

## Pre Public Examination

GCSE Mathematics (Edexcel style)

May 2017

Foundation Tier

**Paper 2F**

**Worked Solutions**

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Name .....

Class .....

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### TIME ALLOWED

1 hour 30 minutes

### INSTRUCTIONS TO CANDIDATES

- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- **You are permitted to use a calculator in this paper.**
- Do all rough work in this book.

### INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [ ] at the end of each question or part question on the Question Paper.
- **You are reminded of the need for clear presentation in your answers.**
- The total number of marks for this paper is **80**.

Question	Mark	out of
1		1
2		1
3		2
4		2
5		2
6		4
7		4
8		4
9		3
10		5
11		3
12		4
13		7
14		3
15		5
16		4
17		3
18		3
19		5
20		2
21		4
22		5
23		2
24		2
Total		80

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

**Question 1.**

Use your calculator to work out  $1.32^2$

**1.7424 B1**  
**(Total 1 mark)**

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**Question 2.**

Change 5.66 centimetres into millimetres.

**56.6mm B1**  
**(Total 1 mark)**

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**Question 3.**

Write 30 out of 96 as a fraction.  
Give your fraction in its simplest form.

**$\frac{30}{96}$  M1**

**$\frac{5}{16}$  A1**  
**(Total 2 mark)**

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**Question 4.**

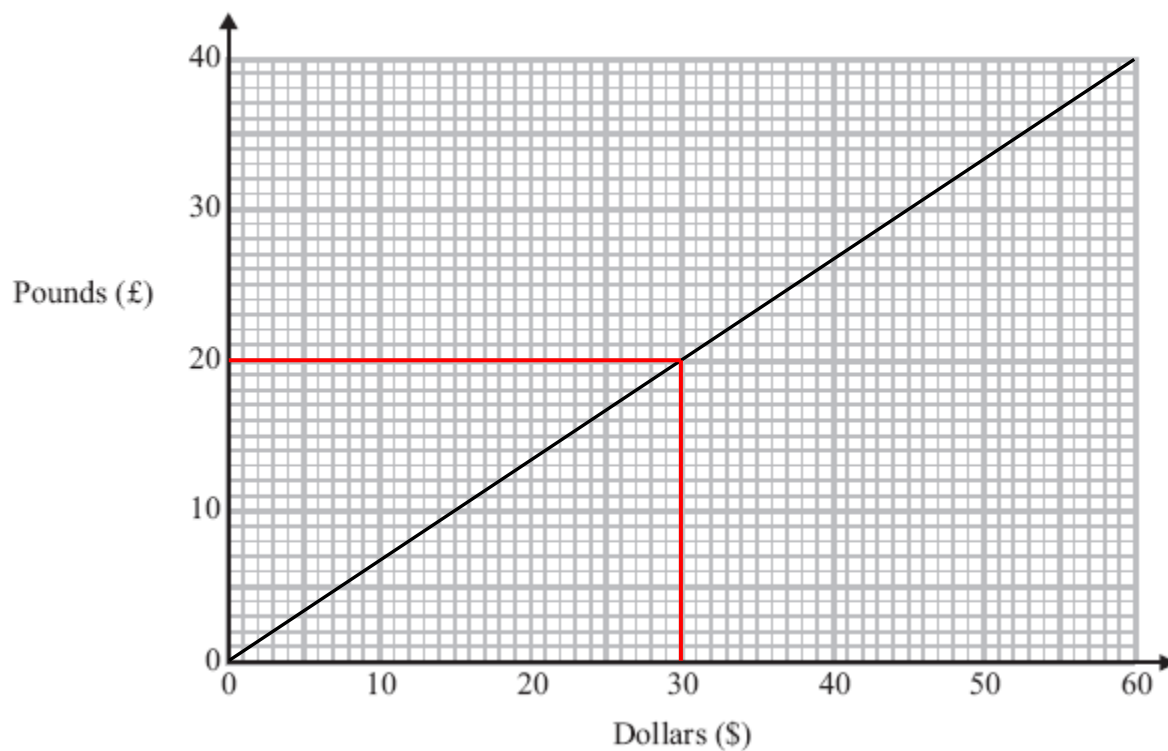
Work out  $\frac{2}{3}$  of 39

**$(39 \div 3) \times 2$  M1**

**26 A1**  
**(Total 2 mark)**

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**Question 5.**



Change £60 into Dollars (\$).

