Write your name here

Surname	Other names

Pearson Edexcel International GCSE

Centre Number	Candidate Number

Mathematics A

Practice paper 5H



Higher Tier

Time: 2 hours

Paper Reference **4MA1/PP5H**

You must have:
Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided
  – *there may be more space than you need*.
- **Calculators may be used.**
- You must **NOT** write anything on the formula page.
  Anything you write on the formulae page will gain no credit.

Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question*.

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

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Arithmetic series

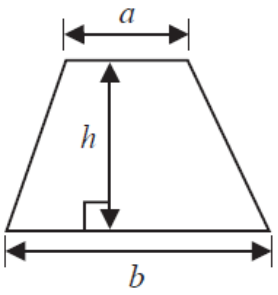
Sum to n terms, $S_n = \frac{n}{2}[2a + (n-1)d]$

The quadratic equation

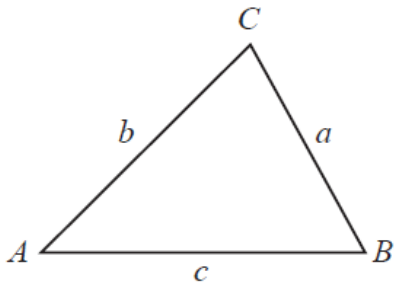
The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by:

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

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



Trigonometry



In any triangle ABC

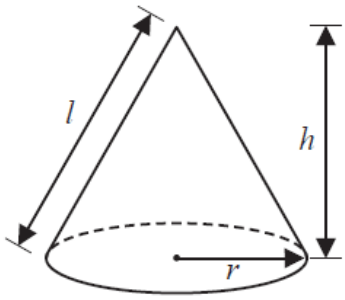
Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

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

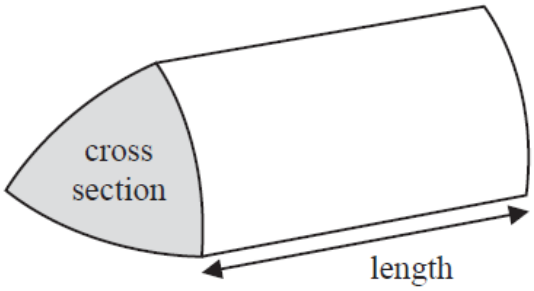
Area of triangle $= \frac{1}{2}ab\sin C$

Volume of cone $= \frac{1}{3}\pi r^2 h$

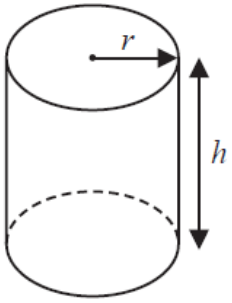
Curved surface area of cone $= \pi r l$



Volume of prism
= area of cross section × length

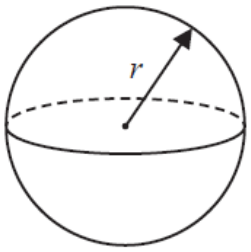


Volume of cylinder $= \pi r^2 h$
Curved surface area of cylinder $= 2\pi r h$



Volume of sphere $= \frac{4}{3}\pi r^3$

Surface area of sphere $= 4\pi r^2$



Answer ALL TWENTY TWO questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The area of the floor of a room is 12 m^2.

