Ratio, Proportion and Rates

Name: .....

Teacher: .....

Class: .....

Contents

Units of Measure

Learning outcomes

1. Use standard units of measurement

2. Know and use metric and imperial units and convert them

3. Use conversion factors to convert between imperial and metric units of measurement

4. Know and use metric conversion factors for area, volume and capacity

Starter activity

Simplify the following ratios in the specified form

1. 14 : 12 ($\mathbf{1 : n}$)

2. 3 : 4 ($\mathbf{n : 1}$)

3. 13 : 36 ($\mathbf{1 : n}$)

4. 42 : 20 : 10 ($\mathbf{n : m : 1}$)

5. 15 : 30 : 45 ($\mathbf{1 : n : m}$)

6. 13 : 4 : 39 ($\mathbf{1 : n : m}$)

Units of Measure

Activity 1

What units of measurement would you use to measure...?

Metric:
Length of a bath?

Imperial:
Volume of a teapot?

Length of a double decker bus?

Volume of a swimming pool?

Weight of a computer?

Weight of a bag of flour?

SCORE __ / 6

Activity 2

Use your knowledge of conversion of metric and imperial measurements to solve the following problems

1. Complete these conversions

a) 12.9 cm = ... mm

b) 1235 mm = ... m

c) 134 lbs = ... stone and ..... lbs

d) 17 yards = ... ft

2. Answer the following

a) 12 m - 30 cm = ...

b) 34 ft + 12 inches = ...

c) 3 gal + 4 pts = ...

SCORE __ / 10

Units of Measure

Activity 3

Use conversion factors to solve the following problems

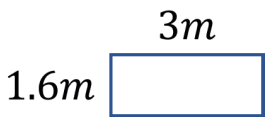
1. 6kg ≈ ..... lbs
2. 13 gallons ≈ ..... litres
3. 1231 ml ≈ ..... pts
4. 17 lbs ≈ ..... g
5. 3 km ≈ ..... yds
6. 11 lbs ≈ ..... kg
7. 120 miles ≈ ..... m
8. 45 litres ≈ ..... pts
9. 92 km ≈ ..... miles
10. 44cm ≈ ..... inches

SCORE __ / 10

Activity 4

Solve the following problems using conversion factors

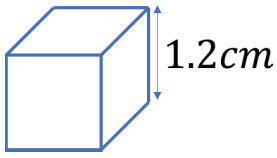
1. Find the area of the rectangle in cm^2



2. Convert $32.6m^2$ into cm^2

3. Convert $543cm^2$ into m^2

4. Find the volume of the cube in mm^3



SCORE __ / 6

Units of Measure

Plenary - What have I learnt today?

Compound Units of Measure

Learning outcomes

1. Understand the difference between compound and standard units of measurement

2. Use compound units of measurement

3. Apply knowledge of compound measures to solve more complex problems

Starter activity

Rearrange the following equations for x =

1. $3 - y + x = 2y$

2. $14x - 7 = y^2$

3. $2g = xy$

4. $x^2 - 3y = 13y$

5. $2\sqrt{x} = 4y$

6. $\frac{3x}{7} - 4 = 12y$

Compound Units of Measure

Activity 1

Would we use compound or standard units?

Length of a table? .....

Weight of a child? .....

Speed of a car? .....

Volume of a water tank? .....

Rate of flow of water? .....

Speed of a cyclist? .....

SCORE __ / 6

Activity 2

Solve the following problems

1. A car is travelling at 32 mph. How far would the car have travelled in:
   a) 25 minutes

   b) 2 hours

   c) 10 minutes

2. How long would the car take to travel

   a) 32 miles

   b) 60 miles

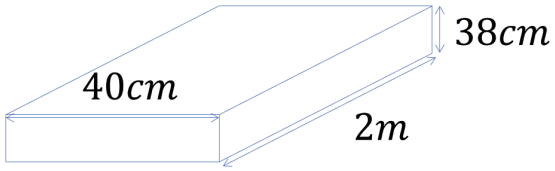
SCORE __ / 7

Compound Units of Measure

Activity 3

Solve the following problem

1. Calculate the pressure, in $\mathrm{N} / \mathrm{m}^3$, that the cuboid exerts on the ground if it has a mass of $10\mathrm{N}$.



2. What would the pressure be if there were three of these stacked on top of one another?

SCORE __ / 4

Compound Units of Measure

Plenary - What have I learnt today?

