Name_____

2026 AICE High Maths II Summer Assignment

Part 1: Complete Questions #1, 2, 9, 16, 19, 10, 22, 23, 12, 20, 17

Part 2: Complete Questions #10, 12, 13, 15, 17, 19, 21

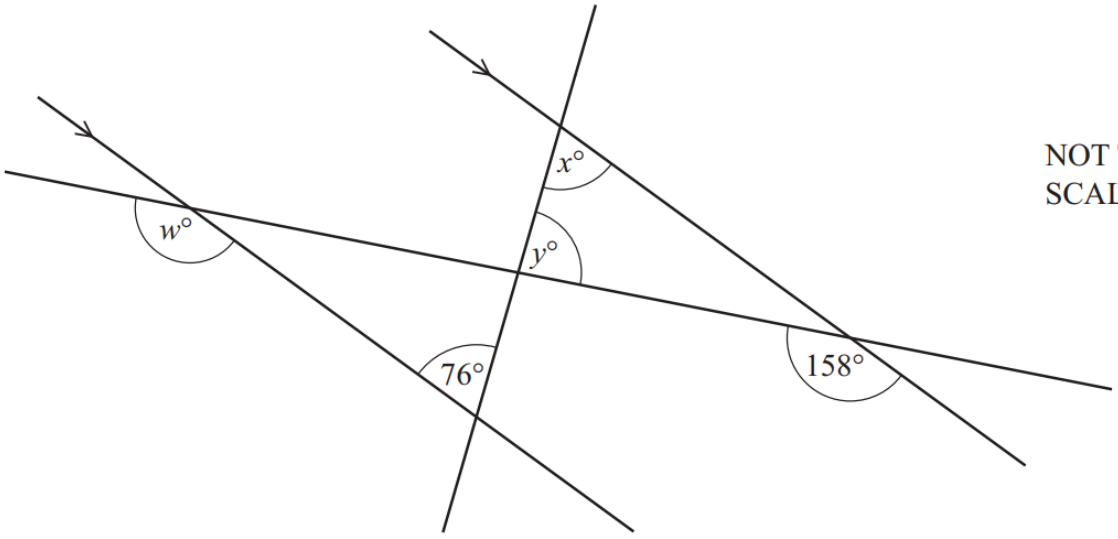
Part 3: Complete Questions #1, 2, 4, 7, 9

1 Simplify.

$7c-5d+c+3d$

..... [2]

2



NOT TO SCALE

The diagram shows two parallel lines intersecting two straight lines.

Find the values of w, x and y.

$w =$ .....

$x =$ .....

$y =$ .....

[4]

9 The table shows some information about the marks scored by a group of students in a test.

Test mark	4	5	8
Frequency	2	4	n

The mean mark is 6.

Work out the value of n.

$n =$ ..... [3]

16 Expand and simplify.

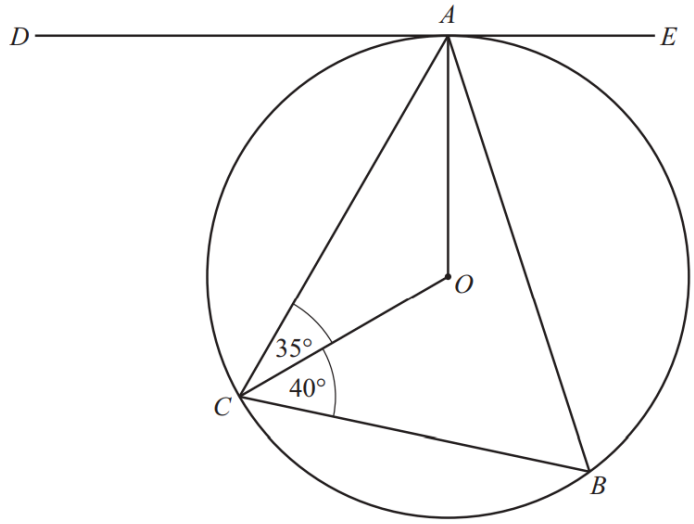
$(x+4)(x-3)(3x+2)$

..... [3]

19 Find the value of $27^{-\frac{2}{3}}$.

..... [2]

10



NOT TO SCALE

A, B and C are three points on a circle, centre O.
DE is a tangent to the circle at A.
Angle $ACO = 35°$ and angle $BCO = 40°$.

Find

(a) angle AOC

Angle AOC = ... [1]

(b) angle ABC

Angle ABC = ... [1]

(c) angle DAC

Angle DAC = ... [1]

(d) angle OAB.

