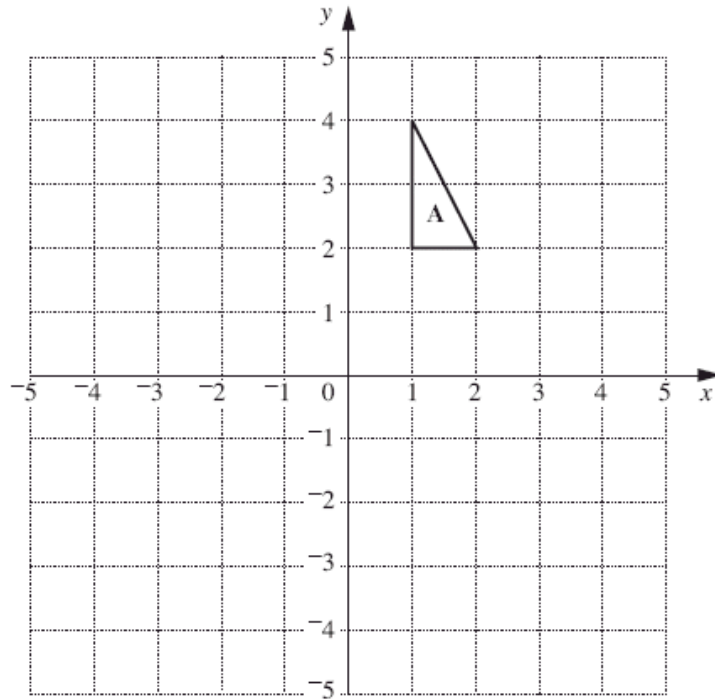


1.



- (a) Reflect triangle **A** in the line  $y = 0$ .  
Label the image **B**.

[1]

- (b) Rotate triangle **A**  $90^\circ$  anticlockwise with centre  $(0, 0)$ .  
Label the image **C**.

[2]

- (c) Describe fully the **single** transformation which maps triangle **B** onto triangle **C**.

.....  
.....

[2]

2. Lucy has a part-time job.  
She is paid £6.20 per hour.

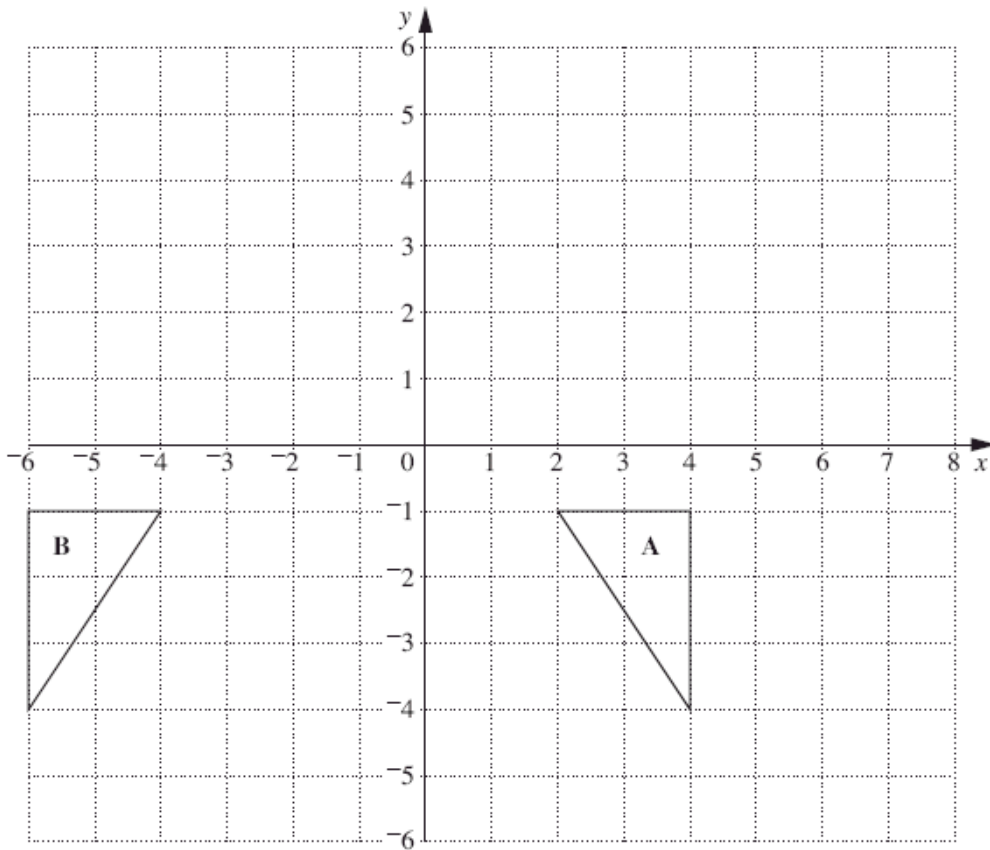
One weekend, Lucy works for 10 hours.  
She is paid her usual pay plus an extra 20% as a bonus.

