Gold Level

Question Paper 24

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Difficulty Level	Gold
Booklet	Question Paper 24

Time Allowed: **59 minutes**

Score: **/49**

Percentage: **/100**

Grade Boundaries:

9	8	7	6	5	4	3	2	1
>85%	75%	65%	55%	45%	35%	25%	15%	<15%

1 The grouped frequency table gives information about the times recorded for 20 runners in
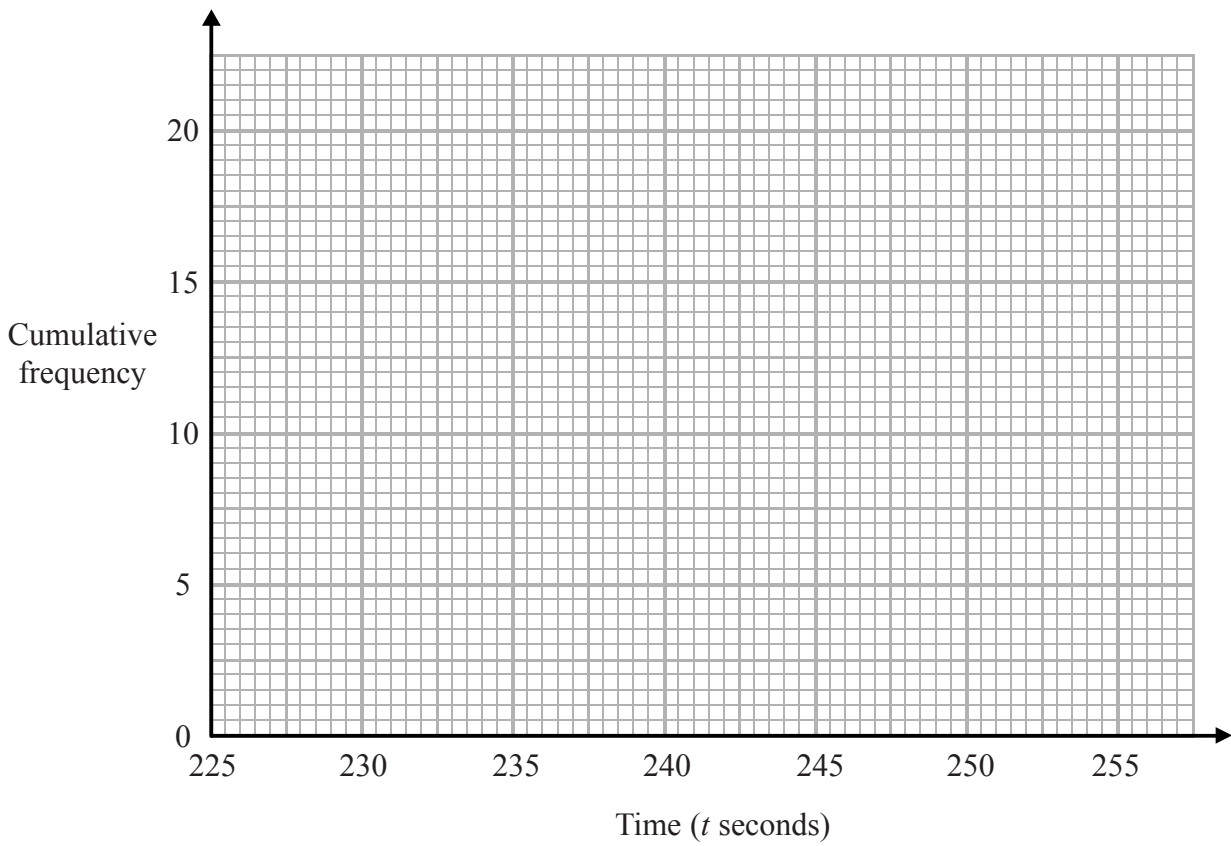   a 1500 metre race.

Time (t seconds)	Frequency
$225 < t \leqslant 230$	1
$230 < t \leqslant 235$	3
$235 < t \leqslant 240$	7
$240 < t \leqslant 245$	6
$245 < t \leqslant 250$	2
$250 < t \leqslant 255$	1

(a) Complete the cumulative frequency table.