Scale Drawings and Bearings

Learning outcomes

1. Use scale factors and maps

2. Construct and interpret scale drawings

3. Work with eight compass point bearings and three figure bearings

Starter activity

Unscramble the key words!

R A B E S I G N .....

E C L A S .....

S A M P .....

R I N D W A G S .....

L U R R E .....

S E M R E T .....

Scale Drawings and Bearings

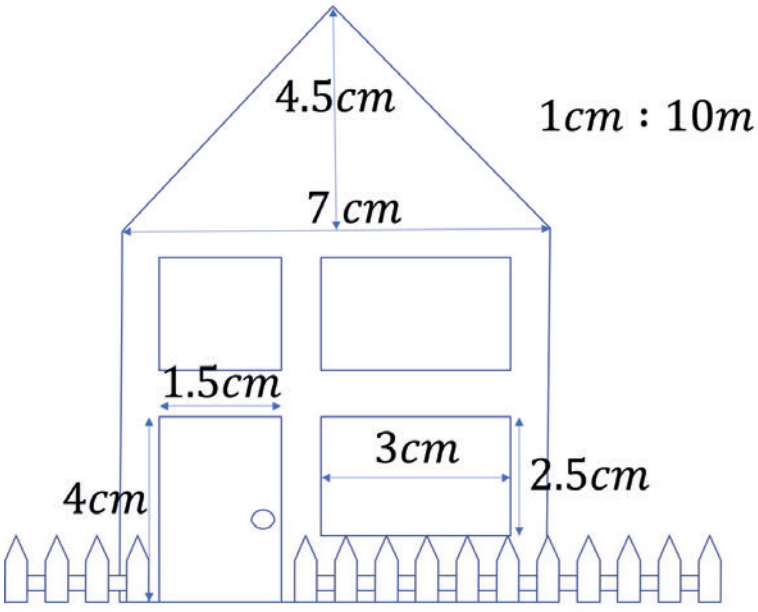
Activity 1

Solve the problems on the following scale drawing

Find the actual area of:
a) The door

b) The ground floor window

c) The roof



SCORE __ / 9

Scale Drawings and Bearings

Activity 2

Create a scale drawing from the following information

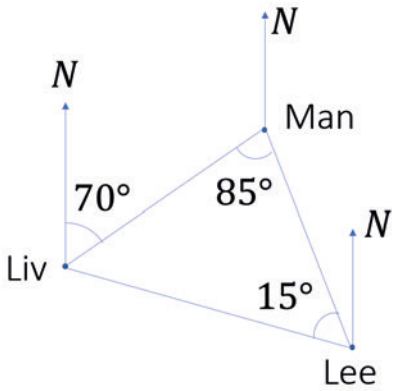
Draw the following at a scale of $1\text{cm} : 5\text{m}$
A rectangle of length 10m and an area of 25m^2.
A triangle is placed on top of the rectangle, in the centre, of height 2.5m and base width of 3.75m

SCORE __ / 6

Activity 3

Solve the following problems around scale drawings and bearings

The diagram shows the position of three cities.
a) Find the bearing of Manchester from Liverpool



b) Find the bearing of Leeds from Manchester

c) Find the bearing of Liverpool on Leeds

SCORE __ / 5

Scale Drawings and Bearings

Plenary - What have I learnt today?

Introduction to Ratio

Learning outcomes

1. Use ratio notation

2. Reduce a ratio to its simplest form

3. Write a ratio in the form $1 : n$ or $n : 1$

Starter activity

Simplify the fractions

1. $\frac{6}{18}$

2. $\frac{8}{12}$

3. $\frac{18}{24}$

4. $\frac{21}{28}$

5. $\frac{12}{30}$

6. $\frac{12}{20}$

7. $\frac{21}{35}$

8. $\frac{28}{35}$

9. $\frac{32}{40}$

Introduction to Ratio

Activity 1

Answer the questions below 

1. a) Write the ratio of stars to triangles b) Write the ratio of triangles to stars

2. On a farm there are 21 cows and 16 sheep and 32 chickens. Write the ratio of cows to sheep to chickens.

3. Write the ratio of stars to triangles to squares 

SCORE __ / 3

Activity 2

Answer the question below and on the next page

1. Write the ratios in their simplest form

a) $5 : 15$ b) $40 : 10$ c) $20 : 8$

d) $15 : 9$ e) $16 : 40$ f) $150 : 350$

g) $15 : 12 : 3$ h) $21 : 49 : 42$ i) $16 : 24 : 80$

(This activity continues on the next page)