Work out her **total** pay for the weekend.  
**You must show your working.**

£ .....

[4]

3.



(a) Describe fully the **single** transformation that maps triangle **A** onto triangle **B**.

.....  
.....

[2]

(b) Translate triangle **A** by the vector  $\begin{pmatrix} -2 \\ 4 \end{pmatrix}$ .

Label the image **C**.

[2]

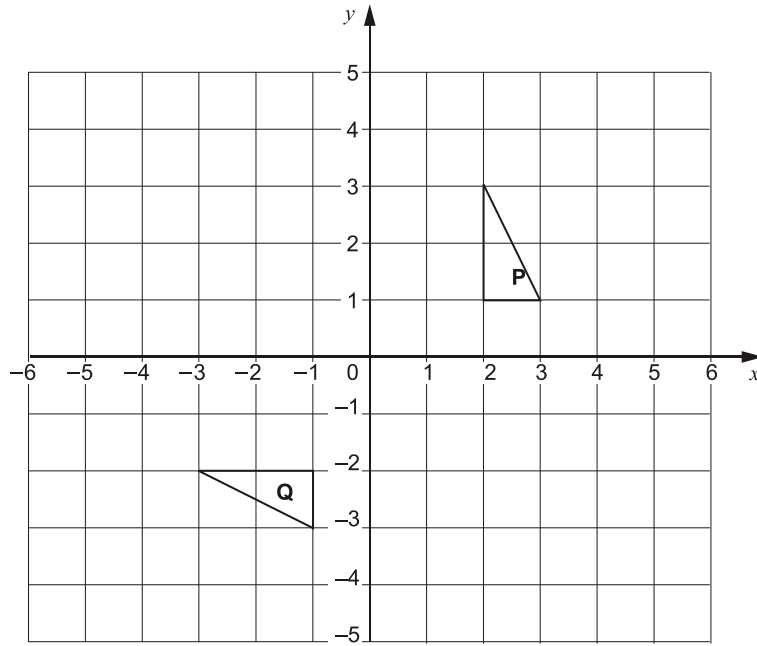
4. Solve.

$$6x - 10 = 2x + 8$$

.....

[3]

5.



(a) Describe fully the **single** transformation that maps shape **P** onto shape **Q**.

.....  
.....  
.....

[2]

(b) Translate shape **P** by  $\begin{pmatrix} 1 \\ -4 \end{pmatrix}$ .

Label the image **R**.

[2]

6. (a) Simplify.

(i)  $a \times a \times a \times a$

.....

[1]

(ii)  $3c \times 2c$

.....

[1]

(b) Solve.

$$5x = 3x + 7$$

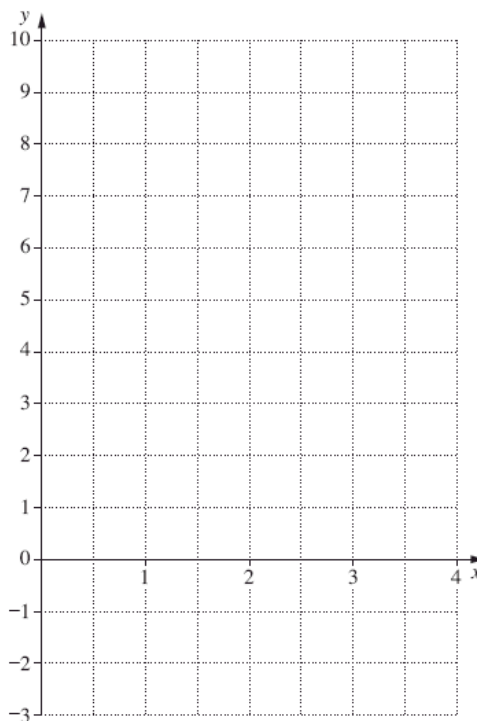
..... [2]

7. (a) Complete the table for  $y = 3x - 1$ .

$x$	0	1	2	3
$y$		2		

[1]

- (b) Draw the graph of  $y = 3x - 1$ .



[2]

8. These are the weekly wages, in pounds (£), paid to 11 workers.

275 160 842 275 420 359 315 275 740 280 195

Jermaine says the average wage is £280.

Jane says the average wage is £376.