**£20 = \$30 M1**

**\$30 × 3**

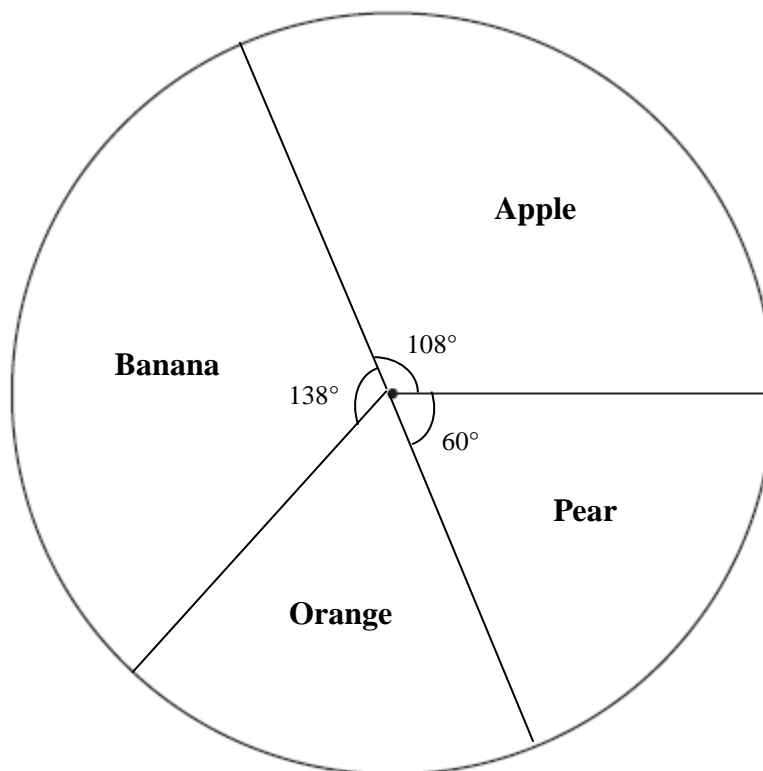
**\$90 A1**

**(Total 2 marks)**

**Question 6.**

Mike asked 60 students to name their preferred fruit.

The pie chart and table shows some information about their answers.



Complete the table.

Preferred Fruit	Number of students	Angle of sector
Apple	18	108°
Banana	<b>23</b>	138°
Orange	9	<b>54°</b>
Pear	<b>10</b>	60°

$$360 - (108 + 138 + 60) = 54^\circ \quad \text{A1}$$

$$108 \div 18 = 6 \quad \text{M1}$$

$$138 \div 6 = 23 \quad \text{A1}$$

$$60 \div 6 = 10 \quad \text{A1}$$

**(Total 4 marks)**

**Question 7.**

Plants are sold in three different sizes of tray.

A small tray of 30 plants costs £6.50

A medium tray of 40 plants costs £8.95

A large tray of 50 plants costs £10.99

Tasmin wants to buy the tray of plants that is the best value for her money.

Which size tray of plants should she buy?

You must show all your working.

**Small Tray -  $650 \div 30 = 21.66\dots$  P1**

**Medium Tray -  $895 \div 40 = 22.375$  M1**

**Large Tray -  $1099 \div 50 = 21.98$  M1**

**Small tray of 30 plants is better value for money as it cheaper by 0.7083... from the medium tray and 0.313... from the large tray. C1**

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**(Total 4 marks)**

**Question 8.**

Tanya drives to her friend's house on her way home from work.

The table shows some information about her journey.

	<b>Time</b>
Leaves work	17:00
Gets to her friend's house	17:30
Leaves her friend's house	18:40

(a) How many minutes is Tanya at her friend's house?

**70 minutes B1  
(1)**

Tanya leaves her friend's house at 18:40.  
She drives 20 miles to her home.  
The speed limit for the journey is 30 mph.

Tanya drives within the speed limit.

