

GCSE Revision – A Bit of Everything

CCEA - GCSE Higher  
Unit M7



This is a collection of questions from all the topics on the revision checklist

### Guidance

1. Check your answers seem right.
2. Always show your workings
3. Take your time when working through this collection of questions

Revision for this test

[www.corbettmaths.com/contents](http://www.corbettmaths.com/contents)



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\* Remember to check out the A Bit of Everything for M6, M5, M3, M2, M1\*

1. Simplify  $\frac{x^6 \times x}{x^{-3}}$

$$\frac{x^7}{x^{-3}}$$

$$x^{10}$$

.....  
(2)

2. Four chairs and two tables cost £218.  
Six chairs and seven tables cost £587.  
Find the total cost of buying twenty chairs and five tables.

$$\begin{aligned} 4x + 2y &= 218 \\ 6x + 7y &= 587 \end{aligned}$$

$$\begin{aligned} 12x + 14y &= 1174 \\ 12x + 6y &= 654 \\ \hline 8y &= 520 \\ y &= 65 \end{aligned}$$

$$\begin{aligned} 4x + 130 &= 218 \\ 4x &= 88 \\ x &= 22 \end{aligned}$$

$$20 \times 22 + 5 \times 65$$

$$£ 765$$

.....  
(5)

3. (a) Make  $w$  the subject of  $9w = 2t - aw$

$$9w + aw = 2t$$

$$w(9+a) = 2t$$

$$w = \frac{2t}{9+a}$$

$$w = \frac{2t}{9+a}$$

(2)

- (b) Make  $y$  the subject of  $c = \sqrt[3]{xy}$

$$c^3 = xy$$

$$y = \frac{c^3}{x}$$

$$y = \frac{c^3}{x}$$

(2)

4. Find the  $n$ th term of the sequences

- (a) 1, 4, 9, 16, 25, ...

$$n^2$$

(1)

- (b) 3, 6, 11, 18, 27, ...

$$n^2 + 2$$

(1)

(c) -3, 0, 5, 12, 21, ...

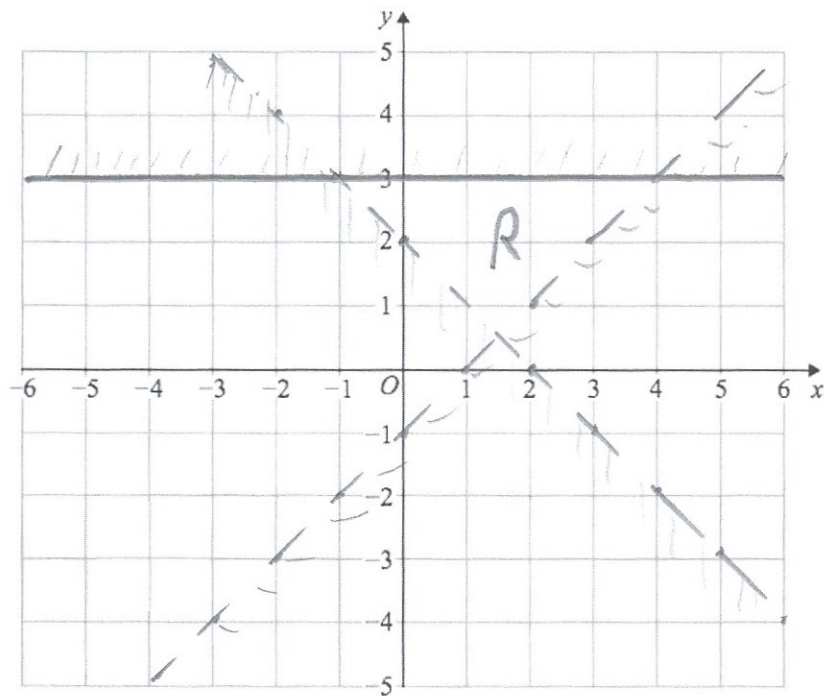
$$\frac{n^2 - 4}{(1)}$$

(d) 2, 8, 18, 32, 50, ...

$$\frac{2n^2}{(1)}$$

5. On the grid, clearly indicate the region that satisfies all these inequalities.

$$y > x - 1 \quad y \leq 3 \quad y > 2 - x$$



(4)

