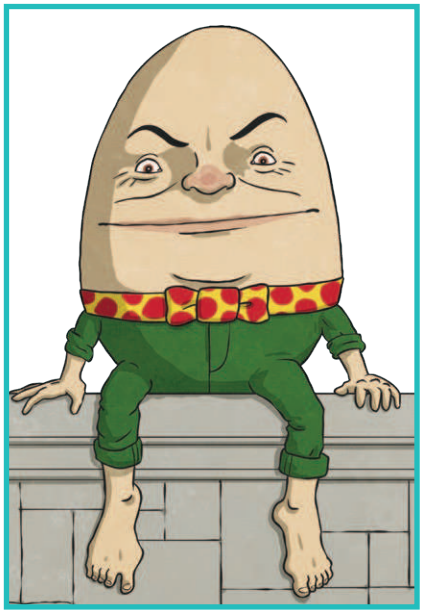
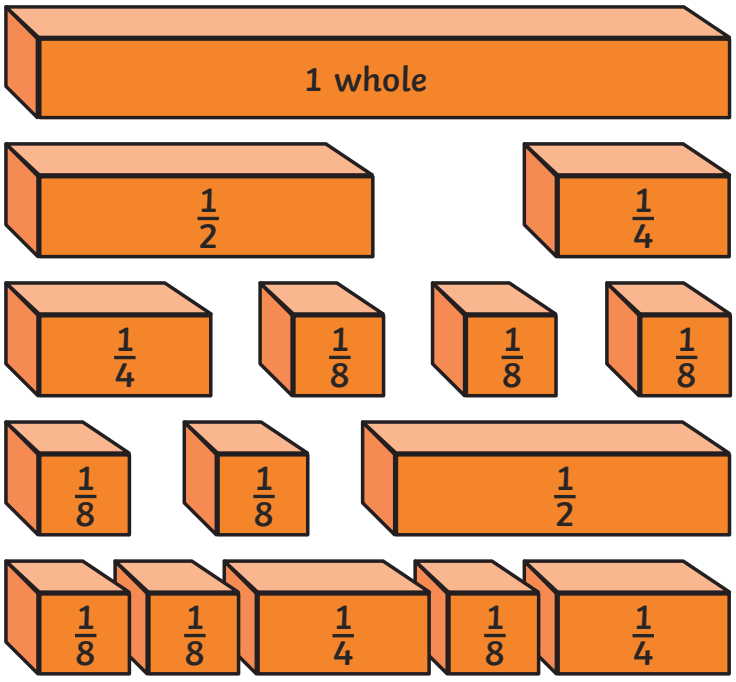
1) Mr Humpty and Mrs Humpty want to build their own brick walls but can't share fairly. Every time they divide these bricks between the two of them, one person always has one more brick than the other.

Use your knowledge of equivalent fractions to solve the problem.





2) a) Use the digit cards to make fractions that are equivalent to one half. Each digit card may only be used once per solution. Find 7 possibilities with denominators less than 20.

0	1	2	3	4	5	6	7	8

$\frac{1}{2} = \frac{\square}{\square} \quad \frac{\square}{\square} \quad \frac{\square}{\square} \quad \frac{\square}{\square} \quad \frac{\square}{\square} \quad \frac{\square}{\square} \quad \frac{\square}{\square}$

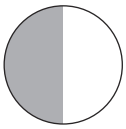
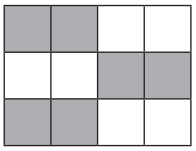
2) b) Explain anything interesting you discovered about the equivalent fractions you found.

1) a) One half is equivalent to *two quarters.* $\frac{1}{2} = \frac{2}{4}$

1) b) *One half* is equivalent to *three sixths.* $\frac{1}{2} = \frac{3}{6}$

1) c) *One half* is equivalent to *five tenths.* $\frac{1}{2} = \frac{5}{10}$

2)

Fraction	Is it equivalent to $\frac{2}{4}$? ✓ or ×
	✓
	✓
	✓

3) *They have all eaten the same amount of chocolate because* $\frac{2}{4}$, $\frac{3}{6}$ *and* $\frac{5}{10}$ *are all equivalent to one half.*

1) *A shows* $\frac{9}{12}$, *B shows* $\frac{3}{4}$ *and C shows* $\frac{6}{8}$ *. All of these fractions are equivalent to* $\frac{3}{4}$. *D is the odd one out because it shows* $\frac{8}{16}$ *which is equivalent to* $\frac{2}{4}$ *or* $\frac{1}{2}$.