Angle OAB = ... [1]

22 A curve has equation $y = x^n + qx^2 + 9x$.

$$\frac{dy}{dx} = 3x^2 - 12x + 9$$

(a) Find the value of n, and the value of q.

n = ... q = ... [2]

(b) Work out the coordinates of the turning points of the curve.

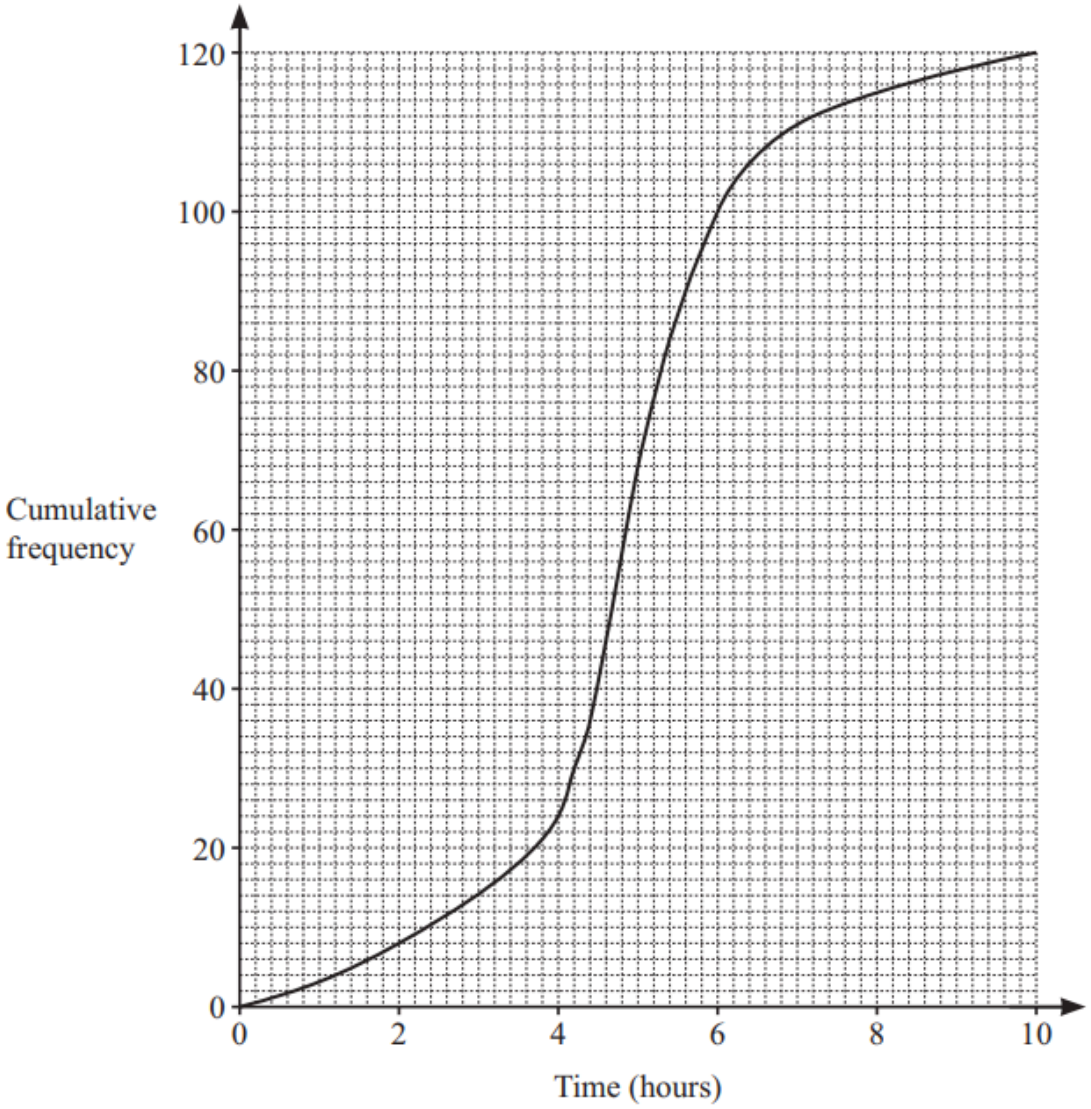
(..... , ...) and (..... , ...) [4]

23 Simplify.

$$\frac{2x^2 + 10x}{x^2 - 25}$$

..... [3]

12 The time spent on the internet by each of 120 adults is recorded for one day.
The cumulative frequency diagram shows this information.