Show how they can both be correct.

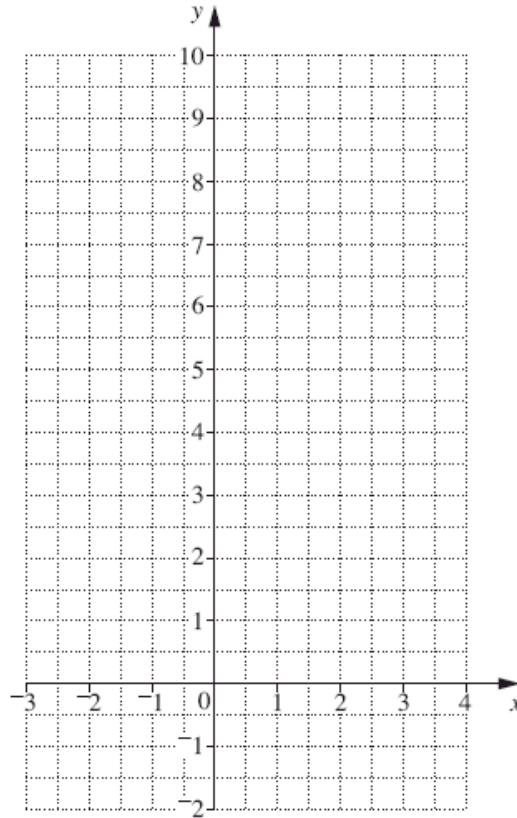
[5]

9. (a) Complete the table of values for  $y + 2x = 6$ .

$x$	0	1	2	3
$y$				0

[1]

(b) Draw the graph of  $y + 2x = 6$ .



[2]

(c) Use your graph to find the value of  $y$  when  $x = -1.5$ .

.....

[1]

10. Work out.

(a)  $8^2$

.....

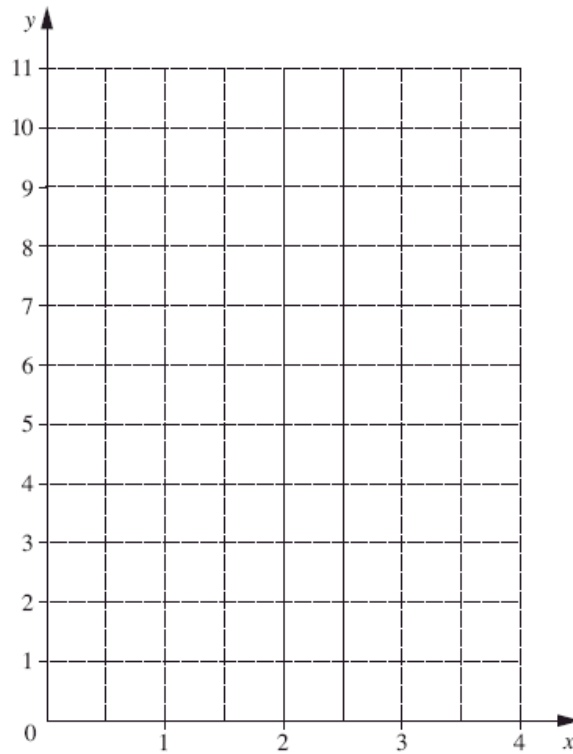
[1]

(b)  $2^3$

.....

[1]

11. (a) Draw the graph of  $y = 2x + 2$  on the grid below.



[3]

(b) Use your graph to find the value of  $x$  when  $y = 5$ .

.....

[1]

12. A box contains milk and plain chocolates in the ratio 3 : 2.  
There are 20 chocolates in the box.

How many milk chocolates are in the box?

.....

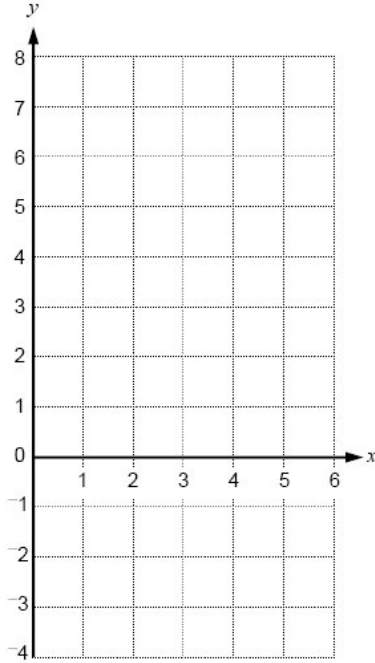
[2]

13. (a) Complete this table for  $y = 7 - 2x$ .

