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Home Learning 7.1 Date Due:.....

1 a Using number lines from –5 to 15, draw mapping diagrams to illustrate the functions:

i $x \to 3x + 2$ **ii** $x \to 4x - 3$ **iii** $x \to 2x + 3$ **iv** $x \to 3x - 1$

b In each mapping diagram draw the lines from –2.5, –0.5 and 1.5

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Home Learning 7.2 Date Due:.....

What are the functions that generate the following mixed outputs from the given mixed inputs? (*Hint*: put them into order first.)

a {3, 0, 4, 1} → {9, 1, 13, –3} **b** {4, –2, 5, 0} → {13, –2, –8, 10}

c {3, –1, 4, 0} → {–2, 18, 3, 23} **d** {5, 0, –1, 6} → {35, –1, 5, 41}

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Home Learning 12.5 Date Due:.....

1 Without using a calculator, work out:

a 0.6 ÷ 0.03 **b** 0.8 ÷ 0.2 **c** 0.08 ÷ 0.1 **d** 0.8 ÷ 0.04

e 0.5 ÷ 0.01 **f** 0.08 ÷ 0.02 **g** 0.09 ÷ 0.03 **h** 0.12 ÷ 0.03

2 Without using a calculator, work out:

a 600 ÷ 0.6 **b** 800 ÷ 0.2 **c** 80 ÷ 0.08 **d** 600 ÷ 0.02

e 900 ÷ 0.03 **f** 20 ÷ 0.04 **g** 60 ÷ 0.1 **h** 900 ÷ 0.2

3 Without using a calculator, work out:

a 4.2 ÷ 20 **b** 2.8 ÷ 400 **c** 16 ÷ 400 **d** 4.5 ÷ 90

e 32 ÷ 800 **f** 80 ÷ 2000 **g** 2.1 ÷ 70 **h** 4.4 ÷ 40

Home Learning 12.4 Date Due:.....

1 Without using a calculator, write down the answer to:

a 0.5×0.7 **b** 0.5×0.2 **c** 0.8×0.8 **d** 0.9×0.3

e 0.03×0.5 **f** 0.6×0.08 **g** 0.07×0.2 **h** 0.5×0.05

2 Without using a calculator, work out:

a 200×0.06 **b** 0.07×300 **c** 0.4×400 **d** 0.03×700

e 0.02×600 **f** 0.003×800 **g** 0.006×800 **h** 0.003×7000

3 Chews cost £0.03. A sweet shop orders 50 000 chews. How much will this cost?

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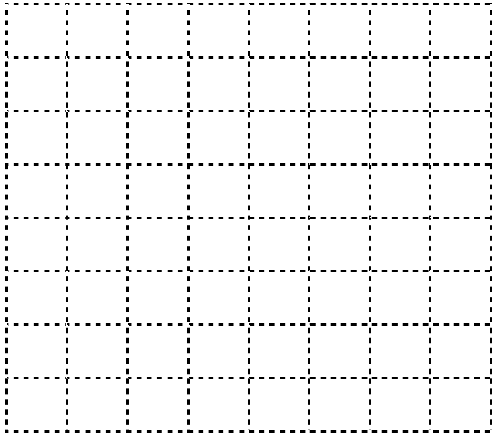
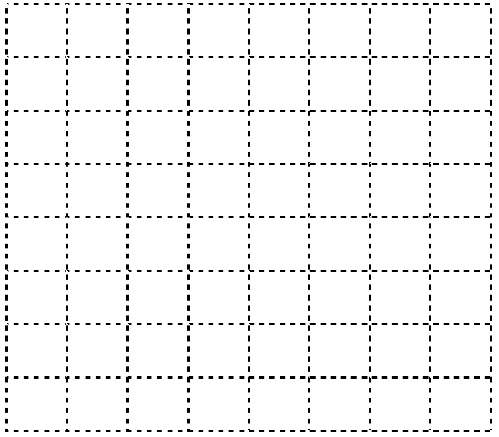
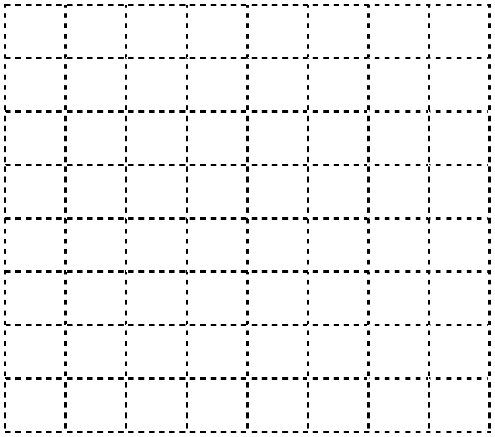
Home Learning 7.3 Date Due:.....