Time (t seconds)	Cumulative frequency
$225 < t \leqslant 230$	
$225 < t \leqslant 235$	
$225 < t \leqslant 240$	
$225 < t \leqslant 245$	
$225 < t \leqslant 250$	
$225 < t \leqslant 255$	

(1)

(b) On the grid, draw the cumulative frequency graph for your table.

Time (*t* seconds)

(2)

(c) Use your graph to find an estimate for the median of the recorded times.

....seconds

(2)

(Total for Question 1 is 5 marks)

2 Use algebra to show that the recurring decimal $0.4\dot{1}\dot{7} = \dfrac{139}{333}$

3 Two bags contain discs.

Bag **A** contains 12 discs.
5 of the discs are red, 6 are blue and 1 is white.

Bag **B** contains 25 discs.
n of the discs are red and the rest are blue.

James takes at random a disc from Bag **A**.
Lucy takes at random a disc from Bag **B**.

Given that the probability that James and Lucy both take a red disc is $\dfrac{2}{15}$

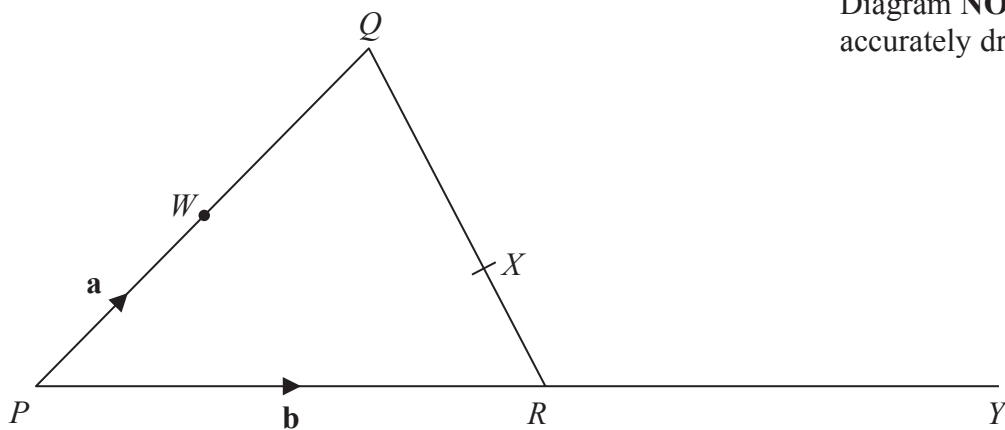(i) find the value of n, the number of red discs in Bag **B**.

$n =$ ....

(ii) Hence calculate the probability that James and Lucy take discs of different colours.

....

4

Diagram **NOT** accurately drawn

PQR is a triangle.
The midpoint of *PQ* is *W*.
X is the point on *QR* such that *QX* : *XR* = 2 : 1
PRY is a straight line.

$\overrightarrow{PW} = \mathbf{a}$ $\overrightarrow{PR} = \mathbf{b}$

(a) Find, in terms of **a** and **b**,

  (i) $\overrightarrow{QR}$

  ....

  (ii) $\overrightarrow{QX}$

  ....

  (iii) $\overrightarrow{WX}$

  ....

  (3)

R is the midpoint of the straight line *PRY*.

(b) Use a vector method to show that *WXY* is a straight line.

(2)

(Total for Question 4 is 5 marks)

5 The diagram shows a circular pond, of radius r metres, surrounded by a circular path.
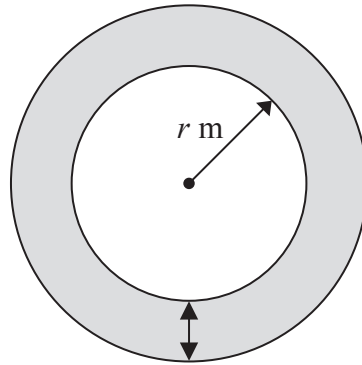The circular path has a constant width of 1.5 metres.