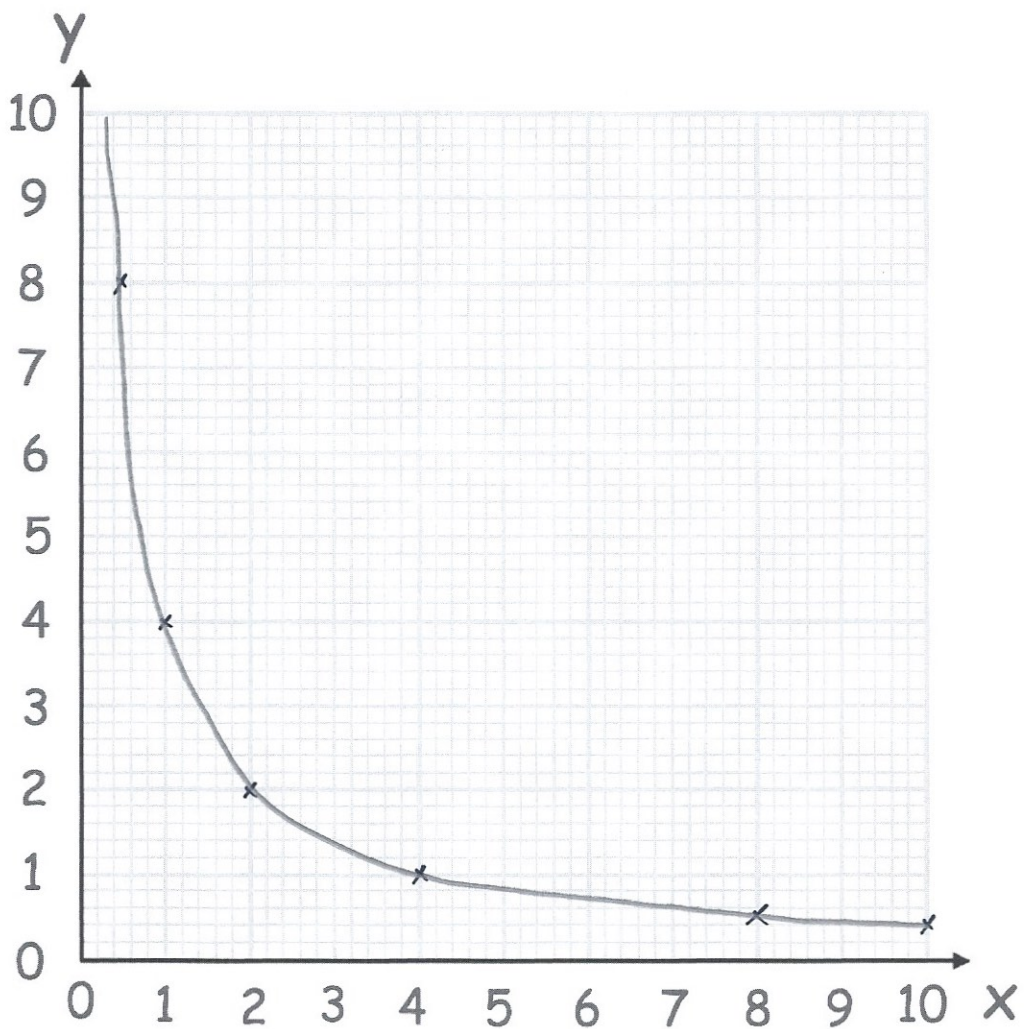


6. (a) Complete the table of value for  $y = \frac{4}{x}$

x	0.5	1	2	4	8	10
y	8	4	2	1	0.5	0.4

(2)

(b) On the grid, draw the graph of  $y = \frac{4}{x}$  for  $0.5 \leq x \leq 10$



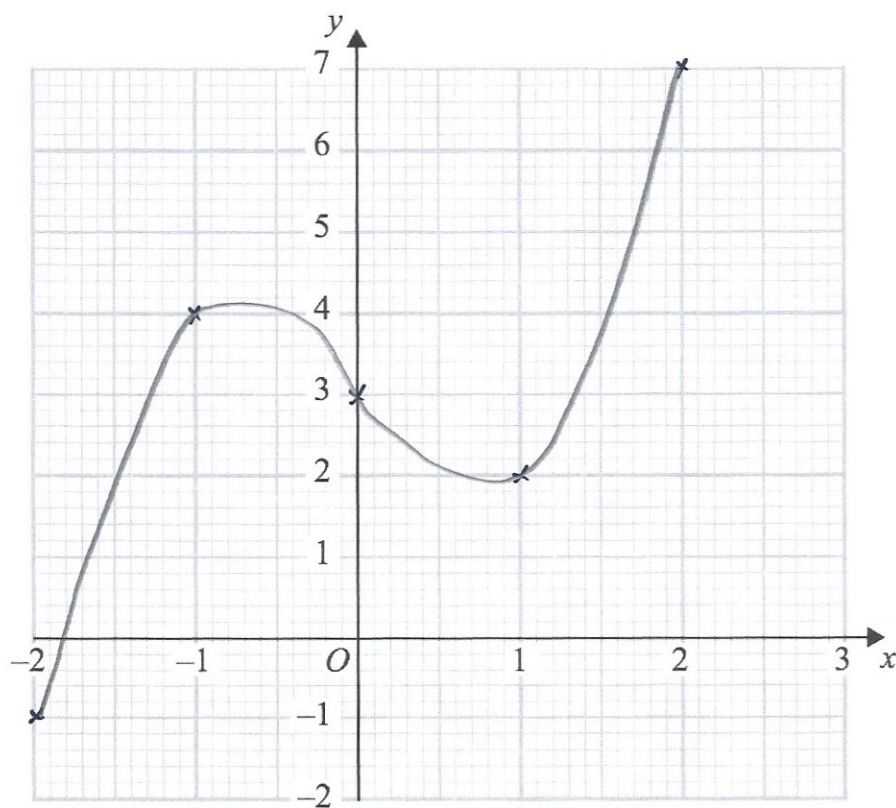
(2)

