

Name: _____

**GCSE Higher
Set A
Non - Calculator Paper**



Corbettmaths

Equipment

1. A blue or black ink ball-point pen.
2. A pencil.
3. An eraser.
4. A ruler.
5. A pair of compasses.
6. A protractor.

Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

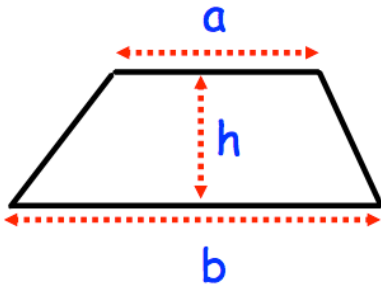
Information

1. The maximum mark for this paper is 100.
2. The marks for questions are shown in brackets
3. You may ask for more lined, graph or tracing paper.

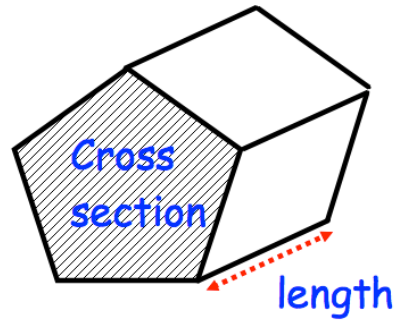
Question	Mark	Available
1		4
2		4
3		4
4		4
5		4
6		5
7		3
8		4
9		4
10		2
11		3
12		3
13		2
14		4
15		6
16		3
17		4
18		3
19		5
20		4
21		4
22		4
23		3
24		4
25		4
26		6
Total		100

Formulae: Higher Tier

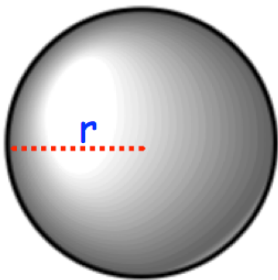
Area of a Trapezium = $\frac{1}{2}(a + b)h$



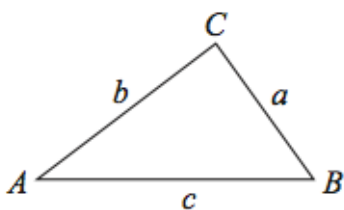
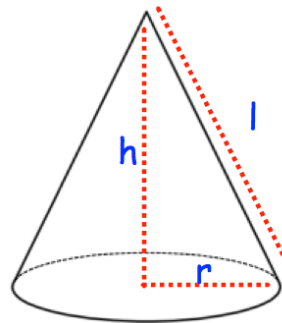
Volume of a prism = area of cross section x length



Volume of a sphere = $\frac{4}{3}\pi r^3$
 Surface area of a sphere = $4\pi r^2$



Volume of a cone = $\frac{1}{3}\pi r^2 h$
 Curved surface area of a cone = $\pi r l$



Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle = $\frac{1}{2} ab \sin C$

The Quadratic Equation
 The solutions of $ax^2 + bx + c = 0$
 where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$$

1. The two-way table gives some information about the languages studied in a school.
Every student studies one language.

	French	Spanish	German	Total
Girl	28		4	49
Boy		15	5	
Total	59			100

(a) Complete the two-way table.

(3)

One of the children is picked at random.

(b) Write down the probability that the child studies Spanish.

.....
(1)

2. (a) Simplify $7h + 5k + h - 7k$

.....
(2)

(b) Apples cost a pence each.
Bananas cost b pence each.

Write down an expression for the total cost, in pence, of 3 apples and 5 bananas.

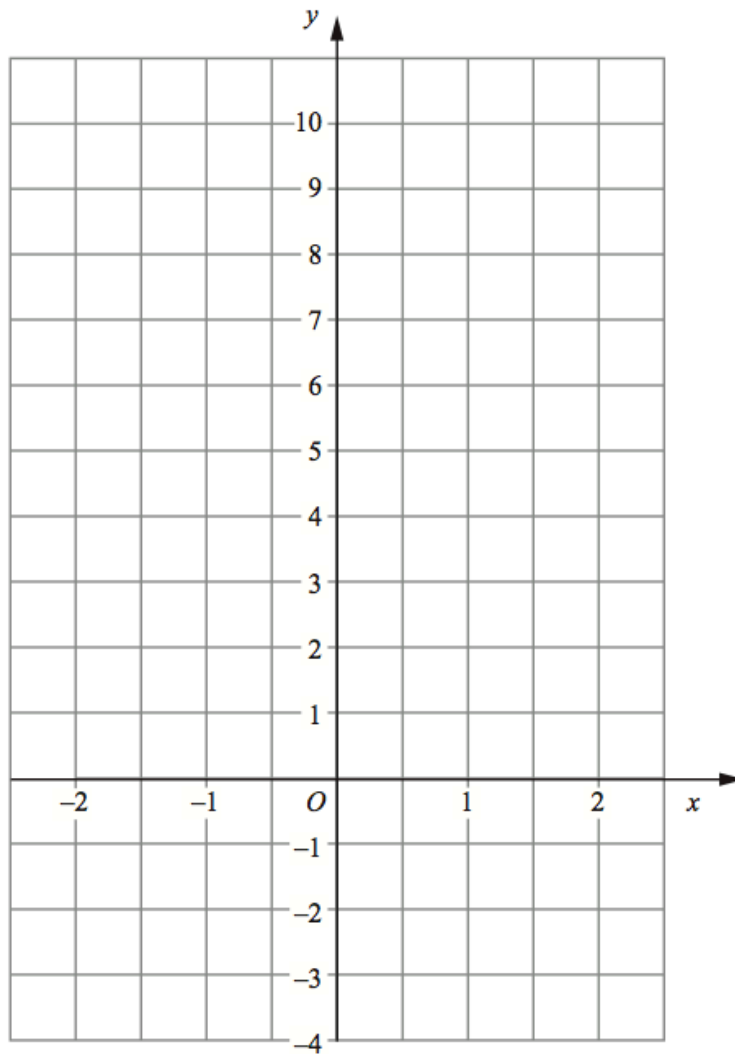
.....pence
(2)

