Activity Booklet 6 Greater Depth





Look carefully at the superhero formulas and the bar models. Can you match each superhero to the correct bar model? Explain your reasoning.

3a + b = c 3a ÷	2a + b + 12 = c 12 + b = c + b) = c
a a a	
?	с
2 b	a a a b
c	
c 12 b a a	a a (12 + b) c

Extra Challenge: Substitute your own values for a and b in each formula. Can you calculate the value of c in each formula?







Look carefully at these SATs-style questions involving expressing missing number problems algebraically.

- What do we have to do to answer the question?
- What important information do we have to identify?



2. Here is a rule for the time it takes to cook an apple pie.

Cooking time = 15 minutes + 5 minutes for 500g of chopped apple

How many minutes will it take to cook a pie which uses 1.1kg of chopped apple?

minutes







1. Here is an equation.	a = 40 + 3b
a) Find the value of a when b = 25 .	
b) Find the value of b when a = 67 .	

2. Here is a rule for the time it takes to cook an apple pie.

Cooking time = 15 minutes + 10 minutes for each 500g of chopped apple

How many minutes will it take to cook a pie which uses 0.8kg of chopped apple?

minutes







- What is the important information to identify?
- How is it best to work out the answer?
- What advice would you give to the child who completed this question?









Look carefully at the numbers on the superhero badges. Find pairs of numbers that satisfy the following three equations.



Extra Challenge: Can you find all the possible pairs of numbers that satisfy the equations?





Look carefully at these SATs-style questions involving finding pairs of numbers that satisfy an equation with two unknowns.

- What do we have to do to answer the question?
- What important information do we have to identify?
- 1. **a** stands for a number in row **1**.

b stands for a number in row **2**.

Join all pairs of numbers that satisfy this rule:

5a + b = 100



2. Complete the table showing pairs of numbers that satisfy this equation:

4a + 2b = 48

a =	2	3	4	5	6
b =	20				







1. a stands for a number in row 1.

b stands for a number in row 2.

Join all pairs of numbers that satisfy this rule:

a + 6b = 60



2. Complete the table showing pairs of numbers that satisfy this equation:

2a + 7b = 53

α =	2	5.5	9	12.5	16
b =	7				



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- What is the important information to identify?
- How is it best to work out the answer?
- What advice would you give to the child who completed this question?

Write the missing number in each pair to satisfy this equation:

α	+ 3	b = 100
When a = 4,	b =	96
When a = 19.	b =	81
When a = 55.	b =	45
	~	







Choose a fraction from the left-hand column and a fraction from the right-hand column.

Can you multiply the fractions together?

Can you simplify the answer where possible?



Extra Challenge: Can you draw a diagram to show what happens when you multiply fractions together?

For example, $\frac{2}{3} \times \frac{2}{5} = \frac{4}{15}$







Look carefully at these SATs-style questions involving multiplying and dividing fractions.

- What do we have to do to answer the question?
- What important information do we have to identify?
- 1. One fruit smoothie contains $\frac{4}{7}$ of a carton of orange juice. I make 8 smoothies. Calculate how many cartons of orange juice I use altogether. Give your answer as a mixed number.

cartons

2. I grow vegetables in my garden. $\frac{5}{9}$ of the vegetables grow underground. Of these underground vegetables, $\frac{3}{8}$ of them are potatoes. What fraction of all the vegetables are potatoes?

potatoes

3. I use $\frac{6}{11}$ of a tub of ice cream to make 7 ice cream sundaes. What fraction of the tub of ice cream does each sundae contain?

tub







1. One fruit smoothie contains $\frac{7}{10}$ of a carton of orange juice. I make 12 smoothies. Calculate how many cartons of orange juice I use altogether. Give your answer as a mixed number.

cartons

2. I grow vegetables in my garden. $\frac{9}{12}$ of the vegetables grow underground. Of these underground vegetables, $\frac{4}{9}$ of them are potatoes. What fraction of all the vegetables are potatoes?

potatoes

3. I use $\frac{7}{12}$ of a tub of ice cream to make 9 ice cream sundaes. What fraction of the tub of ice cream does each sundae contain?

tub









- What is the important information to identify?
- How is it best to work out the answer?
- What advice would you give to the child who completed this question?





