# GCSE Revision - A BIT OF EVERYTHING

Edexcel

Higher

Corbettmaths

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

| Question | Topic | Video number |
|---|---|---|
| 90 | Volume of Cone/Pyramid/Sphere | 359, 360, 361 |
| 91 | Conditional Probability | 247 |
| 92 | Congruent Triangles | 67 |
| 93 | Algebraic Proof | 365 |
| 94 | Exact Trig Values | 341 |
| 95 | Ratio - Problem Solving | 270, 271 |
| 96 | Area Under a Graph | 389 |
| 97 | Geometric Proof | 366 |
| 98 | Invariant Points | 392 |

1. Work out

$4\frac{1}{3} - 3\frac{4}{9}$

Give your answer as a fraction.

$\frac{13}{3} - \frac{31}{9}$

$= \frac{39}{3} - \frac{31}{9}$

$= \frac{8}{9}$

8/9

.....

**(3)**

2. Candles normally cost £6 each.

Two websites have special offers

| Corbettmaths Candles | Candles'R'us |
|---|---|
| Buy 3 get 1 free | 20% off |

Laura wants to buy 30 candles.
Which website should Laura use?

CC: 7 lots of buy 3 get 1 free + 2 extra
= 7 x £18 + £6 + £6 = £138

Candles 'R' us: 30 x 6 = £180 £180 - £36 = £144
20% = £36

Corbettmaths Candles are best value!

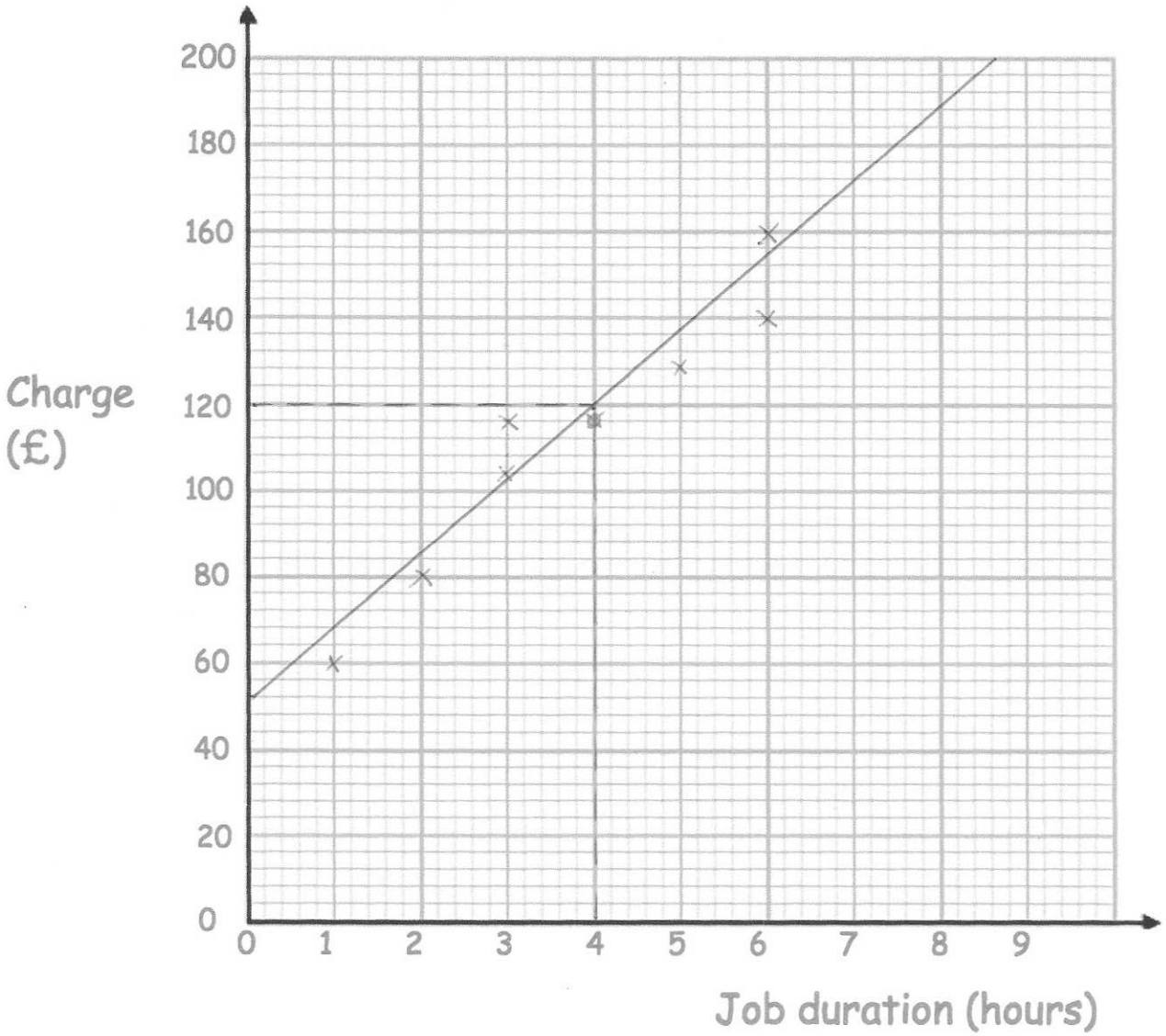
**(4)**

3. The table shows the charge (£) by plumbers for jobs of different duration (hours).

| Job duration (hours) | 1 | 2 | 3 | 3 | 5 | 6 | 6 |
|---|---|---|---|---|---|---|---|
| Charge (£) | 60 | 80 | 104 | 116 | 128 | 140 | 160 |

(a) Plot the data on the scatter graph below.

**(2)**




(b) Describe the correlation.

There is a positive correlation; which means as the job duration increases, so does the charge.

**(1)**

(c) Draw a line of best fit on the scatter graph.

**(1)**

(d) Use your line of best fit to estimate the charge for a 4 hour job.

£ 120

**(1)**

(e) Explain why it may **not** be appropriate to use your line of best fit to estimate the charge for a job lasting 12 hours.

It is beyond the range of the data. It is extrapolation, therefore may not be reliable.

**(1)**

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4. 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.

14300000
- 4192900
10107100

10,107,000

**(2)**

5. Work out

$$5\frac{1}{2} \times 1\frac{2}{3}$$

Give your answer as a mixed number.

$\frac{11}{2} \times \frac{5}{3}$

$= \frac{55}{6}$

$\frac{55}{6} = 9\frac{1}{6}$

.....

**(3)**

---

6. Work out

$$\frac{2}{17} \div \frac{2}{5}$$

Give your answer as a fraction in its simplest form.

