Spring Progress Check Revision Material

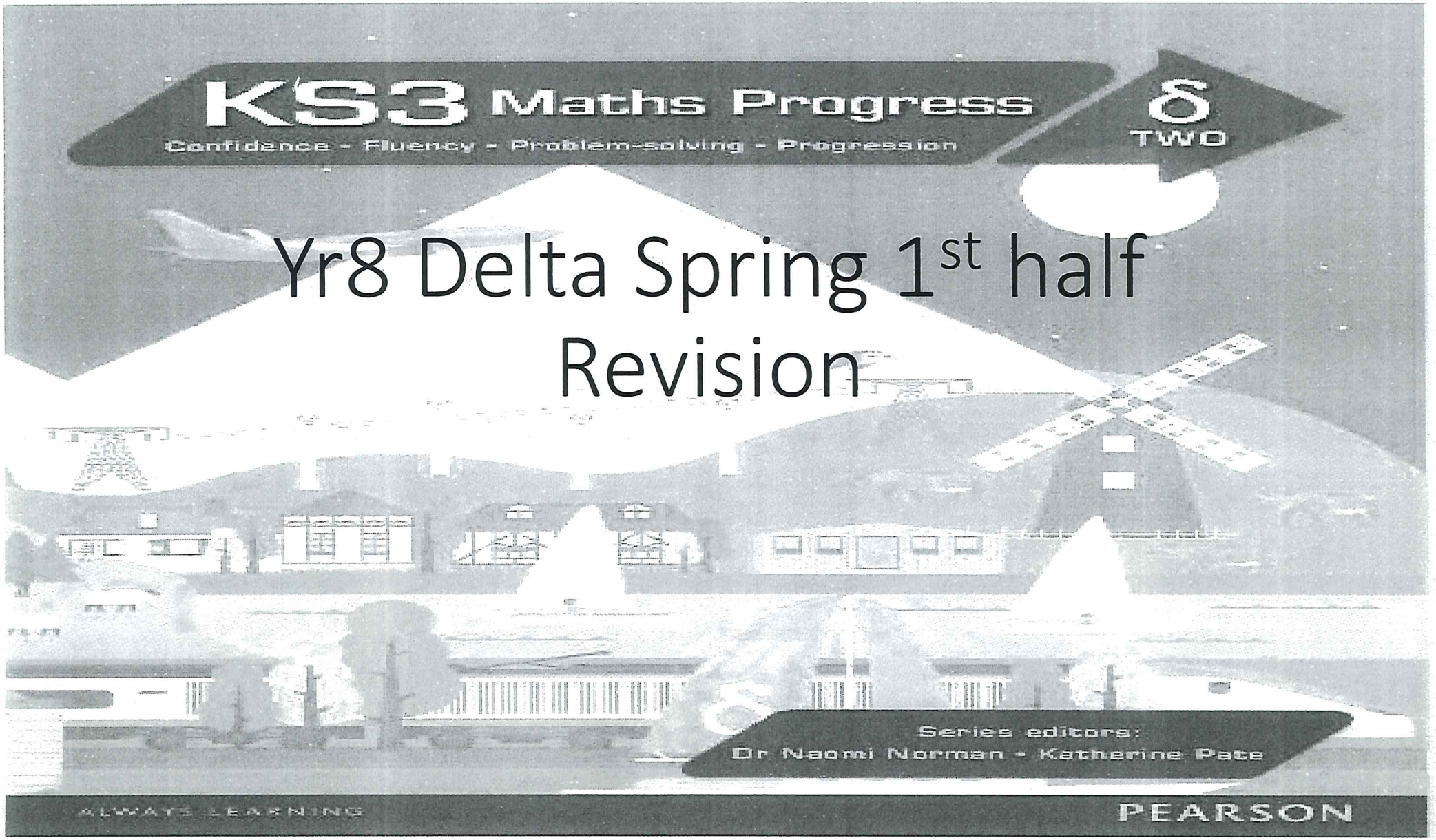
Year 8 Set 1 - 3

Delta

Test Date: Friday 19 Jan

How to revise for Maths?