$x$	0	2	4
$y$	7		

[1]

(b) Draw the graph of  $y = 7 - 2x$ .



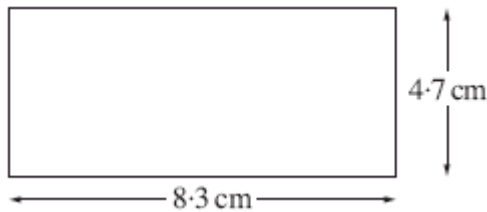
[2]

(c) Use your graph to find the value of  $x$  when  $y = 0$ .

$x = \dots\dots\dots$

[1]

14.



**Not to scale**

Calculate the area of this rectangle.  
Give the units of your answer.

$\dots\dots\dots$

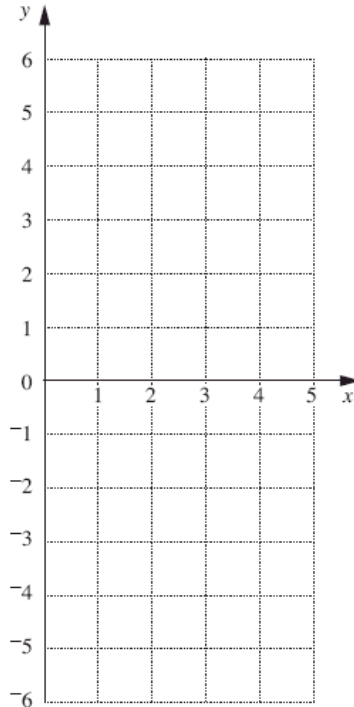
[3]

15. (a) Complete this table for  $y = 2x - 5$ .

$x$	0	2	4
$y$	-5		

[1]

(b) Draw the graph of  $y = 2x - 5$ .



[2]

(c) Is the point  $(12, 9)$  on the line  $y = 2x - 5$  if the line is drawn far enough?  
Explain how you get your answer.

*Write Yes or No on the first space.*

..... because .....

.....

[1]

16. (a) Multiply out.

$$4(x + 2)$$

.....

[1]

(b) Factorise.

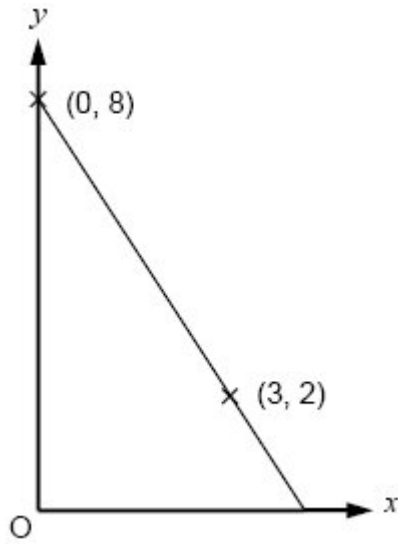
$$6x + 15$$

.....

[1]



17. A line goes through the points (0, 8) and (3, 2).



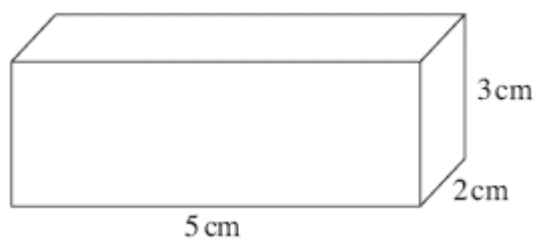
Not to scale

Find the equation of this line.

.....

[3]

- 18.



Show that the total surface area of this cuboid is  $62 \text{ cm}^2$ .

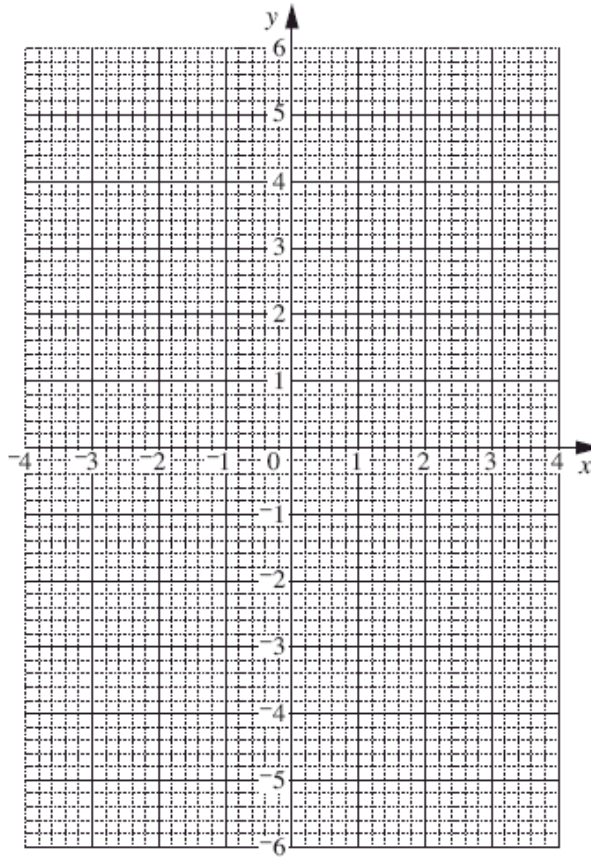
[3]