2) *False because as the denominator increases the size of the parts decreases so more are needed to make the fraction equivalent.*

Children may draw fraction images to prove that the numerator changes when identifying equivalent fractions.

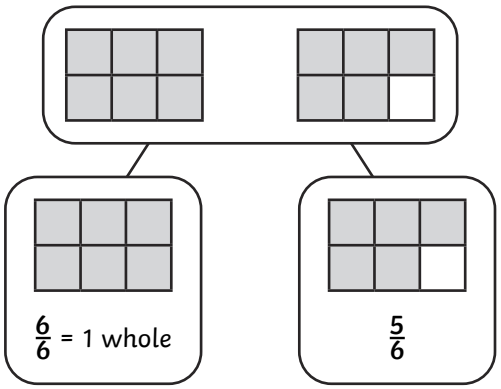
3) *Children should draw a bar model or an other fraction image to show the relationship between sixths and twelfths. They should say they disagree and explain that four twelfths are smaller than three sixths so they are not equivalent.*

1) *Mr and Mrs Humpty can have the same amount of wall each but not the same number of bricks. If you sort the bricks into the fraction types and put them together, you can make 4 wholes. The bricks should be divided so that Mr Humpty and Mrs Humpty both have the equivalent of two wholes each. For example, Mrs Humpty could have 1 whole and 2 halves and Mr Humpty could have 4 quarters and 8 eighths.*

2) a) $\frac{2}{4}$ $\frac{3}{6}$ $\frac{4}{8}$ $\frac{5}{10}$ $\frac{6}{12}$ $\frac{7}{14}$ $\frac{8}{16}$

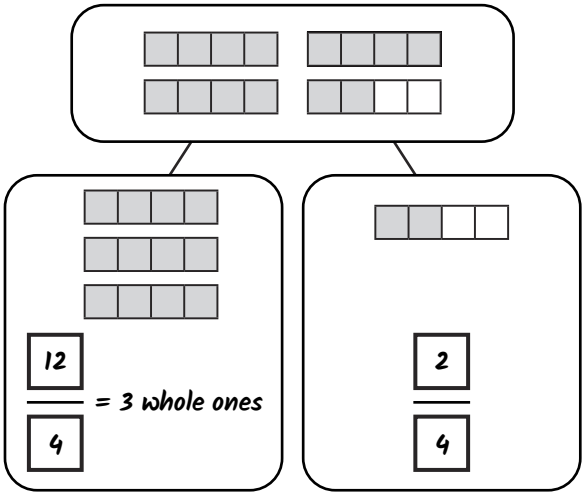
b) *Children may discover that the numerator is half the denominator. If they have worked systematically, they may notice that as the numerator increased by 1, the denominator increased by 2.*

1)



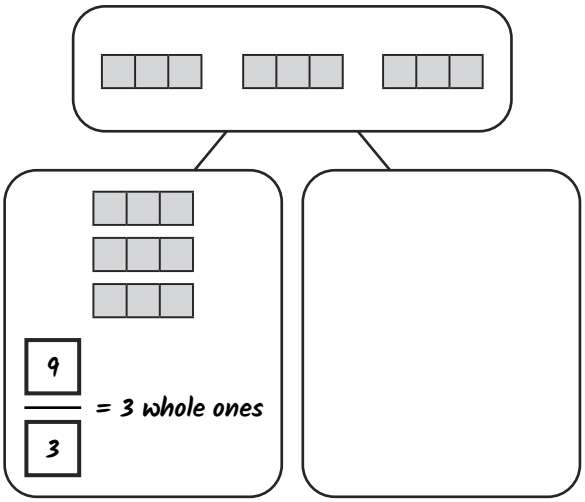
There are **11** sixths altogether.