3. (a) Complete the table of values for $y = 4x + 2$.

x	-1	0	1	2
y				

(2)

(b) On the grid, draw the graph of $y = 4x + 2$.



(2)

4. The cost in pounds, C , of hiring a car is given by
 $C = 25d + 45$

where d is the number of days the car is hired.

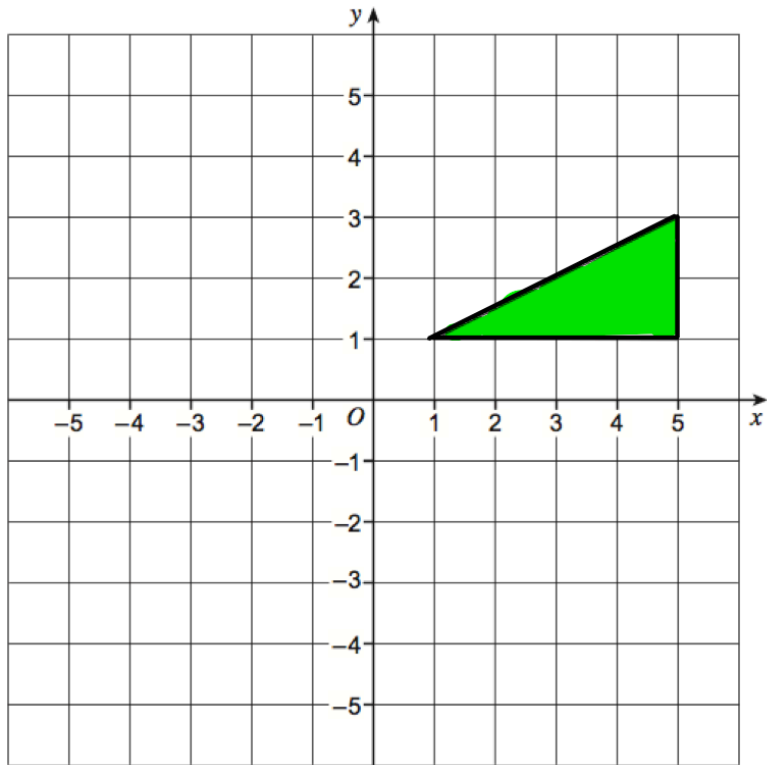
- (a) Find C if $d = 4$.

.....
(2)

- (a) Find d if $C = 245$

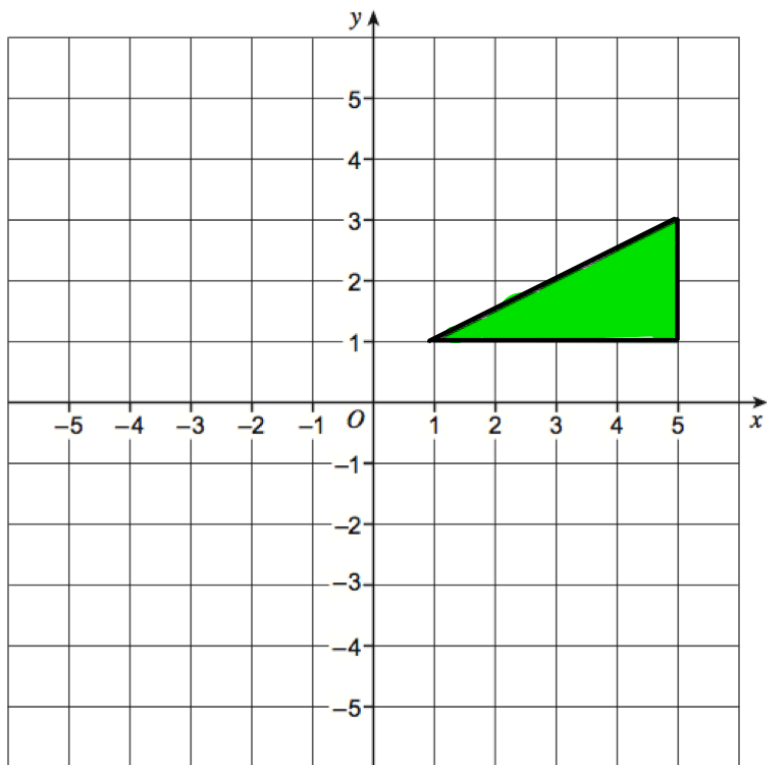
.....
(2)

5. (a) Reflect the triangle in the y-axis.