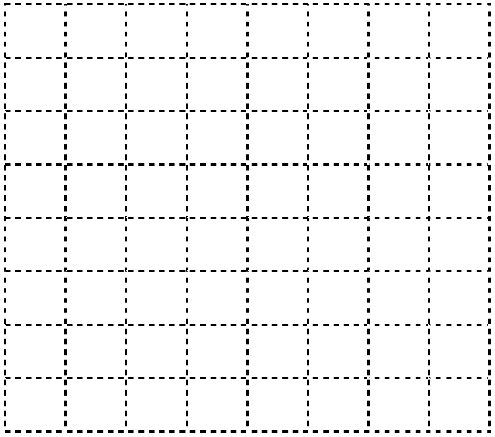
Draw the graphs of:

a $y = 4x + 3$ **b** $y = 4x - 1$ **c** $y = 4x + 5$ **d** $y = 4x - 3$









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Home Learning 12.3 Date Due:.....

1 Write the operation that you do first in each of these calculations, and then work out each one:

a $6 + 2 \times 3$ **b** $(6 + 2) \times 3$ **c** $6 \times 7 - 5$ **d** $6 \times (7 - 5)$

2 Work out the following, showing each step of the calculation:

a $32 \div 4 + 4^2$ **b** $32 \div (4 + 4)^2$ **c** $2 \times 3 + 2^2$ **d** $2 \times (3 + 2)^2$

e $\frac{100}{2 \times 4}$ **f** $\frac{90 - 30}{3 \times 5}$ **g** $\sqrt{(13^2 - 5^2)}$ **h** $\frac{(3 + 3)^2}{3 - 1}$

3 Write out each of the following with brackets to make the calculation true:

a $2 \times 9 - 1 = 16$ **b** $5 + 3 \times 2 = 16$ **c** $2 + 3 \times 1 + 4 = 25$

4 Work out the following (do the inside bracket first):

a $150 \div [20 - (3 + 2)]$ **b** $150 \div [(25 - 3) - 2]$ **c** $3 + [7 \times (4 - 1)]$

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Home Learning 12.2 Date Due:.....

1 Convert the following fractions to equivalent fractions with a common denominator, and then work out the answer, cancelling down or writing as a mixed number, as appropriate:

a $\frac{1}{3}+\frac{1}{2}$ **b** $\frac{1}{7}+\frac{1}{4}$ **c** $\frac{3}{5}+\frac{3}{4}$ **d** $\frac{4}{10}+\frac{2}{5}$ **e** $\frac{4}{15}+\frac{2}{5}$ **f** $\frac{1}{8}+\frac{1}{6}$ **g** $\frac{5}{12}+\frac{2}{3}$

h $\frac{1}{8}+\frac{1}{3}+\frac{1}{2}$ **i** $\frac{1}{2}-\frac{1}{3}$ **j** $\frac{2}{7}-\frac{1}{3}$ **k** $\frac{2}{5}-\frac{1}{4}$ **l** $\frac{7}{10}-\frac{1}{6}$ **m** $\frac{11}{15}-\frac{2}{5}$ **n** $\frac{3}{8}-\frac{1}{6}$

o $\frac{5}{12}-\frac{1}{4}$ **p** $\frac{5}{8}+\frac{2}{5}-\frac{1}{2}$

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Home Learning 7.4 Date Due:.....

