END-OF-YEAR-EXAMINATIONS

**YEAR 1 MATHEMATICS
MATHS FRAMEWORKING BOOKS 1.3 & 2.3**

Time allowed: 2 hours

Instructions to candidates

In the boxes below write your name, surname and form.
Answer the questions in the spaces provided.
Without sufficient working, correct answers may be awarded no marks.

Information to candidates

This paper has 27 questions.
There are 14 pages in this question paper.
Full marks may be obtained for answers to all questions.
The total marks for this paper is 120.
The marks for each question is shown in round brackets, e.g. **(2)**

Calculators are not allowed.

Advice for candidates

Write your answers neatly and in good English.
Work steadily through the paper.
Do not spend too long on one question.
Show all stages in any calculations.

Materials required for the paper

Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.
Tracing paper may be used.

1. Calculate the following, showing clearly all your workings:

a) $-16 \div (-8) - 7 =$

....
(1)

b) $(-7+5)^3 \times (8-11)^2 =$

....
(2)

c) $6 \div \frac{3}{8} - (2\frac{1}{5} - \frac{2}{3}) =$

....
(3)
(6 marks)

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2. Round the following numbers to the specified accuracy:

Number	Nearest whole number	2 decimal places	Nearest ten thousand
14 374. 0909			
97 001. 9099			

(3 marks)

3.

$$3,1,-1,-3,-5,...$$

a) Find the nth term of the above sequence.

……………….
(2)

b) Find the 150th term of the sequence.

……………….
(1)

c) Which term gives a value of -97 ?

……………….
(2)
(5 marks)

1

4. Expand and simplify the following expressions:

a) $5 + 3(2x - 10) - (x - 10) =$

....
(2)

b) $20 - a(8a + 4) - 2(4a^2 - a) =$

....
(2)
(4 marks)

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5. Evaluate the expression below for the values given:

$$6(a - 2b) - c^2$$

When

a) $a = 3, b = 4$ and $c = 5$

....
(2)

b) $a = -2, b = -3$ and $c = -7$

....
(2)
(4 marks)

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6. Calculate the following:

a) $9.23 \div 0.1$

....
(1)

b) $0.01 \div 100$

....
(1)

c) $9.23 \div 0.1^2$

....
(1)
(3 marks)

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7. Solve the following equations, giving your answers as mixed numbers where appropriate:

a) $10 - 2x = 5x + 3$

$x =$ …………………..
(1)

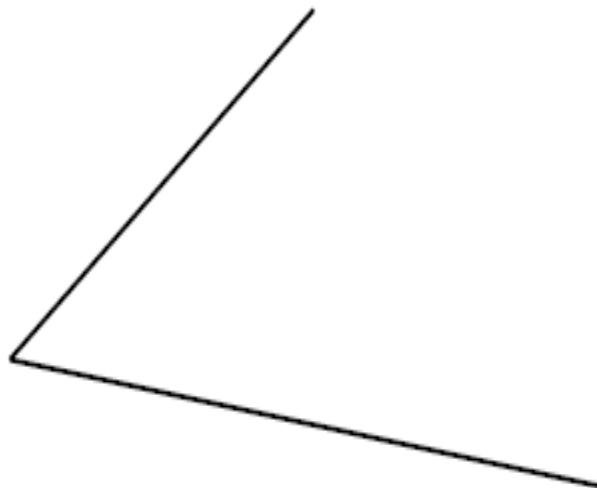b) $3(x+1) = 9(x-4)$

$x =$ …………………..
(2)

c) $\dfrac{3x+2}{2x+8} = 2$

$x =$ …………………..
(2)
(5 marks)

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8. Use ruler and compasses to **construct** the bisector of this angle.
You must show all your construction lines.

(2 marks)

3

9.