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

x	-2	-1	0	1	2
y	-1	4	3	2	7

(2)

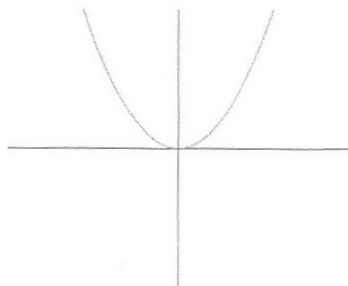
(b) On the grid, draw the graph of  $y = x^3 - 2x + 3$  for the values of  $x$   $-2 \leq x \leq 2$



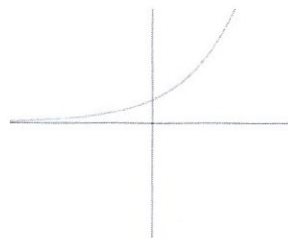
(2)

8. Match each graph to the correct equation

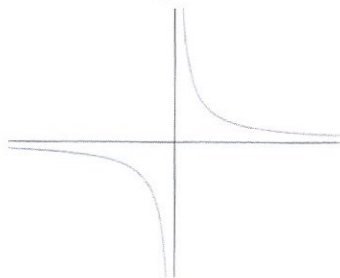
Graph A



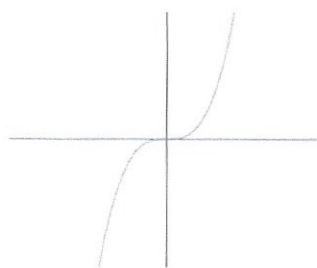
Graph B



Graph C



Graph D



$y = x^2$  is graph **A**

$y = x^3$  is graph **D**

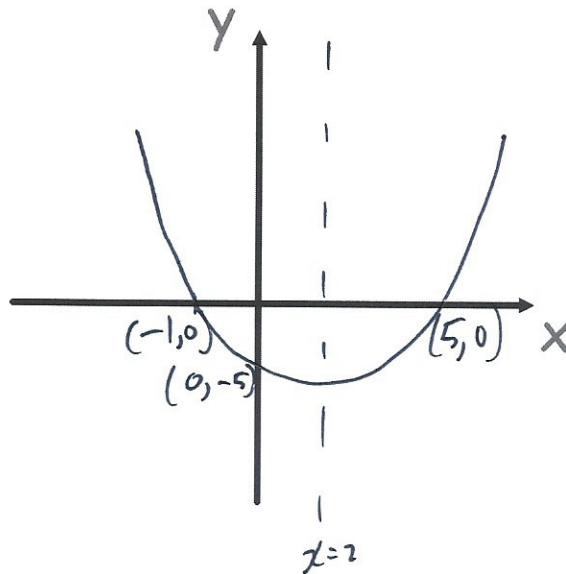
$y = \frac{1}{x}$  is graph **C**

(2)



9. (a) Sketch the graph of  $y = x^2 - 4x - 5$   
Clearly show the coordinates of any points of intersection with the axes.

$$(x+1)(x-5)$$



(3)

- (b) Work out the equation of the line of symmetry of the graph of  $y = x^2 - 4x - 5$

$$-1 + 5 = 4$$

$$4 \div 2 = 2$$

$$x = 2$$

(1)