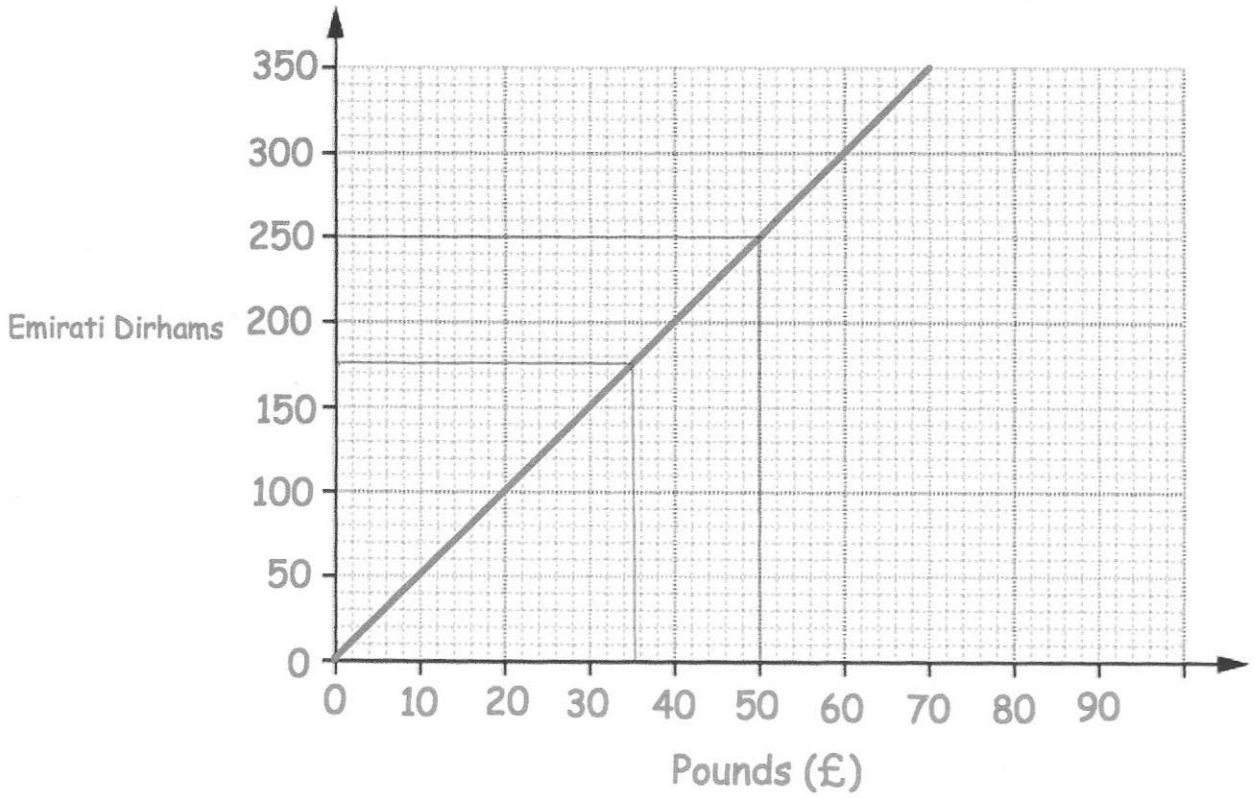
$\frac{2}{17} \times \frac{5}{2} = \frac{10}{34} = \frac{5}{17}$

$\frac{5}{17}$

.....

**(2)**

7.




(a) Convert £50 into Dirhams.

250 Dirhams

**(1)**

(b) Convert 175 Dirhams into Pounds (£).

£ 35

**(1)**

Tom wants to buy a camera.
In London the camera costs £380.
In Abu Dhabi the camera costs 2000 Dirhams.

In which city is the camera cheaper and by how much?
Give your answer in pounds.

200 Dirhams = £40

2000 Dirhams = £400

City: London £ 20

**(1)**

8. Use approximations to estimate the value of

$$\frac{4.12 \times 1.89}{0.21}$$

$\approx \frac{4 \times 2}{0.2}$

$= \frac{8}{0.2} = \frac{80}{2}$

40

**(3)**

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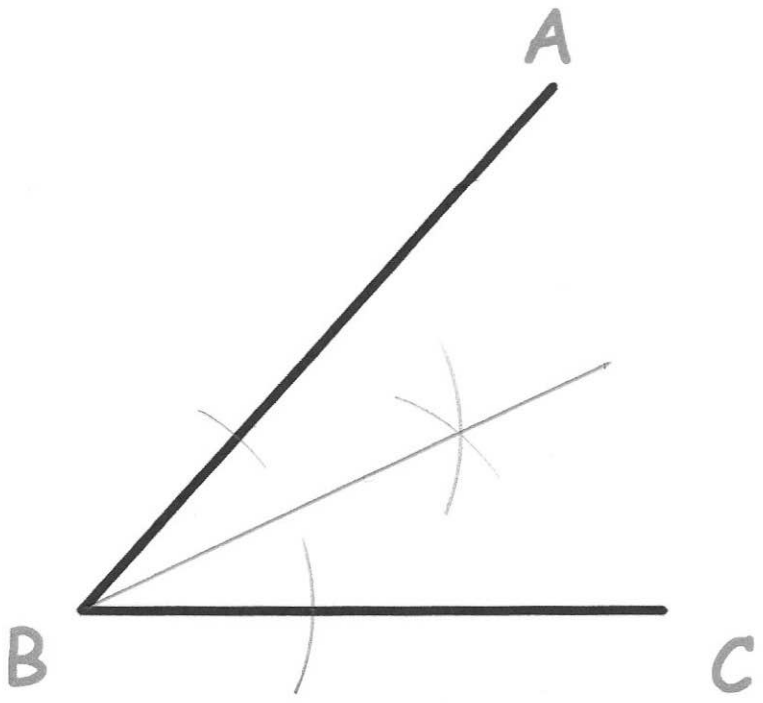
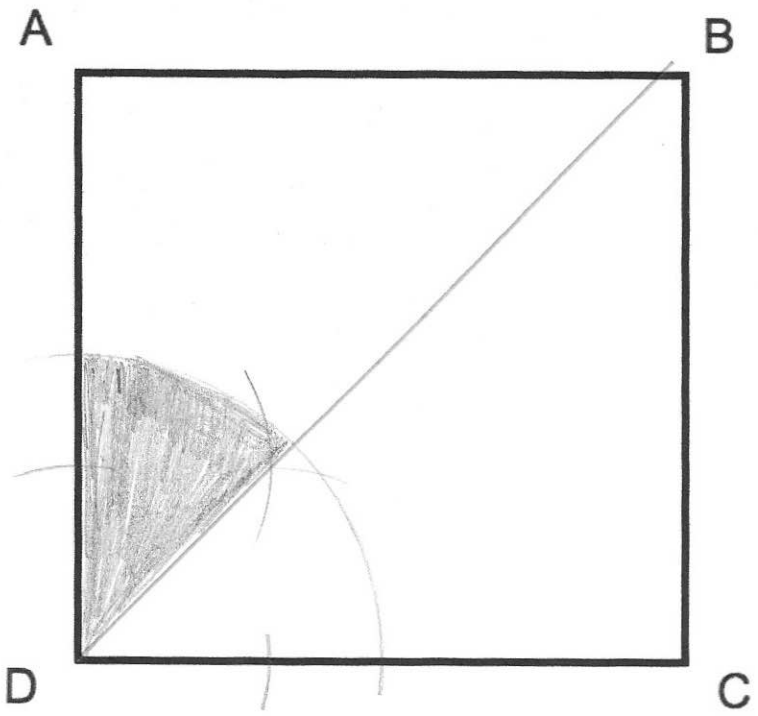
9. Using ruler and compasses, construct the bisector of angle ABC.




**(2)**

10. A and B are two points.




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

**(3)**

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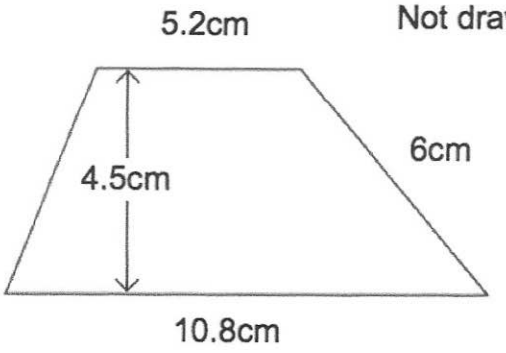
11.




Not drawn accurately

$\frac{1}{2}(a+b)h$

$= \frac{1}{2}(5.2+10.8)\times 4.5$

$= \frac{1}{2}(16)\times 4.5$

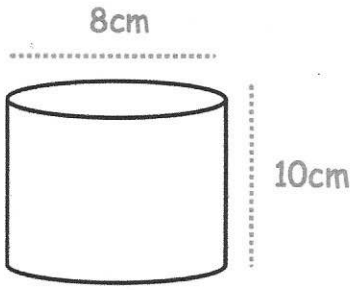
$= 36$

Calculate the area of the trapezium.

