

Name: _____

GCSE Maths 2022
Edexcel Foundation Paper 3
Set B
Calculator



Corbettmaths

Equipment

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

Answers

Guidance

1. Read each question carefully.
2. Check your answers seem right.
3. Always show your workings

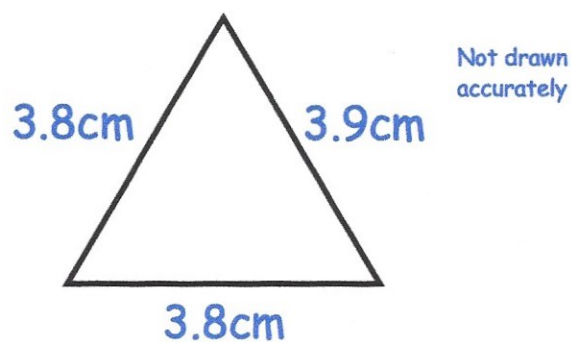
Information

1. This paper has been created based on topics in the Advance Information.
2. Also see Corbettmaths for the checklist for the entire GCSE as these topics may still be useful for Paper 3
3. There is one question per topic - this paper is designed to give an opportunity to practice each topic rather than replicate the actual paper.
4. The marks for questions are shown in brackets

GCSE 2022 Resources



1. Shown below is a triangle.



- (a) Write down the type of triangle shown.

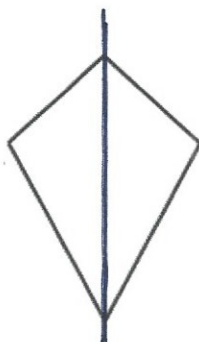
Isosceles
.....
(1)

- (b) Work out the perimeter of the triangle.

$$3.8 + 3.8 + 3.9$$

11.5cm
.....
(1)

2. A quadrilateral is drawn below.



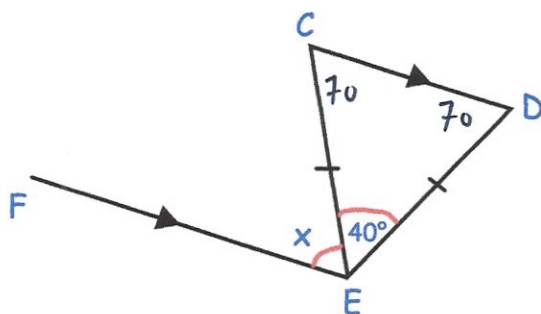
- (a) Write down the name of this quadrilateral.

kite
.....
(1)

- (b) Draw any lines of symmetry on the quadrilateral.

(1)

3.



EF and CD are parallel straight lines.

CE = DE

Angle CED = 40°

Find the size of angle CEF

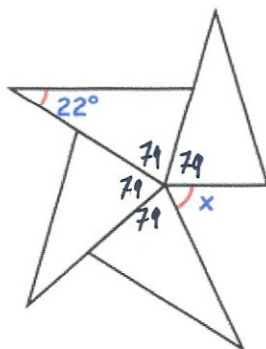
Give a reason for each stage of your working.

$\angle DCE = 70^\circ$ 2 angles in an isosceles triangle are equal.

$\angle CEF = 70^\circ$ Alternate angles are equal. ($\angle DCE = \angle CEF$)

(3)

4. Here are four identical isosceles triangles.



$$180 - 22 = 158$$

$$158 \div 2 = 79$$

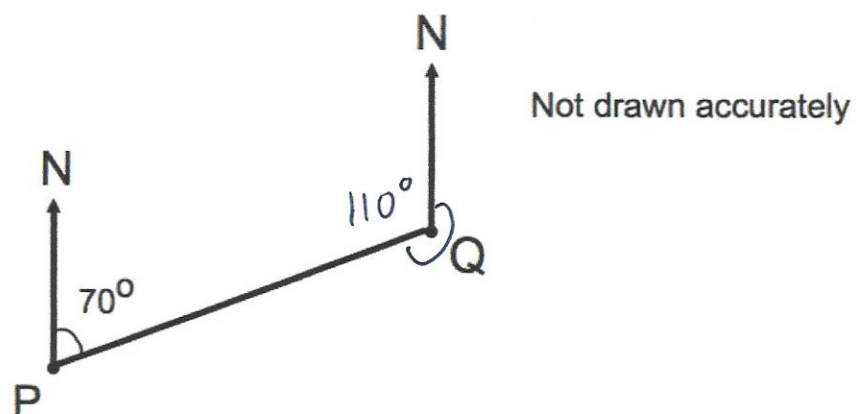
$$79 \times 4 = 316$$

$$360 - 316 = 44$$

Find the size of angle x

44
.....°
(2)

5. The diagram shows the position of two airplanes, P and Q.



The bearing of Q from P is 070° .