- *Practise is key! Attached you will find some questions to help you do that.*
- *Once you've answered the questions – mark your work.*
- *If you get something wrong, look back on what you did and try work out where your mistake is. Unsure? Take your answers to your teacher or to Maths club on a Thursday and get help ahead of the test!*
- *Good luck!*


KS3 Maths Progress
Confidence - Fluency - Problem-solving - Progression
δ
TWO
Yr8 Delta Spring 1st half
Revision
Series editors:
Dr Naomi Norman - Katherine Pate
ALWAYS LEARNING
PEARSON

5 Strengthen

Reflection, rotation and translation

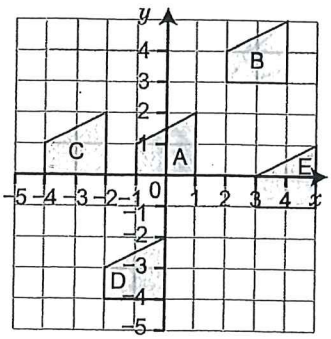
☐ **1** Describe the translation that takes

a A to B .....

b A to C .....

c A to D .....

d A to E. .....



Draw in lines from matching vertices on A to B, and count the squares up and across.

☐ **2** In each diagram the shaded shape has been reflected in a mirror line.

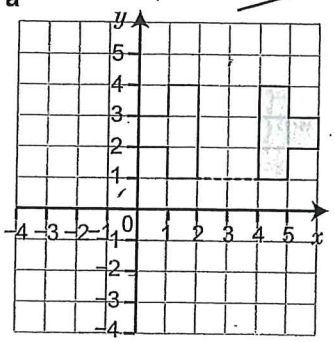
i Draw the mirror line.

ii Label the mirror line with its equation.

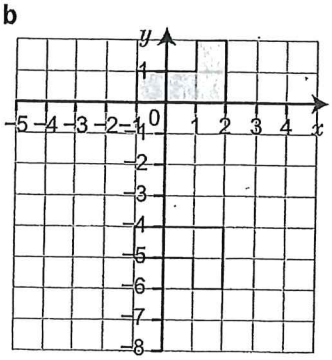
Join corresponding vertices of A and B. Mark the midpoint on the line.

Guided

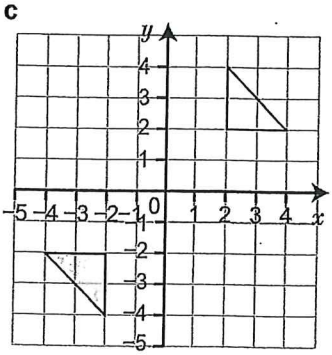
a



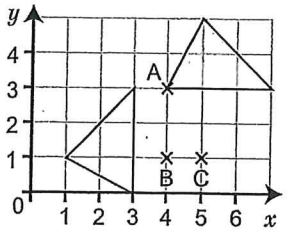
b



c



☐ **3** The shaded triangle has been rotated through 90° anticlockwise. Which of the points A, B or C is the centre of rotation? .....



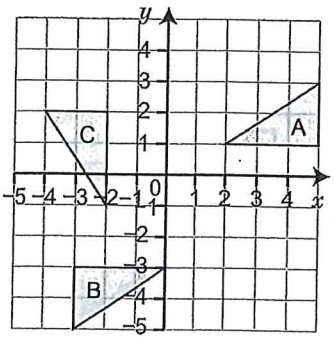
Rotation, centre (☐, ☐), ☐° anticlockwise/clockwise.

Trace the shape and put your pencil on one of the points. Rotate the tracing paper through 90° anticlockwise. Is the triangle over its image?

☐ **4** Describe the rotation that takes shape A to

a shape B

b shape C.



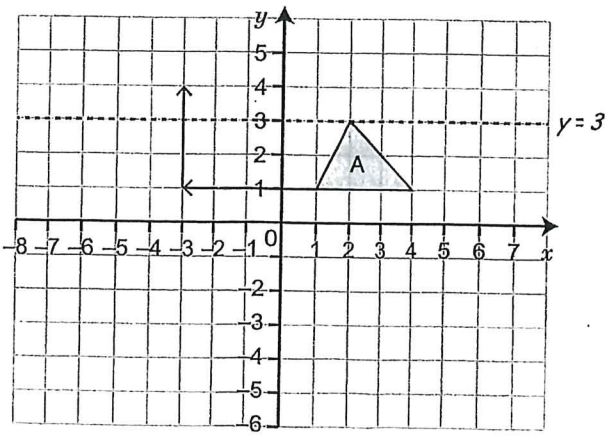
Worked example

☐ **5** Transform triangle A using these transformations.