(a) Use the cumulative frequency diagram to find an estimate of the interquartile range.

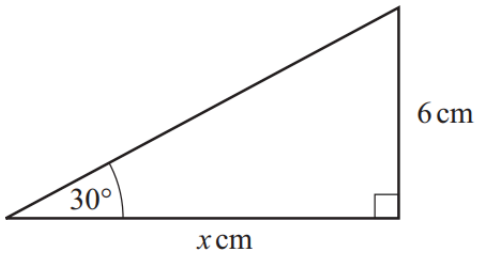
..... h [2]

(b) 70% of the adults spent less than k hours on the internet.

Use the cumulative frequency diagram to find an estimate of the value of k.

$k =$ ..... [2]

20



NOT TO SCALE

Find the exact value of x.

$x =$ ..... [4]

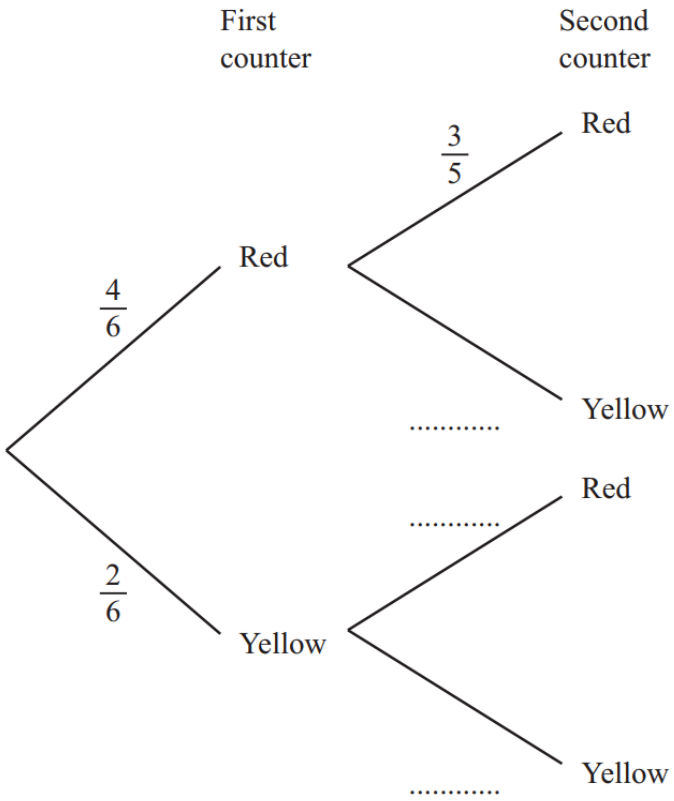
17 **(a)** A bag contains 6 red marbles, 3 green marbles and 1 blue marble.
Two marbles are picked at random from the bag **with replacement**.

Find the probability that both marbles are green.

..... [2]

(b) Another bag contains 4 red counters and 2 yellow counters.
Two counters are picked at random from this bag **without replacement**.

(i) Complete the tree diagram.



(ii) Find the probability that one of the two counters is yellow. ..... [3]

10 **(a)** Write down **all** the factors of 18.

..... [2]

(b) Factorise.

$3y - xy + 15 - 5x$

..... [2]

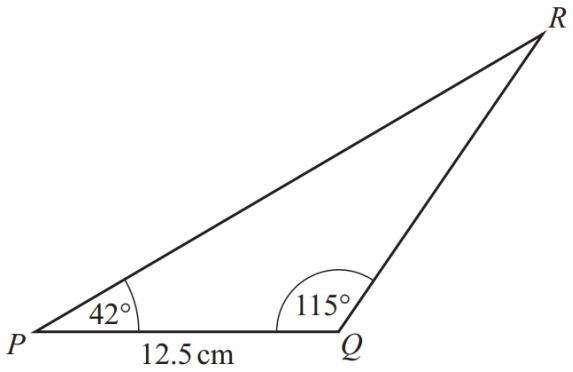
(c) $3y - xy + 15 - 5x = 18$

where x and y are positive integers.

Using your answers to **part (a)** and **part (b)**, find one possible value of x and the corresponding value of y.

$x =$ ..... , $y =$ ..... [2]

12



NOT TO SCALE

The diagram shows triangle PQR.