11 sixths = **1** whole and **5** sixths



There are **14** quarters altogether.

14 quarters = **3** whole ones and **2** quarters



There are **9** thirds altogether.

9 thirds = **3** whole ones

and **0** thirds

2) There are **12** fifths altogether.

12 fifths = **2** wholes and **2** fifths

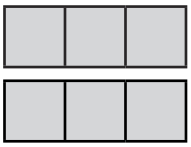
3) $\frac{24}{10} = \frac{20}{10} + \frac{\boxed{4}}{10} = 2\frac{4}{10}$ $\qquad$ $\frac{\boxed{11}}{2} = \frac{\boxed{10}}{2} + \frac{\boxed{1}}{2} = 5\frac{1}{2}$

1) C is the odd one out because it is equal to three whole ones and one third. A, B and D are all equal to three whole ones.

2) Tammy is incorrect because one whole sandwich equals four parts. 42 ÷ 4 = 10r2

   10 whole sandwiches were eaten – and 2 parts.

3) The statement is incorrect. Doubling means multiplying by 2, which means you have 2 whole ones, not 3 whole ones. For example:

$\frac{6}{3}$  = 2 whole ones

1) a) Pierre

   b) $\frac{9}{6}$ or 1 whole pizza and $\frac{3}{6}$ of a pizza

   c) Anya

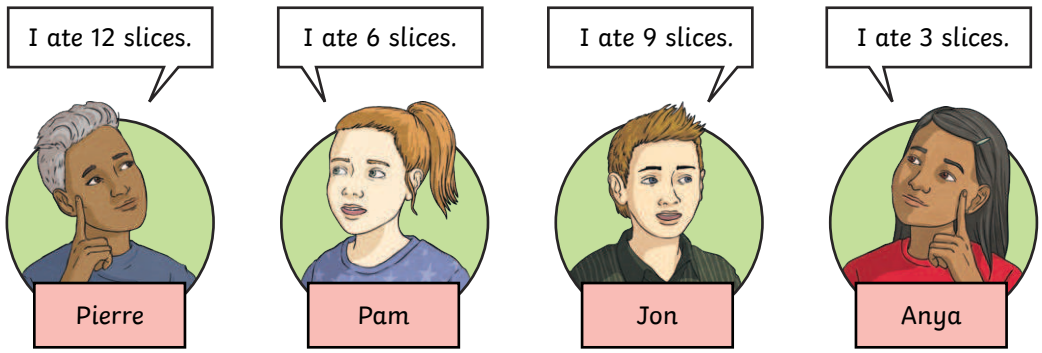
   d) Pam

   e) Anya did because $\frac{3}{6}$ is equivalent to a half.

2) a) $\frac{4}{1}, \frac{8}{2}, \frac{12}{3}, \frac{16}{4}, \frac{20}{5}, \frac{24}{6}, \frac{28}{7}, \frac{32}{8}, \frac{36}{9}$

   b) Children should notice the numerators are multiples of four because they are creating four whole ones. They may also notice that the numerator is always four times bigger than the denominator.

1) The children ate some pizza. Each pizza was cut into 6 slices.



a) Who ate exactly 2 whole pizzas?

b) What fraction of pizza did Jon eat?

c) Who ate less than a whole pizza?

d) Who ate $\frac{6}{6}$ slices of pizza?

e) Who ate half a pizza? Prove it!

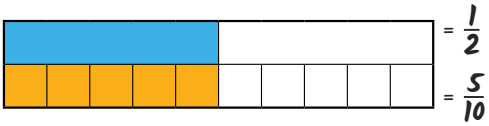
2) **a)** Use the digit cards to make improper fractions (where the numerator is larger than the denominator) that equal 4 whole ones. Your denominator can only be a single-digit number. Each digit card may only be used once per solution. Find all 9 possibilities. One has been done for you.

0	1	2	3	4	5	6	7	8	9

$\frac{12}{3}$

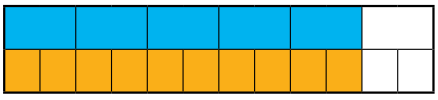
b) What do you notice about the numerator and the denominator in each fraction that you found?