(b) Can Tanya get home before 19:30?  
Give reasons for your answer.

$$\frac{20}{30} \times 60 = 40 \text{ min M1}$$

$$18:40 + 40\text{min} = 19:20 \text{ M1}$$

**Yes she will arrive home at 19:20 with 10 minutes to spare. C1**

**(3)**

**(Total 4 marks)**

**Question 9.**

$$t = 5d$$

- (a) Work out the value of  $t$  when  $d = 7$ .

$$t = 35 \quad \text{B1} \\ (1)$$

$$V = 9 - 8t$$

- (b) Work out the value of  $V$  when  $t = 4$ .

$$9 - (8 \times 4) \quad \text{M1}$$

$$V = -23 \quad \text{A1} \\ (2)$$

**(Total 3 marks)**

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**Question 10.**

Here are the first five terms of a number sequence.

13 18 23 28 33

- (a) Write down the next two terms of the sequence.

$$38, 43 \quad \text{B2} \\ (2)$$

- (b) Explain how you found your terms.

$$\text{Added } 5 \text{ or } +5 \text{ or } 5n + 8 \quad \text{B1} \\ (1)$$

- (c) Work out the 13th term of the sequence.

$$(5 \times 13) + 8$$

$$73 \quad \text{B1} \\ (1)$$

- (d) Explain why 80 is not a term of this sequence.

**All numbers in the sequence end in 3 or 8 or**

$$5n + 8 = 80$$

$$5n = 72$$

$$n = 72 \div 5$$

**$n = 14.4$  is not an integer, therefore 80 cannot be a term in the sequence B1**

**(1)**

**(Total 5 marks)**

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**Question 11.**

Amanda buys 21 identical geometry sets.  
The total cost is £48.72

Work out the total cost of 53 of these geometry sets.

$$48.72 \div 21 = 2.32 \quad \text{M1}$$

$$2.32 \times 53 \quad \text{M1}$$

**Or**

$$48.72 \times 53 = 2582.16 \quad \text{M1}$$

$$2582.16 \div 21 \quad \text{M1}$$

**£122.96 A1**

**(Total 3 marks)**

**Question 12.**

53 students attend an after school club and are able to choose from 3 activities: Football, Tennis or Running.

There are 24 boys.

22 students chose Football, of which 8 were girls.

8 boys chose tennis.

12 girls chose running.

Work out the number of students that chose running.

	Football	Tennis	Running	Total
Boys	<b>14</b>	8	<b>2</b>	24
Girls	8	<b>9</b>	12	<b>29</b>
Total	22	<b>17</b>	<b>14</b>	53

$$53 - 24 = 29 \quad \text{M1}$$

$$22 - 8 = 14 \quad \text{M1}$$

$$24 - (14+8) = 2 \quad \text{M1}$$

$$12 + 2 = 14 \quad \text{A1}$$

**(Total 4 marks)**



**Question 13.**

“Easymove Removals” make the following charges.

**EASYMOVE REMOVALS**



Hire charges  
Fixed charge £120  
PLUS  
£15 per hour

- (a) Alice paid £270 to hire “Easymove Removals”.  
For how long did she hire them?

$$270 - 120 = 150 \quad \text{P1}$$

$$150 \div 15 \quad \text{M1}$$

**10 hours A1**  
**(3)**

- (b) “Quickmove Removals” cost £36 per hour to hire.  
There is no fixed charge.  
Which is cheaper to hire for 5 hours, Easymove or Quickmove?  
You must show all your working.

$$36 \times 5 = 180 \quad \text{A1}$$

$$120 + (15 \times 5) \quad \text{M1}$$

$$= 195 \quad \text{A1}$$

**Quickmove Removals is cheaper to hire by £15 C1**

**(4)**  
**(Total 7 marks)**

**Question 14.**

The table shows the length of some cinema films.