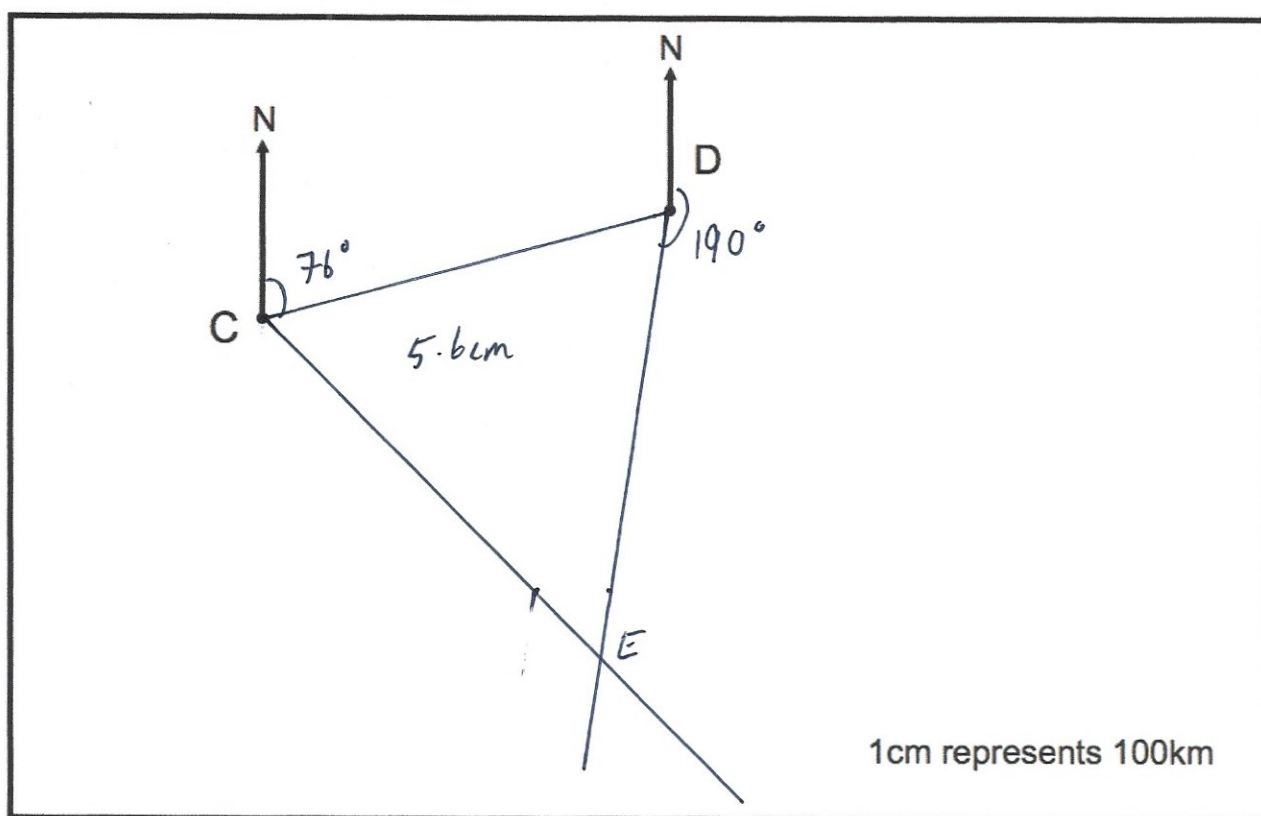
Calculate the bearing of P from Q.

$$360 - 110 = 250$$

$$\begin{array}{r} 250 \\ \hline \end{array}^\circ$$

(2)

6. The diagram shows the position of two cities C and D.



- (a) Work out the actual distance of D from C.

.....560.....km
(2)

- (b) Find the three figure bearing of D from C.

.....076.....°
(1)

E is South-East of C.