12 cm

D ——————— *A*

12 cm

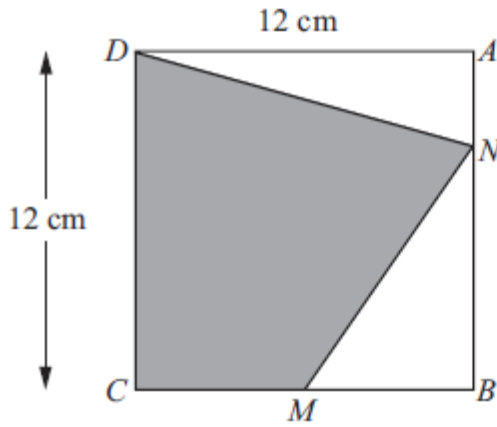*C* ——— *B*
    M

12 cm

N

Diagram NOT accurately drawn

ABCD is a square of side 12 cm. *M* is the midpoint of *CB*.

N is a point on *AB*. $AN = \frac{1}{4}AB$.

Calculate the area of the shaded region *CDNM*.

.... cm^2

(4 marks)

10. $A = 5x - hx^2$

Find A when:

(a) $h = 3, and\ x = 4.$

....

(2)

(b) $h = -2, and\ x = -10.$

....

(2)

(3 marks)

11. Put the following numbers in order from smallest to largest:

450g, 0.95kg, 0.09kg, 55g

....
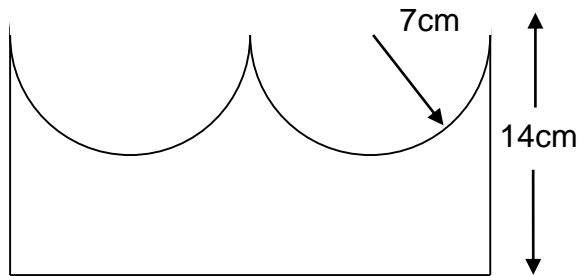
(3 marks)

4

12. The numbers in two bricks which are side by side are added together. The answer is written in the brick above.
   a.   Write down expressions in x to complete the wall.
   b.   Form an equation in x and solve it to find x.

```
          ┌──────────────┐
          │      53      │
      ┌───┴───┐      ┌───┴───┐
      │       │      │       │
  ┌───┴───────┼──────┼───────┴───┐
  │     7     │   x  │     4     │
  └───────────┴──────┴───────────┘
```
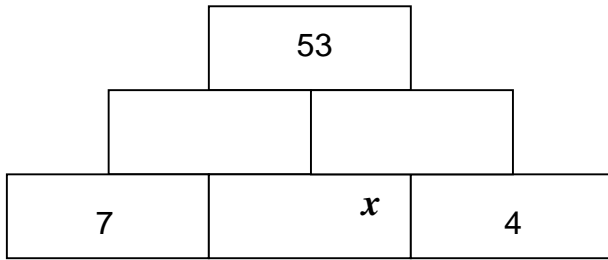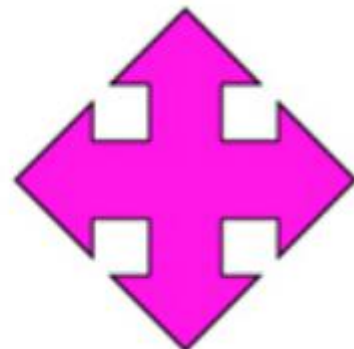
$x =$ ....

(5 marks)

13. You are shown the cross section of a prism. The radius of the semi-circles is 7cm. Calculate the volume of the prism, given that the prism is 20cm long. Take $\pi = \frac{22}{7}$.

7cm

14cm

....
(4 marks)