36 .....cm²

**(2)**

12. Below is a cylinder with diameter 8cm and 10cm.




Find the volume of the cylinder.
Give your answer in terms of π

$r = 4$

$h = 10$

$V = \pi r^2 h$

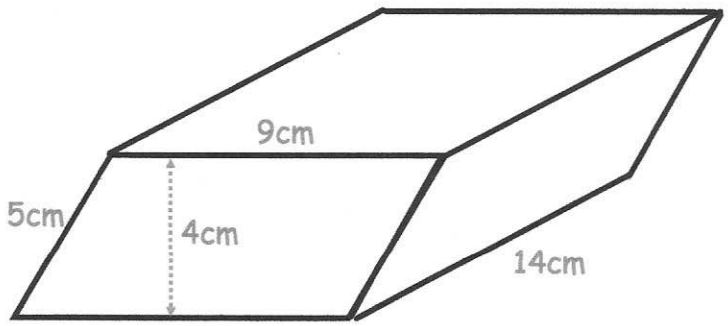
$= \pi \times 4^2 \times 10$

$= 160\pi$

.....160π..... cm³

**(3)**

13. Shown below is a prism.
The cross-section is a parallelogram.




Find the volume of the prism.

$4 \times 9 = 36$

$36 \times 14 =$

504 cm³

**(3)**

14. Here are the lengths in millimetres of 15 earthworms.

| | | | | |
|---|---|---|---|---|
| 43 | 19 | 35 | 28 | 21 |
| 28 | 28 | 18 | 24 | 33 |
| 31 | 36 | 12 | 41 | 28 |

(a) Complete an ordered stem and leaf diagram to show this information.

1|2 means 12

| | |
|---|---|
| 1 | 2 8 9 |
| 2 | 1 4 8 8 8 8 |
| 3 | 1 3 5 6 |
| 4 | 1 3 |

**(3)**

(b) How many earthworms are over 40 millimetres?

2

**(1)**

(c) Write down the mode.

28

**(1)**

(d) What fraction of the earthworms are under 20 millimetres?

1/5

**(1)**

15. On a particular day, 98 adults visit a leisure centre.

Some are going to the gym.
Some are going to play tennis.
Some are going to play badminton.
The rest are going swimming.

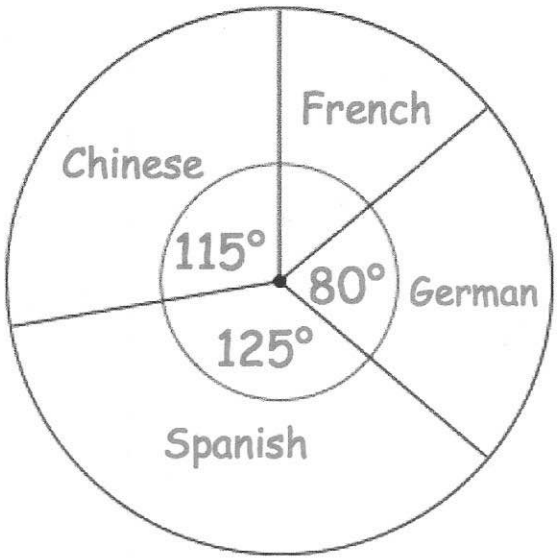
51 people are male.
21 out of the 40 going to the gym are male.
19 males and 7 females are going swimming.
7 out of the 20 people playing badminton are male.
Twice as many females play tennis than males.

How many women play tennis?

| | M | F | Total |
|---|---|---|---|
| Gym | 21 | 19 | 40 |
| Tennis | 4 | 8 | 12 |
| Badminton | 7 | 13 | 20 |
| Swimming | 19 | 7 | 26 |
| Total | 51 | 47 | 98 |

.....8.....
**(2)**

16. The pie chart shows information about the languages studied in a school.
There are 648 students in the school.
Each student studies one language.




How many more students study German than French?

German = $\frac{80}{360}$ of 648

= $\frac{2}{9}$ of 648

= 144

French = $\frac{40}{360}$ of 48

= $\frac{1}{9}$ of 648

= 72

144 − 72 = 72

72

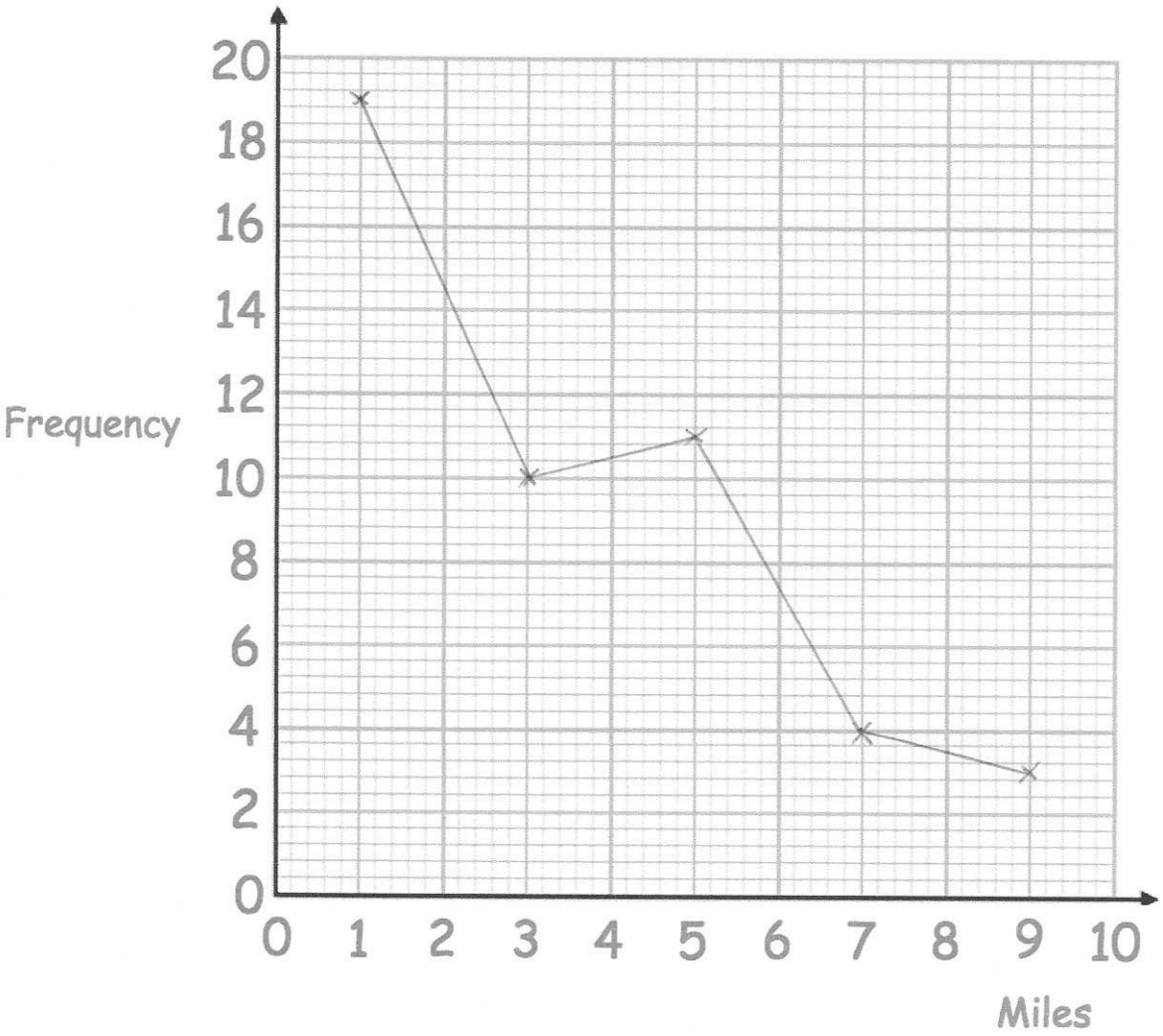
**(4)**

17. The table shows the distance travelled to school by 50 students.

| Distance (miles) | Frequency |
|---|---|
| $0 < d \leq 2$ | 19 |
| $2 < d \leq 4$ | 10 |
| $4 < d \leq 6$ | 11 |
| $6 < d \leq 8$ | 4 |
| $8 < d \leq 10$ | 3 |

(a) Draw a frequency polygon to represent this data.