Calculate the shortest distance from Q to PR. ..... cm [3]

13 Make x the subject of this formula.

$$A = w^2 + 5x^2$$

$x =$ ..... [3]

15 The height of each of 140 basketball players is recorded.
The table shows the results.

Height (h cm)	$160 < h \leqslant 180$	$180 < h \leqslant 185$	$185 < h \leqslant 190$	$190 < h \leqslant 200$	$200 < h \leqslant 210$
Frequency	7	12	31	70	20

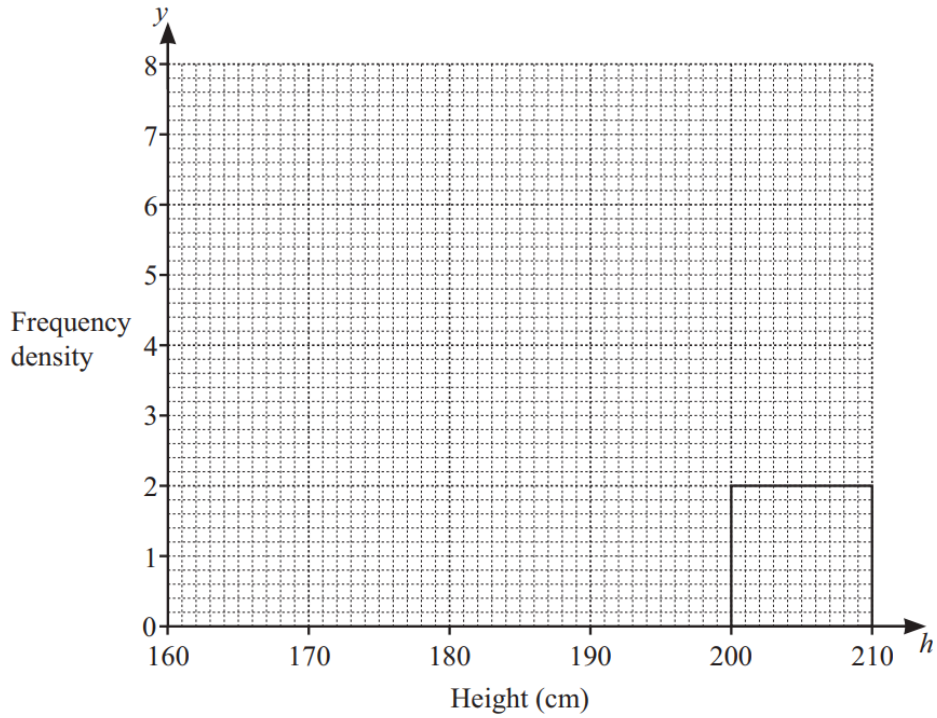
(a) Calculate an estimate of the mean height. ..... cm [4]

(b) Two of the players are chosen at random.

Find the probability that both players have a height greater than 190 cm and no more than 200 cm.

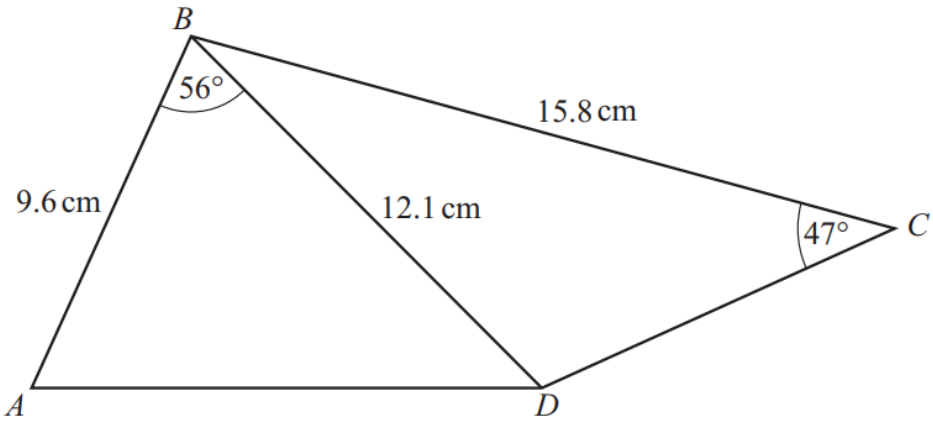
..... [2]

(c) Complete the histogram to show the information in the frequency table.



[3]

17



NOT TO SCALE

The diagram shows a quadrilateral $ABCD$.

(a) Calculate AD.