Introduction to Ratio

Activity 2

2. Write the ratios in their simplest form

a) $25p : £1$

b) $18 \text{ mins} : 1hr$

c) $65m : 1.3km$

SCORE __ / 12

Activity 3

Answer the questions below and on the next page

1. Write the ratios in the form $1:n$

a) $7 : 35$

b) $30 : 120$

c) $2 : 7$

d) $8 : 26$

e) $2 : 1$

f) $10 : 3$

g) $6 : 21$

h) $8 : 5$

i) $5 : 9$

(This activity continues on the next page)

Introduction to Ratio

Activity 3

2. Write the ratios in the form $1 : n$

a) $12p : £3$

b) $15 \text{ mins} : 2\text{hrs}$

c) $200g : 1.4kg$

SCORE __ / 15

Plenary - What have I learnt today?

Dividing by a Ratio

Learning outcomes

1. Split a quantity into two parts given the ratio of the parts

2. Split a quantity into three or more parts given the ratio of the parts

3. Solve real life problems involving splitting an amount into parts given the ratio of the parts

Starter activity

1. Simplify the ratios

a) $3 : 15$ b) $36 : 60$ c) $21 : 28$

d) $5 : 15 : 10$ e) $6 : 18 : 9$ f) $24 : 40 : 48$

2. In a primary school there are 30 teachers and 900 students. Write the ratio of teachers to students in the form $1 : n$

Dividing by a Ratio

Activity 1

Divide each amount by the given ratio

a) Divide 80 in the ratio $3 : 5$

b) Divide 20 in the ratio $1 : 3$

c) Divide 121 in the ratio $9 : 2$

d) Divide 77 in the ratio $2 : 5$

e) Divide 270 in the ratio $10 : 8$

f) Divide 60.50 in the ratio $2 : 9$

g) Divide 24.5 in the ratio $4 : 3$

h) Divide 22.5 in the ratio $2 : 3$

SCORE __ / 16

Activity 2

Divide each amount by the given ratio

a) Divide 27 in the ratio $5 : 3 : 1$

b) Divide 990 in the ratio $7 : 2 : 2$

(This activity continues on the next page)

Dividing by a Ratio

Activity 2

c) Divide 240 in the ratio $5 : 4 : 3$

d) Divide 64 in the ratio $5 : 2 : 1$

e) Divide 140 in the ratio $6 : 3 : 1$

f) Divide 900 in the ratio $5 : 2 : 2$

g) Divide 1320 in the ratio $7 : 4 : 1$

h) Divide 2100 in the ratio $9 : 3 : 2$

SCORE __ / 24

Activity 3

Answer the questions below and on the next page

1. Gary, Helen and Joanne have a combined height of 588cm. If their heights are in the ratio $31 : 32 : 35$ how tall are they?

(This activity continues on the next page)

Dividing by a Ratio

Activity 3

2. The length and width of a rectangle are in the ratio $5:1$. If the perimeter of the rectangle is 96cm calculate the length and width of the rectangle

3. There are 35 people on a bus. There are two-and-a-half times as many people on their phones as not on their phones. How many passengers are on their phones?

SCORE __ / 6

Plenary - What have I learnt today?

Ratio Problems 1

Learning outcomes

1. Identify and work with fractions in ratio problems

2. Scale up ratios to find missing parts

3. Calculate with part to whole ratios

Starter activity

1. Calculate the fractions of amounts

a) $\frac{1}{8} of\ 24$ b) $\frac{4}{5} of\ 200$ c) $\frac{2}{7} of\ 14$

d) $\frac{3}{10} of\ 180$ e) $\frac{2}{3} of\ 150$ f) $\frac{1}{4} of\ 88$

2. a) $\frac{1}{4}$ of an amount is 5. What is the amount?

b) $\frac{2}{5}$ of an amount is 16. What is the amount?

Ratio Problems 1

Activity 1

Answer the questions below

1. Convert each part of the ratios to a fraction. Give the fractions in their simplest form

a) $3 : 7$ b) $9 : 6$ c) $1 : 9$

d) $9 : 5 : 2$ e) $6 : 3 : 12$ f) $8.5 : 1.5$

2. A walking challenge has three routes, A, B and C. $\frac{1}{5}$ of the walkers choose route A. $\frac{2}{5}$ choose route B and the rest choose route C. What is the ratio of those choosing route A to those choosing C?