**(2)**




One student is chosen at random.

(b) Work out the probability that this student travels more than 6 miles to school.

$\frac{7}{50}$

.....

**(1)**

18. The Highest Common Factor (HCF) of two numbers is 6.
The Lowest Common Multiple (LCM) of the same numbers is 60.

What are the two numbers?

12 and 30

6 and 60 etc.

..... and .....

**(2)**

19. Simplify

$(2m^4)^3$

$8m^{12}$

**(2)**

20. Jim picks a five digit odd number.
The second digit is less than 5.
The fourth digit is a cube number The first digit is a prime number.
How many different numbers could he pick?

1st 2nd 3rd 4th 5th

4 x 5 x 10 x 2 x 5

2000

**(3)**

21. Given that $a = 4$, $b = 9$ and $c = -5$

Work out the value of

$$\frac{ab + 24}{2c} = \frac{36 + 24}{-10} = \frac{60}{-10}$$

$-6$

.....

**(3)**

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22. Make w the subject of the formula

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

$g(w-5) = w$

$gw - 5g = w$

$gw - w = 5g$

$w(g-1) = 5g$

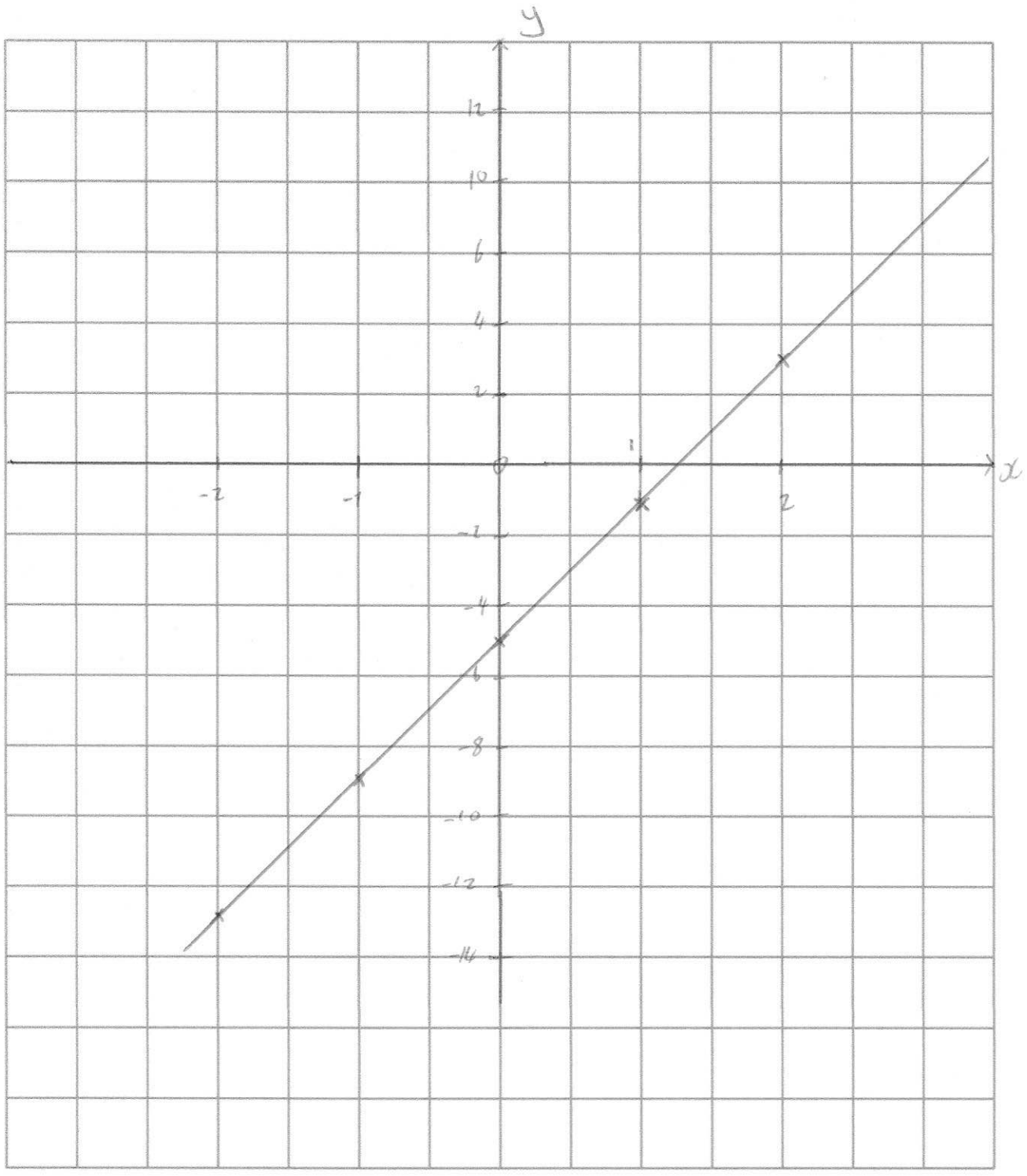
$w = \frac{5g}{g-1}$

w = $\frac{5g}{g-1}$

**(3)**

23. On the grid, draw $y = 4x - 5$ for values of x from –2 to 2.

| $x$ | $-2$ | $-1$ | $0$ | $1$ | $2$ |
|---|---|---|---|---|---|
| $y$ | $-13$ | $-9$ | $-5$ | $-1$ | $3$ |




**(4)**

24. Solve the simultaneous equations

$4x + 3y = 5$
$2x - 5y = 9$ $\times 2$

Do not use trial and improvement

$4x + 3y = 5$
sub $4x - 10y = 18$
$13y = -13$
$y = -1$

$4x - 3 = 5$
$4x = 8$
$x = 2$

check $4 - -5 = 9$ ✓

x = ..... 2 ..... y = ..... $-1$ .....

**(4)**

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25. Kevin is going on holiday to Japan.
He wants to change some money into yen.

The bank only stocks ¥1000 notes.
James wants to change up to £300 into yen.
He wants as many ¥1000 notes as possible.

The exchange rate is £1 = ¥168

How many ¥1000 notes should he get?

$300 \times 168 = ¥50400$

$Max = ¥50000$

50 notes
.....

**(3)**

26. Susan buys an antique for £120 and sells it for £216.

Work out her percentage profit

$\frac{96}{120} = \frac{4}{5}$

80 .....%

**(3)**

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27. Charlene and Danielle share some money in ratio 7 : 9
Danielle gets £48 more than Charlie

How much does each woman receive?

9 - 7 = 2

48 ÷ 2 = 24

24 x 7 = 168

24 x 9 = 216

Charlene £ 168

Danielle £ 216

**(3)**

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28. Natalie invests £600 for 5 years at 3% per year compound interest.
How much interest does she earn?

$600 \times 1.03^5 =$ 695.56

£ 95.56

**(2)**

29. Nigel measures the time, t seconds, to complete a race as 14.8 seconds correct to the nearest tenth of a second.

Write down the error interval for t.

$14.75 \leq t < 14.85$

.....