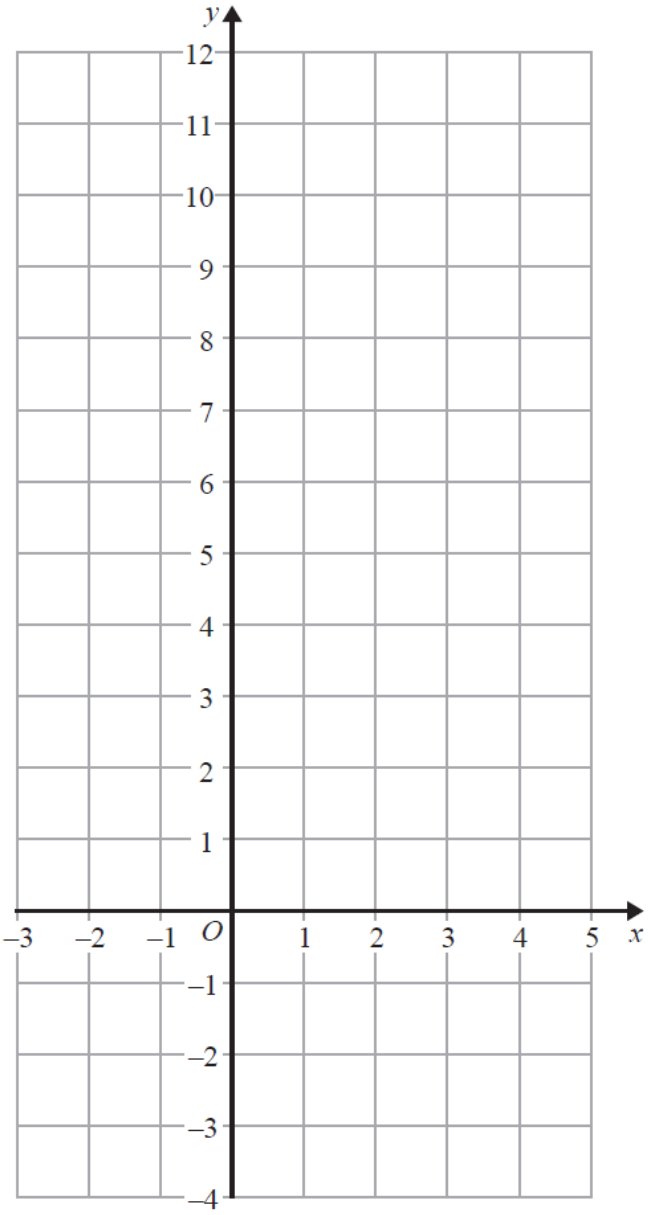
Change 12 m^2 into cm^2.

..... cm^2

(Total for Question 1 is 2 marks)

---

2 On the grid, draw the graph of $y + 2x = 6$ for values of x from -2 to 4.



(Total for Question 2 is 4 marks)

3 A lion is 224 cm long.

Simon makes a scale model of the lion.
He uses a scale of 1 : 8

(*a*) Work out the length of the scale model.

..... cm
(2)

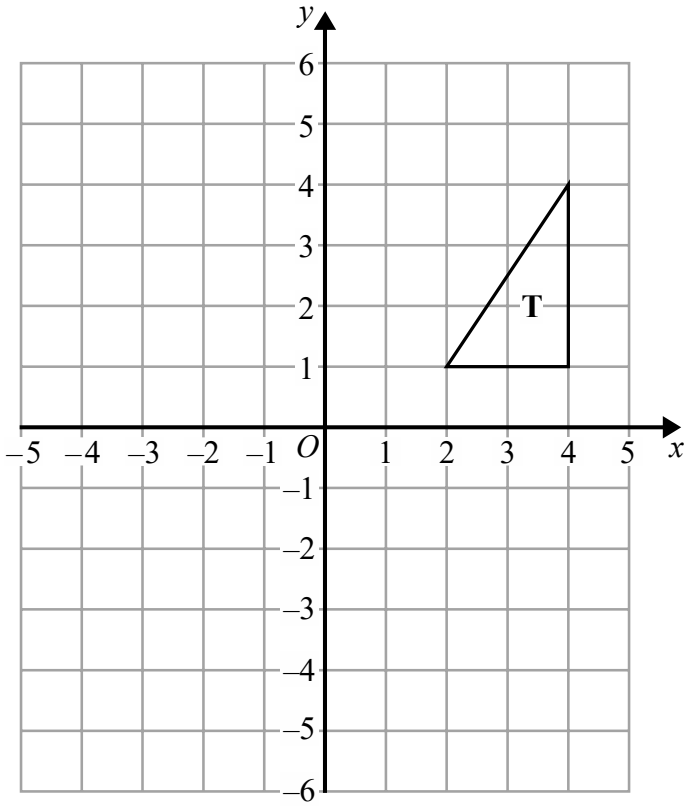
In 2010, there were 411 Asiatic lions in India.
In 2015, there were 523 Asiatic lions in India.