1)



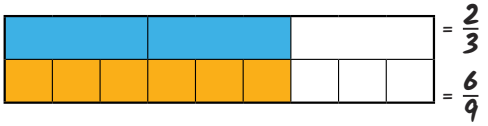
$= \frac{1}{2}$

$= \frac{5}{10}$



$= \frac{5}{6}$

$= \frac{10}{12}$



$= \frac{2}{3}$

$= \frac{6}{9}$

$= \frac{3}{4}$

$= \frac{6}{8}$

2) a) $\frac{4}{5} = \frac{8}{10}$ I looked at the denominators. As $5 \times 2 = 10$, I knew I needed to multiply the numerator by 2.

b) $\frac{6}{18} = \frac{2}{6}$ I looked at the denominators. As $18 \div 3 = 6$, I knew I needed to divide the numerator by 3.

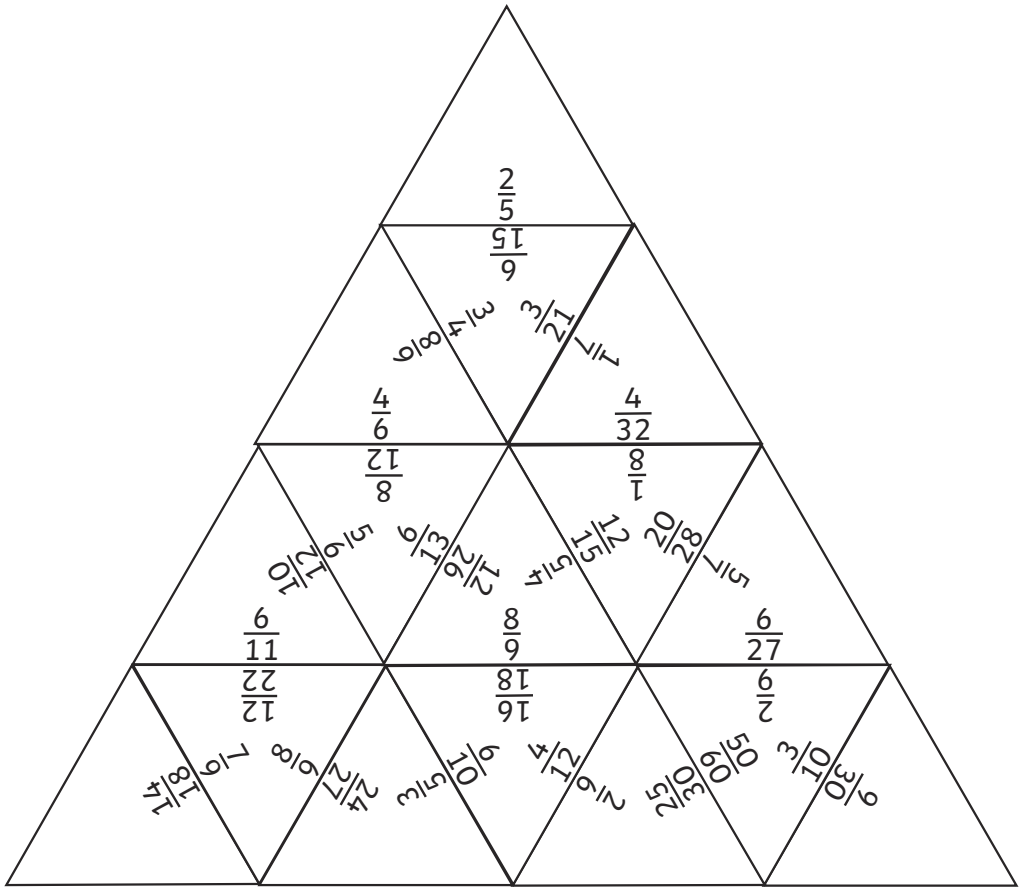
c) $\frac{2}{3} = \frac{10}{15}$ I looked at the numerators. As $2 \times 5 = 10$, I knew I needed to multiply the denominator by 5.

1) Wes is wrong because you need to multiply or divide the numerator and denominator by the same number to find an equivalent fraction. Instead, Wes has added two to both the numerator and denominator, which is an incorrect method.

