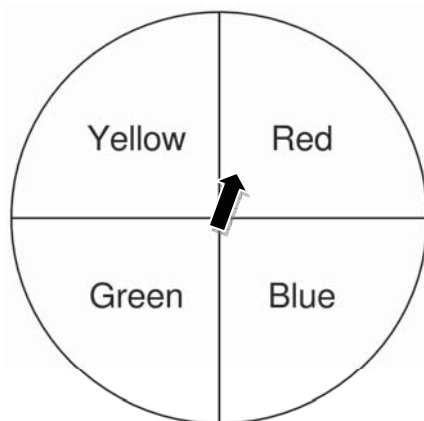
### Example:

For tossing dice, the possible outcomes are 1, 2, 3, 4, 5 and 6.  
The sample space is 1, 2, 3, 4, 5, 6.

Describe what you think sample space means:

For the experiments below, list the sample space:

1. Tossing a coin
2. Choosing a ball from a bag that contains red and blue balls
3. Choosing a number from 1 – 10
4. Spinning the spinner shown below:



What does sample space mean?

### **BACKWARDS QUESTION:**

If the sample space for a spinner was yellow, yellow, red, blue, what do you think the spinner might look like? Draw it:

## 12. Conduct experiments to collect data

You are going to conduct some experiments to collect data. You will list the sample space in the left column of the tables below. You will repeat the experiment 20 times, and record the number of times each outcome occurs using tally marks.

### Experiment 1: Tossing a coin



Sample Space:	Number of outcomes out of 20 trials:

What did you find?

### Experiment 2: Rolling a die

Sample Space:	Number of outcomes out of 20 trials:

What did you find?

### **BACKWARDS QUESTION:**

If an experiment gave the following results for 40 spins of a spinner, draw what you think the spinner might look like:

Red: |||| |||| |||| |||| ||||

Blue: |||| ||||

Why do you think having more spins makes a difference?

## Interleaved practise

Year 4, week 8

Number:

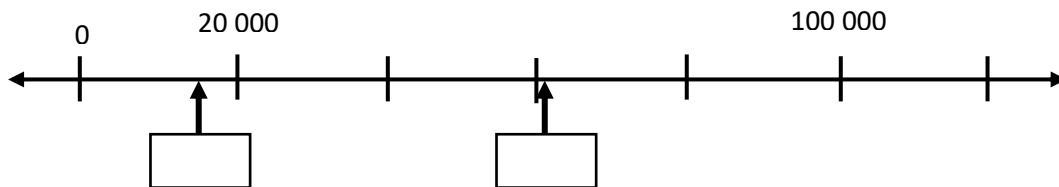
1. Make up a number pattern that starts with the number 1205 and uses addition or subtraction. Write it on the lines and describe the pattern.

1205, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

2. Some biscuits are packed in boxes in layers that look like this. How many biscuits would there be if there were 3 layers in a box? Show how you worked it out.



3. What numbers would go where the arrows are pointing?



4. If I add two odd numbers together, will my answer be odd or even? Give two examples that prove your answer.
5. Write equivalent fractions for each of these fractions

$$\frac{1}{2} = \frac{\quad}{4} \quad \frac{1}{2} = \frac{\quad}{6} \quad \frac{1}{5} = \frac{\quad}{10} \quad \frac{3}{4} = \frac{\quad}{12} \quad \frac{2}{6} = \frac{\quad}{18}$$

Measurement/Geometry:

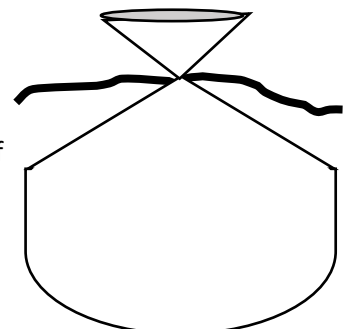
6. This measuring jug holds 1.2L of liquid. I use 4 jugs to fill my bucket. What is the capacity of my bucket?
7. How many hours are there in  $2\frac{1}{2}$  days?



8. On the back of this sheet, draw 3 shapes that are symmetrical.

Chance/Data:

9. Draw the counters that are in the bag using this information:
  - There are 24 counters in the bag. They are blue, yellow and red.
  - If I shut my eyes and take out a counter, I have the same chance of drawing a blue or a yellow counter.
  - I have a greater chance of drawing a red counter.



## 14. Probability as a fraction

In this activity you will learn to express the likelihood of an outcome as a fraction rather than just using words.

1. If I toss a coin 100 times, about how many times would you expect the coin to land as tails? Explain your answer:
2. The probability of the coin landing as tails is  $\frac{1}{2}$ . How is this related to the fraction that you found in the question above?

### Working out what the numbers in the fraction refer to:

1. Which of the numbers in the fraction refers to the total number of possible outcomes from tossing a coin?
2. Which of the numbers in the fraction refers to the number of “tails” on a coin?

**This pattern is the same for every example of probability where the outcomes are equally likely!**

Have a go writing these possibilities as fractions:

1. In a bag I have 5 lollies. Two of them are red, one is blue, one is green, one is yellow.
  - a. The likelihood of drawing out a blue one is:
  - b. The likelihood of drawing out a green one is:
  - c. The likelihood of drawing out a yellow one is:
  - d. The likelihood of drawing out a red one is:
2. A die has 6 sides with the numbers 1-6:
  - a. The likelihood of rolling any one of the numbers is:

Now order each of the events from the questions above from the least likely to the most likely using the line beneath. Explain how you have made your decisions.



### **BACKWARDS QUESTION:**

If another red ball was added to the bag, how would this change your answers?