(*b*) Work out the percentage increase in the number of Asiatic lions in India from 2010 to 2015
Give your answer correct to 1 decimal place.

.....%
(3)

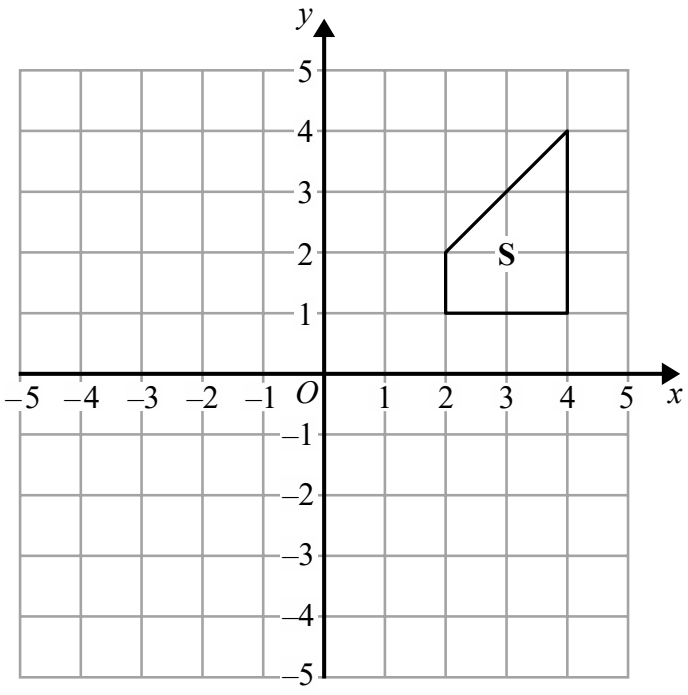
(Total for Question 3 is 5 marks)

4



(*a*) On the grid above, rotate triangle **T** 90° clockwise about (0, 2).

(2)



(*b*) On the grid, translate shape **S** by the vector $\begin{pmatrix} -1 \\ -3 \end{pmatrix}$.

(1)

(Total for Question 4 is 3 marks)

5 The table gives information about the weights of 20 rugby players.

Weight (w kg)	**Frequency**
$80 < w \leq 90$	3
$90 < w \leq 100$	5
$100 < w \leq 110$	7
$110 < w \leq 120$	4
$120 < w \leq 130$	1

(*a*) Write down the modal class.

.....

(1)

(*b*) Work out an estimate for the total weight of these 20 rugby players.

..... kg

(3)

(Total for Question 5 is 4 marks)

6 Here is an isosceles triangle.

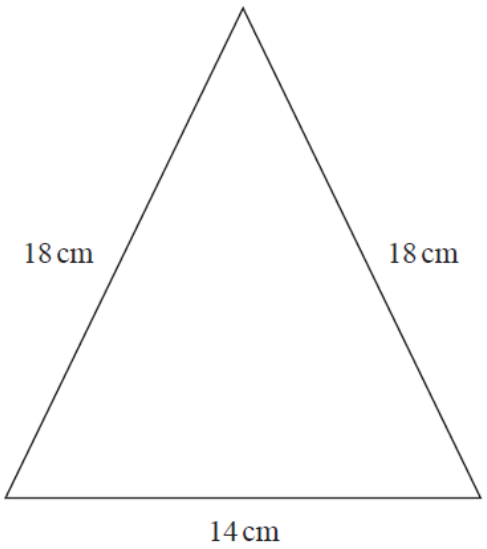


Diagram **NOT** accurately drawn

Work out the area of the triangle.
Give your answer correct to 3 significant figures.