**(2)**

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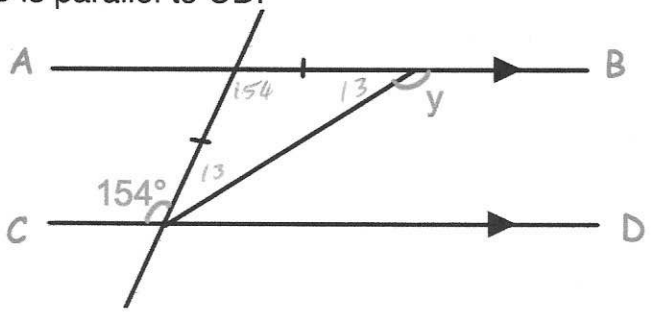
30. AB is parallel to CD.




Work out the size of angle y.
Give reasons for your answer.

$\angle CFE = \angle FEG$ (alternate angles are equal)

$\angle EFG = \angle EGF$ (two angles in an isosceles triangle are equal)

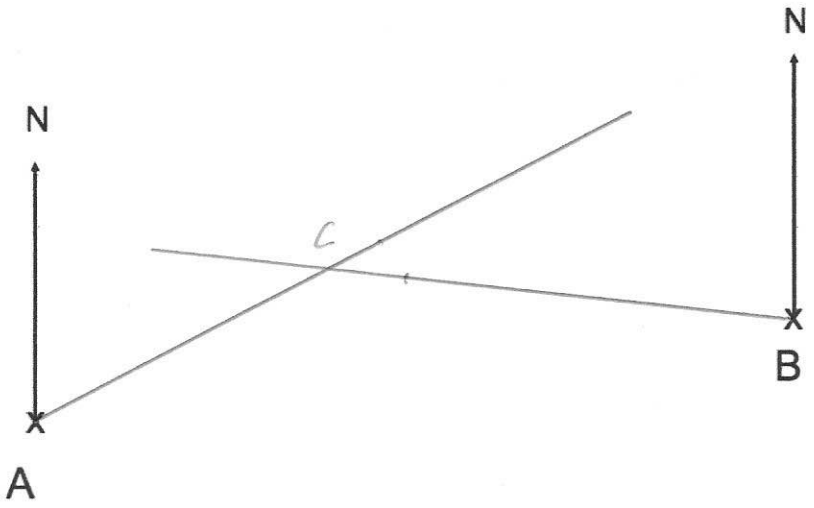
both 13°

Angle EGF & BGF are in a straight line, so add to 180°

167 .....°

**(4)**

31. The diagram shows the position of two people, A and B, who are on their Duke of Edinburgh expedition.




The bearing of person C from person A is 062°
The bearing of person C from person B is 275°

In the space above, mark the position of person C with a cross (x). Label it C.

**(3)**

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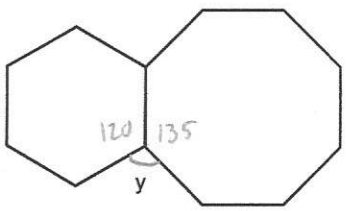
32. Shown is a regular hexagon and a regular octagon.

$720 \div 6 = 120°$




$1080 \div 8 = 135°$

Calculate the size of angle y.

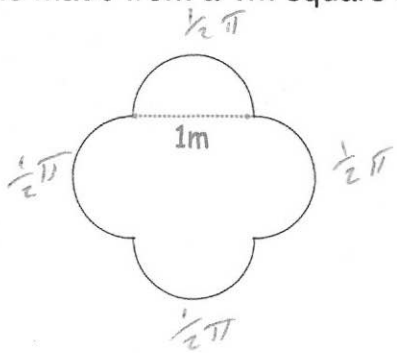
$120 + 135 = 255$

$360 - 255 = 105°$

y = 105 °

**(3)**

33. Shown is a table top.
It is made from a 1m square and four semicircles.




$\pi \times 1 = \pi$

$\pi \div 2 = \frac{1}{2}\pi$

Calculate the perimeter of the table top.

$2\pi$ .....m
or 6.28 **(4)**

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34. Work out $\sqrt{125} = 5$ $2^{-3} = \frac{1}{2^3} = \frac{1}{8}$

$$125^{\frac{1}{3}} \times 2^{-3}$$

$5 \times \frac{1}{8}$

$\frac{5}{8}$
.....
**(2)**

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35. Jacob buys a watch costing £84
This cost includes VAT at a rate of 20%.

How much is the watch without VAT?

120% = 84.00

1% = 0.70

100% = 70

£ 70
**(3)**

36. Expand and simplify $(x - 5)(x - 2)(x - 1)$

$(x^2 - 2x - 5x + 10)(x - 1)$

$(x^2 - 7x + 10)(x - 1)$

$x^3 - x^2 - 7x^2 + 7x + 10x - 10$

$x^3 - 8x^2 + 17x - 10$

.....

**(4)**

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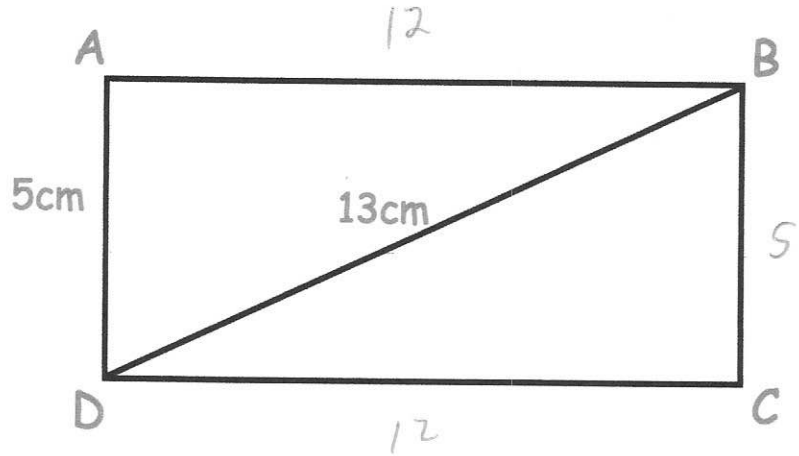
37. Below is rectangle, ABCD