Find four functions with graphs that pass through the point (–1, 1).

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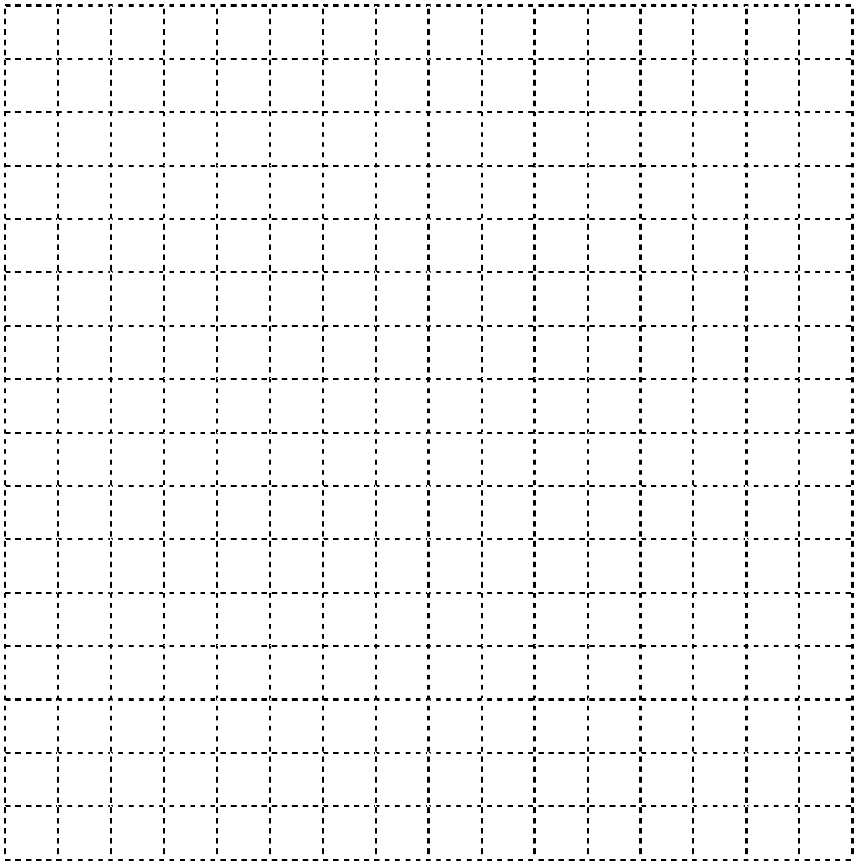
Home Learning 7.5 Date Due:.....

Dean drove from home at an average speed of 40 km/h for 2 hours. He stopped for 40 minutes to pick up Helen, and then set off back home at an average speed of 60 km/h:

a Draw a travel graph to illustrate this journey.

b How long did the journey take Dean?



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Home Learning 12.1 Date Due:.....

1 Write these fractions as mixed numbers (cancel down if necessary):

a nine sixths **b** fourteen thirds **c** twelve sevenths **d** thirteen halves

e $\frac{22}{6}$ **f** $\frac{14}{3}$ **g** $\frac{31}{3}$ **h** $\frac{22}{7}$

2 **a** Write the fraction of a full turn that the minute hand of a clock goes through from:
i 8:15 to 9:45 **ii** 9:25 to 11:10 **iii** 7:12 to 9:36

b Write the fraction of a metre given by: **i** 675 cm **ii** 4225 mm **iii** 310 cm

c Write the fraction of a kilogram given by: **i** 3300 g **ii** 4450 g **iii** 8500 g

