

Hello Gondolas

This week we are going to continue with some algebra.

Monday

Starter

Rosie says,



To find equivalent fractions, whatever you do to the numerator, you do to the denominator.


Using her method, here are the equivalent fractions Rosie has found for $\frac{4}{8}$

$$\frac{4}{8} = \frac{8}{16} \quad \frac{4}{8} = \frac{6}{10}$$

$$\frac{4}{8} = \frac{2}{4} \quad \frac{4}{8} = \frac{1}{5}$$

Are all Rosie's fractions equivalent?
Does Rosie's method work?
Explain your reasons.


Main activity

 Amir represents a word problem using cubes, counters and algebra.

Words	Concrete	Algebra
I think of a number		x
Add 3		$x + 3$
My answer is 5	 = 	$x + 3 = 5$

Complete this table using Amir's method.

Words	Concrete	Algebra
I think of a number		
Add 1		
My answer is 8		

 A book costs £5 and a magazine costs £ n
The total cost of the book and magazine is £8
Write this information as an equation.

 Write down algebraic equations for these word problems.

- I think of a number, subtract 17, my answer is 20
- I think of a number, multiply it by 5, my answer is 45

Create your own table like the ones above for algebraic equations of your choice.

Tuesday

Starter

Ron thinks you can only simplify even numbered fractions because you keep on halving the numerator and denominator until you get an odd number.

Do you agree?
Explain your answer.

Here are some fraction cards.
All of the fractions are equivalent.

$$\frac{4}{A} \quad \frac{B}{C} \quad \frac{20}{50}$$

$A + B = 16$
Calculate the value of C .

Main activity

Rosie thinks of a number. She adds 7 and divides her answer by 2

Teddy thinks of a number. He multiplies by 3 and subtracts 4

Rosie and Teddy think of the same number.

Rosie's answer is 9
What is Teddy's answer?

Rosie and Teddy think of the same number again. This time, they both get the same answer.

Use trial and improvement to find the number they were thinking of.

Eva spends 92p on yo-yos and sweets

She buys y yo-yos costing 11p and s sweets costing 4p.

Can you write an equation to represent what Eva has bought?

How many yo-yos and sweets could Eva have bought?

Can you write a similar word problem to describe this equation?

$$74 = 15t + 2m$$

Wednesday

Starter

Alex is simplifying $\frac{8}{12}$ by dividing the numerator and denominator by their highest common factor.

Factors of 8: 1, 2, 4, 8

Factors of 12: 1, 2, 3, 4, 6, 12

4 is the highest common factor.

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

÷ 4



Use Alex's method to simplify these fractions:

$$\frac{6}{9} \quad \frac{6}{18} \quad \frac{10}{18} \quad \frac{10}{15} \quad \frac{15}{50}$$

Main activity

- How many counters is each cup worth?
Write down and solve the equation represented by the diagram.



- Solve the equation represented on the scales.
Can you draw a diagram to go with the next step?

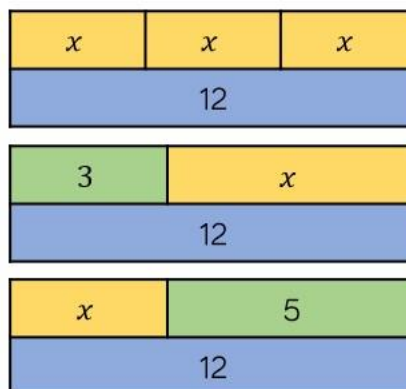


- Match each equation to the correct bar model and then solve to find the value of x .

$$x + 5 = 12$$

$$3x = 12$$

$$12 = 3 + x$$



Thursday

Starter

Mo has 3 boxes of chocolates. 2 boxes are full and one box is $\frac{4}{10}$ full.



To simplify $2\frac{4}{10}$, keep the whole number the same and

simplify the fraction. $\frac{4}{10}$ simplifies to $\frac{2}{5}$

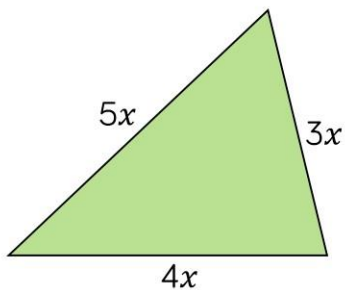
$$2\frac{4}{10} = 2\frac{2}{5}$$

Use Mo's method to simplify:

$$3\frac{4}{8}, 5\frac{9}{21}, 2\frac{7}{21}, \frac{32}{10}, \frac{32}{6}$$

Main activity

The perimeter of the triangle is 216 cm.



Form an equation to show this information.

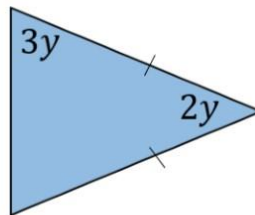
Solve the equation to find the value of x .

Work out the lengths of the sides of the triangle.

- Hannah is 8 years old
- Jack is 13 years old
- Grandma is $x + 12$ years old.
- The sum of their ages is 100

Form and solve an equation to work out how old Grandma is.

What is the size of the smallest angle in this isosceles triangle?



How can you check your answer?

Here is each step of an equation represented with concrete resources.

$$\begin{array}{l}
 \begin{array}{c} \text{Two blue cubes and one red dot} \\ \text{Two blue cubes} \\ \text{One blue cube} \end{array} = \begin{array}{c} \text{Five red dots} \\ \text{Four red dots} \\ \text{Two red dots} \end{array} \\
 2x + 1 = 5 \\
 -1 \qquad \qquad -1 \\
 \hline
 2x = 4 \\
 \div 2 \qquad \qquad \div 2 \\
 \hline
 x = 2
 \end{array}$$

Use this method to solve:

$4y + 2 = 6$

$9 = 2x + 5$

$1 + 5a = 16$



Here is each step of an equation represented by a bar model. Write the algebraic steps that show the solution of the equation.

Use bar models to solve these equations.

$3b + 4 = 19$

$20 = 4b + 2$

Friday

Starter

Tommy is simplifying $4 \frac{12}{16}$

$$4 \frac{12}{16} = 1 \frac{3}{4}$$

Explain Tommy's mistake.

Main activity

The length of a rectangle is $2x + 3$
The width of the same rectangle is $x - 2$
The perimeter is 17 cm.

Find the area of the rectangle.

Alex has some algebra expression cards.



$$y + 4$$

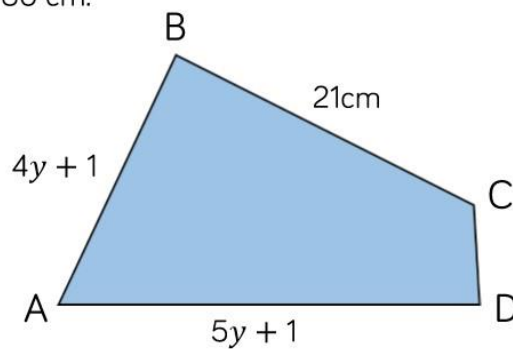
$$2y$$

$$3y - 1$$

The mean of the cards is 19
Work out the value of each card.

Here is the quadrilateral ABCD.

The perimeter of the quadrilateral is 80 cm.



AB is the same length as BC.

Find the length of CD.

a and b are variables:

$$a + b = 6$$

There are lots of possible solutions to
This equation.

Find 5 different possible integer
values for a and b .

a	b

X and Y are whole numbers.

- X is a one digit odd number.
- Y is a two digit even number.
- $X + Y = 25$

Find all the possible pairs of numbers that satisfy the equation.



$$c \times d = 48$$

What are the possible integer values of c and d ?
How many different pairs of values can you find?