- (c) Write down the bearing of E from C.

N
W E
S

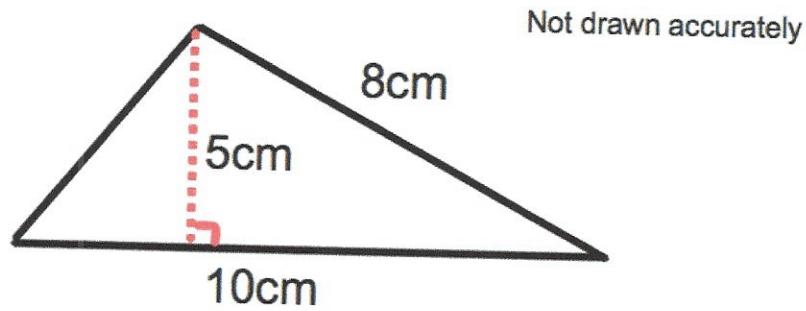
.....135.....°
(1)

E is also on a bearing of 190° from D.

- (d) Mark the position of E on the diagram.

(2)

7.

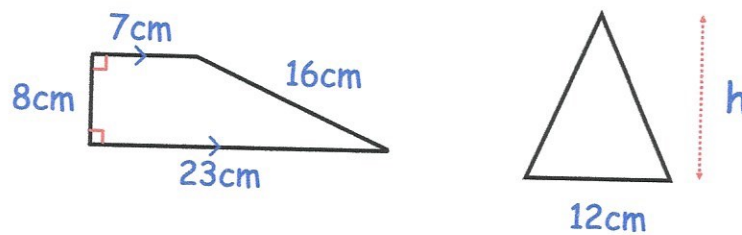


Calculate the area of the triangle.

$$\frac{1}{2} \times 10 \times 5$$

.....25.....cm²
(2)

8. The trapezium and the triangle have the same area.



Calculate the height of the triangle.

$$\frac{1}{2} (7 + 23) \times 8 = 120 \text{ cm}^2$$

$$120 \times 2 = 240$$

$$240 \div 12 = 20$$

.....20.....cm
(3)

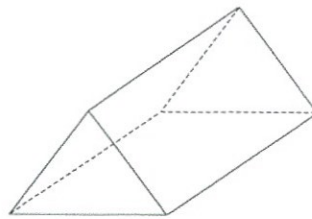
9. A car travels at 5m/s

Write this speed in km/h

$$\begin{aligned} 300 \text{ m/min} \\ 18000 \text{ m/hr} \\ 18 \text{ km/h} \end{aligned}$$

.....18.....km/h
(2)

10. Below is a solid shape.



- (a) What is the mathematical name for the shape?

.....triangular prism.....
(1)

- (b) Write down the number of vertices

.....6.....
(1)

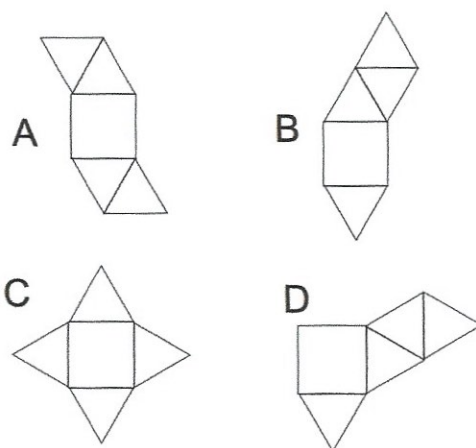
- (c) Write down the number of faces

.....5.....
(1)

- (d) Write down the number of edges

.....9.....
(1)

11. Here are 4 diagrams.



Three of these diagrams show a net for a square-based pyramid.

Write down the letter of the diagram which is **not** a net for a square-based pyramid.

B

(1)

12. The timetable for a flight from London to Beijing is shown.

Departure from London	5 August 20:25
Arrival in Beijing	6 August 13:10

7 hours

When it is 1pm in London, it is 8pm in Beijing.

How long should the journey take?

Give your answer in hours and minutes.