AD = 5cm
BD = 13cm

Calculate the perimeter of rectangle ABCD

$5^2 + y^2 = 13^2$

$25 + y^2 = 169$

$y^2 = 144$

$y = 12$

$5 + 12 + 5 + 12$

34

.....cm

**(3)**

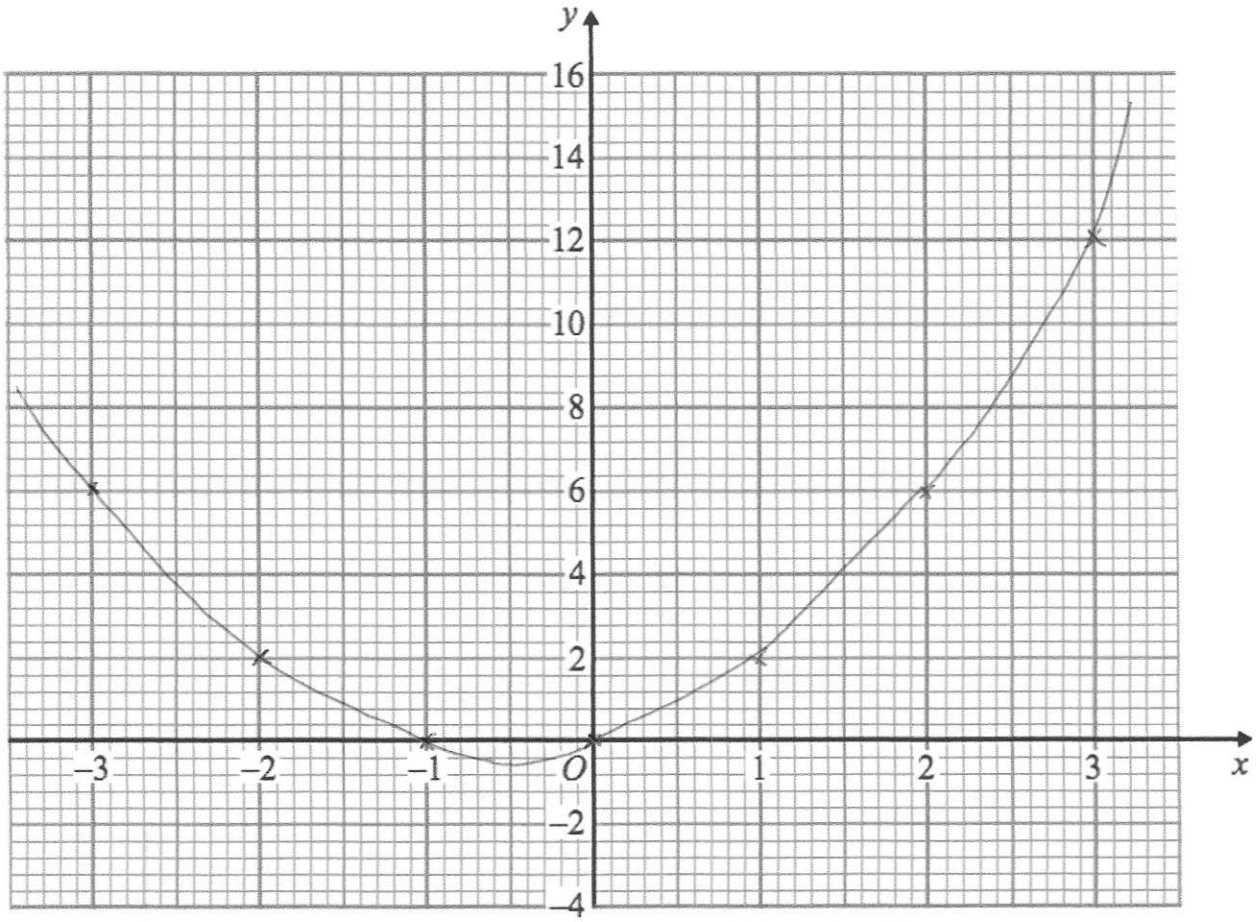
38

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

| $x$ | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| $y$ | 6 | 2 | 0 | 0 | 2 | 6 | 12 |

**(2)**

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




**(2)**

39. A circle has an area of $64\pi$ cm$^2$

Work out the radius of the circle.

$A = 64\pi$

$r^2 = 64$

$r = 8$

8

.....cm

**(2)**

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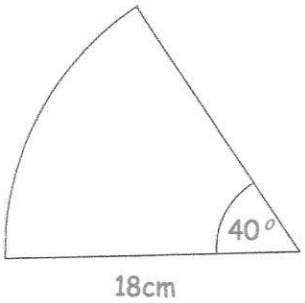
40.




Find the length of the arc, giving your answer to 1 decimal place.

$\frac{40}{360} \times \pi \times 36$

$\frac{1}{9} \times \pi \times 36 = 4\pi$

12.6

.....cm

**(3)**

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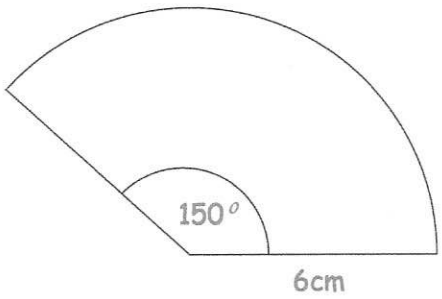
41. Shown is a sector of a circle.




Find the area of the sector.

$\frac{150}{360} \times \pi \times 6^2$

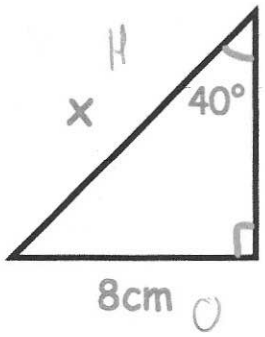
$= 15\pi$

47.1

.....cm$^2$

**(3)**

42. The diagram shows a right-angled triangle.




5 O H

Calculate the length of x.

$x = \frac{8}{\sin 40}$

12.45 to 2dp

.....cm

**(3)**

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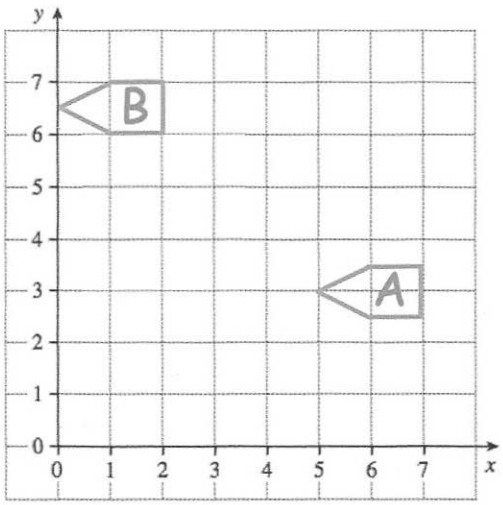
43.




Describe fully the single transformation that maps shape A onto shape B.

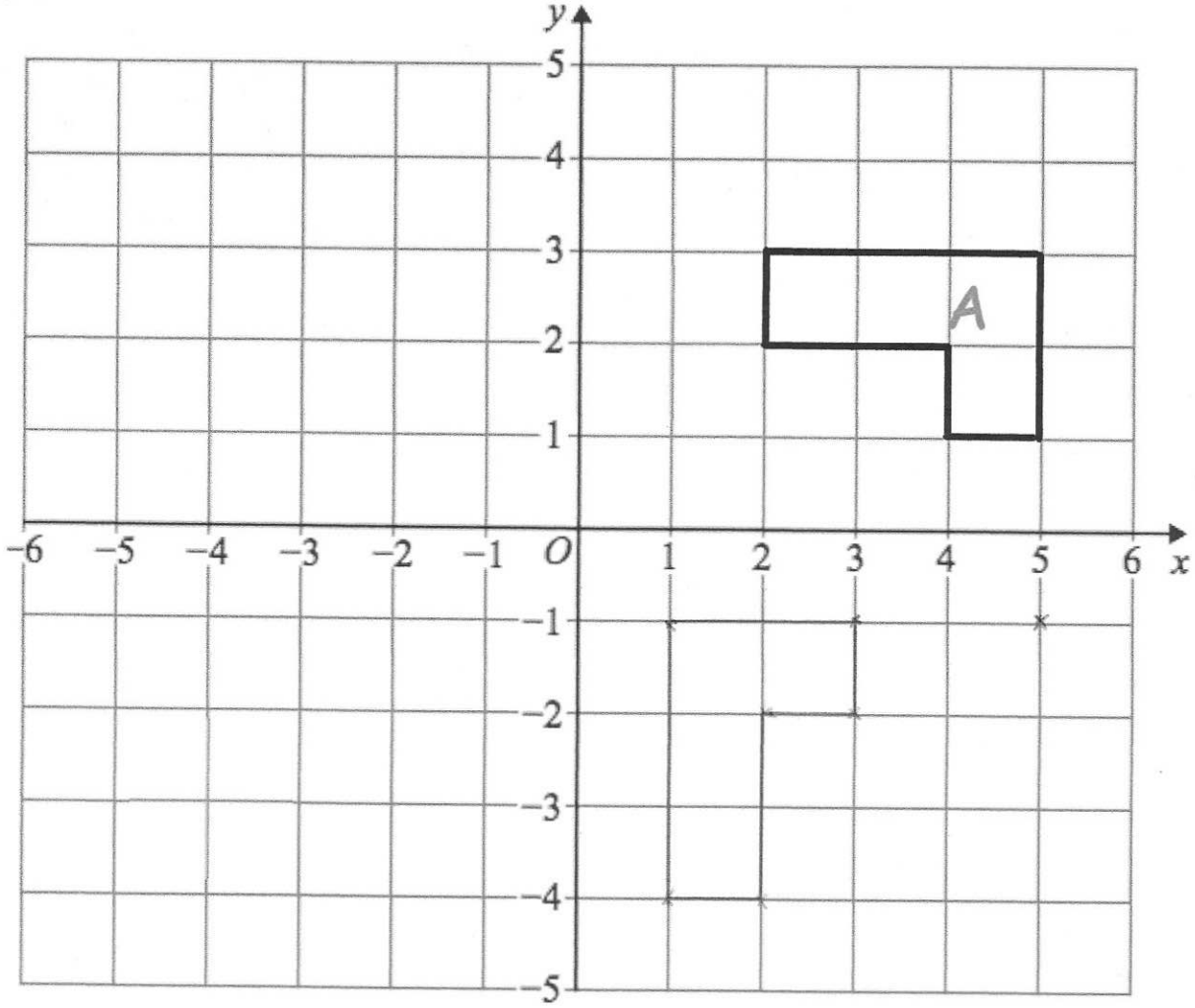
Translation by the vector $\begin{pmatrix} -5 \\ 3.5 \end{pmatrix}$

.....