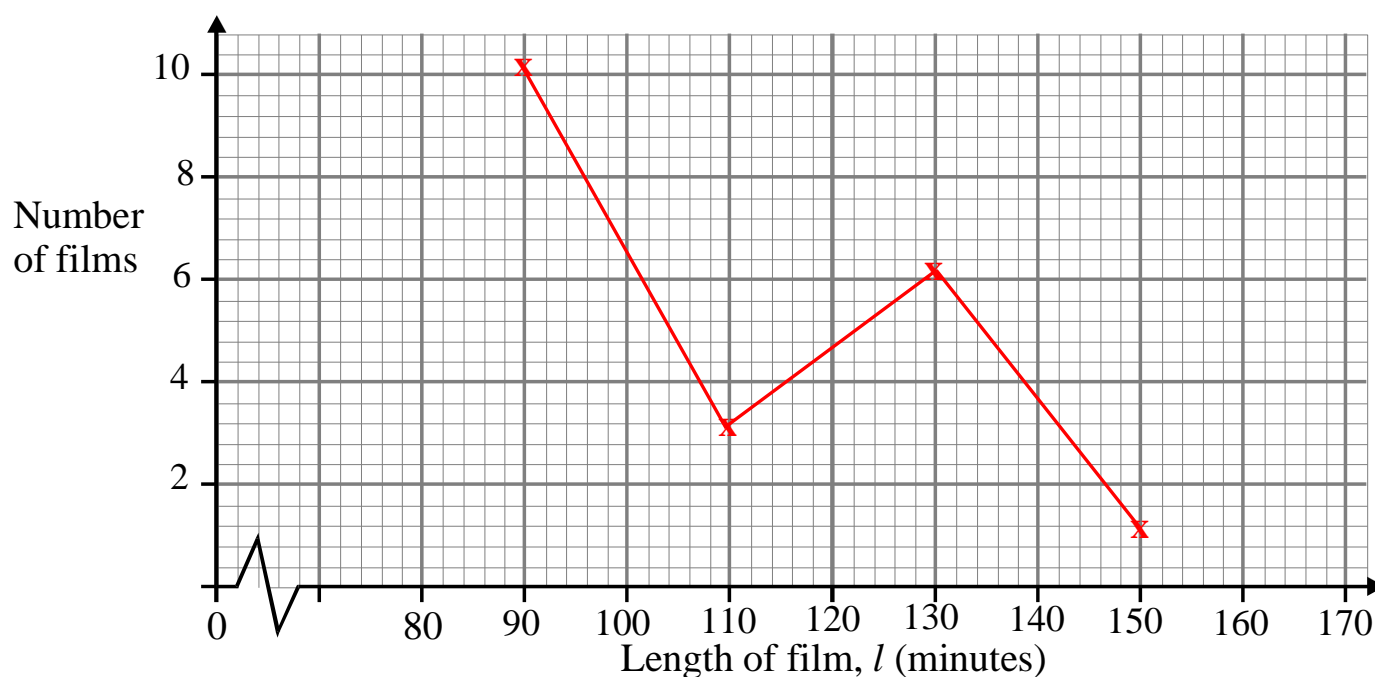
Length, $l$ (minutes)	Number of films
$80 < l \leq 100$	10
$100 < l \leq 120$	3
$120 < l \leq 140$	6
$140 < l \leq 160$	1

(a) Write down the modal class interval.

**$80 < l \leq 100$  B1**

**(1)**

(b) Draw a frequency polygon for the information in the table.