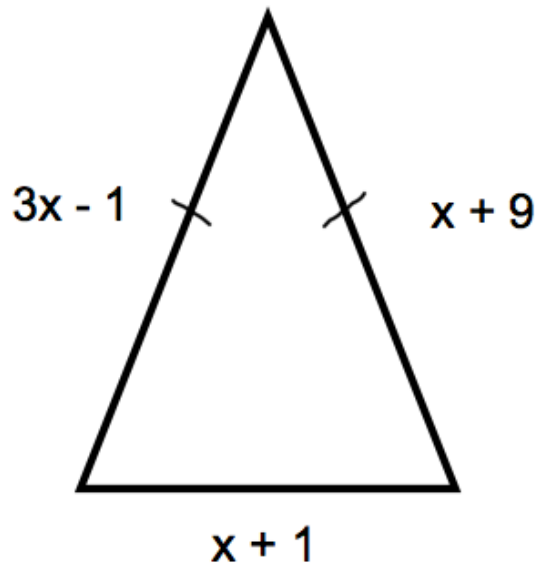
(1)

(b) Rotate the triangle through 90° anticlockwise about the origin.



(2)

6. Shown below is an isosceles triangle. Each side is measured in centimetres.



(a) Explain why $3x - 1 = x + 9$

.....
.....
(1)

(b) Solve the equation above.

$x = \dots\dots\dots$ cm
(2)

(c) Calculate the perimeter of the triangle.

$\dots\dots\dots$ cm
(2)

7. Use the information that

$$423 \times 57 = 24111$$

to find the value of:

(a) 4.23×5.7

.....
(1)

(b) 0.423×0.57

.....
(1)

(c) $24111 \div 5.7$

.....
(1)

8. $3x^2 = 75$

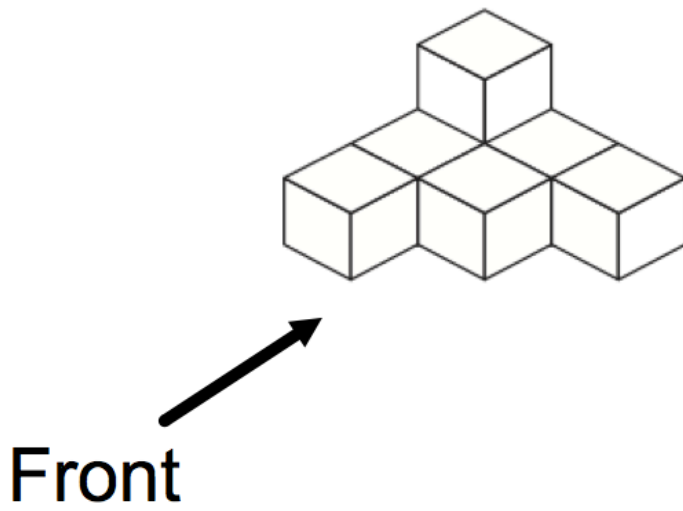
(a) Find the value of x.

.....
(2)

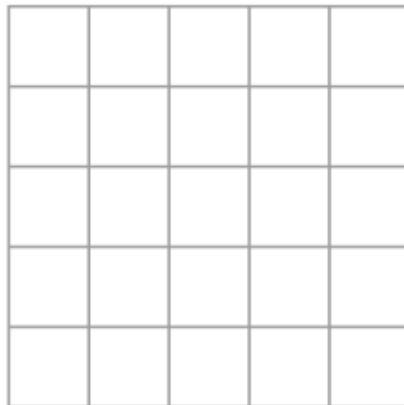
(b) Express 75 as a product of its prime factors.

.....
(2)

9. Laura makes a solid shape using centimetre cubes.

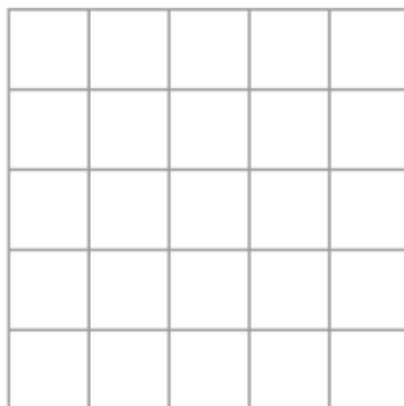


(a) Draw the front elevation on the grid below.



(2)

(b) Draw the plan view on the grid below.



(2)