Show your working.

$$13:10 \text{ (minus 7 hrs)} \rightarrow 06:10$$

$$20:25 \xrightarrow{35 \text{ mins}} 21:00 \xrightarrow{3 \text{ hrs}} 00:00 \xrightarrow{6 \text{ hrs}} 06:00 \xrightarrow{10 \text{ mins}} 06:10$$

9 hours 45 minutes

(3)

13. Here is part of a train timetable.

	Departure times			
Antrim	12:30	13:00	14:00	16:00
Randalstown	12:45	13:15	14:15	16:15
Ballymena	13:01	13:31	14:31	16:31
Ballycastle	13:39	14:09	15:09	17:09

Freddy wants to travel from Randalstown to Ballycastle.

He arrives at Randalstown at 13:03 to catch the next train to Ballycastle.

(a) How long does this train journey take?

13:15 14:00 14:09
 ← ←
 45 9

54
minutes
 (2)

Jennifer lives in Antrim and her friend lives in Ballymena.

Jennifer lives a 5 minute walk from Antrim train station.

Her friend lives a 30 minute walk from Ballymena train station.

Jennifer wants to arrive at her friend's house **before** 3pm.

Plan Jennifer's journey to her friend's house.

Jennifer could catch either the 12:30 or 13:00 train but not 14:00 or 16:00.

example: Jennifer should leave before 12:55 so she can get to Antrim train station by 13:00. She should get the 13:00 train to Ballymena, which will arrive at 13:31. She should then walk to her friend's house and she should arrive by 14:01, which is before 3pm.

(5)

14. David cycles from A to B at a speed of 20mph for $1\frac{1}{4}$ hours.
He then cycle from B to C at a speed 16mph for 2 hours
Finally David cycles from C to D at a speed of 12mph for 45 minutes.

Work out the average speed for the entire journey.

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

A to B

$$d = 20 \times 1.25 = 25 \text{ miles}$$

B to C

$$d = 16 \times 2 = 32 \text{ miles}$$

C to D

$$d = 12 \times 0.75 = 9 \text{ miles}$$

A to D

$$25 + 32 + 9 = 66 \text{ miles}$$

$$1.25 + 2 + 0.75 = 4 \text{ hours}$$

$$66 \div 4 = 16.5$$

$$\frac{16.5}{\dots\dots\dots} \text{mph}$$

(4)

15. A glass cube of side length 5cm has a mass of 306.25g.
Calculate the density of the glass.

$$V = 5 \times 5 \times 5 = 125 \text{ cm}^3$$

$$d^M_V \quad d = 306.25 \div 125 = 2.45$$

$$\frac{2.45}{\dots\dots\dots} \text{g/cm}^3$$

(3)

16. Find the pressure exerted by a force of 180 newtons on an area of 50cm^2 .
Give your answer in newtons/ m^2

$$50 \div 100^2 \\ = 0.005\text{m}^2$$

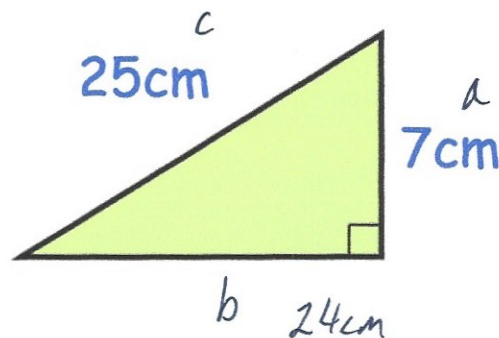
$$p = \frac{F}{A}$$

$$\frac{180}{0.005}$$

$$\frac{36000}{\dots\dots\dots}\text{newtons}/\text{m}^2$$

(3)

17. Here is a right angle triangle.



Calculate the area of the triangle.

$$\begin{aligned} a^2 + b^2 &= c^2 \\ 7^2 + b^2 &= 25^2 \\ 49 + b^2 &= 625 \\ b^2 &= 576 \\ b &= 24\text{cm} \end{aligned}$$

$$\begin{aligned} A &= \frac{1}{2} \times 24 \times 7 \\ &= 84 \end{aligned}$$

$$\frac{84}{\dots\dots\dots}\text{cm}^2$$

(5)

18. A cinema has 16 seats in each row.
There are 24 rows.
During a movie, there are 45 empty seats.
Work out how many people watched the movie.

$$16 \times 24 = 384$$

$$384 - 45 = 339$$

339

(3)

19. Bradley buys 12 rulers.
He pays with a £20 note.
His change is £14.60
What is the cost of one ruler?

$$20.00 - 14.60 = £5.40$$

$$£5.40 \div 12 = 45p$$

45p

(3)