**B2 for fully correct frequency polygon - points plotted at the midpoint.**

**B1 for all points plotted accurately but not joined with straight line segments**

**(2)**

**(Total 3 marks)**

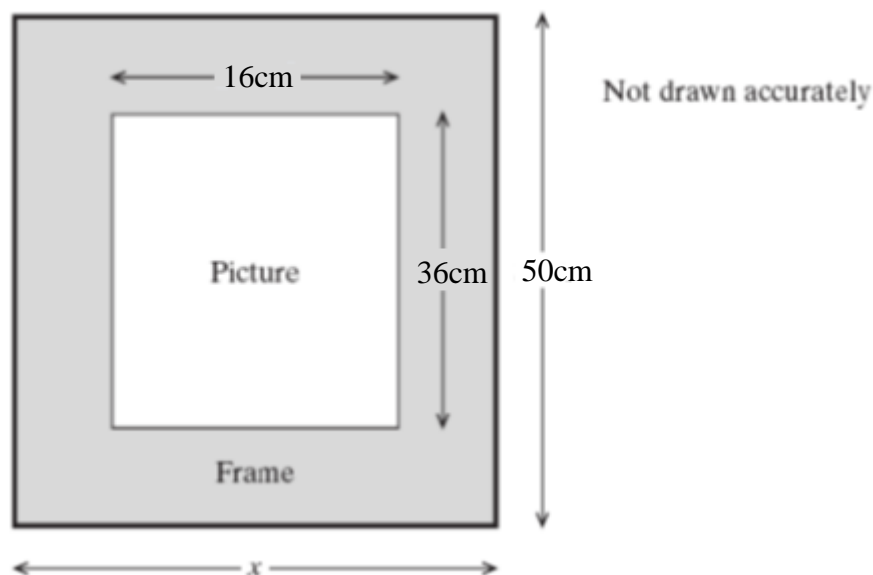
**Question 15.**

The diagram shows a rectangular picture with a frame around it.

The frame is the same width all the way around.

The picture is 16 cm wide and 36 cm high.

The total height of the picture **and** frame is 50 cm.



(a) Work out the width  $x$ , shown on the diagram.

$$50 - 36 = 14$$

$$14 \div 2 = 7 \text{ M1}$$

$$16 + 7 + 7$$

**30cm A1**

**(2)**

(b) Work out the area of the frame.

$$30 \times 5 = 1500 \text{ P1}$$

$$16 \times 36 = 576 \text{ M1}$$

$$1500 - 576$$

**924cm<sup>2</sup> A1**

**(3)**

**(Total 5 marks)**

**Question 16.**

Keira uses letter cards to spell the word ADJACENT.



Keira is going to take at random one of these cards.

(a) Choose the word that best describes the probability that the card will have the letter T on it.

impossible      unlikely      evens      likely      certain

**unlikely B1**  
**(1)**

(b) Choose the word that best describes the probability that the card will have the letter P on it.

impossible      unlikely      evens      likely      certain

**impossible B1**  
**(1)**

Fiona has some sweets in a bag.

5 of the sweets are toffee.

9 of the sweets are caramel.

The rest of the sweets are chocolate.

Fiona takes at random a sweet from the bag.

The probability that she takes a chocolate sweet is  $\frac{3}{10}$ .

(c) How many chocolate sweets are in the bag before Fiona takes a sweet?

$$\frac{5+9}{n} = \frac{7}{10} \quad \text{M1}$$

$$140 = 7n$$

$$n = 20$$

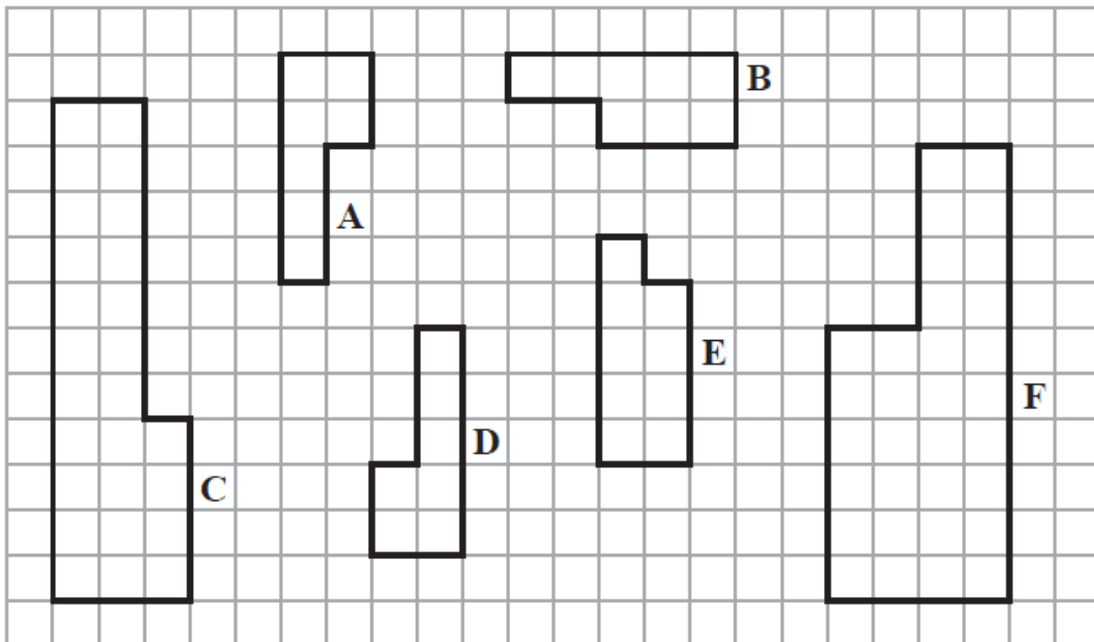
$$20 - 5 - 9 = 6$$

**6 A1**  
**(2)**

**(Total 4 marks)**

**Question 17.**

Six shapes are drawn on the  $1\text{cm}^2$  grid of squares.