10. The weight of a bag of onions is 10kg, correct to the nearest kg.

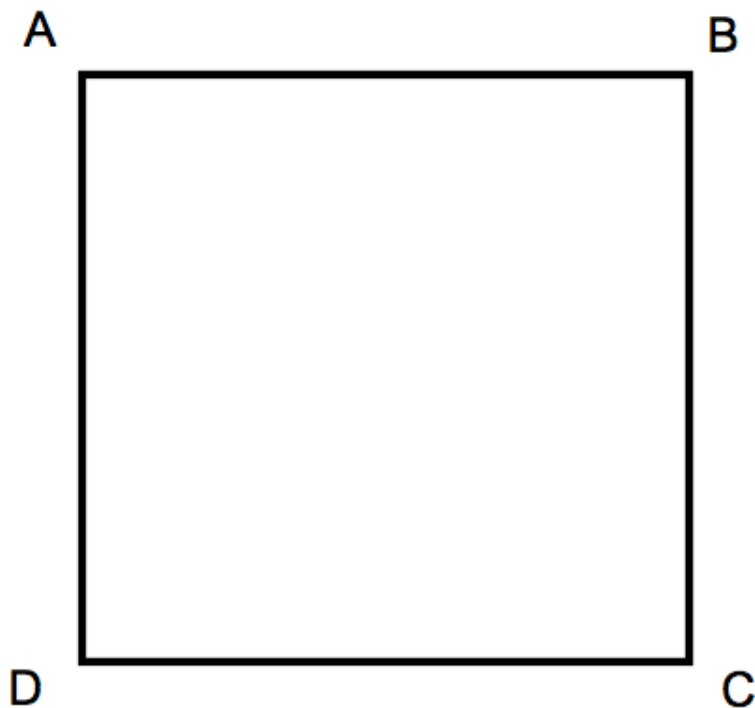
(a) Write down the smallest possible weight of the bag of onions.

.....kg
(1)

(a) Write down the largest possible weight of the bag of onions.

.....kg
(1)

11. A and B are two points.



Shade the region inside the rectangle, which is closer to AD than DC, and less than 4cm from D.

(3)

12. Work out an estimate for the value of

$$\frac{8.1 \times 198}{0.0491}$$

.....
(3)

13.

(a) Write 0.000235 in standard form

.....
(1)

(b) Write 8021×10^5 in standard form

.....
(1)

14. (a) Factorise fully

$$9m^2 - 12mp$$

.....
(2)

(b) Factorise $x^2 - 2x - 24$

.....
(2)

15. The table shows information about the number of hours that 260 students spent revising for an exam.

Number of hours (h)	Frequency
$0 < h \leq 2$	20
$2 < h \leq 4$	32
$4 < h \leq 6$	48
$6 < h \leq 8$	120
$8 < h \leq 10$	24
$10 < h \leq 12$	16

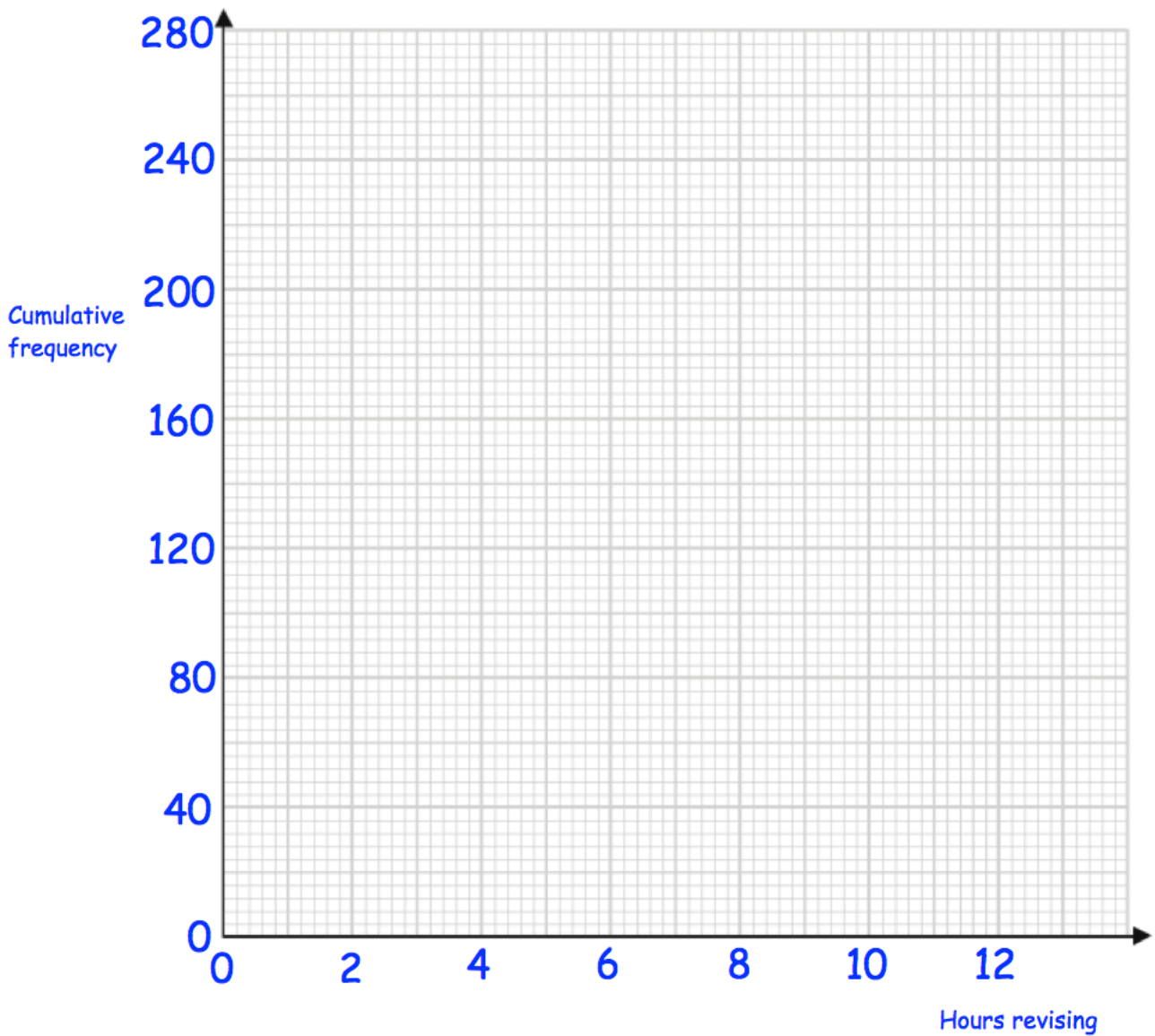
- (a) Complete the cumulative frequency table.