..... cm^2

(Total for Question 6 is 4 marks)

7 The diagram shows a parallelogram $ABCD$.

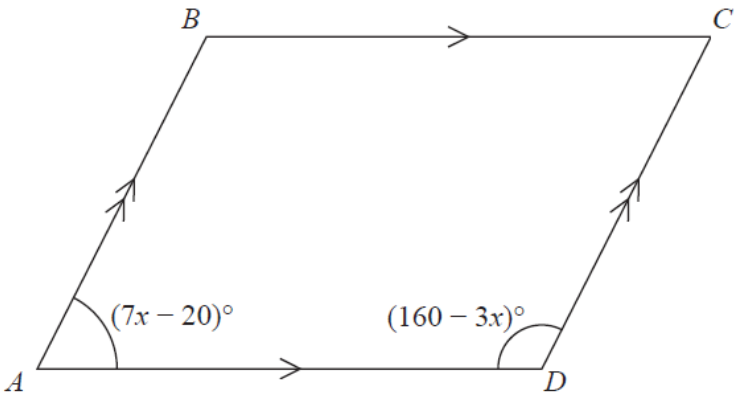


Diagram **NOT** accurately drawn

Angle $BAD = (7x - 20)°$
Angle $ADC = (160 - 3x)°$

Work out the value of x.
Show clear algebraic working.

$x =$ .....

(Total for Question 7 is 3 marks)

8 $m = 3^4 \times 5^3$
$n = 3^3 \times 5^2 \times 11$

(*a*) Find the Lowest Common Multiple (LCM) of m and n.

.....

(2)

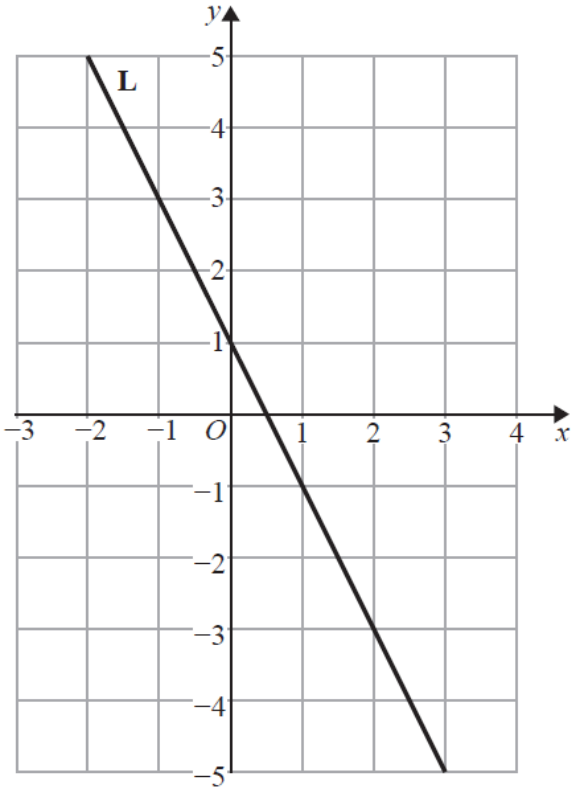
(*b*) Find the Highest Common Factor (HCF) of $5m$ and $3n$.

.....

(2)

(Total for Question 8 is 4 marks)

9 Here is the straight line **L** drawn on a grid.



Find an equation for **L**.

.....

(Total for Question 9 is 2 marks)

10 (*a*) Solve $7x + 2y = 16$
$5x - 2y = 20$

Show clear algebraic working.

$x =$ .....

$y =$ .....

(3)

(*b*) Expand and simplify $(k + 9)(k - 5)$

.....

(2)