19. (a) Complete the table of values for  $y = 3 - x^2$ .

$x$	-3	-2	-1	0	1	2	3
$y$	-6		2	3	2		-6

[1]

- (b) Draw the graph of  $y = 3 - x^2$  for values of  $x$  from -3 to 3.



[2]

- (c) **Explain** how you can use your graph to solve the equation  $3 - x^2 = 0$ .

.....

[1]

20. (a) Write as a single power of 5.

$$\frac{5^4 \times 5^6}{5^3}$$

.....

[2]

- (b) Write 250 as the product of its prime factors.

.....

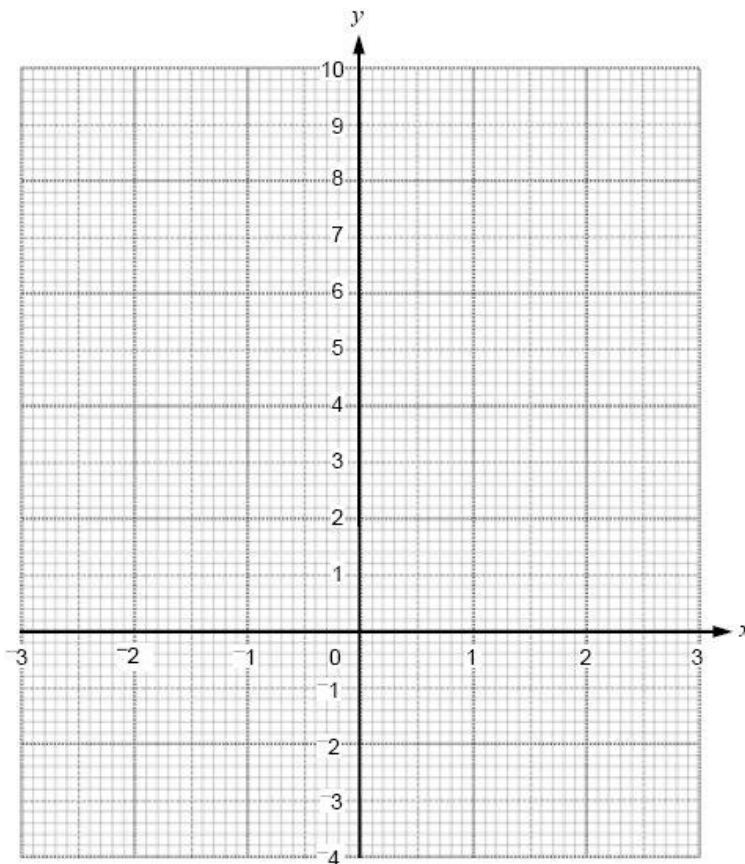
[2]

21. (a) Complete this table for the graph of  $y = x^2 - 3$ .

$x$	-3	-2	-1	0	1	2	3
$y$	6	1			-2	1	6

[2]

(b) Draw the graph of  $y = x^2 - 3$ .



[2]

(c) Use your graph to estimate both solutions to  $x^2 - 3 = 0$ , correct to one decimal place.

.....

[2]

22. Dave the cat meows every 6 minutes.  
 Poppy the cat meows every 8 minutes.  
 At 8:45, they both meow together.

At what time will they next meow together?

.....

[4]