.....

**(2)**

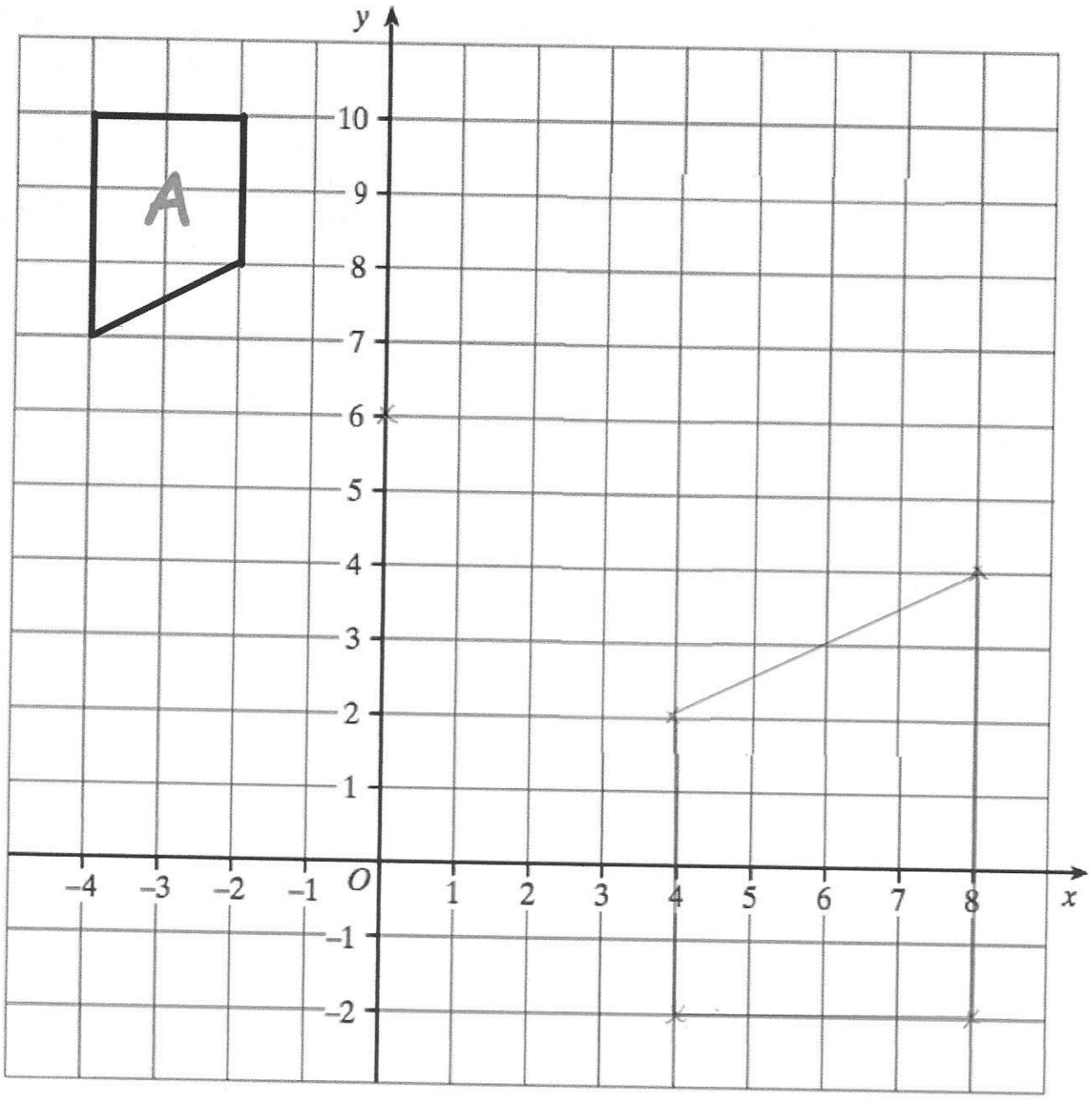
44.




Rotate shape A 90° anti-clockwise about centre (5, −1)

**(3)**

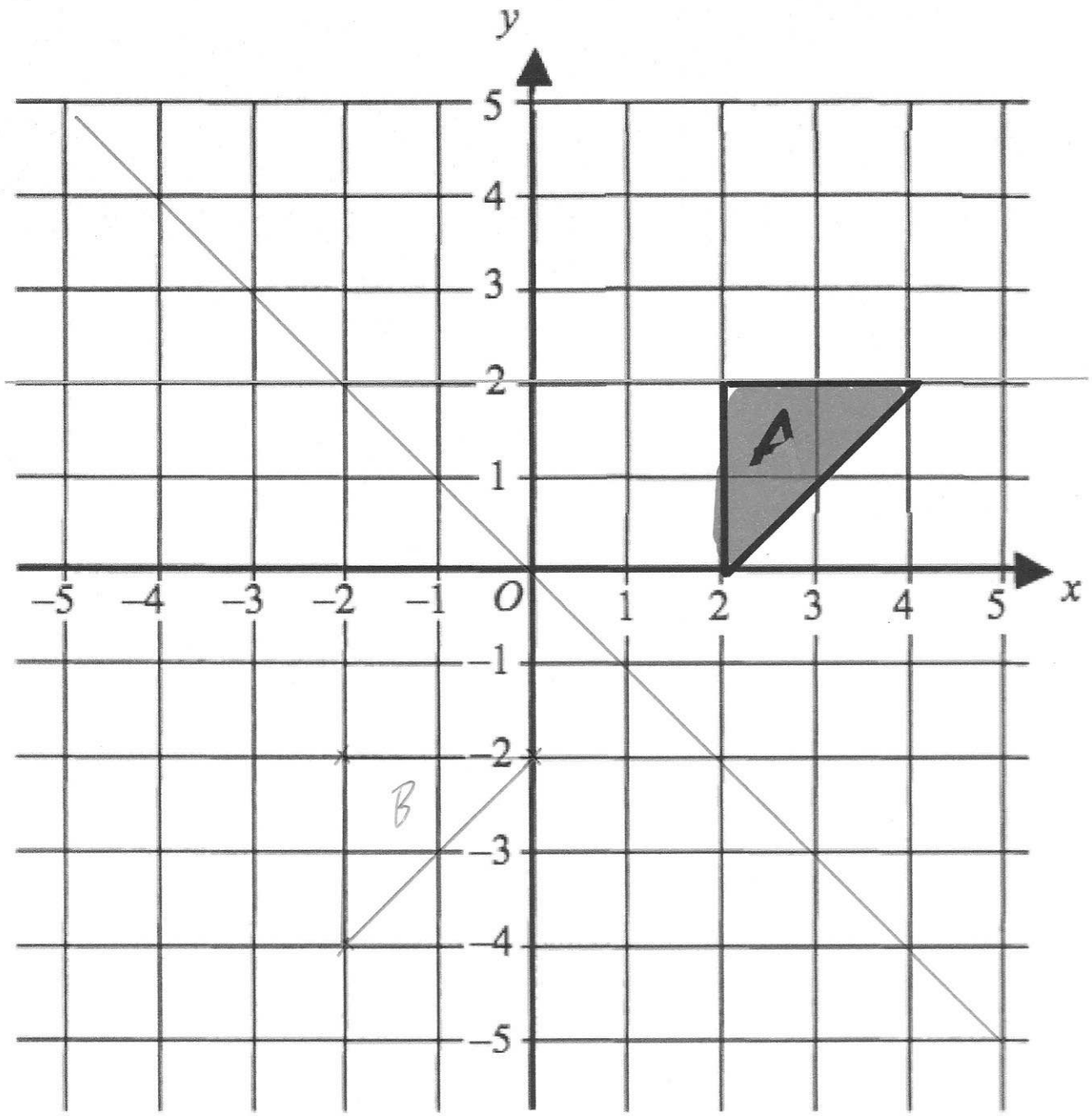
45.