SCORE __ / 8

Activity 2

Answer the questions below and on the next page

Calculate the missing parts of the ratios

1. a) $1 : 2 = \square : 10$ b) $3 : 7 = 21 : \square$ c) $4 : \square = 20 : 25$

d) $\square : 4 = 12 : 48$ e) $5 : \square = 45 : 18$ f) $2 : 5 = \square : 30$

(This activity continues on the next page)

Ratio Problems 1

Activity 2

2. a) $2 : 1 : 4 = 6 : \square : \square$

b) $1 : 5 : 3 = \square : 20 : \square$

c) $\square : 2 : \square = 18 : 12 : 24$

d) $0.25 : \square = 18 : 9$

SCORE __ / 14

Activity 3

1. A bag of marbles contains only blue and green marbles. The ratio of blue marbles to total marbles is $3 : 8$. What is the ratio of blue marbles to green marbles?

2. Jenny makes a drink. The ratio of squash to water is $3 : 19$. What is the ratio of squash to the total amount of liquid in the drink?

3. A bag of marbles contains only blue and red marbles. There are $\frac{1}{4}$ as many blue marbles as red marbles. What is the ratio of blue to red to total marbles?

SCORE __ / 6

Ratio Problems 1

Plenary - What have I learnt today?

Ratio Problems 2

Learning outcomes

1. Apply ratio to real life problems and contexts

2. Use the difference of two parts in ratio problems

3. Solve problems where the ratio changes including using simultaneous equations

Starter activity

Answer the questions below

1. A recipe uses sugar and butter in the ratio $3:1$. How much butter is needed for 150g sugar?

2. The ages of a mother and daughter are in the ratio $7:3$. If the mother is 49 how old is the daughter?

3. Fruit punch is made with orange juice, cranberry juice and lemonade in the ratio $1:3:6$. If 450ml of cranberry juice is used how much lemonade and orange juice are required?

Ratio Problems 2

Activity 1

Calculate which item is the best value for money

1. A pack of 5 kitchen rolls costing £1.80 or a pack of 8 kitchen rolls costing £3.50

2. A packet of 10 pens costing £8.00 or a pack of 6 pens costing £4.20

3. A 5kg bag of carrots costing £3.00 or a 3kg bag of carrots costing £2.40

4. A 2kg bag of potatoes costing £2.50 or a 3kg bag of potatoes costing £3.60

SCORE __ / 8

Activity 2

Answer the questions below and on the next page

1. Josh and Hannah are given pocket money by their parents in the ratio of their ages $16 : 11$. Josh receives $£15$ more than Hannah. How much pocket money are both children given?

(This activity continues on the next page)

Ratio Problems 2

Activity 2

2. A piece of wood is cut into 3 pieces in the ratio of $1:2:5$. The first piece is 36cm smaller than the third piece. How long is the second piece of wood?

SCORE __ / 4

Activity 3

Answer the questions below

1. A village contains bungalows and houses in the ratio of $5:7$. There are 56 houses. If 12 new bungalows are built what would be the new ratio of bungalows to houses?

2. Ted has a jar of red and yellow sweets. The fraction of red sweets in the jar is $\frac{5}{16}$. Ted eats 1 yellow and 3 red sweets. After that the fraction of red sweets in the jar is $\frac{3}{10}$. How many red and yellow sweets were originally in the jar?

SCORE __ / 10

Ratio Problems 2

Plenary - What have I learnt today?