Look at the different gemstones the superheroes have recovered.

Can you work out the mean average weight of the gemstones? Round your answer to the nearest tenth of a gram.

Can you work out the mean average value of the gemstones?



Extra Challenge: Can you convert the weight and price into a different unit of measure? For example, can you present the average weight in kilograms?



Activity 4.2 Guided Maths



Look carefully at these SATs-style questions involving the calculation and conversion of units of both imperial and metric measures.

- What do we have to do to answer the question?
- What important information do we have to identify?

1	Use the inforr	nation to comp	lete these conv	ersions:		
	If 1 litre 5 li	is approximate itres is approxi	ely 1.8 pints, mately			pints.
	If 1 inch is c 22 ii	approximately nches is appro>	2.5 centimetres kimately	,		centimetres.
	If 1 mile is 7 n	approximately 1iles is approxi	1.6 kilometres, mately			kilometres.
	If 1kg 15	is approximate 5kg is approxin	ely 2.2lbs, 1ately			lbs.
2.	Last year, I v each concert.	went to six m	usic concerts. I	Here are the c	listances th	nat I travelled for
	23.45km	31.72km	52.98km	34.7km	20.75kr	n 43.1km
	What was the	e mean distanc	e travelled?			km









1.	Use the information	to complete these c	conversions:	
	If 1 litre is appr 7 litres is o	oximately 1.8 pints approximately	S,	pints.
	If 1 foot is approxin feet is ap	naley 30 centimetr proximately	res, 4	metres.
	If 1 mile is approxi 11 miles is	mately 1.6 kilome approximately	tres,	metres.
	If 1kg is approxin appro	nately 2.2lbs, 13kg oximately	ı is	lbs.
2.	last year. I went to	seven music conce	erts. Here are the dist	tances that I travelled for
	each concert.			
	23.26km	31.02km	52.50km	34.40km
	20.88kr	n 43	3.90km	40.58km
	What was the mean	distance travelled?		km





- What is the important information to identify?
- How is it best to work out the answers?
- What advice would you give to the child who completed this question?
- 1. Rhys went to seven football matches last season. Three of the football tickets cost \pounds 24 each and the rest cost \pounds 32 each. What was the mean cost of the tickets? Round your answer to the nearest pence.

 $£24 \times 3 = £72$ $£32 \times 4 = £128$ £72 + £128 = £200 $£200 \div 7 = £28.60$ The mean cost is £28.60







Look at the different circular superhero badges. (Not drawn to scale.) Can you say the length of the diameter and the radius of each badge?



Extra Challenge: The circumference of a circle is approximately 3.14 times greater than the diameter. Can you use this fact to calculate the diameter of the badges, rounding answers to the nearest mm?

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Look carefully at these SATs-style questions involving parts of a circle.

- $\boldsymbol{\cdot}$ What do we have to do to answer the question?
- What important information do we have to identify?
- 1. A tractor tyre has a radius of 0.58m. What is the length of four tractor tyres?





2. This design is made up of 2 identical circles and a rectangle. Calculate the radius of the circle. (Not drawn to scale.)



radius =	cm
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3. A bike travels from a tree to a pond turning its wheels 24 times. The circumference of the bicycle wheel is 78cm. Calculate the distance from the tree to the pond in metres.



metres







Have a go at answering these SATs-style questions.

1. A tractor tyre has a radius of 0.93m. What is the length of five tractor tyres?



metres

2. This design is made up of 2 identical circles and a rectangle. Calculate the radius of the circle. (Not drawn to scale.)



r	adius =	cm

3. A bike travels from a tree to a pond turning its wheels 33 times. The circumference of the bicycle wheel is 102cm. Calculate the distance from the tree to the pond in metres.







- What is the important information to identify?
- How is it best to work out the answers?
- What advice would you give to the child who completed this question?
- 1. This design is made up of six circles and one rectangle. Each circle has a radius of 9.5cm. Calculate the perimeter of the rectangle in metres. (Not drawn to scale.)



length = 9.5 × 3 width = 9.5 × 2 (28.5 + 19) × 2 = 95cm

9.5 metres