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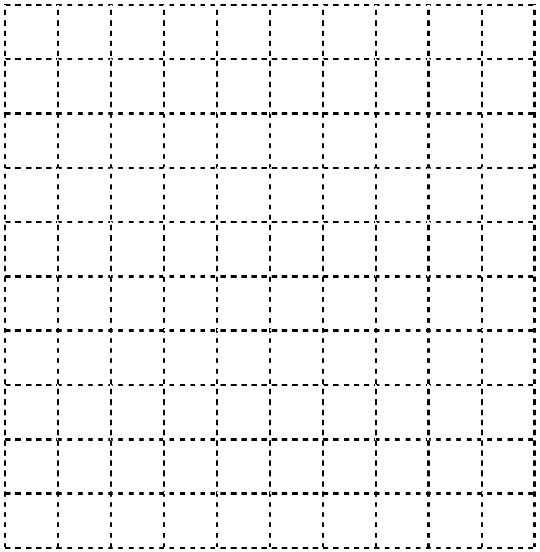

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Home Learning 8.1 Date Due:.....

1 Round these numbers to **i** one decimal place, and **ii** two decimal places:

a 2.478 **b** 6.089 **c** 2.997

2 Write down the answers to:

a 4.8×10 **b** 0.56×10^2 **c** 7.92×10^3 **d** $21 \div 10^3$ **e** $214 \div 10^2$

f $876 \div 10^3$ **g** 0.007×10^2 **h** $57 \div 10^2$

3 Multiply these numbers by **i** 0.1, and **ii** 0.01:

a 7.9 **b** 652

4 Divide these numbers by **i** 0.1, and **ii** 0.01:

a 0.5 **b** 85

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Home Learning 8.2 Date Due:.....

1 Write the following numbers in words:

a 5 504 055 **b** 3 089 089

2 Write the following numbers using figures:

a Two million, one hundred and three thousand, one hundred and six.

b Eight million, six hundred and seventy thousand and eighty one.

3 Round off the following numbers to **i** the nearest ten thousand, **ii** the nearest hundred thousand and **iii** the nearest million:

a 2 578 913 **b** 7 908 688

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Home Learning 11.4 Date Due:.....

1 The test results of 10 pupils are recorded for Maths and Science.

Pupil	1	2	3	4	5	6	7	8	9	10
Maths	50	62	24	35	85	38	42	75	90	56
Science	43	65	18	30	90	38	48	82	95	60

a Plot the results on a scatter graph:

Take the x-axis as the Maths result from 0 to 100;

Take the y-axis as the Science result from 0 to 100.

b Describe in words what the graph tells you.

2 The table shows the cost of CDs in a record shop sale and the number sold in one day.

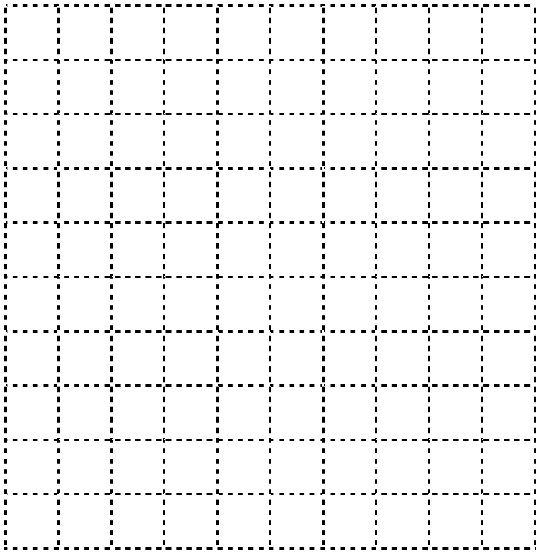
CD	A	B	C	D	E	F	G	H	I	J
Cost	£8	£12	£14	£10	£12	£9	£8	£10	£13	£12
Number sold	20	12	8	15	10	18	18	13	7	8