Guided

a A translation 4 squares left and 3 squares up followed by a reflection in the line $y = 3$. Label the image B.

b A reflection in the line $y = -1$ followed by a rotation of 90° anticlockwise about (0, –3). Label the image C.



Enlargement

6 Leanne has started to enlarge the rectangle by scale factor 2 about the centre of enlargement Y.

a Work out the distances from Y to points C and D.

Guided

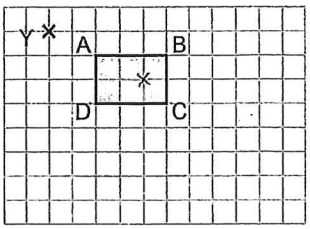
Y to A: 2 right, 1 down $\xrightarrow{\times 2}$ 4 right, ... down

Y to B: 5 right, 1 down .....

Y to C: .....

Y to D: .....

b Plot the new points and join them up.



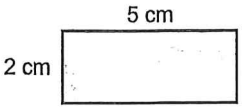
Check that the lengths on the enlargement are twice as long as on the original.

7 A rectangle is 5 cm long and 2 cm wide.
It is enlarged by scale factor 3.

a Work out

i the area of the original rectangle .....

ii the area of the enlarged rectangle. .....



b Complete the missing number: Enlarged area = original area × .....

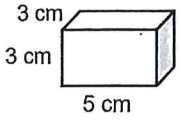
Strategy hint
Sketch the enlarged rectangle. Mark on the lengths after the enlargement.

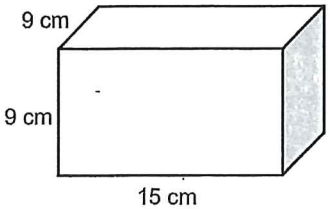
8 A cuboid is enlarged by scale factor 3.

a Work out

i the volume of the original cuboid .....

ii the volume of the enlarged cuboid. .....





b Complete the missing number:

Enlarged volume = original volume × .....

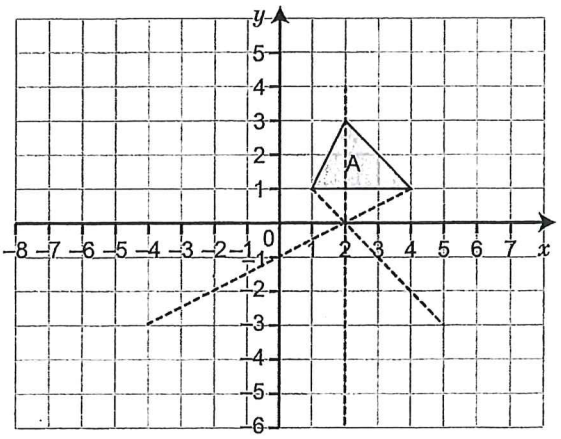
9 **a** Enlarge triangle A by scale factor –2 with centre of enlargement (2, 0). Label the image B.

b Enlarge triangle B by scale factor $\frac{1}{2}$ with centre of enlargement (6, –2). Label the image C.

Guided

Divide the base and the vertical height by 2.

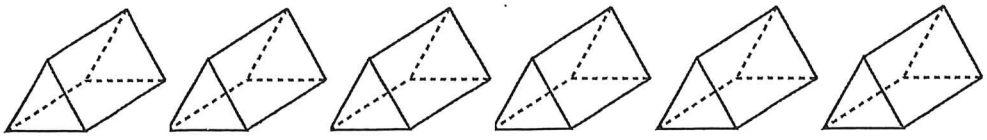
The bottom left vertex of the triangle changes to the top right vertex of the enlarged triangle.



Planes of symmetry

10 In this triangular prism the cross-section is an equilateral triangle.

How many planes of symmetry does the prism have? .....



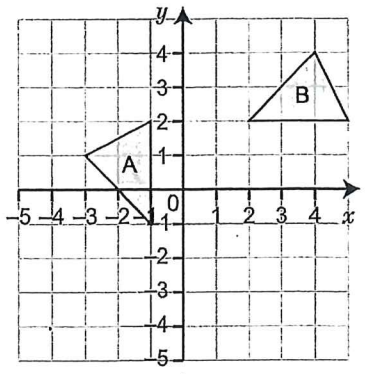
How many ways could you cut it in half? Would each half be a reflection of the other? Use the diagrams to draw the planes of symmetry.