Two of the shapes are congruent.

(a) Write down the letters of these two shapes.

**A and D B1**  
**(1)**

(b) Which two shapes are mathematically similar?

**B&F B1**  
**(1)**

(c) Find the area of shape C.

**$26\text{cm}^2$  B1**  
**(1)**

**(Total 3 marks)**

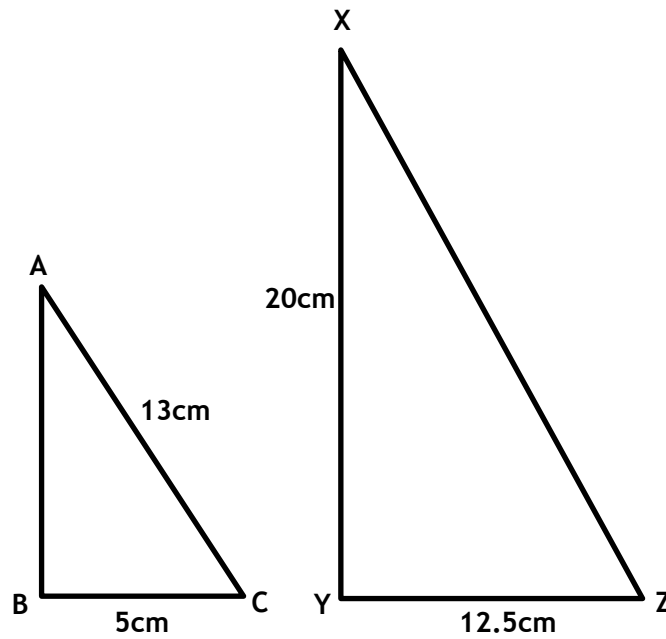
**Question 18.**

$ABC$  and  $XYZ$  are similar triangles with right angles at  $B$  and  $Y$ .

$AC = 13$  cm,

$BC = 5$  cm and

$YZ = 12.5$  cm



Calculate the perimeter of  $XYZ$ .

$$12.5 \div 5 = 2.5 \quad \text{P1}$$

$$13 \times 2.5 = 32.5 \quad \text{M1}$$

$$12.5 + 20 + 32.5$$

**65cm A1**  
**(Total 3 marks)**

**Question 19.**

Adam has sticks of the following lengths:

$$(3x + 4)\text{cm}$$

$$(5x + 2)\text{cm}$$

$$(x + 16)\text{cm}$$

He puts all 3 sticks together to make a triangle.

The triangle is isosceles.

Calculate the 3 possible values of  $x$ .

$$3x + 4 = 5x + 2 \quad \mathbf{P1}$$

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

$$2 = 2x$$

$$x = 1 \quad \mathbf{A1}$$

$$3x + 4 = x + 16$$

$$2x = 12 \quad \mathbf{M1}$$

$$x = 6 \quad \mathbf{A1}$$

$$5x + 2 = x + 16$$

$$4x = 14$$

$$x = 3.5 \quad \mathbf{A1}$$

**(Total 5 marks)**

**Question 20.**

A cricket team played eight innings.

The mean number of runs for the eight innings is 20

The cricket team played one more inning.

The mean number of runs for all nine innings is 23

Work out the number of runs the team made in the ninth inning.

$$20 \times 8 = 160 \text{ or } 23 \times 9 = 207 \text{ M1}$$

$$207 - 160 = 47$$

**47 A1**

**(Total 2 marks)**

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**Question 21.**

The width of a rectangular sports pitch is  $x$  metres, where  $x$  is an integer.

The length of the pitch is 20 m more than its width.