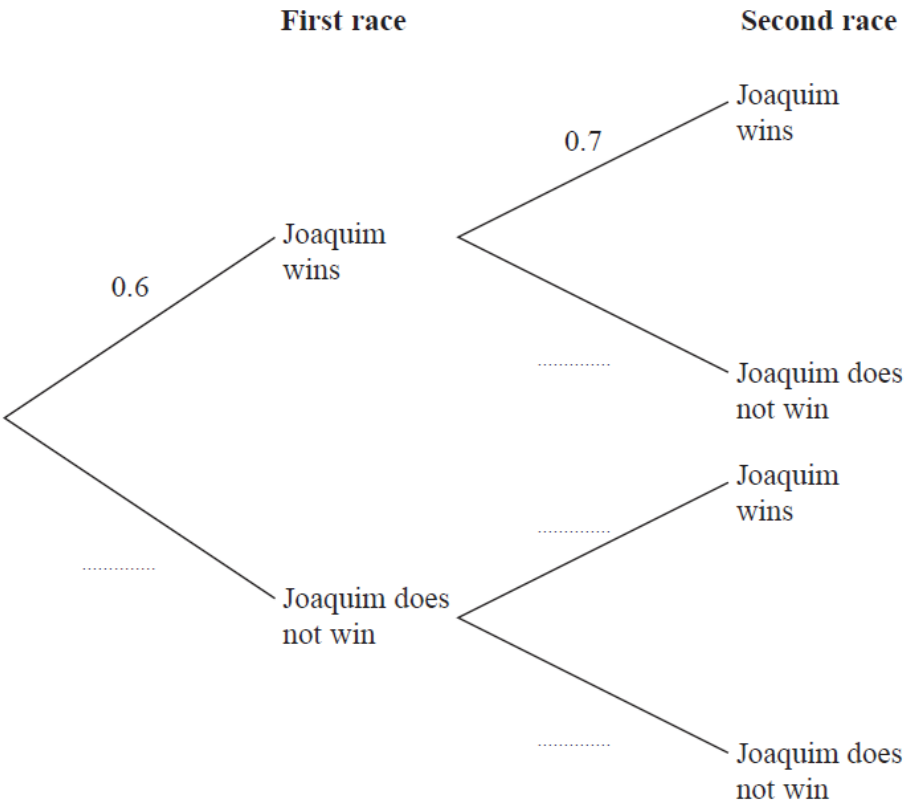
(Total for Question 10 is 5 marks)

---

11 Joaquim takes part in two cycle races.

The probability that he wins the first race is 0.6.
The probability that he wins the second race is 0.7.

(*a*) Complete the probability tree diagram.



(2)

(*b*) Work out the probability that Joaquim wins both races.

.....

(2)

Joaquim takes part in a third cycle race.
The probability that Joaquim wins the third race is 0.2.

(*c*) Work out the probability that he wins exactly one of the three races.

.....

(3)

(Total for Question 11 is 7 marks)

12 P is inversely proportional to the square of q.
When $q = 2$, $P = 12.8$

(a) Find a formula for P in terms of q.

.....

(3)

(b) Find the value of P when $q = 8$

.....

(1)

(Total for Question 12 is 4 marks)

---

13 (*a*) Use algebra to show that $0.3\dot{2}\dot{4} = \frac{107}{330}$

(2)

(*b*) Rationalise the denominator of $\frac{4}{7-\sqrt{5}}$

Show each stage of your working.

Give your answer in the form $a + b\sqrt{5}$ where *a* and *b* are fractions in their simplest forms.

(3)

(Total for Question 13 is 5 marks)

14 *ABCDE* and *AWXYZ* are two mathematically similar pentagons.

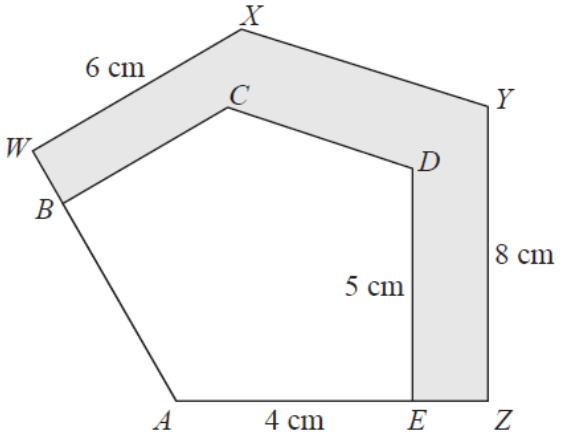


Diagram **NOT** accurately drawn

$AE = 4$ cm $WX = 6$ cm $DE = 5$ cm $YZ = 8$ cm

(*a*) Calculate the length of *AZ*.