14. Write down how many lines of rotational symmetry and the order of rotational symmetry each shape has.
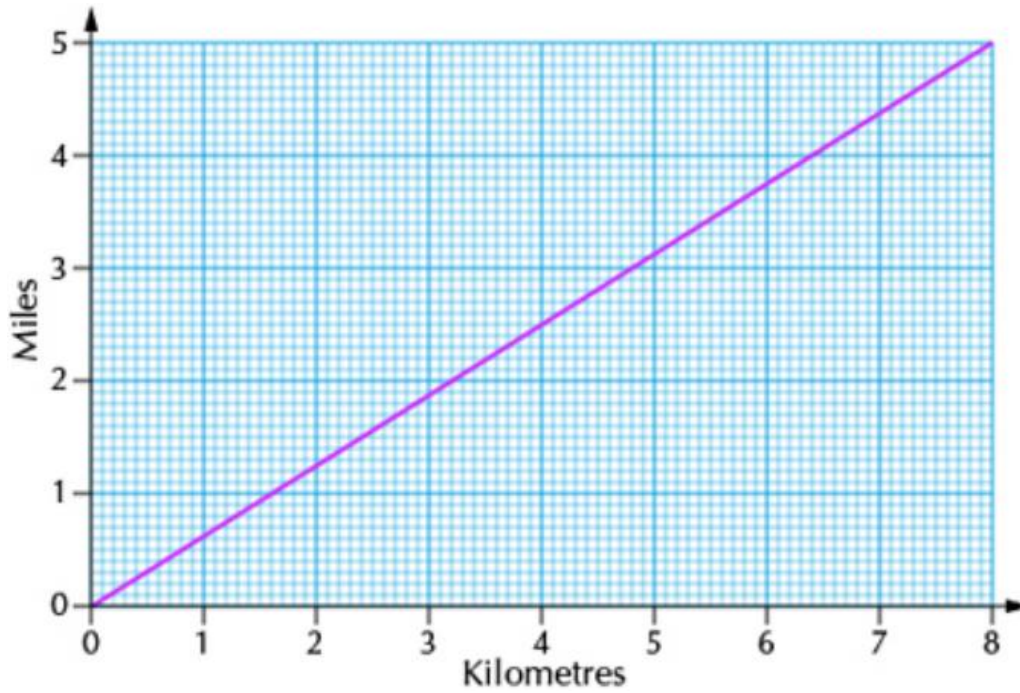
Lines of symmetry: …………..   ……………..

Order of rotational symmetry: …………..   ……………..

(4 marks)

5

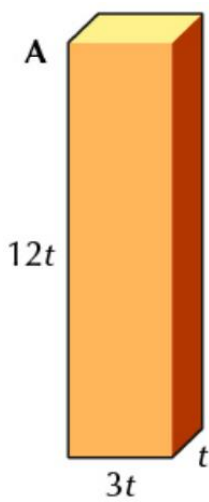**15.** The graph below is a kilometer-mile conversion graph.
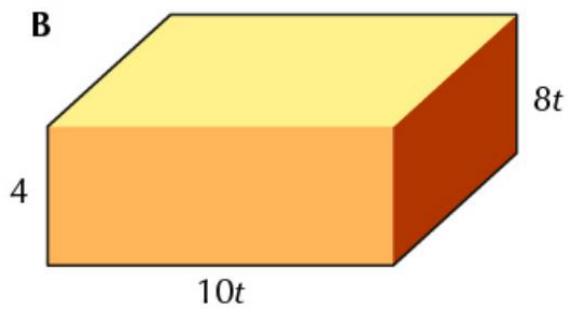

a. How many miles is

    i. 2 kilometres?

    ii. 7 kilometres?

b. How many kilometres is

    i. 10 miles?

(**3 marks**)