Given that the perimeter of the pitch must be less than 300 m

Find the greatest possible width of the rectangular sports pitch.

$$x + 20 \quad \text{B1}$$

$$2(x) + 2(x+20) = 4x + 40 \quad \text{M1}$$

$$4x + 40 < 300$$

$$4x < 260$$

$$x < 65 \quad \text{A1}$$

**64m B1**

**(Total 4 marks)**

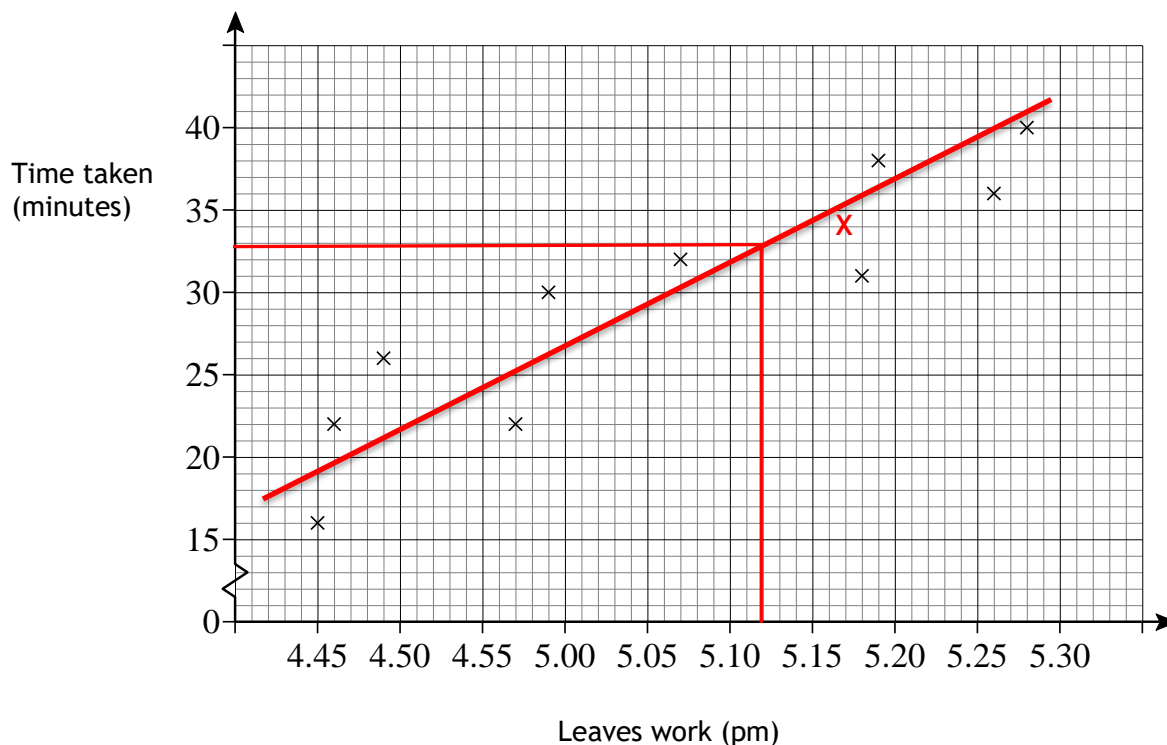
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**Question 22.**

Becky cycles home from work each day.

The scatter graph shows information about her journey times.



(a) The table shows one more set of journey times.

Leaves work (pm)	5.17
Arrives home (pm)	5.51

Complete the scatter graph using the data from the table.

**B1**  
**(1)**

(b) Describe the correlation.

**Positive B1**

**(1)**

(c) Becky leaves work at 5.12 pm

What time will Becky arrive home?