TEST

5 Unit test

PROGRESS BAR Colour in the progress bar as you get questions correct.
Then fill in the progression chart on pages 108–111.

1 Describe fully the rotation that moves shape A to shape B.

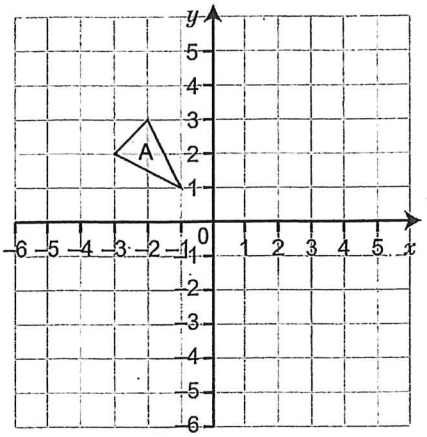


2 **a** Reflect shape A in the x-axis.
Label the image B.

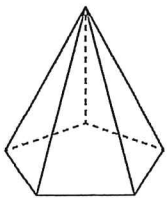
b Rotate shape B 180° about the origin.
Label the image C.

c Translate shape C by $\begin{pmatrix} 3 \\ -2 \end{pmatrix}$.
Label the image D.

d Describe the transformation that takes shape C to shape A.



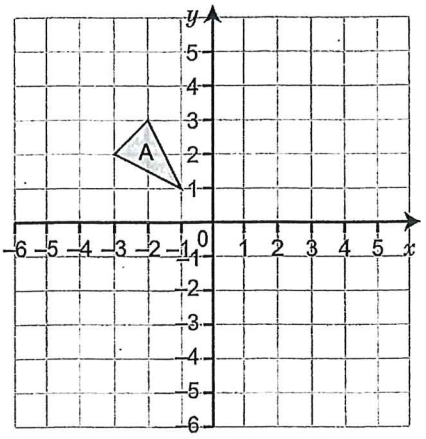
3 How many planes of symmetry does this regular pentagonal-based pyramid have? .....



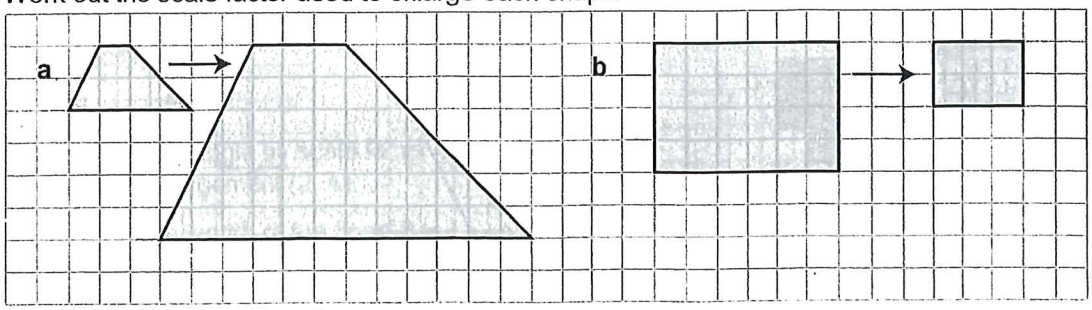
4 Enlarge shape A by

a scale factor 2, centre of enlargement (0, 0).
Label the image B.

b scale factor 3, centre of enlargement (–3, 2).
Label the image C.



5 Work out the scale factor used to enlarge each shape.



6 A marble with volume 4 cm^3 is enlarged by scale factor 2.
What is the volume of the enlarged sphere?

6 Strengthen

Recurring decimals

☐ **1** Circle the recurring decimals.

a 0.444444... **b** 0.693712... **c** 0.739739...

Is there a repeating pattern?

☐ **2** Write the first 12 decimal digits of these recurring decimals.

a $0.\dot{2}$ .....

b $0.\dot{5}\dot{8}$ .....

c $0.64\dot{1}$ .....

d $0.6\dot{4}\dot{1}$ .....

e $0.\dot{6}4\dot{1}$ .....

The digits with dots show the repeating pattern.
So $0.\dot{3}8\dot{9}$ means 0.389389389...