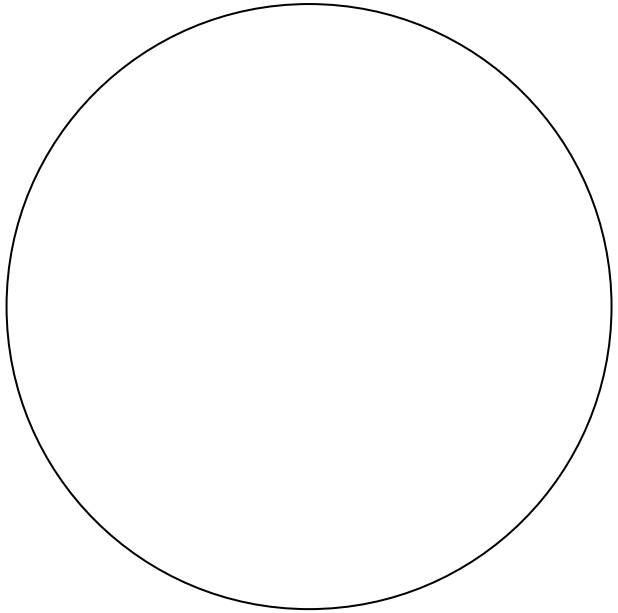
a Plot the results on a scatter graph:

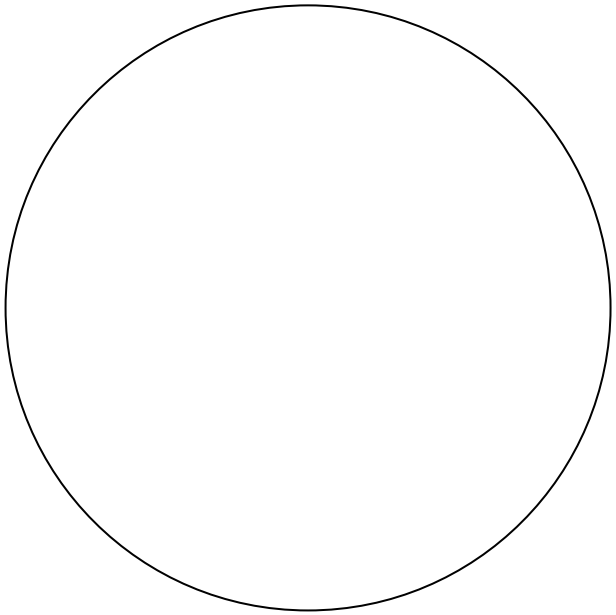
Take the x-axis as the Cost from £0 to £20;

Take the y-axis as the Number sold from 0 to 25.

b Describe in words what the graph tells you.







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Home Learning 8.3 Date Due:.....

1 Estimate the answers to:

a 18% of 288 **b** $\sqrt{60}$ **c** 5.6^2 **d** 193×52

e $\frac{29.3 - 15.2}{12.7 + 7.6}$ **f** $\frac{228 \times 12}{24}$ **g** $\frac{42.1 \times 7.5}{19.1 \times 15.8}$ **h** $\frac{9.3^2}{14.9 - 6.8}$

2 Pick out the answer that is the most appropriate for the calculation shown and justify your choice:

a $\sqrt{80}$ (possible answers 7.9, 8.9, 9) **b** 29×37 (possible answers 1073, 1703, 3073)

c 48×0.51 (possible answers 23, 25, 27) **d** $3.2 \div 0.001$ (possible answers 30, 300, 3000)

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Home Learning 8.4 Date Due:.....

1 Work out the following:

a 1.89 + 32.407 + 601.2

b 6.5 + 5 + 12.04 + 2.184

c 16.23 + 12.39 – 11.18

d 51.3 + 18.2 – 28.615

e 20.07 + 3.4 – 12.35 – 9.92 + 5.8

2 In an experiment, a beaker of water has a mass of 1.256 kg. The beaker alone weighs 0.135 kg. What is the mass of water in the beaker?

3 A rectangle is 1.76 m by 39 cm. What is its perimeter?

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Home Learning 11.3 Date Due:.....