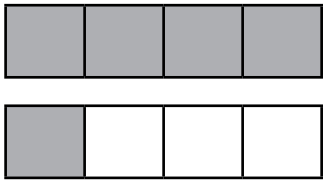
2) Possible answers:

$\frac{2}{2} = \frac{12}{12}$ $\frac{2}{3} = \frac{8}{12}$ $\frac{2}{4} = \frac{6}{12}$ $\frac{2}{6} = \frac{4}{12}$

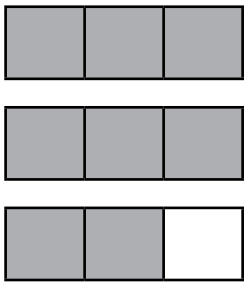
1)



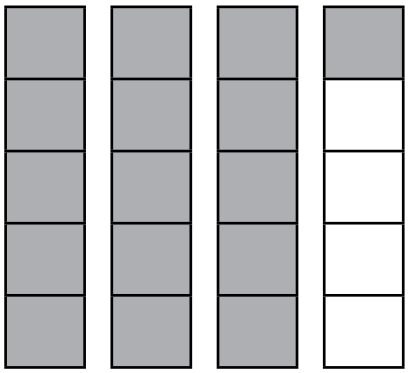
1) a) $1\frac{1}{4}$



b) $2\frac{2}{3}$



c) $3\frac{1}{5}$



2) a) $2\frac{3}{6}$ $(=2\frac{1}{2})$

b) $3\frac{2}{4}$ $(=3\frac{1}{2})$

c) $4\frac{3}{6}$

d) $3\frac{1}{4}$

1) $\frac{17}{4}$ *is an improper fraction and, when converted into a mixed number, it is* $4\frac{1}{4}$*, which is greater than* $3\frac{3}{4}$.

2) a) *This is incorrect as it still includes an improper fraction. The answer should be* $2\frac{2}{6}$.

b) *This is incorrect as 12 thirds make four whole ones. The answer should be* $3\frac{2}{3}$.

c) *The fraction in the mixed number is incorrect. The answer should be* $3\frac{2}{5}$.

1) There are 2 possible answers:

   A = 7, B = 1 $\frac{7}{3} = 2\frac{1}{3}$

   A = 8, B = 2 $\frac{8}{3} = 2\frac{2}{3}$

2) Possible answers:

   A = 4, B = 1 $\frac{4}{3} = 1\frac{1}{3}$

   A = 7, B = 2 $\frac{7}{3} = 2\frac{1}{3}$

   A = 10, B = 3 $\frac{10}{3} = 3\frac{1}{3}$

   (In all answers that the children give, A should be one more than B × 3.)

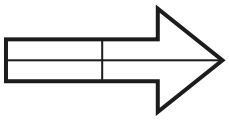
3) a) $\frac{18}{4} = 4\frac{2}{4}$

   b) $\frac{28}{5} = 5\frac{3}{5}$

   c) $\frac{13}{2} = 6\frac{1}{2}$

1)

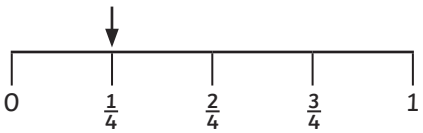
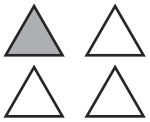
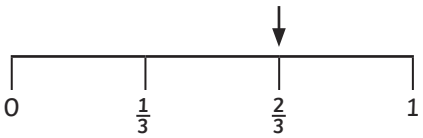
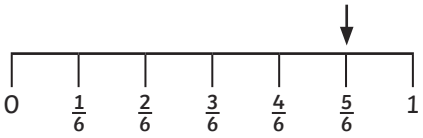
○ Yes
✓ No



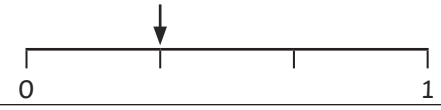
○ Yes
✓ No

✓ Yes
○ No

2)