..... cm
(2)

(*b*) Calculate the length of *BC*.

..... cm
(2)

The area of pentagon *AWXYZ* is 52.48 cm^2

(*c*) Calculate the area of the shaded region.

..... cm^2
(3)

(Total for Question 14 is 7 marks)

15 (*a*) Factorise $y^2 - 2y - 48$

.....

(2)

(*b*) Solve $\dfrac{4}{e-3} = 5$

$e =$ .....

(2)

(*c*) Simplify fully $\dfrac{3}{x+1} - \dfrac{2}{x-1}$

.....

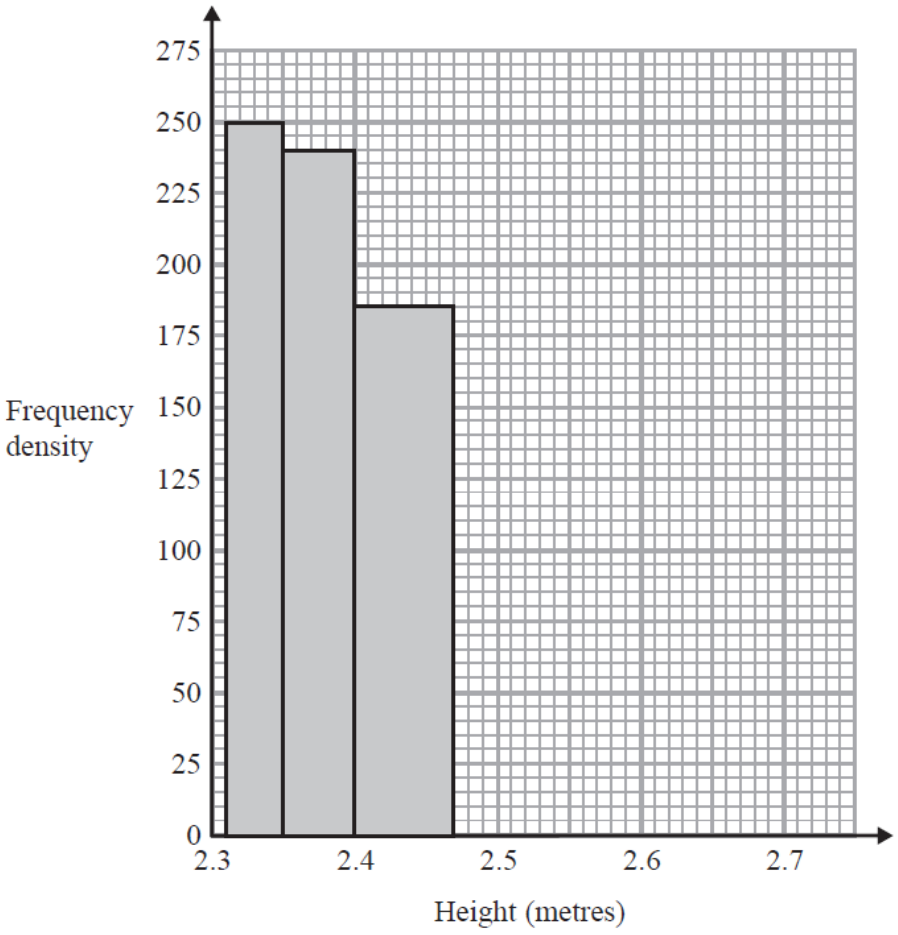
(3)

(Total for Question 15 is 7 marks)

16 The table shows information about the heights, in metres, of 45 of the world's tallest men.

Height (h metres)	Number of men
$2.31 < h \leq 2.35$	10
$2.35 < h \leq 2.40$	12
$2.40 < h \leq 2.47$	13
$2.47 < h \leq 2.72$	10

(a) Use the information in the table to complete the histogram.