Draw pie charts to represent the following data:

a The favourite TV programme of 30 adults

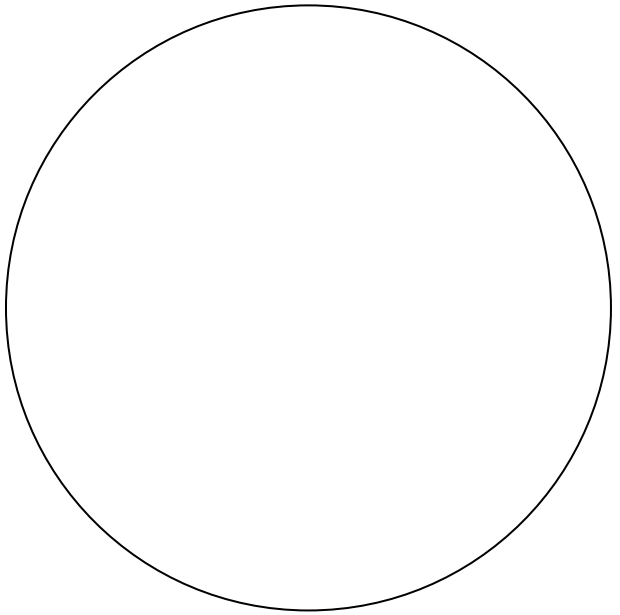
Subject	News	Soaps	Documentaries	Drama
Frequency	8	12	6	4

b The ages of 60 teachers in a school

Age (years)	21–30	31–40	41–50	51–60	Over 60
Frequency	11	19	17	8	5

c The favourite hobbies of 24 pupils

Hobby	Sport	Computing	Games console	Music	Other
Frequency	4	5	8	5	2



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Home Learning 8.5 Date Due:.....

1 Use the fraction key on your calculator to work out each of these (give your answer as a mixed number or a fraction in its simplest form):

a $\frac{1}{4} + \frac{2}{3} + \frac{5}{6}$ **b** $1\frac{2}{3} + 1\frac{1}{8} - \frac{5}{12}$ **c** $\frac{1}{5} \times \frac{2}{9} \div 1\frac{1}{3}$

d $(1\frac{3}{5} + 1\frac{1}{2}) \div \frac{11}{15}$ **e** $\dfrac{2\frac{2}{3} - 1\frac{1}{4}}{1\frac{1}{2} + 1\frac{1}{8}}$

2 Use the power key and/or the cube/cube-root key on your calculator to work out each of these:

a 2^7 **b** 3.2^3 **c** $\sqrt[3]{2197}$ **d** $\sqrt{3^2 + 2^3}$

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Home Learning 8.6 Date Due:.....

1 Without using a calculator, and using any method you are happy with, work out:

a 5.4×6.8 **b** 3.82×5.5

2 Without using a calculator, and using any method you are happy with, work out:

a $50.4 \div 18$ **b** $153 \div 3.4$

3 Exercise books cost £0.78 each. How much will 88 exercise books cost?

4 Geometry sets cost £1.20 each. How many can be bought for £114?

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Home Learning 11.2 Date Due:.....

1 Put the following sets of data into stem-and-leaf diagrams. Remember to give a key. In each case write down the range, the mode and the median.

a

22	45	36	32	32	33	27	42	41
37	29	31	34	30	44	42	29	30
44	32	25	26	32	29	41	22	32

b

72	91	83	77	92	92	84
83	70	77	87	95	77	94
91	78	85	93	77	78	87.

c

3	14	25	36	6	31	22	27	8	4	4	26
21	25	4	25	32	5	4	27	23	23	28	33
38	4	30	10	31	11	29	34	4	34	24	29

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Home Learning 10.6 Date Due:.....

1 Using the letters suggested, construct a simple formula in each case:

a The sum, S, of four numbers a, b, c and d. **b** The product, P, of two numbers A and B.

c The sum, S, of five consecutive integers.