Number of hours (h)	Cumulative frequency
$0 < h \leq 2$	
$0 < h \leq 4$	
$0 < h \leq 6$	
$0 < h \leq 8$	
$0 < h \leq 10$	
$0 < h \leq 12$	

(1)

- (b) On the grid on the following page, draw a cumulative frequency graph for your table.

(2)



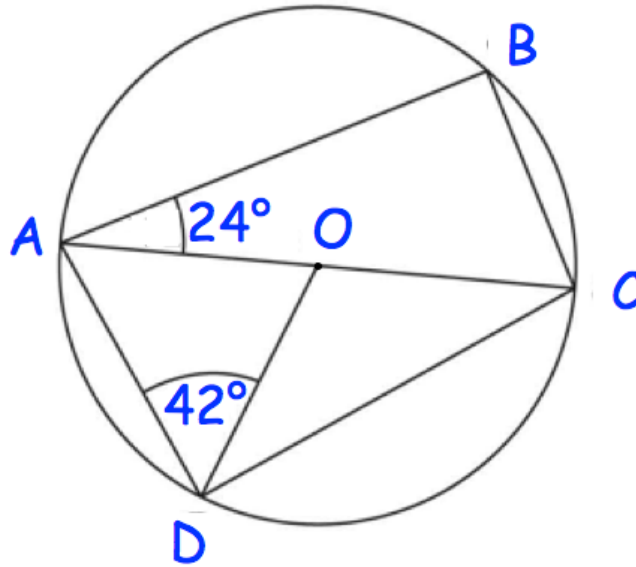
(c) Use your graph to find an estimate for the median number of hours spent revising.

.....hours
(1)

(d) Use your graph to find an estimate for the number of students who spent **less** than 3 hours revising.

.....
(2)

16.



In the diagram O is the centre of the circle.
AOC is a straight line.
Angle BAO is 24° and Angle ADO is 42°

(a) Find the size of angle CAD.

.....^o
(1)

(b) Find the size of angle ACB.

.....^o
(1)

(c) Find the size of angle BCD.

.....^o
(1)

17. Solve the simultaneous equations

$$3x + 2y = 16$$

$$2x - 3y = 2$$

Do not use trial and improvement

$$x = \dots\dots\dots y = \dots\dots\dots$$

(4)

18. (a) Solve the inequality

$$5w + 13 > 7w + 2$$

$$\dots\dots\dots$$

(2)

(b) w is a whole number.

Write down the largest value of w that satisfies

$$5w + 13 > 7w + 2$$

$$\dots\dots\dots$$

(1)

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

(a) Express H in terms of c.

$$H = \dots\dots\dots$$

(3)

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

$$H = \dots\dots\dots$$

(1)