Words	Fractions	Shape	Number Line	Quantities
one quarter	$\frac{1}{4}$			
two thirds	$\frac{2}{3}$			*The child should have drawn three identical objects and shaded two of them.*
five sixths	$\frac{5}{6}$			

3)

	Unit Fraction	Non-Unit Fraction
	✓	
four fifths		✓
	✓	
	✓	

4)

$\frac{1}{2}$			$\frac{1}{2}$		
$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$

$\frac{1}{3}$			$\frac{1}{3}$			$\frac{1}{3}$		
$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$

1) *Children could explain that Harry has grouped them correctly into representations of the same fraction. They may also notice that they are grouped into unit fractions and non-unit fractions.*

2) *d is the odd one out because it represents three sixths unlike the other three images which all represent two sixths.*

3)

Statement	True or False
The image represents $\frac{3}{4}$.	*True*
The image represents two thirds.	*False*
The image represents this fraction. 	*True*

1) *$\frac{1}{5}$ yellow, $\frac{1}{5}$ blue, $\frac{3}{5}$ red*

There are many possible answers. Here are some examples:
5 × red counters ($\frac{5}{5}$)
4 × red counters ($\frac{4}{5}$) and 1 × yellow counter ($\frac{1}{5}$)
3 × red counters ($\frac{3}{5}$) and 2 × red counters ($\frac{2}{5}$)
3 × red counters ($\frac{3}{5}$), 1 × yellow counter ($\frac{1}{5}$), 1 × blue counter ($\frac{1}{5}$)
2 × red counters ($\frac{2}{5}$), 2 × blue counters ($\frac{2}{5}$), 1 × yellow counter ($\frac{1}{5}$)
2 × blue counters ($\frac{2}{5}$), 2 × yellow counters ($\frac{2}{5}$), 1 × red counter ($\frac{1}{5}$)

2) *Craig – a*
Lena – c
Fran – d
John – f
Raj – b
Cora – e

1) What could be the values of A and B? Find all possibilities.

$\frac{A}{3} = 2\frac{B}{3}$

2) What could be the values of A and B now? Find 3 possibilities.

$\frac{A}{3} = B\frac{1}{3}$

3) Franco has created improper fractions and equivalent mixed numbers using number tiles, but he has knocked some of the tiles and can't remember where to put them. Can you place the following numbers in the correct places to complete the mathematical statements? (Each tile can only be used once.)