2 Give the number of hours in: **a** 4 days **b** d days

3 A boy is now 15 years old.

a How many years old he will be in: **i** 6 years **ii** t years?

b How many years old was he: **i** 7 years ago **ii** n years ago?

4 A train is travelling at an average speed of 50 mph. Give how many miles it will travel in:

a 3 hours **b** t hours

5 Give how many metres there are in: **a** 7 km **b** y km

6 How many seconds are there in t minutes?

7 Write down the number that is a quarter of M.

8 Write down the number that is three times as big as K.

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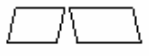
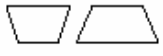
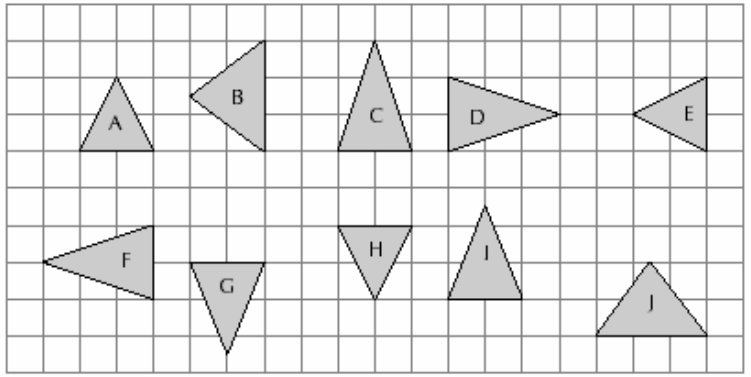
Home Learning 9.1 Date Due:.....

1 For each pair of shapes below, state whether they are congruent or not:

a  **b** **c**  **d** **e**

2 Which of the isosceles triangles on the grid below are congruent?



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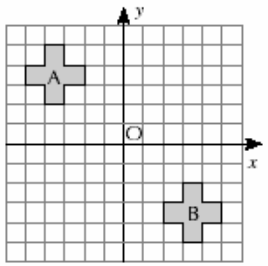
Home Learning 9.2 Date Due:.....



Find three different combinations of two transformations that will map shape A onto shape B.

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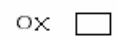
Home Learning 9.3/4 Date Due:.....

1 Draw copies of the shapes shown and enlarge each one by the given scale factor about the centre of enlargement O:

a Scale factor 2



b Scale factor 3

c Scale factor 2

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Home Learning 10.5 Date Due:.....

1 If $M = DV$, find M when **i** $D = 2$ and $V = 150$ **ii** $D = 2.6$ and $V = 200$

2 If $A = 4rh$, find A when **i** $r = 15$ and $h = 5$ **ii** $r = 1.5$ and $h = 16$

3 If $n = \frac{A + 360}{180}$, find n when **i** $A = 540$ **ii** $A = 720$

4 If $U = v - ft$, find U when **i** $v = 80$, $f = 32$ and $t = 2$ **ii** $v = 120$, $f = 15$ and $t = 6$

5 If $L = \frac{A}{B}$, find L when **i** $A = 36$ and $B = 4$ **ii** $A = 10$ and $B = 2.5$

6 $T = \frac{P(q - r)}{2}$, find T when **i** $P = 14$, $q = 19$ and $r = 11$ **ii** $P = 8.1$, $q = 17.5$ and $b = 8.5$

7 $Q = w(k^2 + g^2)$, find Q when **i** $w = 16$, $k = 4$ and $g = 3$ **ii** $w = 8$, $k = 5$ and $g = 10$

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Home Learning 10.4 Date Due:.....

1 If $a = 3$ and $b = 5$ find the value of each of the following.

a $2a + b$ **b** $3a - b$ **c** $2(b + 3a)$ **d** $4(2b - a)$

2 If $c = 7$ and $d = -1$ find the value of each of the following.

a $5c + d$ **b** $8c - 3d$ **c** $2(4d + 5c)$ **d** $2(5c - 2d)$

3 If $e = 6$ and $f = -2$ find the value of each of the following.

a $e^2 + f^2$ **b** $e^2 - f^2$ **c** $ef + 4e^2 - 3f^2$ **d** $e(9 - f^2)$

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Home Learning 9.5 Date Due:.....