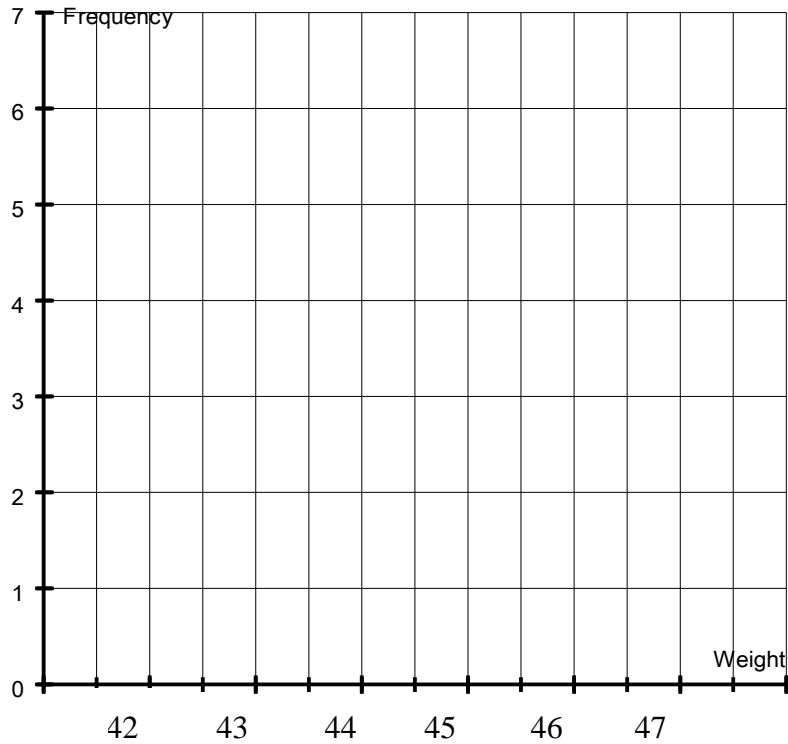**16.** Write the volume of each shape below in a simplified index form.

Volume = …………..

Volume = …………..

:

(**4 marks**)

17. The following table shows the weights of 18 students in 2Y.

Weight (Kg)	Frequency
42	2
43	3
44	5
45	3
46	4
47	1

a)   Draw a frequency diagram to show this information.

(2)

b) What is the range of the data?

....
(1)

c) Write down the modal weight.

....
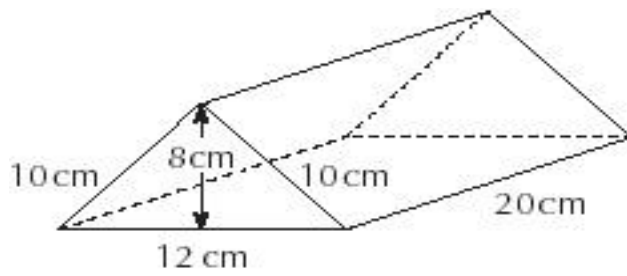(1)

d) Find the median weight.

…………………..
(2)

e) Find the mean weight, correct to 1 decimal place.

…………………..
(3)
(9 marks)

18.

Calculate

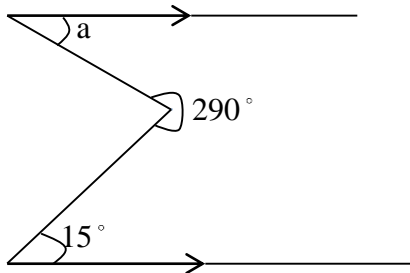a) The total surface area of the above prism, giving your answer in cm^2.

…………… cm^2

(3)

b) The Volume of the above prism, giving your answer in m^3.
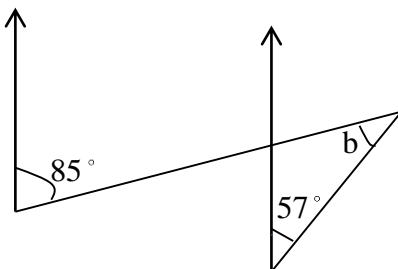
..…………… m^3

(2)

(5 marks)

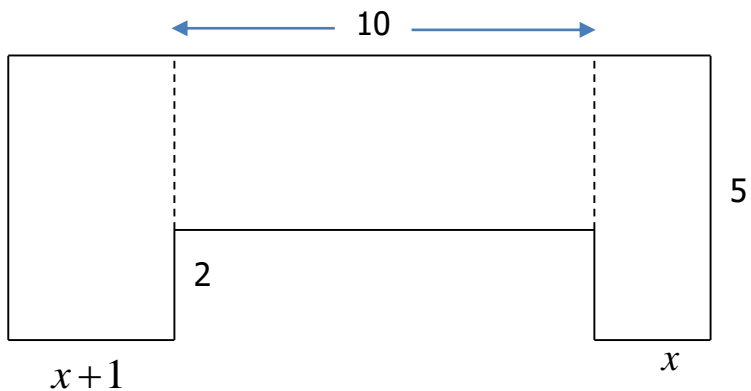**19.** Calculate the unknown angles in the following diagrams.

a)

a = …………………

(2)

b)

b = ………………..