Diagram **NOT**
accurately drawn

r m

The area of the path is $\dfrac{1}{10}$ the area of the pond.
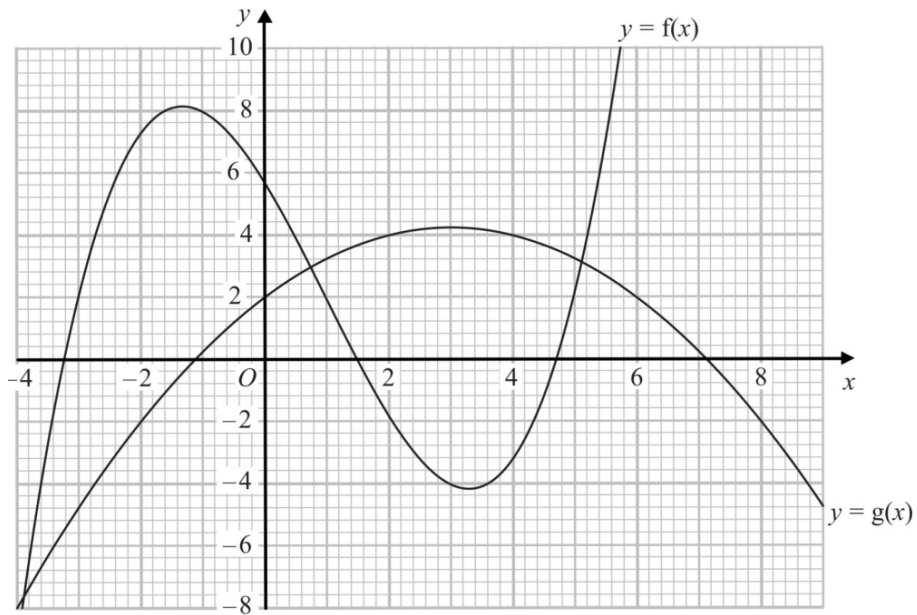
(a) Show that $2r^2 - 60r - 45 = 0$

(3)

(b) Calculate the area of the pond.
Show your working clearly.
Give your answer correct to 3 significant figures.

.... m^2

(5)

(Total for Question 5 is 8 marks)

6 The diagram shows parts of the graphs of $y = f(x)$ and $y = g(x)$.

(a) Find g(0)

....

(1)

(b) Find gf(−1)

....

(2)

(c) Calculate an estimate for the gradient of the curve $y = f(x)$ at the point on the curve where $x = 3$

....

(3)

(Total for Question 6 is 6 marks)

7 Correct to 2 significant figures, $a = 58$, $b = 28$ and $c = 18$

Calculate the upper bound for the value of $\dfrac{a}{b - c}$

Show your working clearly.

....

8 Simplify fully $\dfrac{6x^2 + x - 15}{12x^2 - 27}$

Show clear algebraic working.

....

9

Diagram **NOT**
accurately drawn

N

B

T

10 m

X

14 m

A   25 m   *C*
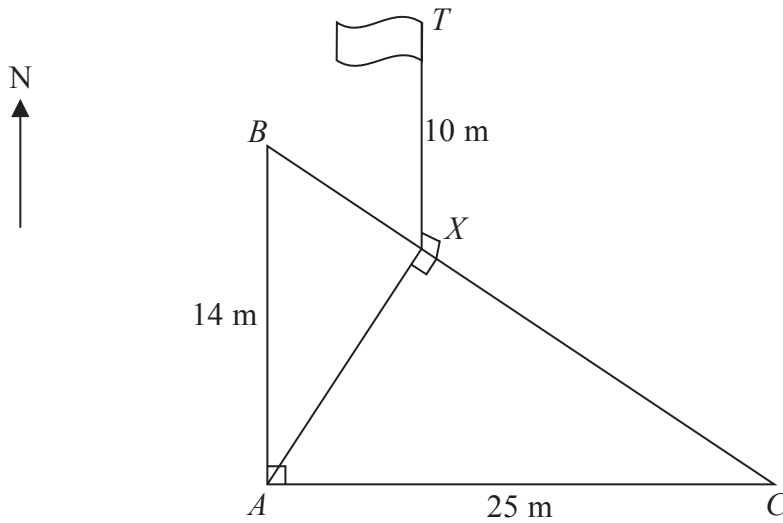
A, *B* and *C* are points on horizontal ground.
B is due North of *A* and *AB* is 14 m.
C is due East of *A* and *AC* is 25 m.