$AD =$ ..... cm [3]

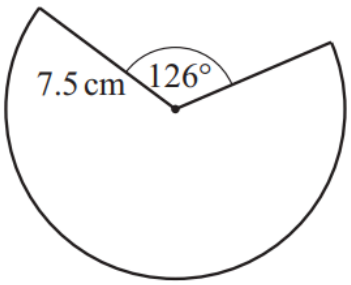
(b) Calculate the obtuse angle BDC.

Angle $BDC =$ ..... [4]

(c) Calculate the area of the quadrilateral.

..... cm^2 [3]

19



NOT TO SCALE

The diagram shows a major sector of a circle with radius 7.5 cm.

Calculate the perimeter of the major sector.

..... cm [4]

21 $\dfrac{16^{5m}}{4} = 64^{2n}$

Find m in terms of n.

$m =$ ..... [3]

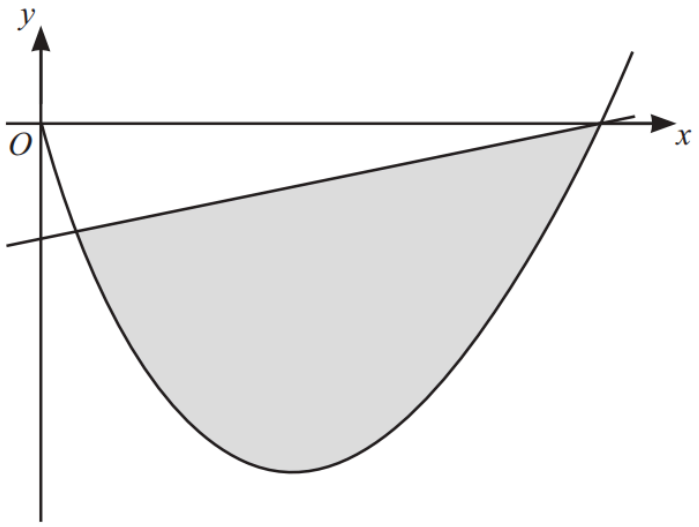
1 Solve the equation $6\sin\theta = 1 + \frac{2}{\sin\theta}$ for $-180° < \theta < 180°$. [4]

2 The equation of a curve is such that $\frac{dy}{dx} = 4(2x-5)^3 - 9x^{\frac{1}{2}}$. The curve passes through the point $A\left(4, -\frac{11}{2}\right)$.

(a) Find the gradient of the normal to the curve at the point A. [2]

(b) Find the equation of the curve. [4]

4



The diagram shows the curve with equation $y = 5x^{\frac{3}{2}} - 20x$ and the line with equation $y = x - 16$.
The x-coordinates of the points of intersection of the curve and line are 1 and 16.

Find the area of the shaded region between the curve and the line. [5]

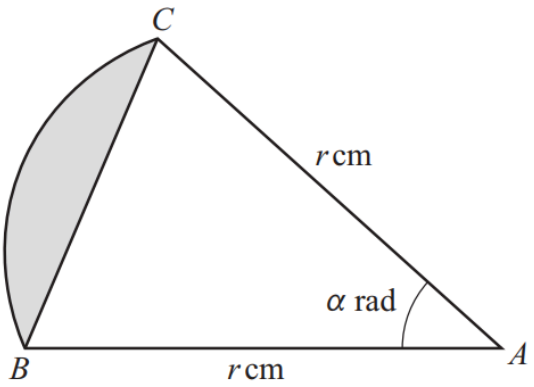
7 The equation of a curve is $y = 4x^2 + \frac{9}{x^2} - 8$.

(a) A point P is moving along the curve in such a way that its y-coordinate is decreasing at 5 units per second.

Find the rate at which the x-coordinate of point P is changing when $x = 2$. [4]

(b) Find the coordinates of the stationary points of the curve and determine their nature. [5]

9



The diagram shows a sector ABC of a circle with centre A and radius r cm. The angle BAC is α radians, where $0 < \alpha < \frac{1}{2}\pi$.

(a) It is given that the area of the triangle ABC is $4\,\text{cm}^2$ and the area of the sector ABC is $8\alpha\,\text{cm}^2$.

Find the exact area of the shaded segment. [4]

(b) It is given instead that the length of the chord BC is $\frac{1}{\sqrt{2}}r$ cm but the area of the triangle ABC is still $4\,\text{cm}^2$.

Find the area of the shaded segment. Give your answer correct to 3 significant figures. [4]