Direct and Inverse Proportion 1

Learning outcomes

1. Solve real life problems involving direct proportion

2. Solve real life problems involving inverse proportion

3. Understand graphs that show direct proportion

4. Understand graphs that show inverse proportion

Starter activity

Solve the equations to find the value of a

1. a) $15 = 5a$ b) $10.5 = 3a$ c) $3.2 = 8a$

2. a) $8 = \frac{a}{2}$ b) $4 = \frac{a}{5}$ c) $2.5 = \frac{a}{7}$

Direct and Inverse Proportion 1

Activity 1

Answer the questions below

1. If 8 boxes contain 480 screws, how many screws will there be in 5 boxes?

2. If 3 litres of paint cost £9.90, how much will 4 litres of paint cost?

3. The exchange rate is £1 : €1.24. How many Euros can Jane get with £50?

4. The exchange rate is £1 : $1.45. How many pounds can Jane get with $75?

5. If 2.4kg of flour costs £1.92, how much does 250g cost?

SCORE __ / 5

Activity 2

Answer the questions below

1. If 4 cooks can prepare a buffet in 15 minutes, how long would it take 6 cooks?

2. If 3 people can paint a room in 8 hours, how long would it take 4 people?

3. If it takes 7 gardeners 4 days to landscape a garden, how long would it take 2 gardeners?

4. It takes 4 teachers 3½ hours to mark test papers, how long would it take 7 teachers to mark the papers?

5. A journey takes 2 hours at an average speed of 30mph. How long would it take at 45mph?

SCORE __ / 5

Direct and Inverse Proportion 1

Activity 3

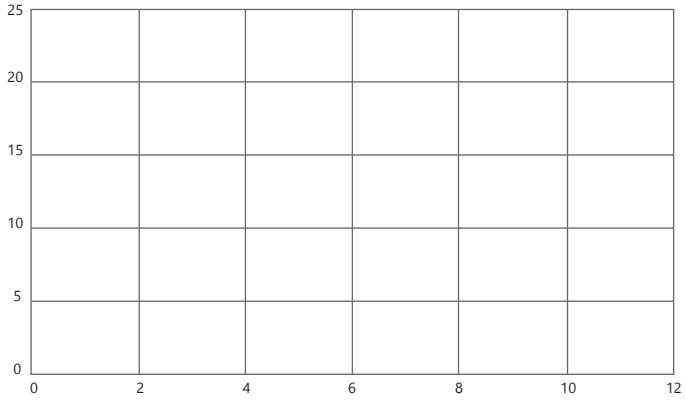
For each example y is directly proportional to x

a) Complete the table of values

b) Draw the graph of each direct proportion

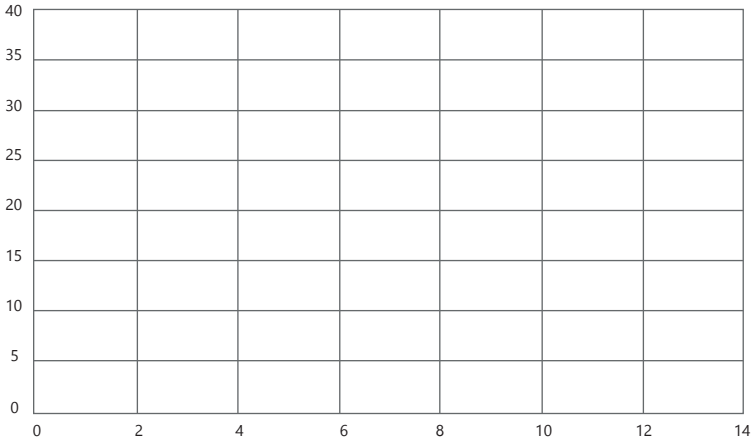
1.

x	0.5	1	5	
y		2		20



2.

x	2	7	10	
y			30	36



SCORE __ / 4

Activity 4

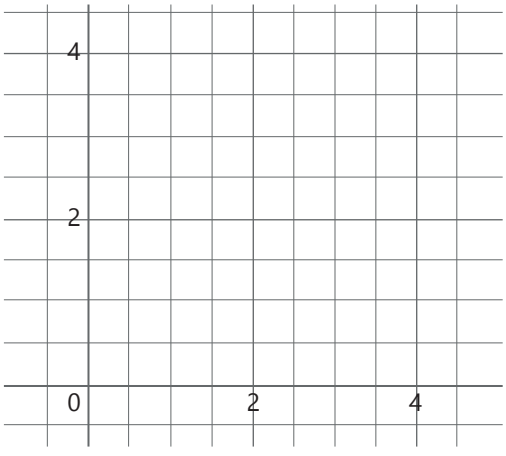
For each example y is inversely proportional to x

a) Complete the table of values

b) Sketch the graph of each inverse proportion

1.

x	0.5	1	2	
y			1	0.4



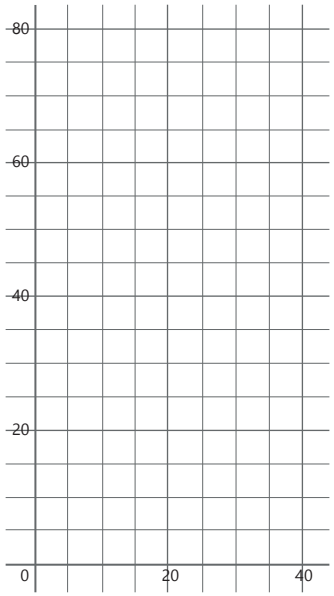
(This activity continues on the next page)

Direct and Inverse Proportion 1

Activity 4

2.

x	2	4	8	10
y			20	



SCORE __ / 4

Plenary - What have I learnt today?