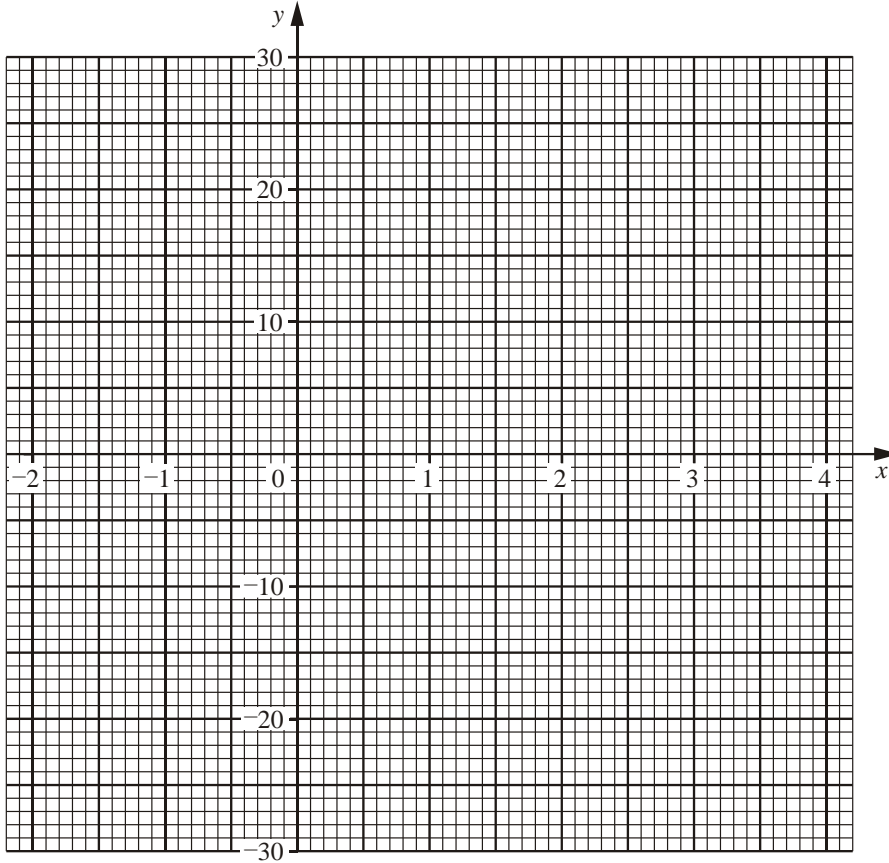
23. The table shows some values of  $x$  and  $y$  for the equation  $y = (x - 1)^3$ .

$x$	-2	-1	0	1	2	3	4
$y$	-27		-1	0	1	8	

(a) Complete the table.

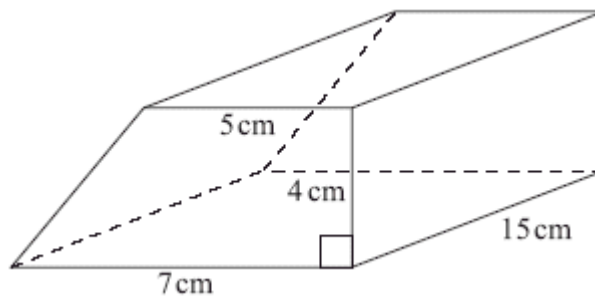
[1]

(b) Draw the graph of  $y = (x - 1)^3$  for values of  $x$  from -2 to 4.



[2]

24. The cross-section of a prism is a trapezium.  
The trapezium has height 4 cm and its parallel sides are 5 cm and 7 cm.  
The length of the prism is 15 cm.



Calculate the volume of the prism.

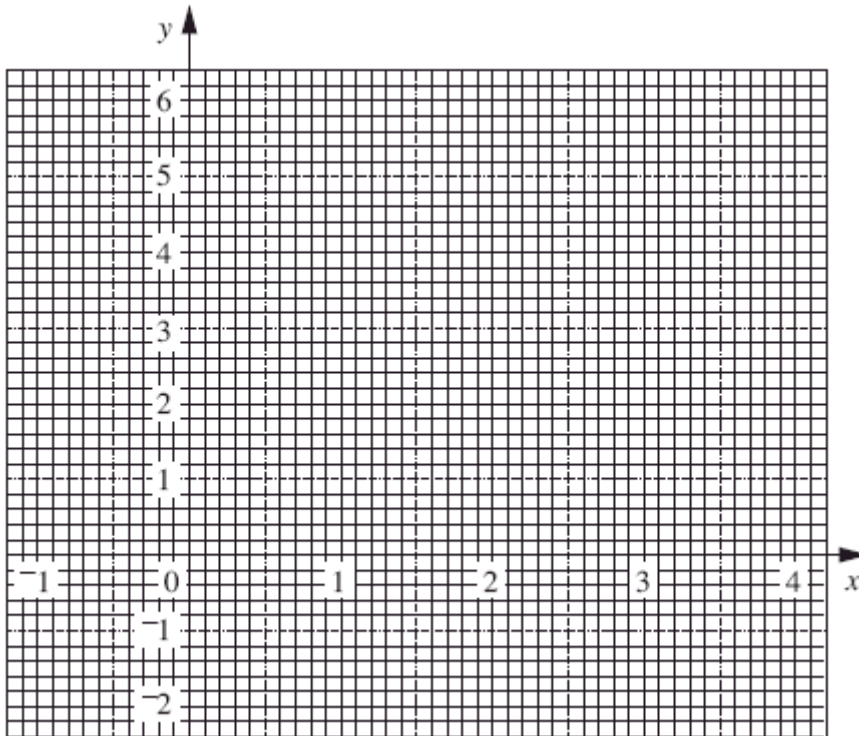
.....  $\text{cm}^3$  [3]

25. (a) Complete the table for  $y = 3 + 3x - x^2$ .