**Correct line of best fit**      **B1**  
**30 min – 34 min**              **M1**

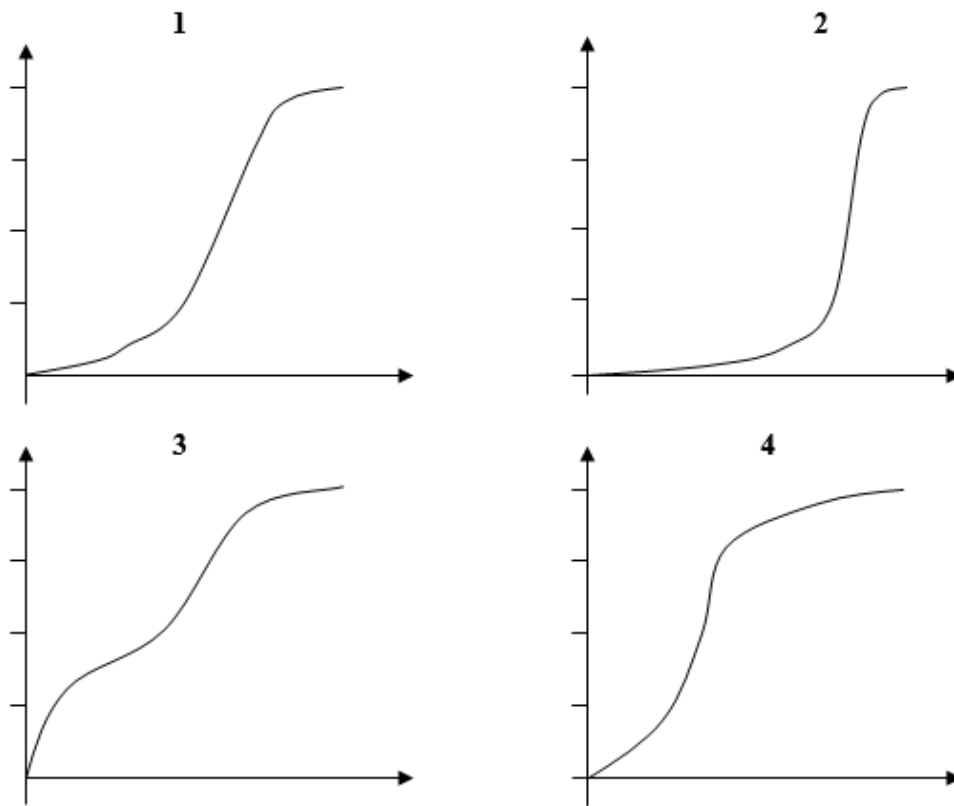
**5.42pm – 5.46pm**      **A1**

**(3)**

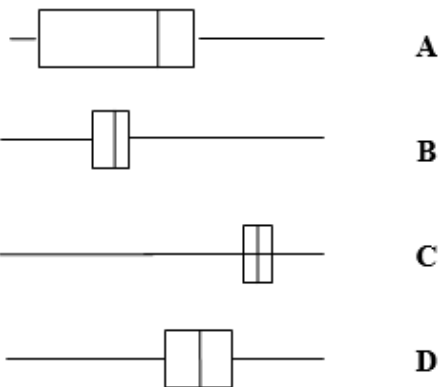
**(Total 5 marks)**

**Question 23.**

Here are four cumulative frequency diagrams.



Here are four box plots.



For each box plot write down the number of the appropriate cumulative frequency diagram.

- A & 3**
- B & 4**
- C & 2**
- D & 1**
- B2 for all correct**
- B1 for two correct**

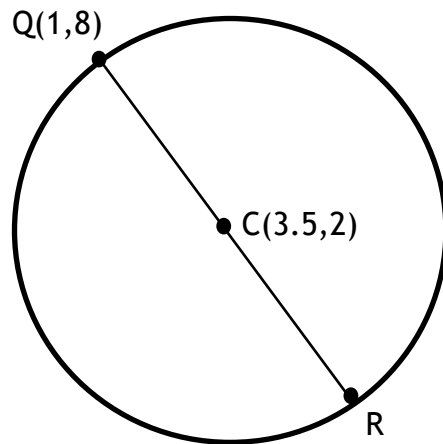
**(Total 2 marks)**

**Question 24.**

Below is a diagram of a circle.

QR is the diameter of the circle and C is the centre of the circle.

Find the coordinates of point R.



$$3.5 \times 2 = 7$$

$$7 - 1 = 6$$

$$2 \times 2 = 4$$

$$4 - 8 = -4 \quad \text{M1}$$

**(6,-4) A1**

**(Total 2 marks)**

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**TOTAL FOR PAPER IS 80 MARKS**