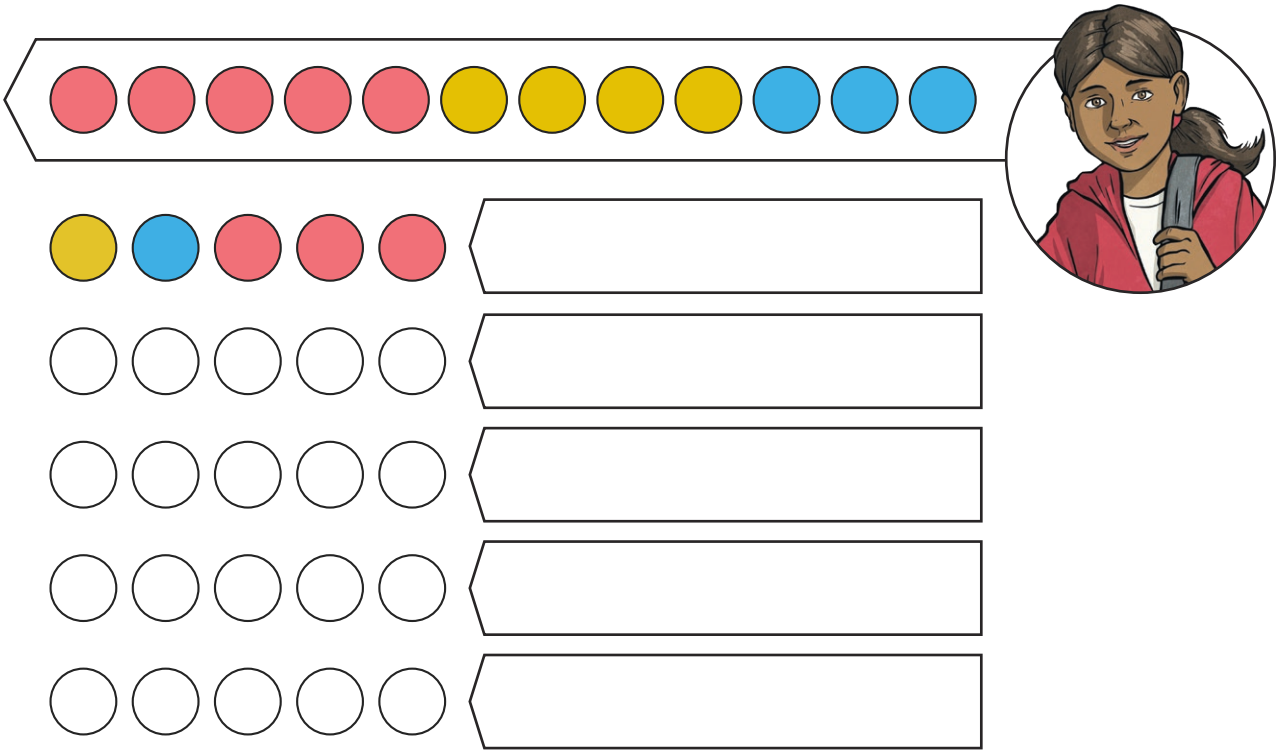
1	2	3	4	5	6	13	28	18

a) $\frac{\square}{4} = \square\frac{\square}{4}$

b) $\frac{\square}{5} = \square\frac{\square}{5}$

c) $\frac{\square}{2} = \square\frac{\square}{2}$

1) Rebecca has 5 red counters, 4 yellow counters and 3 blue counters. Rebecca uses 5 counters each time to make a fraction representation. Can you find 5 different representations she can make? The first one has been done for you. Remember to record a fraction for each colour used in each representation.



2) Read the statements and match the fraction representation to the correct child.

Craig

My fraction has a numerator of 4.

Lena

My fraction has a denominator of 4.

Fran

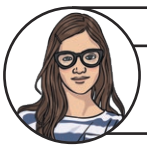
My fraction is a unit fraction.

John

My fraction has 2 parts shaded out of 4.

Raj

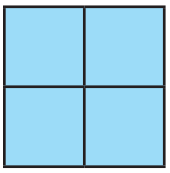
My fraction is a non-unit fraction with a denominator greater than 4.



Cora

My fraction has an even numerator and an odd denominator.

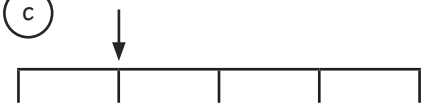
a



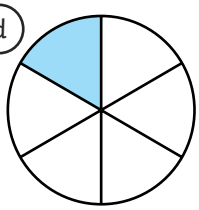
b

$\frac{4}{6}$

c



d



e

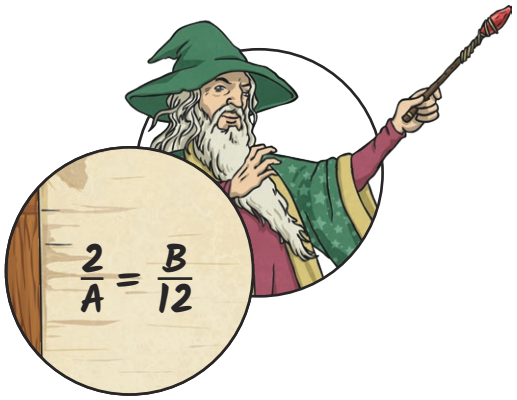
f two quarters

1) Wes the Wizard is finding equivalent fractions. He says,

> $\frac{5}{6}$ is equivalent to $\frac{7}{8}$ because whatever you do to the top, you also do to the bottom.

Explain why Wes is wrong.

2) Marc the Master Wizard is working out some equivalent fractions. He has written this in his spell book:



Give 4 possible sets of equivalent fractions showing the values of A and B.

1) Wendy the Wizard needs to complete the jigsaw to release her spell book from her evil enemy's clutches. Match the mini triangle cards, so that pairs of equivalent fractions are next to each other, to build a larger triangle.