1 Express each of the following ratios in their simplest form:

a 12 cm : 16 cm **b** 40 mm : 5 cm **c** 30 cm : 1 m **d** 500 m : 2.5 km **e** 500 cm^3 : 1 l

2 Rectangle A is 6 cm by 2 cm and rectangle B is 6 cm by 8 cm. Find each of the ratios given below for the two rectangles, giving your answers in their simplest form:

a the perimeter of rectangle A to the perimeter of rectangle B.

b the area of rectangle A to the area of rectangle B.

3 A rectangle of length 12 cm and width 10 cm has a black square of edge length 2 cm in each corner (four black squares in total). If the four black squares are cut off the rectangle, find the ratio of the area of the black squares to the area of the remaining shape.

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Home Learning 10.3 Date Due:.....

1 Solve the following equations.

a $5x + 3 = 12 + 2x$ **b** $7x + 3 = 19 + 3x$ **c** $6x + 4 = 16 + 2x$ **d** $7x - 4 = 11 + 2x$

e $6x - 5 = 19 + 2x$ **f** $7x - 6 = 9 + 2x$ **g** $7 + 6x = 13 + 3x$ **h** $4 + 3x = 10 + 5x$

i $6 + 9x = 21 + 4x$

2 Solve the following equations.

a $3(x + 5) = 21 + x$ **b** $4(2x + 3) = 26 + x$ **c** $4(3x - 1) = 6 + 7x$

d $5x - 7 = 2(1 + x)$ **e** $8x + 9 = 3(5 + 2x)$ **f** $7x - 2 = 2(1 + 3x)$

g $2(4x + 7) = 3(8 + x)$ **h** $3(8 + 3x) = 4(7 + 2x)$ **i** $2(5x - 6) = 4(3 + x)$

Home Learning 10.1 Date Due:.....

1 Solve the following equations.

a $2x + 7 = 13$ **b** $3x - 8 = 10$ **c** $2y + 5 = 19$ **d** $3s - 7 = 17$

e $4f + 5 = 13$ **f** $5q - 4 = 16$ **g** $4p + 7 = 39$ **h** $5t - 3 = 12$

2 Solve the following equations.

a $19 - 2t = 7$ **b** $13 - 3x = 4$ **c** $17 - 4v = 5$ **d** $39 - 5z = 4$

e $15 - 4g = 3$ **f** $19 - 2x = 5$ **g** $26 - 3f = 8$ **h** $11 - 5k = 1$

3 Solve the following equations.

a $2(5x + 3) = 26$ **b** $4(3x - 1) = 44$ **c** $5(2j + 3) = 35$ **d** $4(4w + 5) = 36$

e $6(5q - 5) = 30$ **f** $10(4m - 9) = 30$

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Home Learning 10.2 Date Due:.....

1 Solve the following equations.

a $3x + 4 = -11$ **b** $4x - 3 = -15$ **c** $3x + 5 = -13$ **d** $2x - 7 = -13$

e $4x + 5 = -15$ **f** $2x - 5 = -1$ **g** $2x + 7 = -37$ **h** $3x - 7 = -10$

2 Solve the following equations.

a $19 - 2x = 13$ **b** $11 - 3x = 17$ **c** $13 - 4x = 29$ **d** $27 - 5x = 12$

e $17 - 4p = 5$ **f** $17 - 2r = 21$ **g** $25 - 3t = 31$ **h** $19 - 5m = 34$

3 Solve the following equations.

a $2(2x + 8) = 8$ **b** $4(3x - 1) = -16$ **c** $5(4x + 13) = 25$ **d** $4(3q + 7) = 4$

e $6(2g - 5) = -66$ **f** $10(3y + 19) = 70$

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