20. In year 8 there are 197 students.
In year 9 there are 212 students.
In year 10 there are 235 students.
How many students are there in total in years 8, 9 and 10?

$$\begin{array}{r} 197 \\ 212 \\ + 235 \\ \hline 644 \end{array}$$

644

(2)

21. Grace is saving money for a new guitar.

The guitar costs £49.50

In January she saved £7.85

In February she saved £14.26

Work out how much more money Grace needs to save

$$7.85 + 14.26 = £22.11$$

$$£49.50 - £22.11 = £27.39$$

£27.39

(3)

22. Round 45.2807 to two significant figures

45

(1)

23. List all the factors of 20

1, 2, 4, 5, 10, 20

1, 2, 4, 5, 10, 20

(1)

24. Mr Jenkins is tiling a square floor.
He uses 196 square tiles.

Work out how many tiles are in each row.

$$\sqrt{196}$$

14

(2)

25. 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~~ 6 and 60

(2)

26. Work out $\frac{7}{20}$ of 860

$$860 \div 20 = 43$$

$$43 \times 7 = 301$$

301

(1)

27. Here are some fractions.

$$\frac{4}{9} \quad \left(\frac{6}{9}\right) \quad \frac{30}{40} \quad \left(\frac{14}{21}\right) \quad \frac{6}{10}$$

Which two fractions are equivalent to $\frac{2}{3}$?

$$\frac{6}{9} \quad \text{and} \quad \frac{14}{21}$$

.....
(1)

28. Over a season, a football team won 53% of their matches and drew 32%.

Win 53%
Draw 32%
Loss

- (a) Work out what percentage of games were lost.

$$53 + 32 = 85$$

$$\frac{15}{100} \%$$

.....
(1)

- (b) Work out what fraction of the games were lost.
Give your answer in its simplest form.

$$\frac{15}{100}$$

$$\frac{3}{20}$$

.....
(2)

29. Barry is saving money towards a new motorbike that costs £4,000.
Each month, he saves £5 more than the previous month.
In January he saves £60.

$$60 + 65 + 70 + 75 + 80 + 85 + 90 + 95 + 100 + 105 + 110 + 115$$

Over the first year of saving money, what fraction of the cost has he saved?

$$\frac{1050}{4000}$$

$$\frac{21}{80}$$

.....
(3)

30. Martina sat two maths tests.

Paper 1 has 60 marks.

Paper 2 has 150 marks

Martina scored 65% in Paper 1 and 36% in Paper 2.

Her teacher has said to pass she will need to score 45% of the total marks.

Did Martina pass?

You need to show your working.

$$1\% \text{ of } 60 = 0.6$$

$$65\% \text{ of } 60 = 39 \text{ marks}$$

$$1\% \text{ of } 150 = 1.5$$

$$1.5 \times 36 = 54 \text{ marks}$$

$$\text{Her total} = 93 \text{ marks}$$

$$1\% \text{ of } 210 = 2.1$$

$$45\% \text{ of } 210 = 94.5 \text{ marks}$$

No

(4)

31. An empty bucket weighs 800g.

The weight of the bucket increases to 3.3kg when filled with water.

Calculate the percentage increase in the weight of the bucket.

$$3300 - 800 = 2500$$

$$\frac{2500}{800} = 312.5\%$$

312.5%

(3)

32. The population of an island has decreased by 40% over 50 years.
The population in 2018 was 360

Work out the population of the island in 1968.

$$60\% \text{ of } y = 360$$

$$1\% \text{ of } y = 6$$

$$100\% \text{ of } y = 600$$

600

(3)

33. In a nursery, there are 5 adults and 14 children.

Write the ratio of adults to children in the form 1 : n

$$\begin{array}{r} 5 : 14 \\ \div 5 \quad \downarrow \quad \div 5 \\ 1 : 2.8 \end{array}$$

$$14 \div 5 = 2.8$$

1 : 2.8

(1)

34. Below are seven cards, each with a number written on it.

-3	-4	6	2	4	-7	1
----	----	---	---	---	----	---

Choose two suitable cards to make the calculation correct.

$$\boxed{-4} + \boxed{6} = 2$$

(1)

35. It would take 48 days for 5 workers to build a house.

(a) How much longer would it take if only 4 workers built the house?

$$48 \times 5 = 240$$

$$240 \div 4 = 60$$

60 days
.....
(3)

(b) State one assumption you made in working out your answer to (a)

..... All workers work at the same rate.
.....
(1)

36. Work out

$$\frac{\sqrt{8^2 + 5^4}}{2.7^3}$$

Write down all the figures on your calculator display.