(2)

(4 marks)

20. The diagram below shows a shape split into three rectangles.

Find:
a) The perimeter,

....
(4)

b) Write your answer in part a) in the form 4(……..)

....
(1)

c) The area in terms of x.

....
(3)

d) Write your answer in part c) in the form 5(……..)

....
(3)

(7 marks)

21. AD and BC are parallel AE=ED.
$\angle EAB = 140^o$. D lies on EC.

Diagram not drawn to scale.
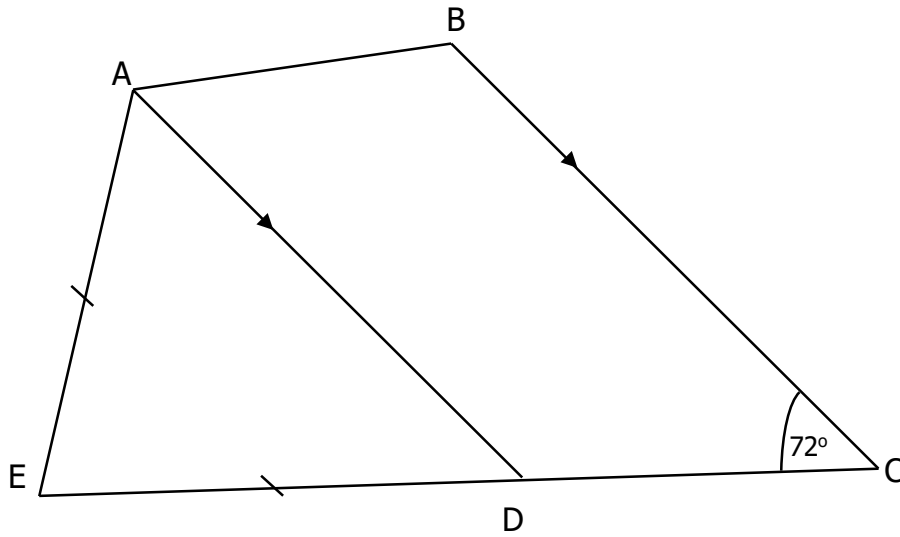
Find the size of:

a) $\angle ADC$

....
(1)

b) $\angle ADE$

....
(1)

c) $\angle AED$

....
(1)

d) $\angle BAD$

....
(1)

e) $\angle ABC$

....
(1)
(**5 marks**)

22. The area of a circle is 9π cm². Find:

    a) the diameter,

                                      ....

                                        (3)

    b) the circumference in terms of π .

                                        ....

                                        (2)

                                        (5 marks)

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23. Find the values of x, y and z.
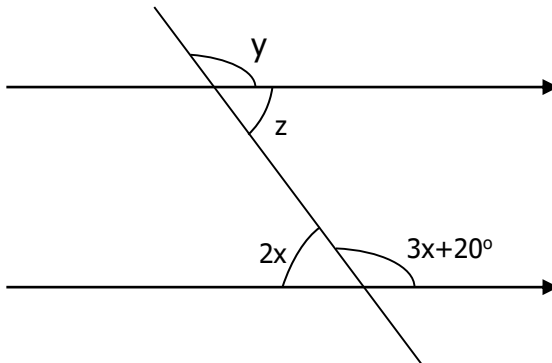
                            x=...............................

                                        (3)

                            y=...............................

                                        (1)

                            z=...............................

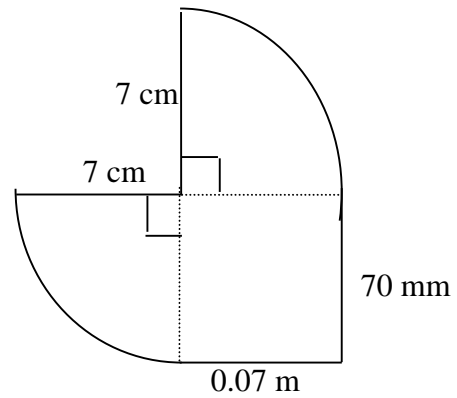   (1)

                                        (5 marks)

24. Work out the **area** of the following shape, giving your answer in cm^2.

Use $\pi = \dfrac{22}{7}$.