(2)

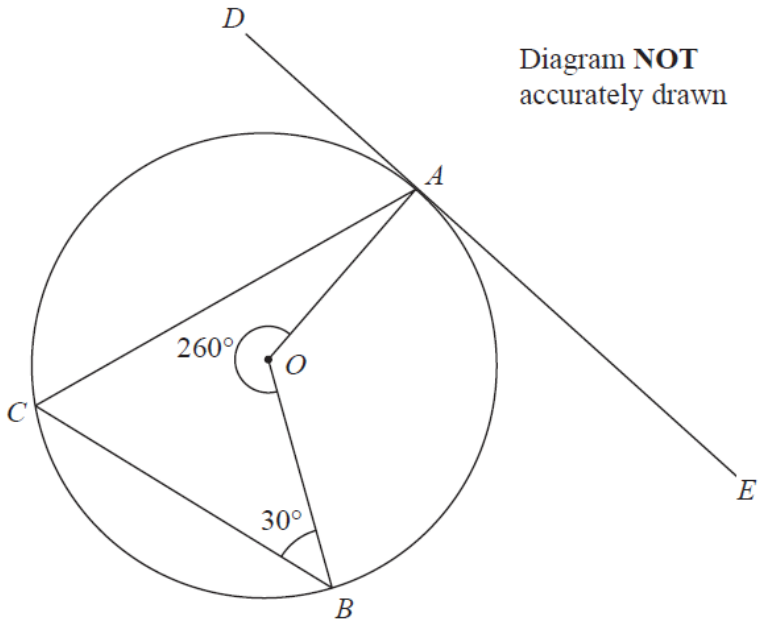
(b) Find an estimate for the number of these men with height between 2.32 metres and 2.34 metres.

.....

(1)

(Total for Question 16 is 3 marks)

17



A, *B*, and *C* are points on the circumference of a circle, centre *O*.
DAE is a tangent to the circle.

(*a*) Work out the size of angle *ACB*.

.....°

(2)

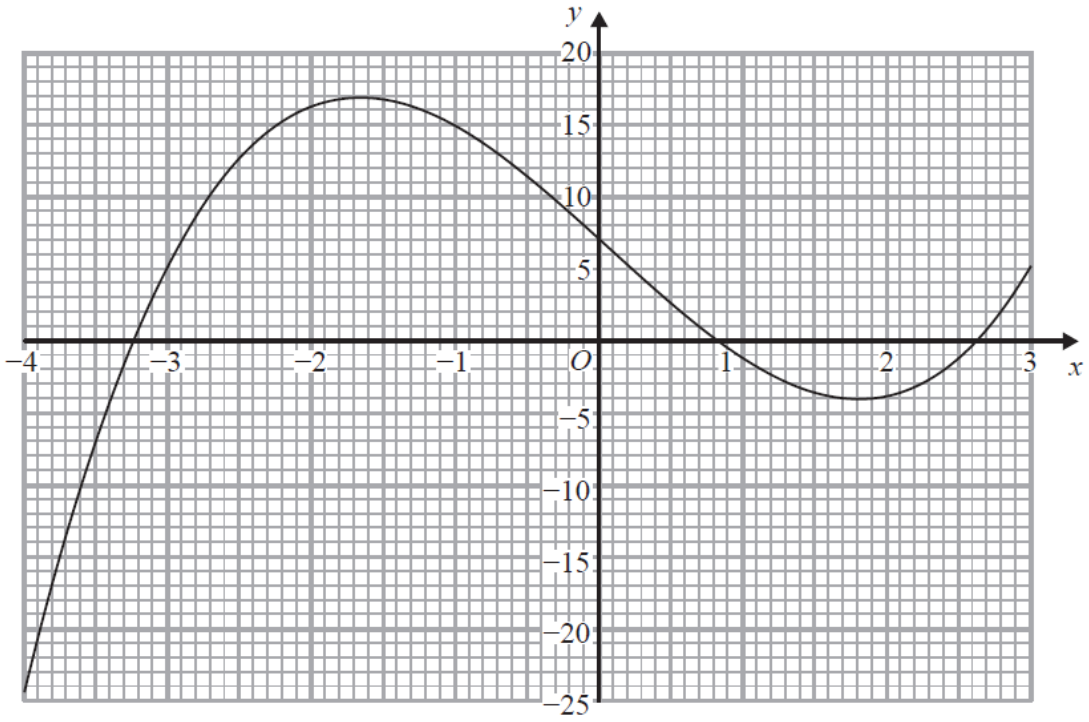
(*b*) Work out the size of angle *CAD*.