$x$	-1	0	1	2	3	4
$y$	-1	3			3	-1

[1]

(b) Draw the graph of  $y = 3 + 3x - x^2$ .



[2]

(c) Use your graph to find the values of  $x$  for which  $3 + 3x - x^2 = 0$ .

.....

[2]

26. (a) Write 63 as a product of its prime factors.

.....

[2]

(b) Find the lowest common multiple (LCM) of 42 and 63.

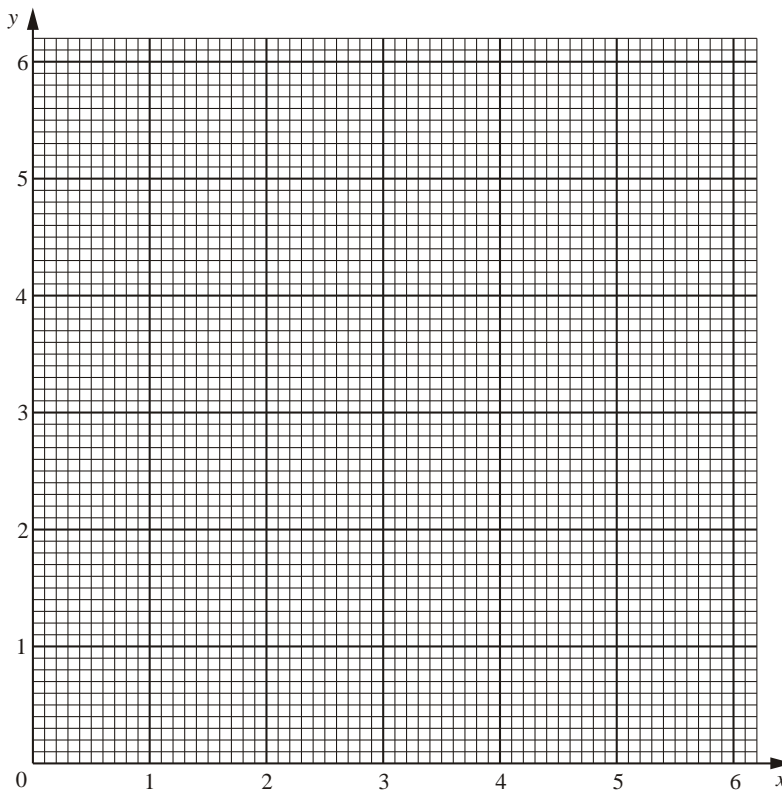
..... [2]

27. (a) Complete the table below for  $y = \frac{6}{x}$ .

$x$	1	2	3	4	5	6
$y$	6		2		1.2	1

[1]

- (b) Draw the graph of  $y = \frac{6}{x}$  on the grid below.



[2]

- (c) Use your graph to solve the equation  $\frac{6}{x} = 2 \cdot 2$ .

.....

[1]

28. Write down all the integer values of  $n$  that satisfy this inequality.

$$-5 < 2n \leq 8$$

.....