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

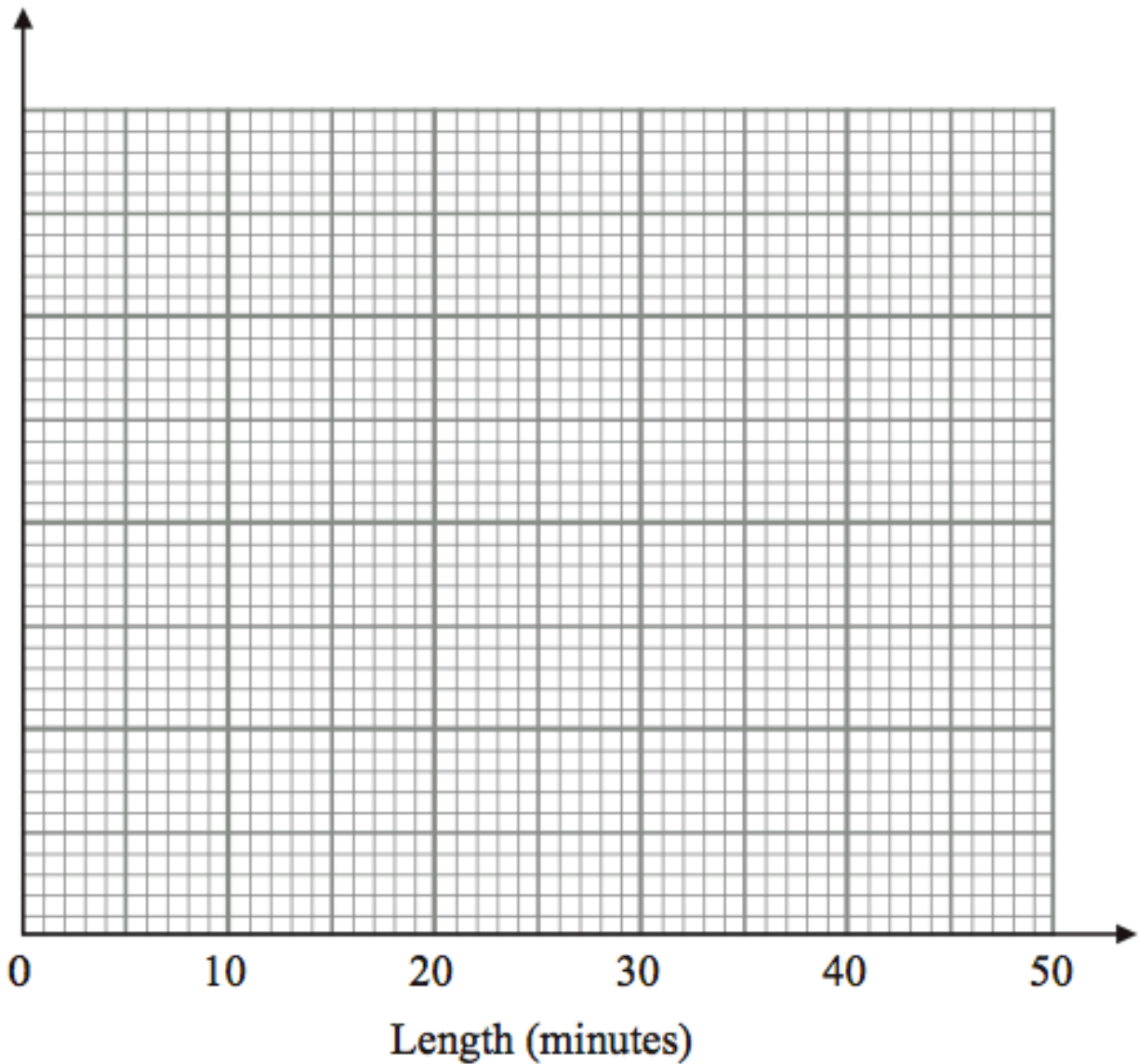
$$c = \dots\dots\dots$$

(1)

20. 100 students sit a test.
The table gives information about the length, in minutes, it takes for the students to complete the test.

Length (t) minutes	Frequency
$0 < t \leq 5$	12
$5 < t \leq 15$	29
$15 < t \leq 30$	30
$30 < t \leq 45$	15
$45 < t \leq 50$	14

Draw a histogram for this information.

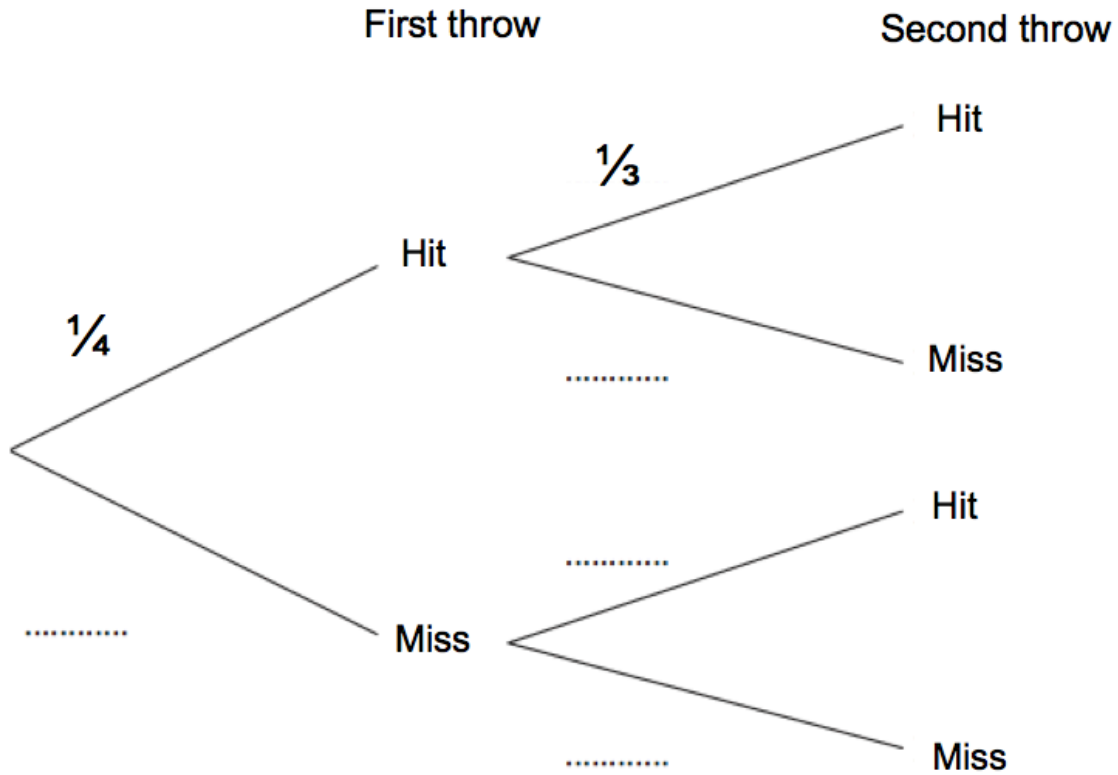


(4)

21. Jennifer is playing darts.
She throws two darts aiming for a Bullseye.

The probability Jennifer hits the Bullseye on her first throw is $\frac{1}{4}$.
The probability she hits the Bullseye on her second throw $\frac{1}{3}$.