☐ **3** Write these recurring decimals as fractions.

a $0.\dot{1}$ **b** $0.\dot{8}$ **c** $0.\dot{3}$

Guided

$n = 0.1111...$
$10n = 1.1111...$
$10n - n = 1.1111...$
$\quad - 0.1111...$
$9n =$ .....
$n =$ .....

Worked example

☐ **4** Write these recurring decimals as fractions.

a $0.\dot{5}\dot{3}$ **b** $0.\dot{2}\dot{8}$ **c** $0.\dot{3}\dot{5}$

Guided

$n = 0.5353...$
$100n = 53.5353...$
$100n - n = 53.5353...$
$\quad - 0.5353...$
$99n =$ .....
$n =$ .....

☐ **5** Write these recurring decimals as fractions.

a $0.4\dot{7}$ **b** $0.2\dot{4}$ **c** $0.\dot{1}\dot{9}$

Guided

$n = 0.4777...$
$10n = 4.7777...$
$100n = 47.777...$
$100n - 10n = 47.777...$
$\quad - 4.777...$
$90n =$ .....
$n =$ .....

Using percentages

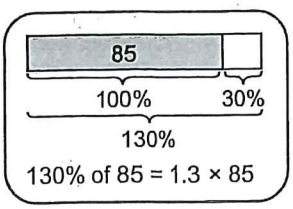
☐ **6** Convert these percentages to decimals.

a 110% ..... **b** 135% ..... **c** 60% .....

$110\% = \frac{110}{100}$

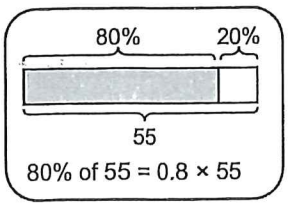
7 Find the new quantities after these percentage increases.

a Increase 85 by 30% **b** Increase 60 by 12.5%



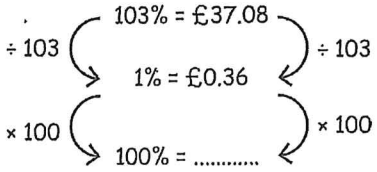
8 Find the new quantities after these percentage decreases.

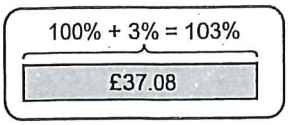
a Decrease 55 by 20% **b** Decrease 70 by 45%



9 In a department store all prices have increased by 3%.
What was the original price of a pair of jeans that now costs £37.08?

Guided





10 Work out the original prices.

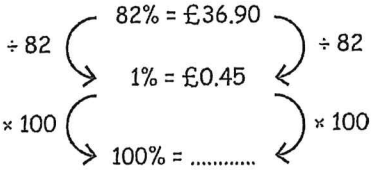
a Hair cuts have increased by 5%.
A hair cut now costs £5.25.

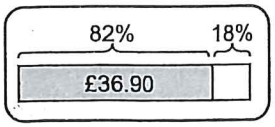
Strategy hint
Use the same method as in Q9.

b Football season tickets have increased by 8%.
A season ticket now costs £432.

11 In a sale the price of a pair of trainers has been reduced by 18% to £36.90.
Work out the original price before the sale.

Guided





12 In an electrical sale, prices have been reduced.
Work out the original prices.

a Laptops have been reduced by 5% to £319.20.

Strategy hint
Use the same method as in Q11.

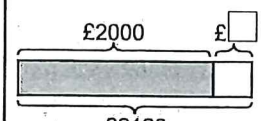
Worked example

b Kettles have been reduced by 15% to £37.40.

Percentage change

13 Simon invests £2000. After 12 months he receives £2120.

Draw the information given as a bar model.



a Calculate the percentage increase.

Original amount = £2000

Actual change = £2120 - £2000 = ...

Percentage change = $\frac{\text{actual change}}{\text{original amount}} \times 100 = \frac{.....}{£2000} \times 100 =$ .....

b Check your answer by increasing £2000 by the percentage you calculated. Do you get £2120?

14 a Work out the percentage profit made on each item.

Use the same method as in Q13.

i Bought for £15, sold for £18

ii Bought for £23, sold for £31.05

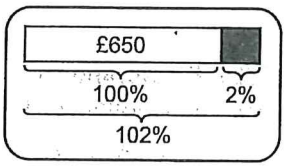
b Check your answers.