7 cm

7 cm

70 mm

0.07 m

...…………… cm^2

(**3 marks**)

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25. James bought 4 cups of tea and 5 buns. Each bun was 10 pence more than a cup of tea. The total cost was £5.90. Let x be the cost of a bun.

a) Write down an expression for the cost of a **cup of tea** in pence.

…………………

(1)

b) Form an equation in x using the information given above.

…………………

(1)

c) Solve the equation in **(b)** and use your answer to find the cost of a **cup of tea**.
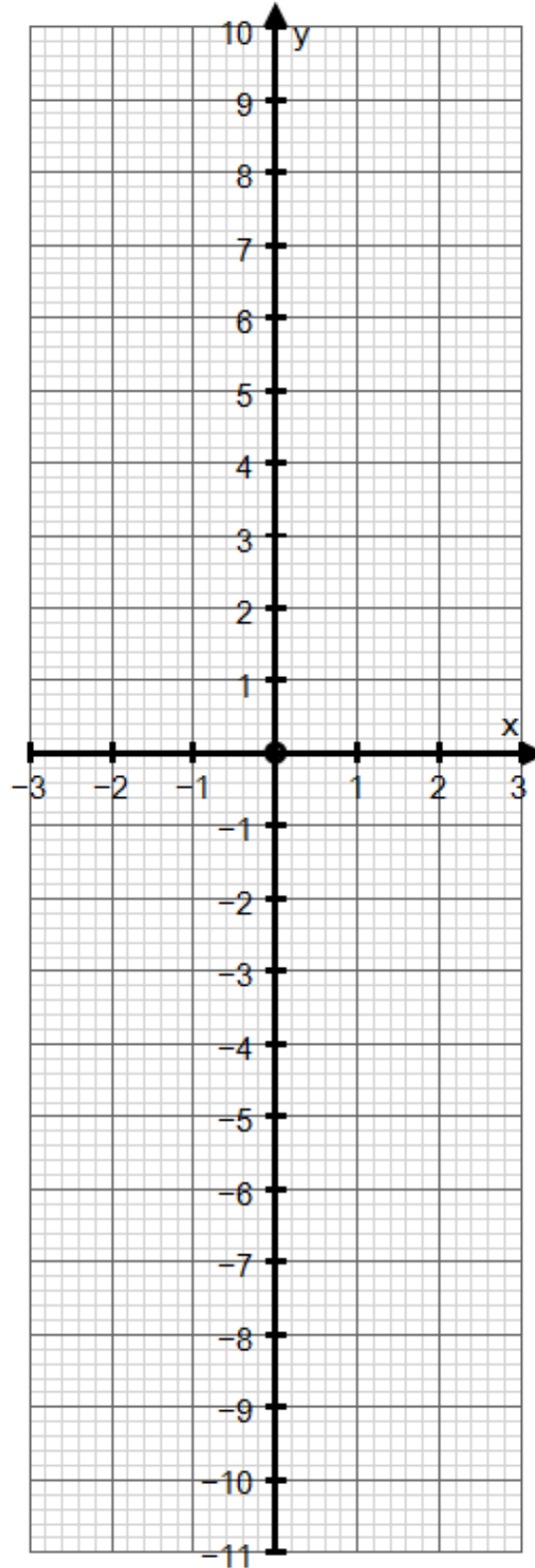
Cup of tea = £……

(3)

(**5 marks**)