(a) Complete the tree diagram.

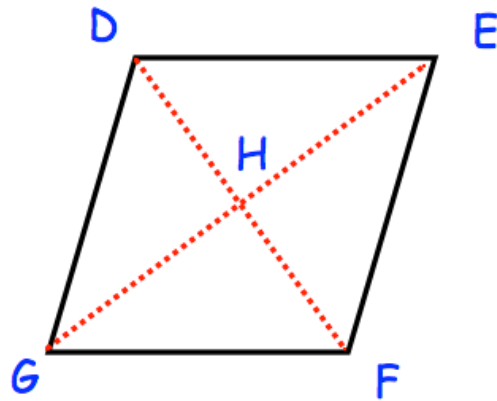


(b) Work out the probability Jennifer hits the Bullseye at least once.

(2)

.....
(2)

22. The diagram shows a rhombus DEFG.
The diagonals intersect at H.



Prove triangles DGH and EFH are congruent.

(4)

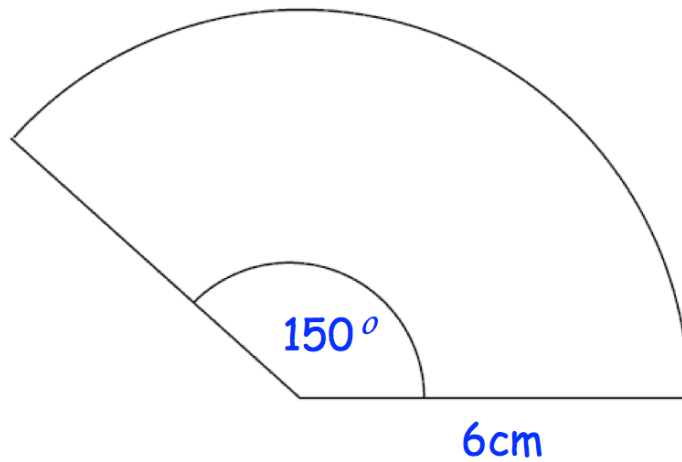
23. Make w the subject of the formula

$$g = \frac{w}{w - 5}$$

$$w = \dots\dots\dots$$

(3)

24. Shown is a sector of a circle.



Find the area of the sector.
Give your answer in terms of π

..... cm^2
(4)

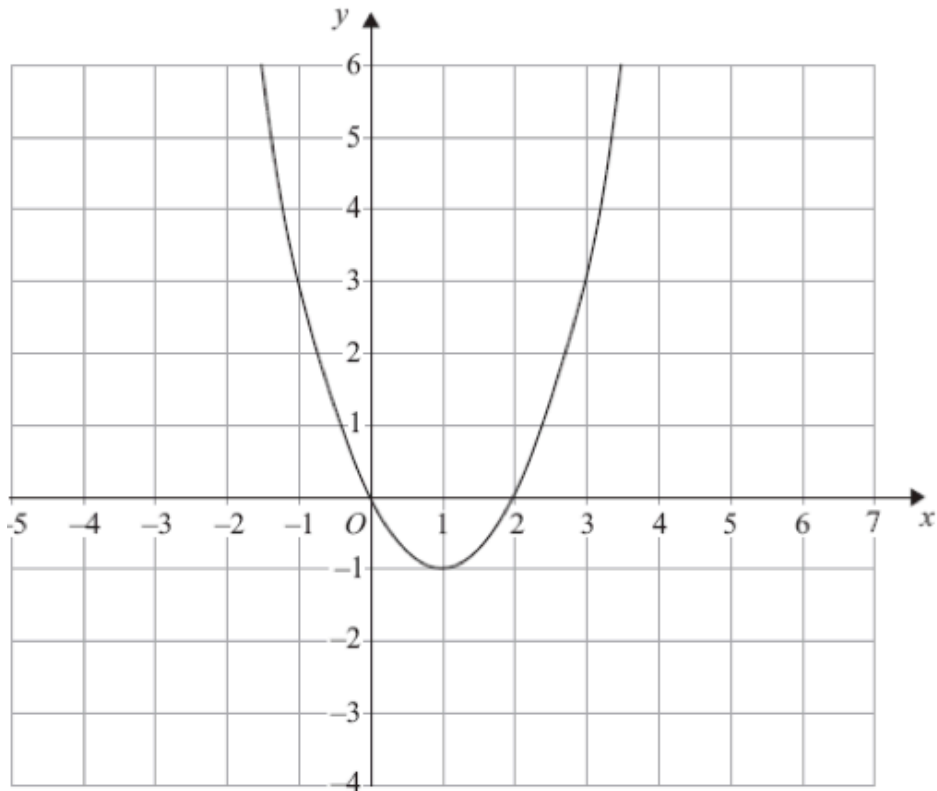
25. Expand and simplify $(3 + \sqrt{8})(4 + \sqrt{2})$

Give your answer in the form $a + b\sqrt{2}$ where a and b are integers.