1.333577681
.....
(2)

37. In a school canteen, a cup of tea costs 60p.

(a) Write down an expression for the cost, in pence, of y cups of tea.

$60y$ pence
(1)

The canteen sells twice as many cups of coffee as it does cups of tea.

(b) Write down an expression for the cups of coffee sold when y cups of tea are sold.

$2y$
(1)

Each cup of coffee costs 80p.

(c) Write down an expression for the cost, in pence, of the cups of coffee sold.

$160y$ pence
(1)

The canteen also sells biscuits and fruit.

(d) Write down an expression for the cost, in pence, of w biscuits at 15p each and 8 pieces of fruit at 30p each.

$15w + 240$ pence
(1)

38. Expand and simplify $9(t + 3) + 3(2t - 11)$

$$9t + 27 + 6t - 33$$

$$15t - 6$$

$15t - 6$
(2)

39. Simplify $\frac{52c^3}{13c}$

$4c^2$
.....
(1)

40. Here are the first four terms of a number sequence.

2 5 8 11

(a) (i) Write down the next term of the number sequence.

14
.....
(1)

(ii) Explain how you found your answer.

added 3 .
.....
(1)

The 40th term of the number sequence is 119.

(b) Work out the 41st term of the number sequence.

122
.....
(1)

41. The n th term of a sequence is $3n - 2$

(a) Write down the first two terms of this sequence.

1st term 1, 2nd term 4
(2)

(b) Which term of the sequence is equal to 70?

$$3n - 2 = 70$$

$$3n = 72$$

$$n = 24$$

24th
.....
(2)

(c) Explain why 101 is not a term in the sequence.

$$3n - 2 = 101$$

$$3n = 103$$

$$n = 34.\bar{3}$$

The 34th term is 100.

The 35th term is 103

Therefore 101 is not a term in the sequence.

(2)

42. Expand and simplify $(w - 9)(w - 4)$

$$w^2 - 4w - 9w + 36$$

$w^2 - 13w + 36$
.....
(2)

43. Fully factorise $5x^3 - x^2$

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

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

(2)

44. Factorise $x^2 + 3x - 4$

$$(x + 4)(x - 1)$$

$$(x + 4)(x - 1)$$

(2)

45. 7 Rebecca is x years old.

15 Mary is 8 years older than Rebecca. $x + 8$

45 Jill is three times older than Mary. $3x + 24$

The sum of their ages is 67.

Work out Mary's age.

$$5x + 32 = 67$$

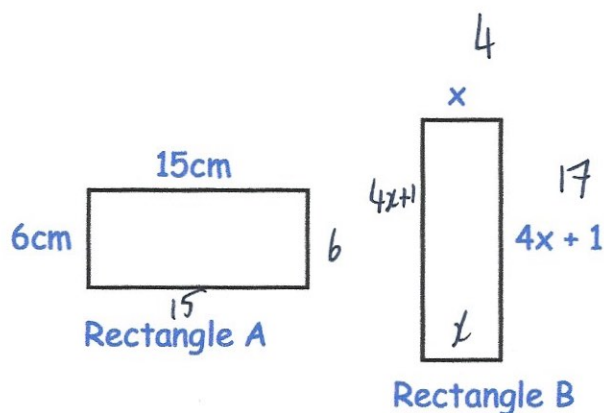
$$5x = 35$$

$$x = 7$$

$$15$$

(3)

46.



Both rectangles have the same perimeter.