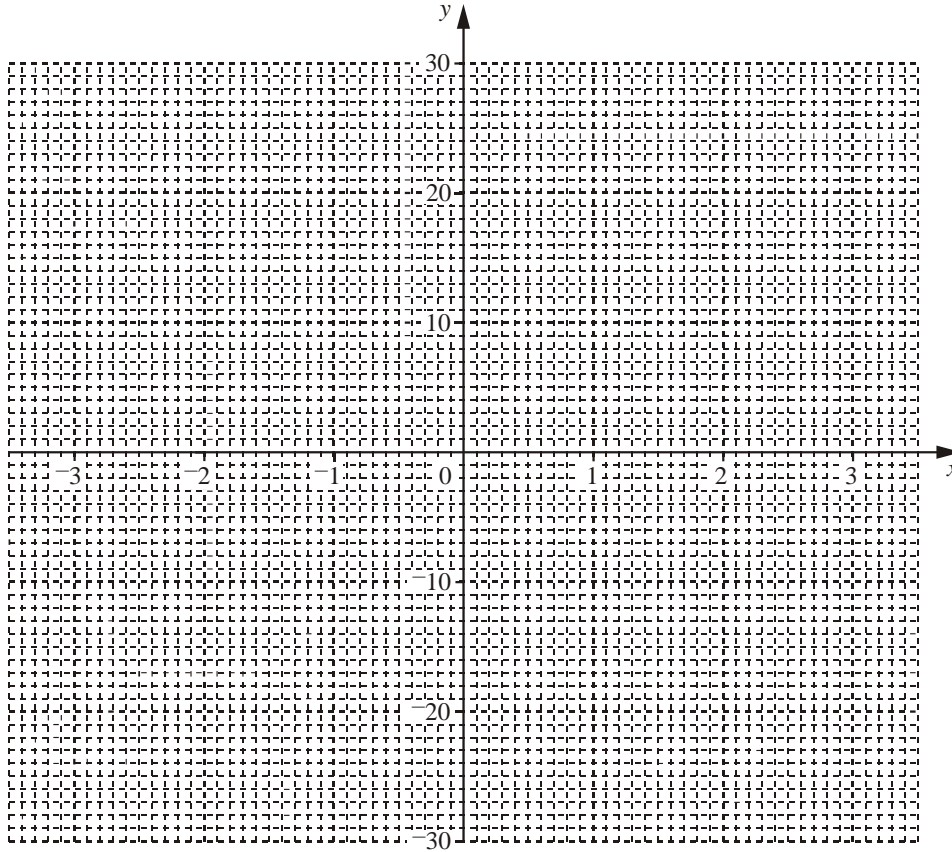
[3]

29. (a) Complete this table for  $y = x^3 + 2$ .

$x$	-3	-2	-1	0	1	2	3
$y$	-25	-6		2	3		29

[1]

- (b) Draw the graph of  $y = x^3 + 2$ .



[2]

- (c) The equation  $x^3 + 2 = 7x$  can be solved by adding a straight line to the graph,

- (i) Write down the equation of this line.

.....

[1]

- (ii) Draw this line on the graph and use it to solve the equation  $x^3 + 2 = 7x$ .

.....

[3]

30. Fiona drives to work.  
Each day she drives 49 miles, to the nearest mile.

Calculate the least possible distance she drives in 5 working days.

..... miles

[2]

31. Here are six equations.

$$y = x^2 - x$$

$$y = \frac{1}{x}$$

$$y = 2x - 1$$

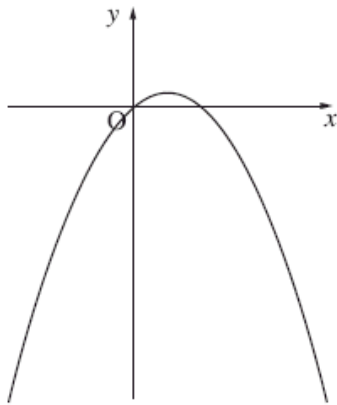
$$y = x - x^2$$

$$y = 2x + 1$$

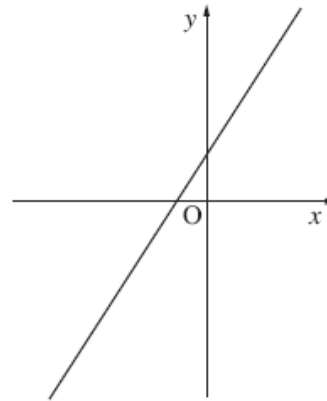
$$y = x^3 - x$$

The graphs of four of these equations are drawn below.

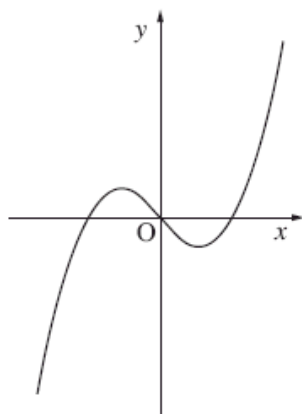
Write the correct equation below each graph.



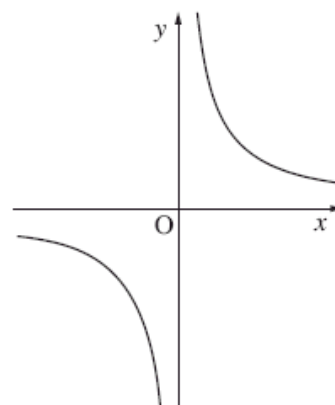
.....



.....



.....



.....

[3]

32. Solve.

$$3x^2 - 8x + 2 = 0$$

Give your answers correct to 2 decimal places.

.....

[3]