Enlarge the triangle by scale factor –2, using centre of enlargement (0, 6)

**(3)**

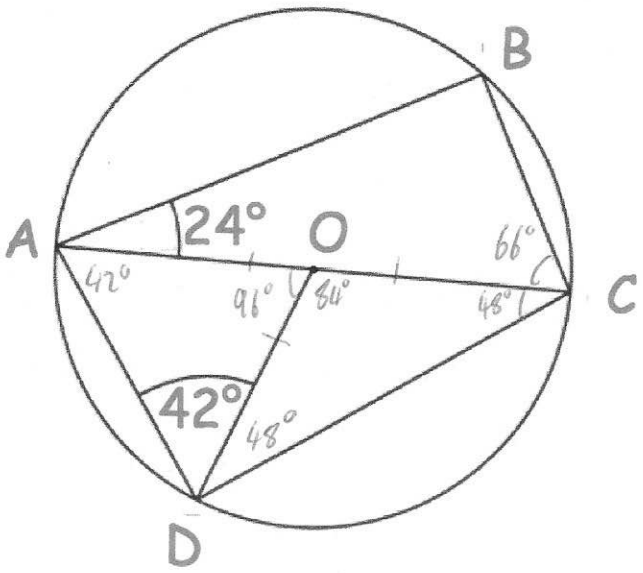
46.




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

**(2)**

47.




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.

42°
.....°
**(1)**

(b) Find the size of angle ACB.

180 - 24 - 90

66
.....°
**(1)**

(c) Find the size of angle BCD.

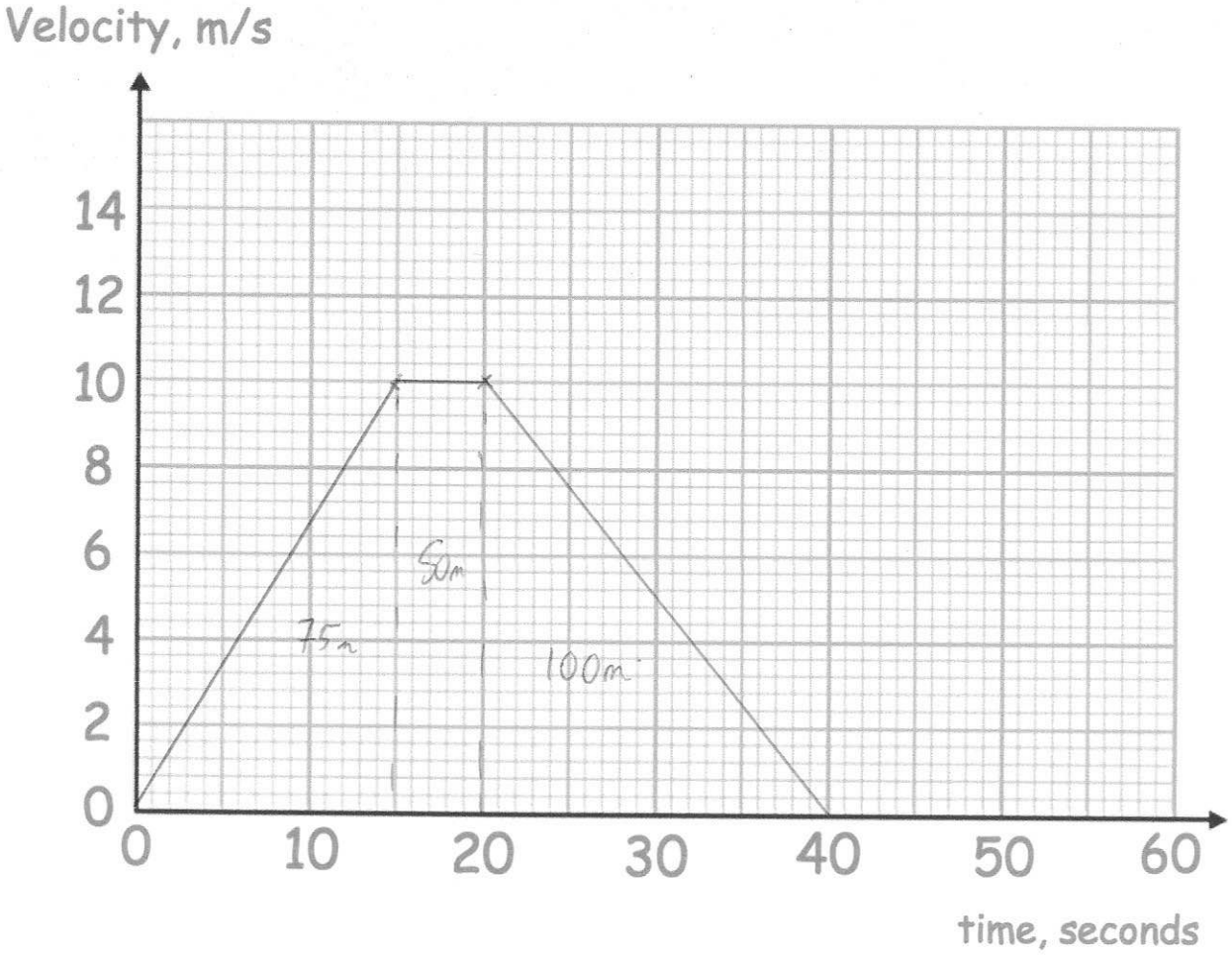
42
+24
66

180
-66
114°

114
.....°
**(1)**

48. A remote control car drives in a straight line.
It starts from rest and travels with constant acceleration for 15 seconds reaching a velocity of 10m/s.
It then travels at a constant speed for 5 seconds.
It then slows down with constant deceleration of $0.5m/s^2$.

(a) Draw a velocity time graph




(b) Using your velocity-time graph, work out the total distance travelled.

225 .....m

**(2)**

49.


$t = \frac{d}{s}$

A village is 20 miles from Belfast.

Conor drives from the village to Belfast at 40mph
Kelly drives from the village to Belfast at 50mph

30 minutes

Work out how much longer the journey takes Conor.
Give your answer in minutes.

kelly $\frac{20}{50} = 0.4$ hours

24 minutes

30 − 24

6 minutes

**(3)**

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50. The mass of $3m^3$ of tin is 21840kg.

(a) Work out the density of tin.

$\frac{m}{v}$ $\frac{21840}{3}$

7280 $kg/m^3$

**(2)**

The density of aluminium is $2712kg/m^3$. $\times 5 = 13560$

(b) Work out the difference in mass between $5m^3$ of tin and $5m^3$ of aluminium.

tin $7280 \times 5 = 36400$

36400
13560
22840

22840 kg

**(3)**