26. a) Complete the table of values for $y = 4x - 3$

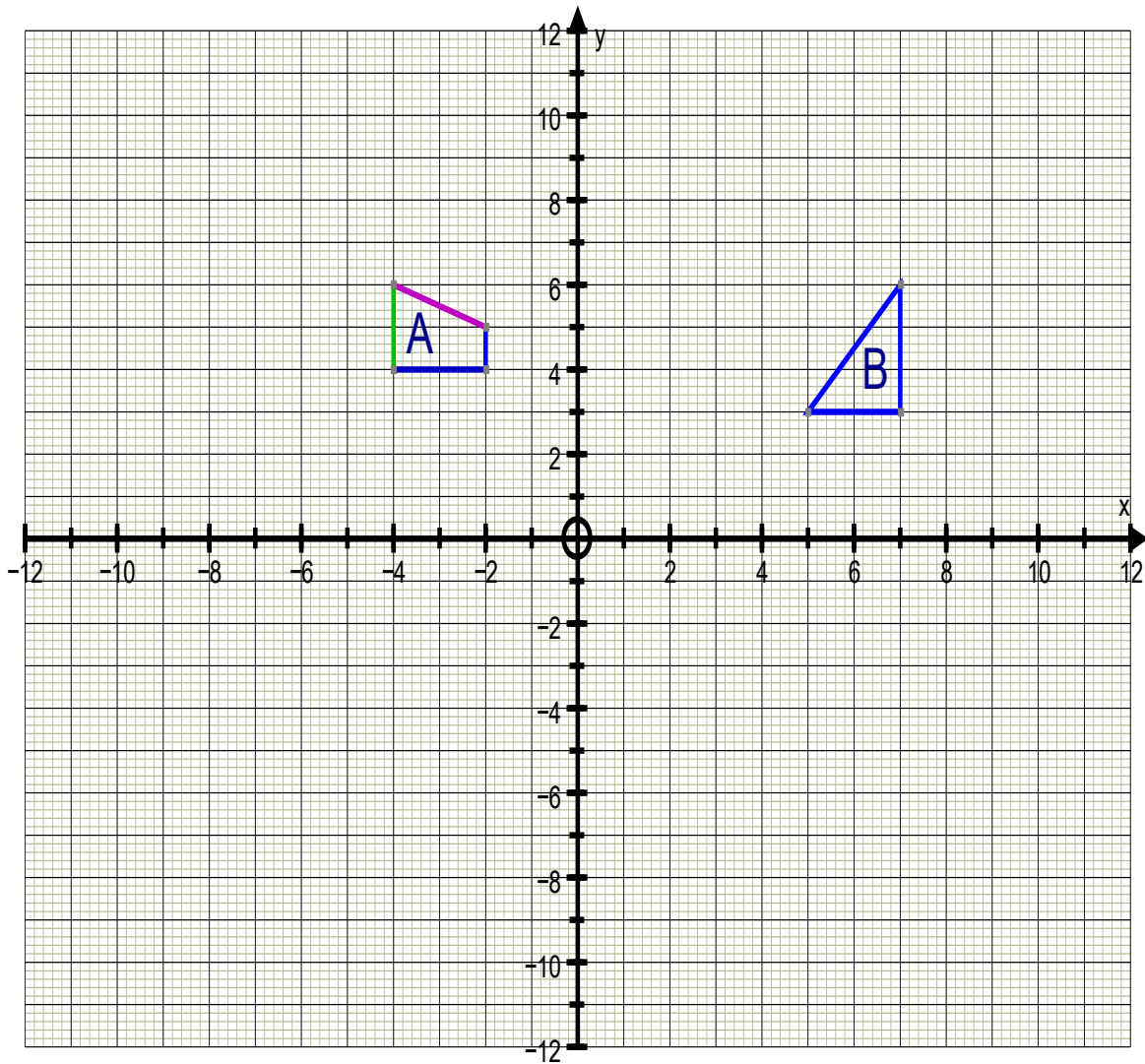| x	-2	-1	0	1	2	3
y	-11		-3			9

(2)

b) On the grid below, draw the graph of $y = 4x - 3$.

(2)

(**4 marks**)

27.

a) Reflect shape A in the line $y = 7$. Label the image C. (2)

b) Enlarge shape B by a scale factor of 2, about the point (9, 7). Label the image D. (2)

c) Rotate shape B, $180°$ about the point (-1, -1). Label the image E. (2)

(6 marks)

END