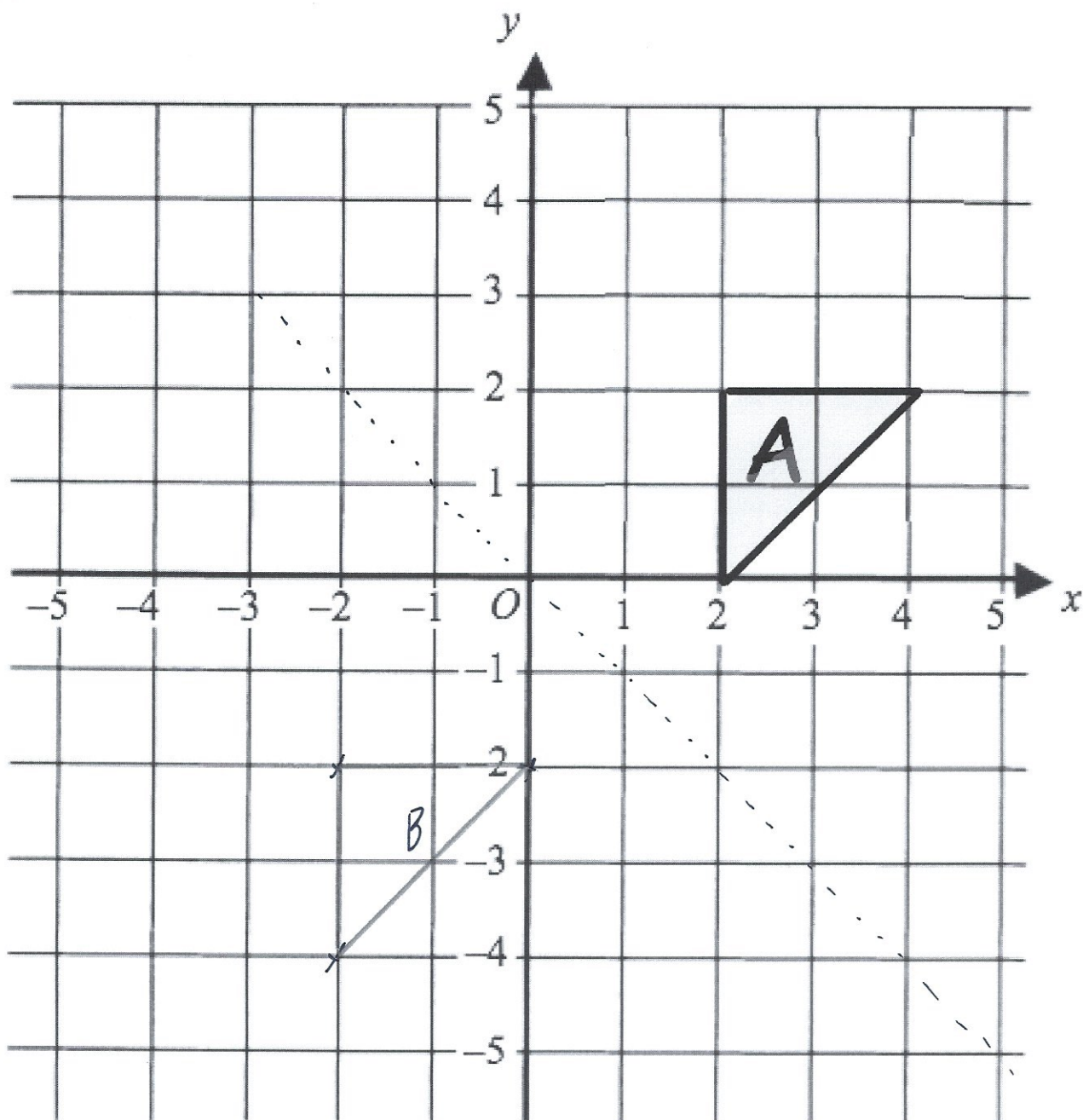
- (c) Use your answer to (b) to find the coordinates of the minimum point of  $y = x^2 - 4x - 5$

$$2^2 - 4 \times 2 - 5 = -9$$

$$(2, -9)$$

(2)

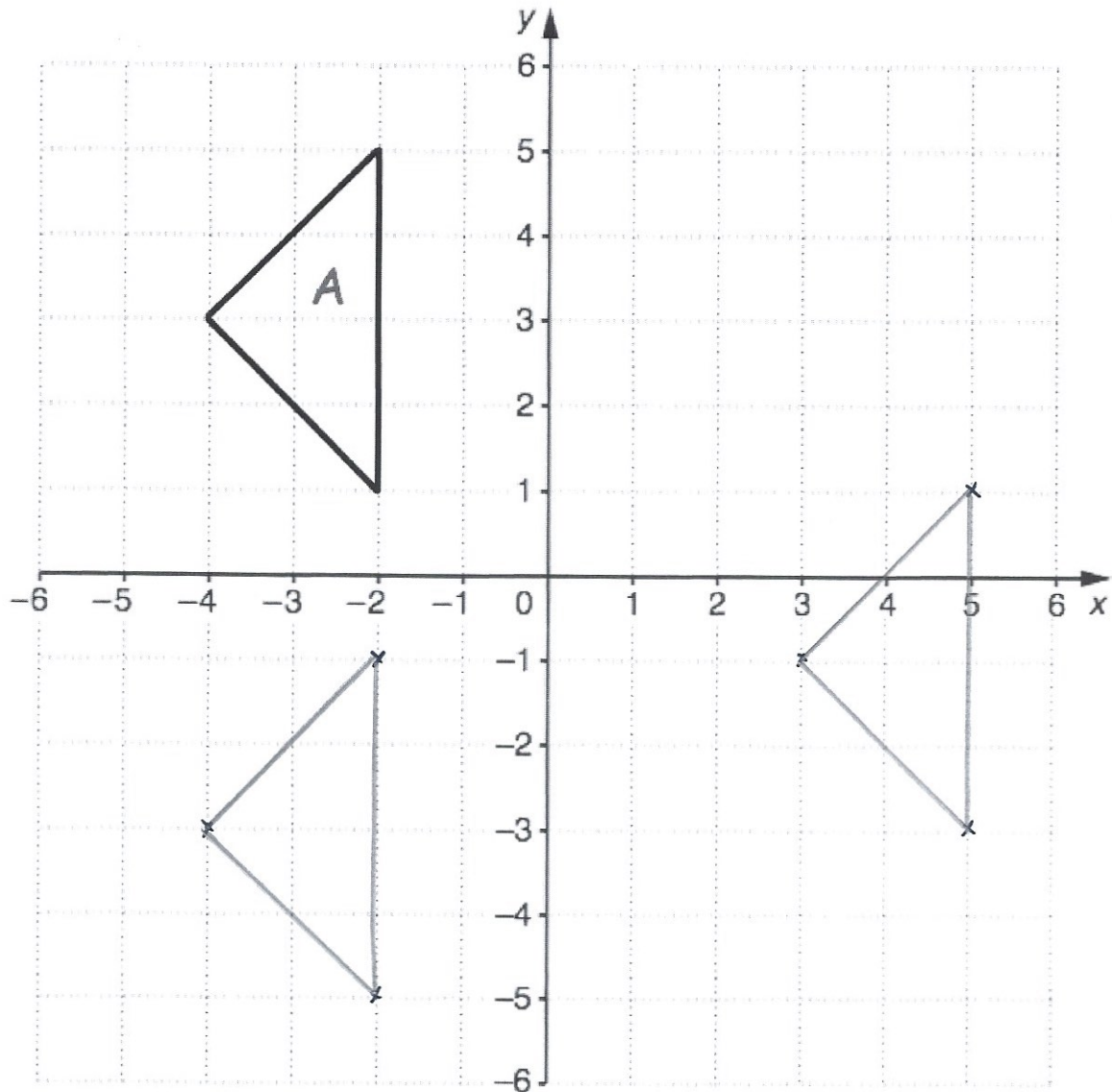
10.