.....°

(2)

(Total for Question 17 is 4 marks)

18 Here is the graph of $y = x^3 - 0.2x^2 - 9x + 7$ for $-4 \leq x \leq 3$



(*a*) Use the graph to find an estimate for the solution of the equation $x^3 - 0.2x^2 - 9x + 7 = -5$

.....

(2)

(*b*) By drawing a suitable straight line on the grid, find an estimate for the solution of the equation $x^3 - 0.2x^2 - 4x + 7 = 0$

.....

(3)

(Total for Question 18 is 5 marks)

19 The diagram shows a solid cone.

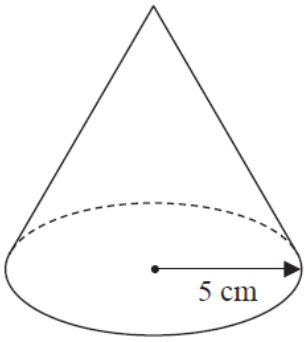


Diagram **NOT** accurately drawn

The radius of the base of the cone is 5 cm.
The total surface area of the cone is 90π cm^2

Work out the volume of the cone.
Give your answer as a multiple of π.

.....cm^3

(Total for Question 19 is 5 marks)

20 $(3 + \sqrt{c})(2\sqrt{c} - 3) = 1 + k\sqrt{c}$
where c and k are prime numbers.

(a) Find the value of c and the value of k.

$c =$ ..... $k =$ .....
(3)

$$p^m = \frac{1}{p \times \sqrt[3]{p^2}}$$

(b) Find the value of m.

$m =$ .....
(3)

(Total for Question 20 is 6 marks)

---

21 A rectangular piece of card has length $(3x - 13)$ cm and width $(x - 2)$ cm.
A square, with sides of length 25 cm, is removed from each corner of the card.

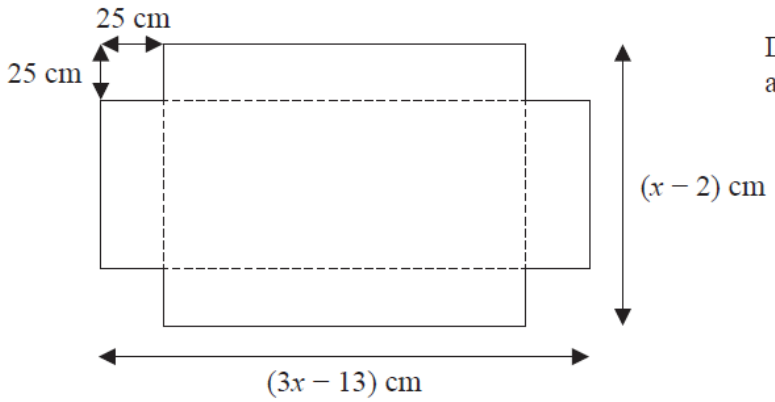


Diagram **NOT** accurately drawn

The card is then folded along the dashed lines to make an open box with height 25 cm as shown below.

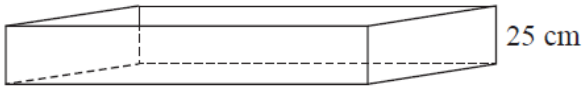


Diagram **NOT** accurately drawn

(*a*) Show that the length of the open box is $(3x - 63)$ cm.

(1)

The volume of the open box is 81 900 cm^3

(*b*) Find the value of x.
Show clear algebraic working.

x = ...

(5)

(Total for Question 21 is 6 marks)

22 The 4th term of an arithmetic series is 17.
The 10th term of the same arithmetic series is 35.

Find the sum of the first 50 terms of this arithmetic series.

(Total for Question 22 is 5 marks)

TOTAL FOR PAPER: 100 MARKS