15 Work out the percentage loss made on each of these items.

a Bought for £25, sold for £23.75

b Bought for £93, sold for £68.82

16 Mohammed invests £650 in the bank at 2% compound interest per year.
He leaves all the money in the bank.
Work out the amount at the end of 1 year, 2 years and 3 years.

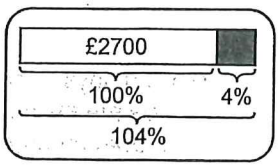


650 × 1.02 = ... end of year 1

..... × 1.02 = ... end of year 2

..... × 1.02 = ... end of year 3

17 Alina invests £2700 at 4% compound interest per year.
She leaves all the money in the bank.
How much will she have at the end of the third year?



TEST

6 Unit test

PROGRESS BAR Colour in the progress bar as you get questions correct.
Then fill in the progression chart on pages 108–111.

1 Write each fraction as a decimal.

a $\frac{2}{9}$ ..... **b** $\frac{7}{12}$ ..... **c** $\frac{5}{11}$ .....

2 Find the new value after each quantity has changed by the given percentage.

a 36 cm increased by 45% .....

b 162 kg decreased by 7.5% .....

3 The price of a smartphone is increased by 6% to £386.90.
What was the original price?

4 Write each recurring decimal as a fraction.

a $0.\dot{6}$ **b** $0.\dot{4}\dot{5}$

c $0.\dot{3}\dot{7}$ **d** $0.4\dot{7}\dot{1}$

5 Kyle's weight has decreased from 81.6 kg to 73.4 kg.
What was his percentage weight loss?

6 Rob invests £5 450 in a savings account paying compound interest of 2%.
How much money will he have in his account after 4 years?

7 The population of Wales in 2011 was 3.06 million.
Calculate the expected population of Wales in 2020 if the growth rate is 1.1% per year.