Reflect the triangle in the line  $y = -x$   
Label the new triangle B.

(2)

11.

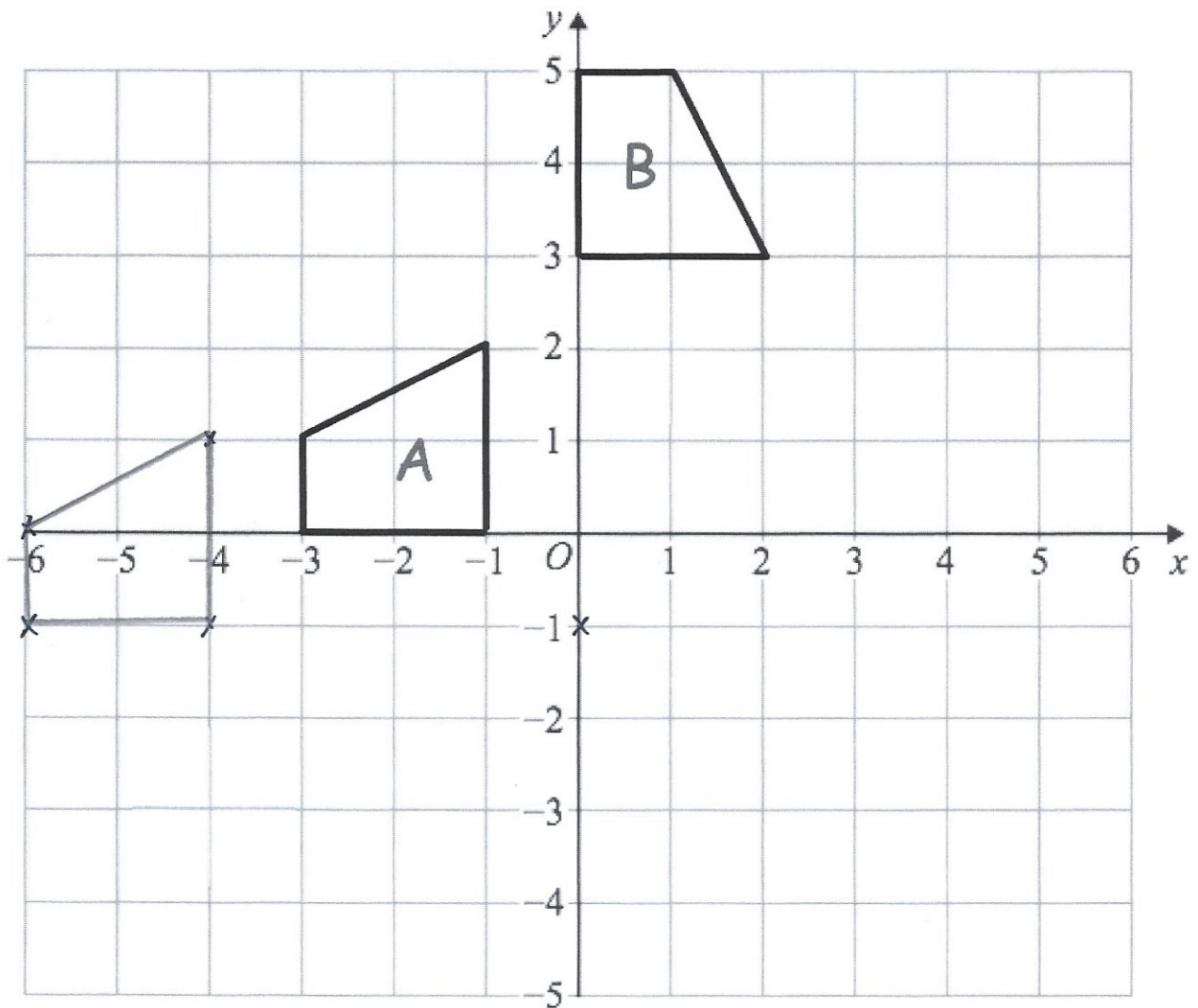


Triangle A is translated by the combined transformation of a reflection in the x-axis followed by a translation with vector  $\begin{pmatrix} 7 \\ 2 \end{pmatrix}$ .