Direct and Inverse Proportion 2

Learning outcomes

1. Understand and use a constant of proportionality

2. Construct and interpret equations that describe direct proportion

3. Construct and interpret equations that describe inverse proportion

4. Construct and interpret complex equations that describe direct and inverse proportion

Starter activity

Answer the questions

1. 6 pencils cost £1.80.
   a) Find the cost of 10 pencils

   b) How many pencils can you buy for £2.40

2. 12 identical books weigh 15.6kg.
   a) Find the weight of 16 books

   b) A pile of books weighs 32.5kg. How many books is this?

Direct and Inverse Proportion 2

Activity 1

Answer the questions below

1. If $y = kx$, find k when:

a) $y = 18, x = 3$
b) $y = 21, x = 6$
c) $y = 6, x = 24$

2. If $y = kx^2$, find k when:

a) $y = 75, x = 5$
b) $y = 81, x = 3$
c) $y = 50, x = 10$

3. If $y = \frac{k}{x}$, find k when:

a) $y = 4, x = 5$
b) $y = 10, x = 13$
c) $y = 8, x = 7$

4. If $y = \frac{k}{x^2}$, find k when:

a) $y = 15, x = 5$
b) $y = 20, x = 4$
c) $y = 30, x = 10$

SCORE __ / 12

Activity 2

Answer the questions below

1. x is directly proportional to y. When $x = 15, y = 5$. Find the value of x when

2. C is directly proportional to D. When $C = 39.9, D = 7$. Find the value of C when $D = 18$

3. The distance covered by a car is directly proportional to the time taken. The car covers 94.5km in 3.5 hours. How far does it cover in 2.5 hours?

SCORE __ / 9

Direct and Inverse Proportion 2

Activity 3

1. x is inversely proportional to y. When $x = 4, y = 0.2$.
   Find the value of x when $y = 5$

2. A is inversely proportional to B. When $A = -4, B = 10$.
   Find the value of B when $A = 2$

3. A and B are positive quantities. A is inversely proportional to B.
   When $A = 90, B = 40$. Find the value of A when $A = B$.

SCORE __ / 9

Activity 4

Answer the questions below

1. A is directly proportional to B^2. $\mathrm{A} = 80$ when $\mathrm{B} = 4$
   a) Find A when $\mathrm{B} = 5$ b) Find B when $\mathrm{A} = 125$

2. R is directly proportional to S^3. $\mathrm{R} = 300$ when $\mathrm{S} = 10$.
   a) Find R when $\mathrm{S} = 6$ b) Find S when $\mathrm{R} = 153.6$

3. M is inversely proportional to T^2. $\mathrm{M} = 4$ when $\mathrm{T}=4$.
   a) Find M when $\mathrm{T} = 10$ b) Find T when $\mathrm{M} = 8$

SCORE __ / 9

Direct and Inverse Proportion 2

Plenary - What have I learnt today?

Percentage Of Amounts

Learning outcomes

1. Calculate perctenage of amounts without a calculator

2. Calculate percentage of amounts using a calculator

3. Solve percentage of amounts problems in context

Starter activity

Rearrange the letters to find the keywords

tgeeapnrec

lermlutipi

tnocfrai

llccaaute

Percentage Of Amounts

Activity 1

Calculate the percentage of amounts, without a calculator

1. a) 50% of 400 b) 10% of 120 c) 5% of 260

d) 25% of 800 e) 1% of 50 f) 10% of 45

2. a) 20% of 400 b) 40% of 50 c) 90% of 380

d) 15% of 120 e) 51% of 260 f) 26% of 800

3. a) 8% of 260 b) 59% of 380 c) 3% of 45

d) 72% of 800 e) 88% of 98 f) 110% of 60

SCORE __ / 18

Percentage Of Amounts

Activity 2

Calculate the percentage of amounts using your calculator

1. a) 15% of 220 b) 72% of 400 c) 91% of 900

d) 56% of 340 e) 11% of 550 f) 91% of 3900

2. a) 9% of 1850 b) 6% of 310 c) 115% of 430

d) 17.5% of 280 e) 37.5% of 4800 f) 2.6% of 650

SCORE __ / 12

Activity 3

Answer the question below and on the next page

Non-calculator questions

1. Helen has £1600 in her savings account. She gives 85% of her savings to charity. How much does she give to charity?

(This activity continues on the next page)