Answers : Unit 5 → Strengthen

5 Strengthen

Reflection, rotation and translation

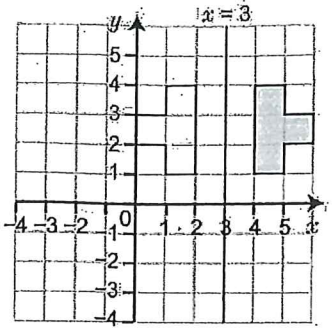
1 a 3 right, 3 up

b 3 left

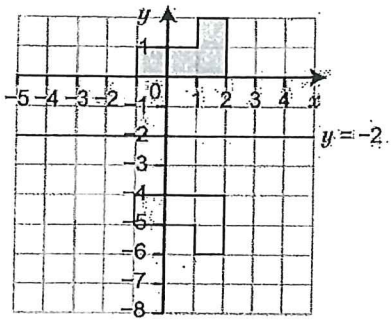
c 1 left, 4 down

d 4 right, 1 down

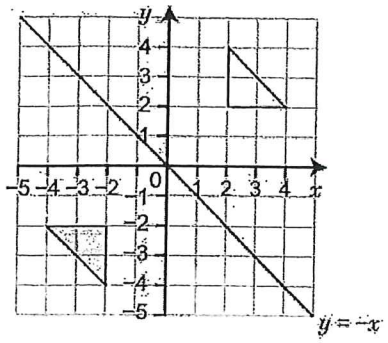
2 a



b



c

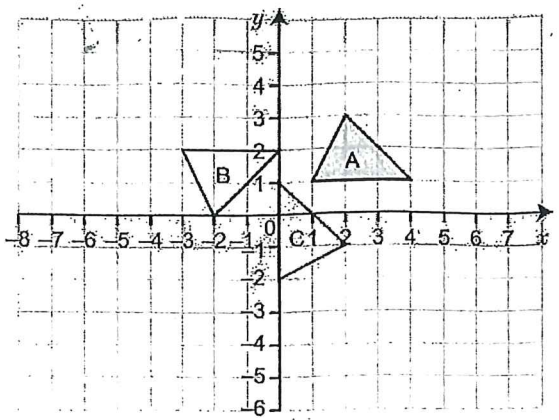


3 point C

4 a rotation, centre (1, –1), 180°

b rotation, centre (1, –2), 90° anticlockwise

5 a, b



Enlargement

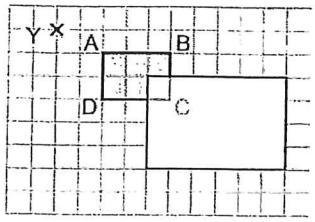
6 a Y to A: 4 right, 2 down

Y to B: 10 right, 2 down

Y to C: 10 right, 6 down

Y to D: 4 right, 2 down

b



7 a i 10 cm^2

ii 90 cm^2

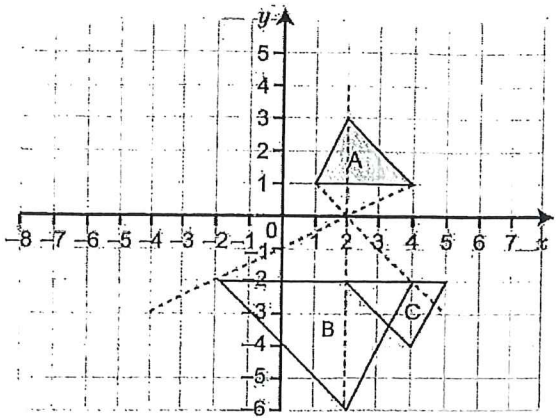
b × 9

8 a i 45 cm^3

ii 1215 cm^3

b × 27

9 a, b



Planes of symmetry

10 4 planes

Unit 6 → Test Answers

6 Unit test

1 **a** 0.222222...

b 0.58333333...

c 0.4545454545...

2 **a** 52.2 cm

b 149.85 kg

3 £365

4 **a** $\frac{2}{3}$

b $\frac{5}{11}$

c $\frac{37}{99}$

d $\frac{157}{333}$

5 10%

6 £5899.26

7 3.38 million

Unit 6 → Strengthen Answers.

6 Strengthen

Recurring decimals

1 decimals **a** and **c**

2 **a** 0.222222222222

b 0.585858585858

c 0.641111111111

d 0.641414141414

e 0.641641641641

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

b $\frac{8}{9}$

c $\frac{1}{3}$

4 **a** $\frac{53}{99}$

b $\frac{28}{99}$

c $\frac{35}{99}$

5 **a** $\frac{43}{90}$

b $\frac{11}{45}$

c $\frac{1}{5}$

Using percentages

6 **a** 1.1

b 1.35

c 0.6

7 **a** 110.5

b 67.5

8 **a** 44

b 38.5

9 £36

10 **a** £5

b £400

11 £45

12 **a** £336

b £44

Percentage change

13 **a** 6%

b Students check their own answers.

14 **a** **i** 20%

ii 35%

b Students check their own answers.

15 **a** 5%

b 26%

16 £663 at the end of year 1

£676.26 at the end of year 2

£689.79 at the end of year 3

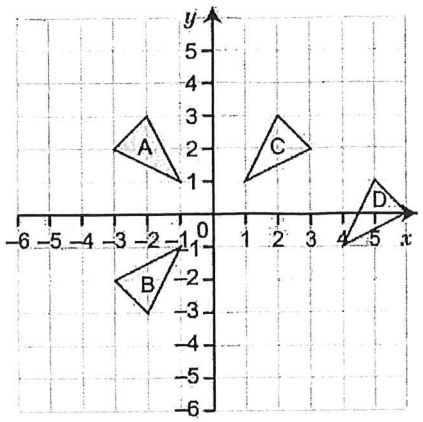
17 £3037.13

Answers → Unit 5 → Test

5 Unit test

1 rotation, 90° clockwise about (2, –1)

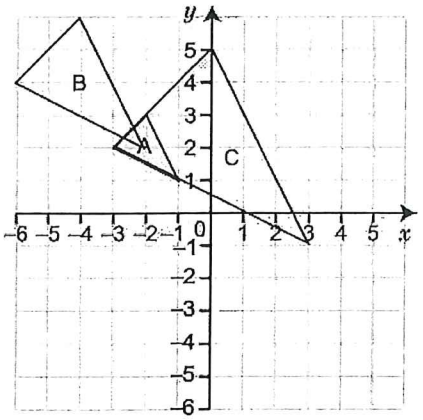
2 **a–c**



d reflection in $x = 0$ (or the y-axis)

3 5 planes

4 **a, b**



5 **a** scale factor 3

b scale factor $\frac{1}{2}$

6 32 cm^3