Draw the position of the triangle after the combined transformation.

(2)

12.



Trapezium A is combined by a combined transformation of a translation by the vector  $\begin{pmatrix} -3 \\ -1 \end{pmatrix}$  followed by a rotation.

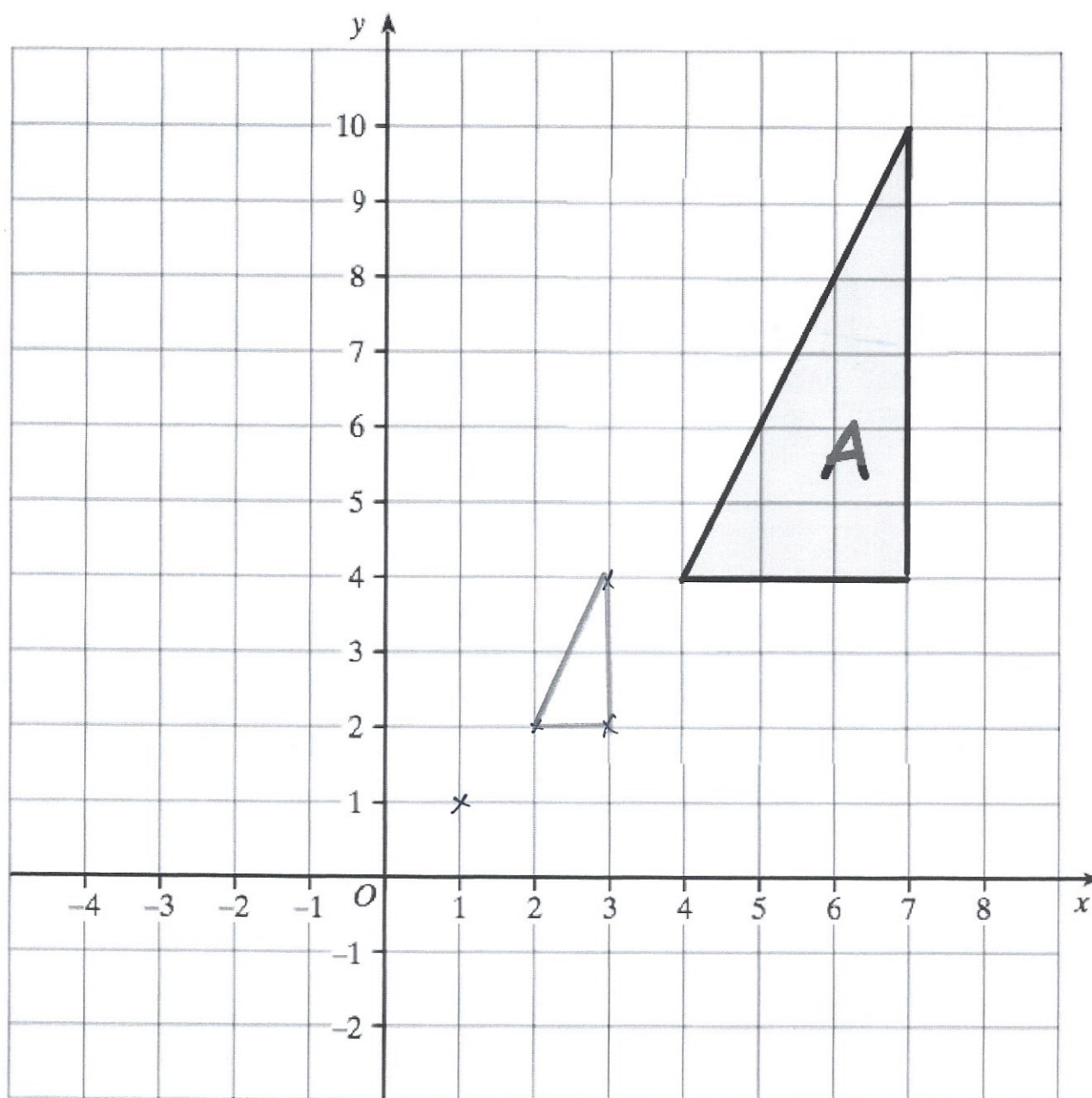
Trapezium B shows the position after the combined transformation.