Find the area of rectangle B.

$$15 + 6 + 15 + 6 = 42\text{cm}$$

$$10x + 2 = 42$$

$$10x = 40$$

$$x = 4$$

$$4 \times 17 = 68$$

.....⁶⁸.....cm²
(5)

47. Given that $x = 9$ and $y = 5$

Work out the value of $x^2 - 7y$

$$9^2 - 7 \times 5$$

$$81 - 35$$

.....⁴⁶.....
(2)

48. Make m the subject of the formula

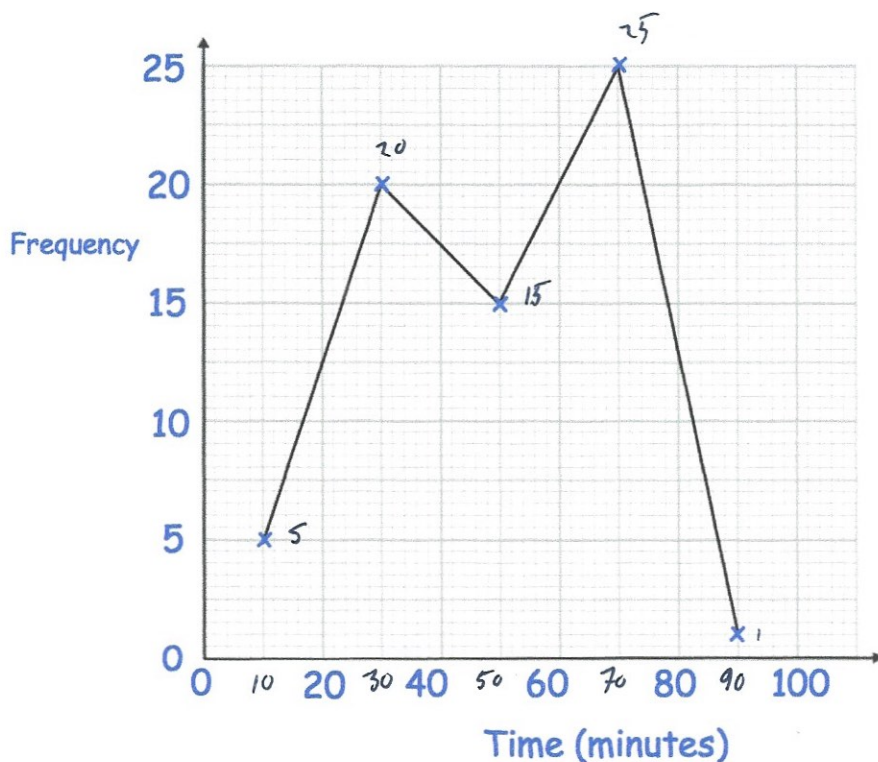
$$s = \frac{hm}{4}$$

$$45 = hm$$

$$m = \frac{45}{h}$$

$$m = \frac{45}{h} \dots \dots \dots (2)$$

49. The frequency polygon shows information on how long people spend in a swimming pool.



$$\begin{aligned}
 5 \times 10 &= 50 \\
 20 \times 30 &= 600 \\
 15 \times 50 &= 750 \\
 25 \times 70 &= 1750 \\
 1 \times 90 &= 90 \\
 \hline
 &3240
 \end{aligned}$$

$$5 + 20 + 15 + 25 + 1 = 66$$

Calculate an estimate of the mean time spent in the swimming pool.

$$\cancel{3240} \quad 3240 \div 66$$

$$\underline{49.09 \text{ mins}} \quad (3)$$

50. A spinner lands of white, black, red or orange.
The relative frequencies after 300 spins are shown in the table below.

Colour	White	Black	Red	Orange
Relative Frequency	0.25	0.4	0.2	0.15

Work out how many more times the spinner landed on black than orange.

$$300 \times 0.4 = 120$$

$$300 \times 0.15 = 45$$

75

(3)

51. Here are the ages of 9 children at a birthday party.

10 12 13 10 11 14 15 10 12

- (a) Find the mode.

10

(1)

- (b) Find out the median.

10 10 10 11 12 12 13 14 15

12

(2)

- (c) Work out the range.

$$15 - 10 = 5$$

5

(2)

- (d) Work out the mean.

$$107 \div 9 = 11.8\bar{8}$$

11.89

(2)

52. 8 boys and 8 girls from a class run 100m.

The times taken, to the nearest second, for each girl are:

15 20 24 18 19 21 26 29

The mean of the boys' times is 25 seconds.

The range of the boys' times is 14 seconds.

Thomas says that "the boys in our class are faster than the girls."

Is he correct?

$$15 + 20 + 24 + 18 + 19 + 21 + 26 + 29 = 172$$

$$172 \div 8 = 21.5 \text{ (mean for girls)}$$

$$29 - 15 = 14 \text{ (range for girls)}$$

As the girls' mean time taken to complete the 100m run is lower than the boys, the girls are quicker on average. therefore Thomas is incorrect.