Percentage Of Amounts

Activity 3

2. A wooden plank is 8m long. 55% of the plank is cut off. What length of wood is left?

Calculator questions

1. Which is larger, 22% of £57 or 47% of £29? By how much?

2. A jug can hold 3.4 litres of water. It is 32% full. How much more water will fit into the jug?

SCORE __ / 8

Plenary - What have I learnt today?

Percentage Increase and Decrease

Learning outcomes

1. Calculate a percentage increase or decrease without a calculator

2. Calculate a percentage increase or decrease with a calculator

3. Answer questions on percentage increase and decrease in context

Starter activity

Calculate the percentage of amounts

1. a) 50% of 46

b) 50% of 940

c) 25% of 88

d) 25% of 3320

2. a) 20% of 190

b) 90% of 270

c) 65% of 440

d) 95% of 90

Percentage Increase and Decrease

Activity 1

Calculate the percentage increase and decreases, without using a calculator

1. a) Increase £200 by 10%

b) Increase £4300 by 25%

c) Increase £450 by 40%

d) Increase £1350 by 65%

2. a) Decrease 700 by 10%

b) Decrease 760 by 25%

c) Decrease 180 by 15%

d) Decrease 380 by 35%

SCORE __ / 8

Activity 2

Calculate the percentage increase and decreases, using a calculator and the multiplier method

1. a) Increase 85 by 10%

b) Increase 150 by 17.5%

c) Increase 24 by 3%

d) Increase 70 by 150%

(This activity continues on the next page)

Percentage Increase and Decrease

Activity 2

2. a) Decrease 15.4 by 20%

b) Decrease 2300 by 85%

c) Decrease 70 by 10.5%

d) Decrease 600 by 100%

SCORE __ / 16

Activity 3

Calculate the percentage increase and decreases

1. Helen's weekly wage of £400 is decreased by 5%. Jane's weekly wage of £360 is increased by 10%. Who now earns more?

(This activity continues on the next page)

Percentage Increase and Decrease

Activity 3

2. Two years ago Emma earned £32000 per year. Last year she got a 3% pay rise. This year she got a 2% pay cut. How much does she earn per year now?

3. Grimsby has a population of 152 445 which increases by 12% each year. Scunthorpe has a population of 208 045 which decreases by 7% each year. Which town has the largest population after a year?

SCORE __ / 9

Plenary - What have I learnt today?

Percentage Change

Learning outcomes

1. Express one amount as a percentage of another

2. Calculate percentage change

3. Answer percentage change questions in context

Starter activity

For each pair write down which is larger

a) $0.35, 32\%$

b) $0.57, 56\%$

c) $0.4, 4\%$

d) $0.08, 80\%$

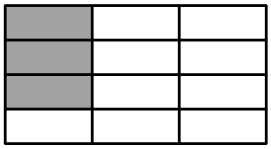
e) $0.7, \frac{8}{10}$

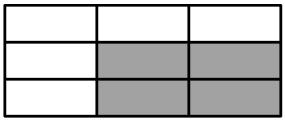
f) $23\%, \frac{24}{100}$

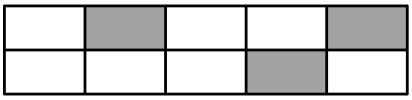
Percentage Change

Activity 1

1. Identify the percentage shaded in each diagram

a) 

b) 

c) 