Describe fully one possible rotation.

..... Rotation,  $90^\circ$  clockwise about  $(0, -1)$  .....

(2)

13. The diagram shows shape A

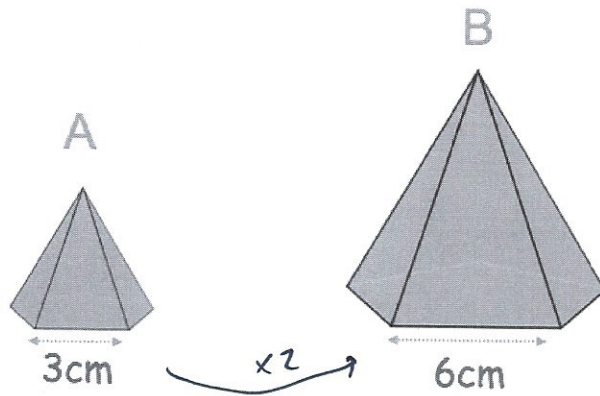


Draw the enlargement of shape A with scale factor  $\frac{1}{3}$  and centre of enlargement (1,1).

(3)



14.



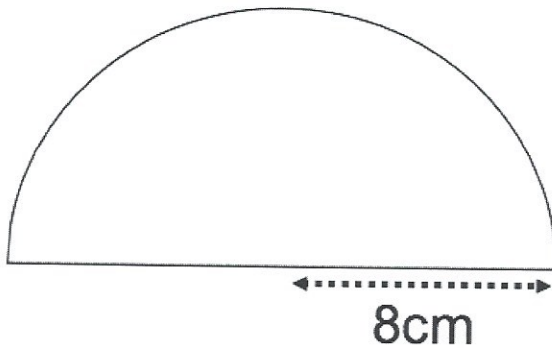
Pyramid A has a volume of  $26\text{cm}^3$

(a) Work out the volume of Pyramid B.

$$26 \times 2^3 = 208$$

..... $208$ ..... $\text{cm}^3$   
(2)

15.

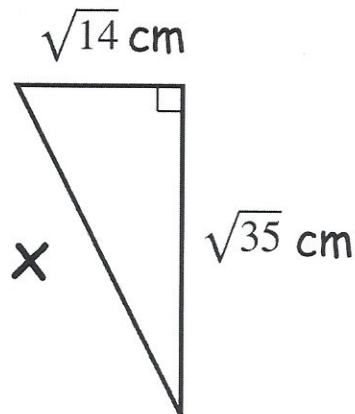


$$\frac{1}{2} \times \pi \times 8^2$$

Work out the area of the semi-circle.  
Leave your answer in terms of  $\pi$

..... $32\pi$ ..... $\text{cm}^2$   
(3)

16. Shown below is a right-angled triangle



Work out the length of the side,  $x$ .

$$x^2 = (\sqrt{14})^2 + (\sqrt{35})^2$$
$$x^2 = 49$$

.....cm  
(3)

17. In a gym there are

9 exercise classes on a Monday  
8 exercise classes on a Wednesday  
15 exercise classes on a Friday

Max is going to attend either

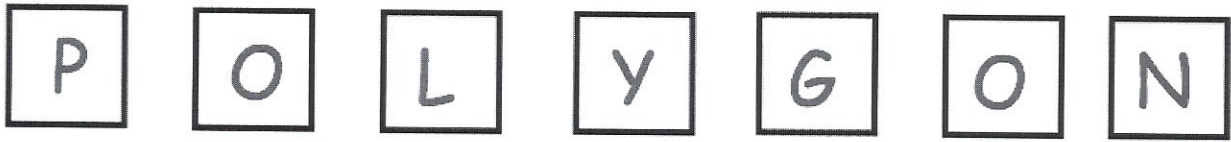
- a class on Monday and a class on Wednesday
- or a class on Monday and a class on Friday
- or a class on Monday, Wednesday and Friday.

How many different ways can Max pick which exercise classes he is going to attend?

$$9 \times 8 = 72$$
$$9 \times 15 = 135$$
$$9 \times 8 \times 15 = 1080$$

.....  
1287  
.....  
(5)

18. There are seven tiles in a bag, each with a letter written on it.



A tile is selected at random, it is **replaced** and then another tile is selected.