A vertical flagpole, *TX*, has its base at the point *X* on *BC* such that the angle *AXC* is a right angle.
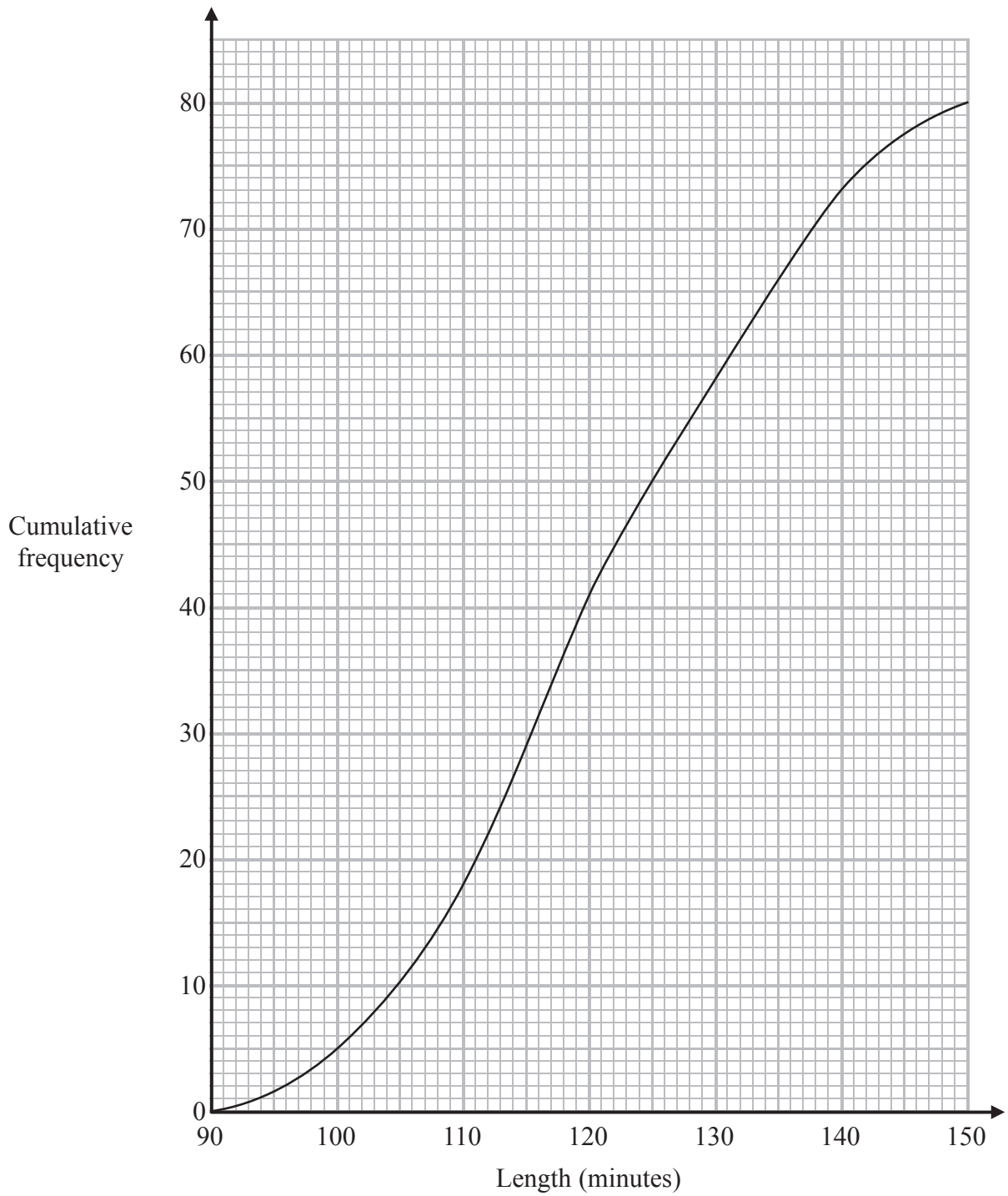
The height of the flagpole, *TX*, is 10 m.

Calculate the size of the angle of elevation of *T* from *A*.
Give your answer correct to 1 decimal place.

....°

(Total for Question 9 is 6 marks)

10 The cumulative frequency graph shows information about the length, in minutes, of each of 80 films.

(a) Find an estimate for the interquartile range.

.... minutes

(2)

(b) Find an estimate for the percentage of the 80 films that lasted more than 125 minutes.

.... %