2. A 50g bowl of Frosties contains 17g of sugar. What is this as a percentage?

3. In Year 11 there are 114 girls and 136 boys. What percentage of the total Y11 students are boys?

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Activity 2

Calculate the percentage change

1. a) A price of £20 is increased to £22

b) A price of £140 is increased to £161

c) A price of £16 is increased to £18.80

2. a) A price of £10 is decreased to £8

b) A price of £25 is decreased to £21

c) A price of £160 is decreased to £124

SCORE __ / 6

Percentage Change

Activity 3

Answer the questions below

1. A shop owner buys a suit for £52 and sells it for £70.20.
   What is the percentage profit?

2. The height of a tree increases from 13m to 20.8m.
   What is the percentage increase in its height?

3. A car is bought for £15 000. Four years later it is sold for £12 300.
   After another 4 years it is sold for £8856.

   a) Find the percentage decrease in price over the first 4 years.

   b) Find the percentage decease in price over the next 4 years

   c) Find the percentage decrease in price over the whole 8 years

SCORE __ / 10

Percentage Change

Plenary - What have I learnt today?

Reverse Percentages

Learning outcomes

1. Calculate an original amount following a percentage increase

2. Calculate an original amount following a percentage decrease

3. Calculate an original amount following more than one percentage change

Starter activity

Calculate the percentage increases and decreases

1. a) Increase 80 by 5%

b) Increase 14 by 10%

c) Increase 15 by 75%

d) Increase 22 by 15%

2. a) Decrease 60 by 20%

b) Decrease 80 by 15%

c) Decrease 320 by 4%

d) Decrease 85 by 17%

Reverse Percentages

Activity 1

1. Calculate the original prices for the percentage increases

a) £98 after a 75% increase

b) £10.08 after a 5% increase

c) £61.56 after an 8% increase

d) £1764 after a 47% increase

c) £58.50 after a 106% increase

2. The price of mobile was increased by 25%. It now costs £100. Gary says that the original price was £75. Explain why he is wrong? What was its original price?

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Activity 2

1. Calculate the original prices for the percentage decreases

a) £8 after a 20% decrease

b) £216 after a 10% decrease

c) £52.50 after a 25% decrease

(This acitvity continues on the next page)

Reverse Percentages

Activity 2

d) £415.80 after a 34% decrease

e) £3.88 after a 3% decrease

2. The price of mobile was reduced by 34%. It now costs £100. Gary says that the original price was £134. Explain why he is wrong? What was its original price?

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Activity 3

Calculate the original amount for each question

1. SCS, the sofa company, are advertising a double discount sale. They have a sofa on sale for £314.65 after a 50% discount followed by a 30% discount. What was the price before the sale?

2. Jenny sells her laptop to David and makes a 15% profit. David then sells the laptop to Michael for £391. David makes a 15% loss. How much did Jenny pay for the laptop?

SCORE __ / 6

Reverse Percentages

Plenary - What have I learnt today?

Growth and Decay

Learning outcomes

1. Calculate simple interest

2. Calculate compound interest

3. Solve problems involving compound growth and decay

Starter activity

Calculate the percentage

Increases:

a) Increase 300 by 15%

b) Increase £105 by 6%

c) Increase 560g by 23%

d) Increase 2.5kg by 45%

e) Increase £3 by 4%

Decreases:

a) Decrease 500 by 25%

b) Decrease £210 by 16%

c) Decrease 640g by 3%

d) Decrease 6.2kg by 95%

e) Decrease £16 by 63%

Growth and Decay

Activity 1

Calculate the total investments:

1. £400 invested at 3% per year simple interest for 2 years

2. £525 invested at 6% per year simple interest for 3 years

3. £650 invested at 2.5% per year simple interest for 4 years

Calculate the original investment amounts:

1. £728 total after being invested for 2 years at 2% per year simple interest

2. £972.40 total after being invested for 3 years at 3.5% per year simple interest

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Activity 2

Calculate the total amounts following the investments

1. £5,000 invested at 5% per year compound interest for 3 years

2. £700 invested at 2.5% per year compound interest for 4 years

(This activity continues on the next page)

Growth and Decay

Activity 2

3. £6,000 invested at 4.5% per year compound interest for the first 2 years and then 8% compound interest in the third year. How much will the investment be worth in 3 years

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Activity 3

Calculate the compound growth and decay

1. The number of bacteria in a sample increases by 42% per day. If there were 7000 bacteria at day one, how many bacteria will there be after 6 days?

2. A car depreciates in value by 10% each year. A car is bought for £4500, how much will it be worth in 3 years time?

3. The number of bees in a hive decreases by 3% each year. There are 6500 bees in the hive at the beginning of 2014. How many bees will there be at the end of 2020?

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Growth and Decay

Plenary - What have I learnt today?

Notes

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