Find the probability that both tiles are the letter O.

$$P(O) = \frac{2}{7}$$

$$P(OO) = \frac{2}{7} \times \frac{2}{7} = \frac{4}{49}$$

$$\frac{4}{49}$$

.....  
(5)

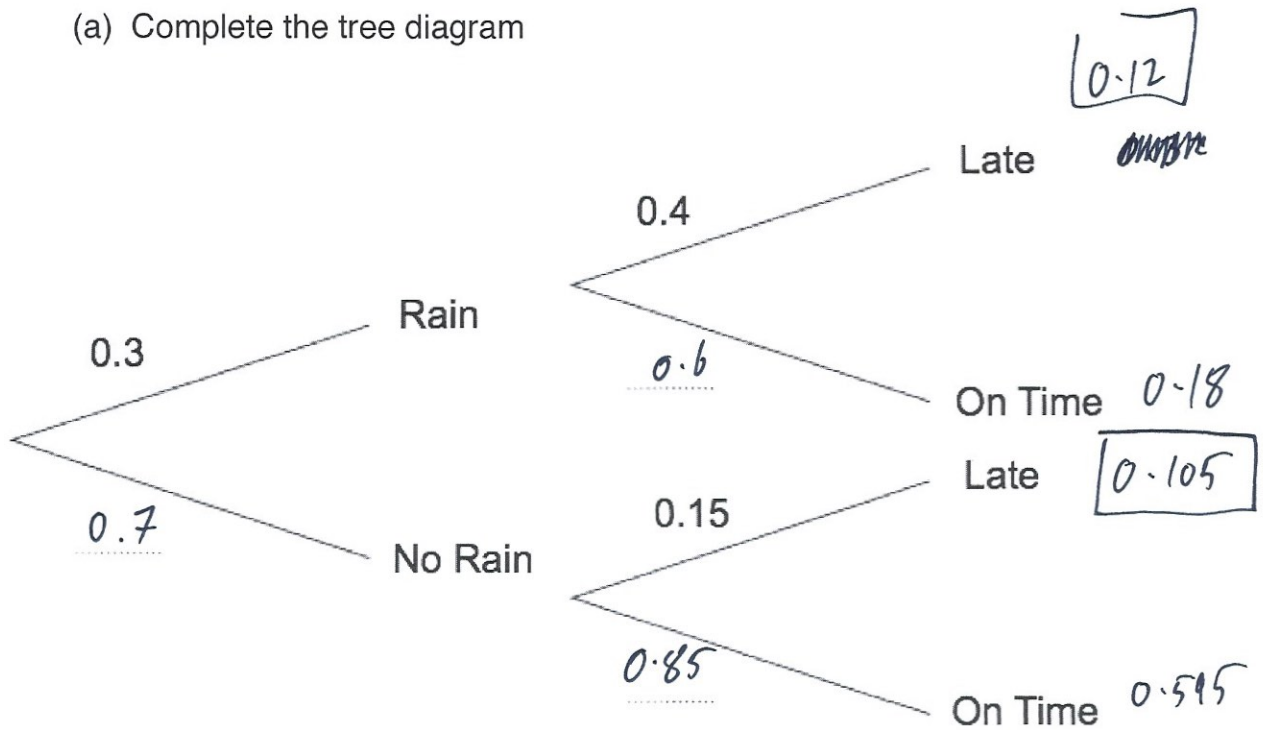
19. In a small village, one bus arrives a day.

The probability of rain in the village is 0.3.

If it rains, the probability of a bus being late is 0.4.

If it does not rain, the probability of a bus being late is 0.15.

(a) Complete the tree diagram



(2)

(b) Work out the number of days the bus would be expected to be late over a period of 80 days.

$$0.12 + 0.105 = 0.225$$

$$80 \times 0.225 = 18$$

18 days

(3)

20. (a) Work out  $16^0$

$$\frac{1}{\dots\dots\dots}$$

(1)

(b) Work out  $3^{-2}$

$$\frac{1}{3^2}$$

$$\frac{1}{9}$$

(1)

21. The number of visitors to some tourist attractions is shown in the table below.

The King's Palace	5.4 million
Castle	923,840
Theme Park	$1.43 \times 10^7$
Science Museum	4,192,900

(a) Write the number of visitors to the Theme Park as an ordinary number.

$$14300000$$

(1)

(b) Write the number of visitors to the Castle in standard form.

$$9.2384 \times 10^5$$

(1)

(c) How many more people visited the Theme Park than the Science Museum

$$\begin{array}{r} 14300000 \\ 4192900 \\ \hline 10107100 \end{array}$$

$$10107100$$

(2)



22. H varies directly to the cube of c.  
When  $H = 40$ ,  $c = 2$ .

(a) Express H in terms of c.

$$H \propto c^3$$
$$40 = k \times 2^3$$
$$k = 5$$

$$H = \frac{5c^3}{\dots\dots\dots} \quad (3)$$

(b) Find the value of H when  $c = 5$ .

$$5 \times 5^3$$

$$H = \frac{625}{\dots\dots\dots} \quad (1)$$

(c) Find the value of c when  $H = 5000$ .

$$5000 = 5 \times c^3$$
$$c^3 = 1000$$

$$c = \frac{10}{\dots\dots\dots} \quad (1)$$