.....
(4)

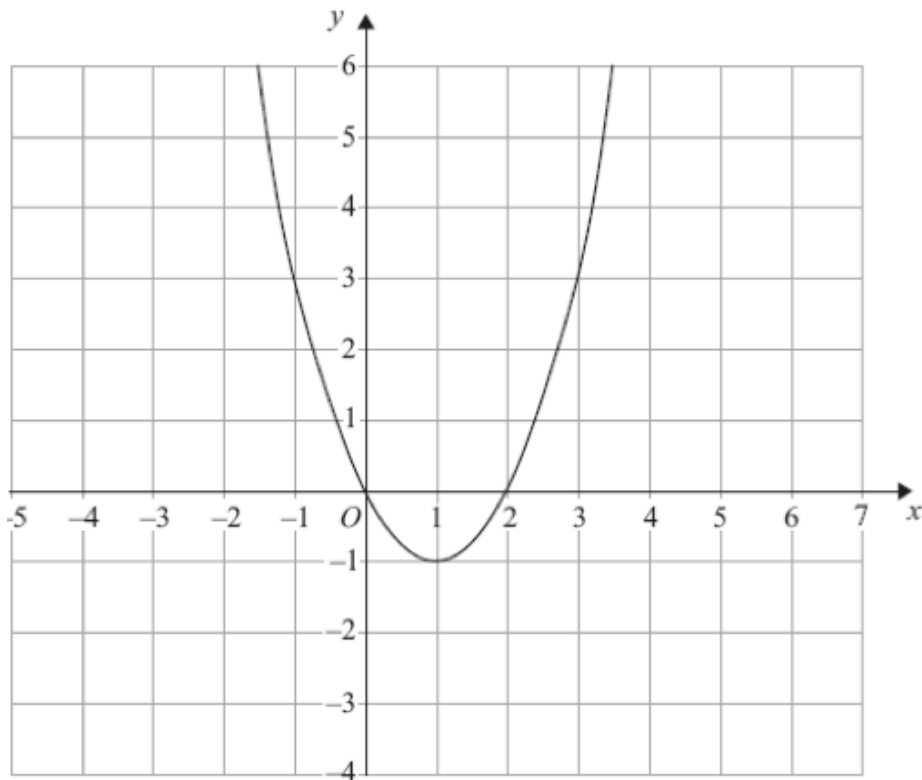
26. The graph of $y = f(x)$ is shown on each grid.

(a) On this grid, sketch $y = f(x) + 1$



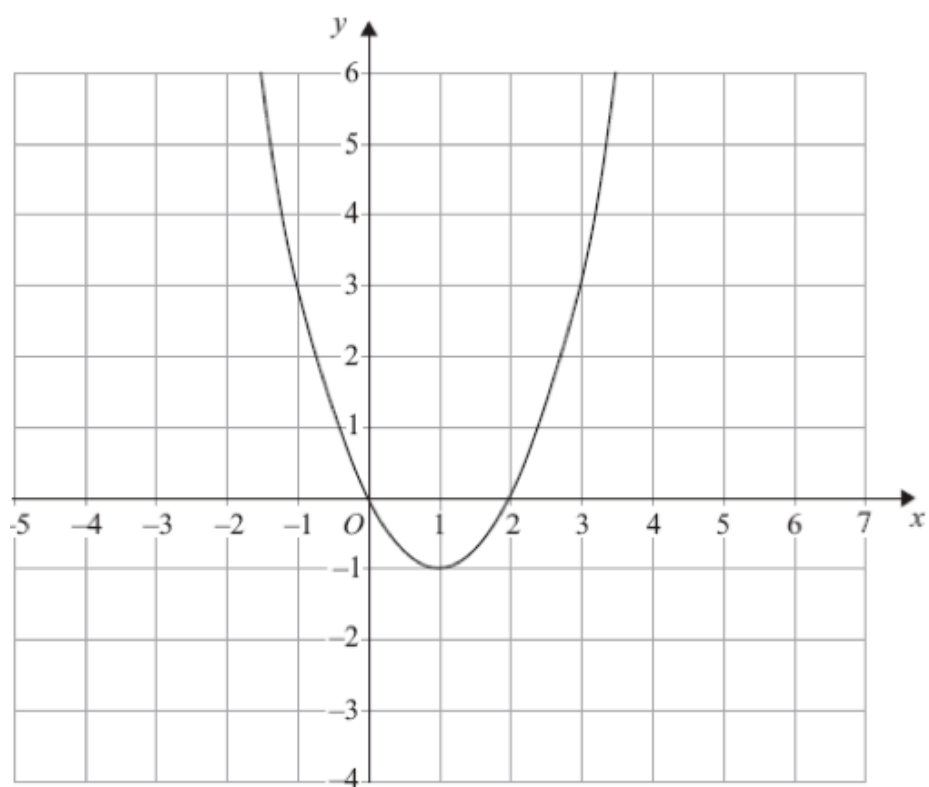
(2)

(b) On this grid, sketch $y = f(-x)$



(2)

(c) On this grid, sketch $y = f(\frac{1}{2}x)$



(2)