Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | | | | | |

Candidate Number | | | | |

EDEXCEL Mock Test Papers

paper2 -Test3

Mathematics
PAPER 2 (Calculator)
Higher Tier

Morning (Time: 1 hour 30 minutes)

2H

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator, Formulae Sheet (enclosed). 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.
- Answer the questions in the spaces provided – there may be more space than you need.
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is 80
- 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

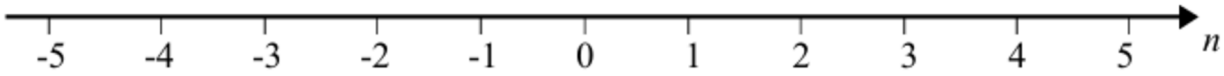
- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Answer ALL questions.

Write your answers in the spaces provided.

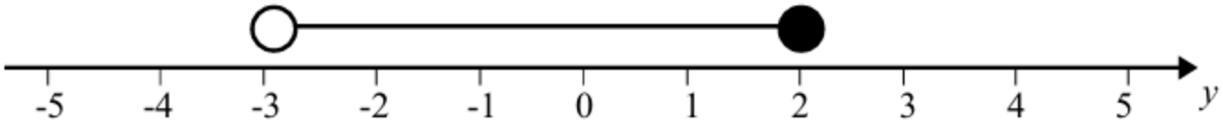
You must write down all the stages in your working.

1 (a) On the number line, show the inequality $-3 < n \leq 5$



(2)

(b) Write down the inequality shown on the number line.



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(1)

(Total for Question 1 is 3 marks)

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2 (a) Find the Highest Common Factor (HCF) of 40 and 64

.....

(2)

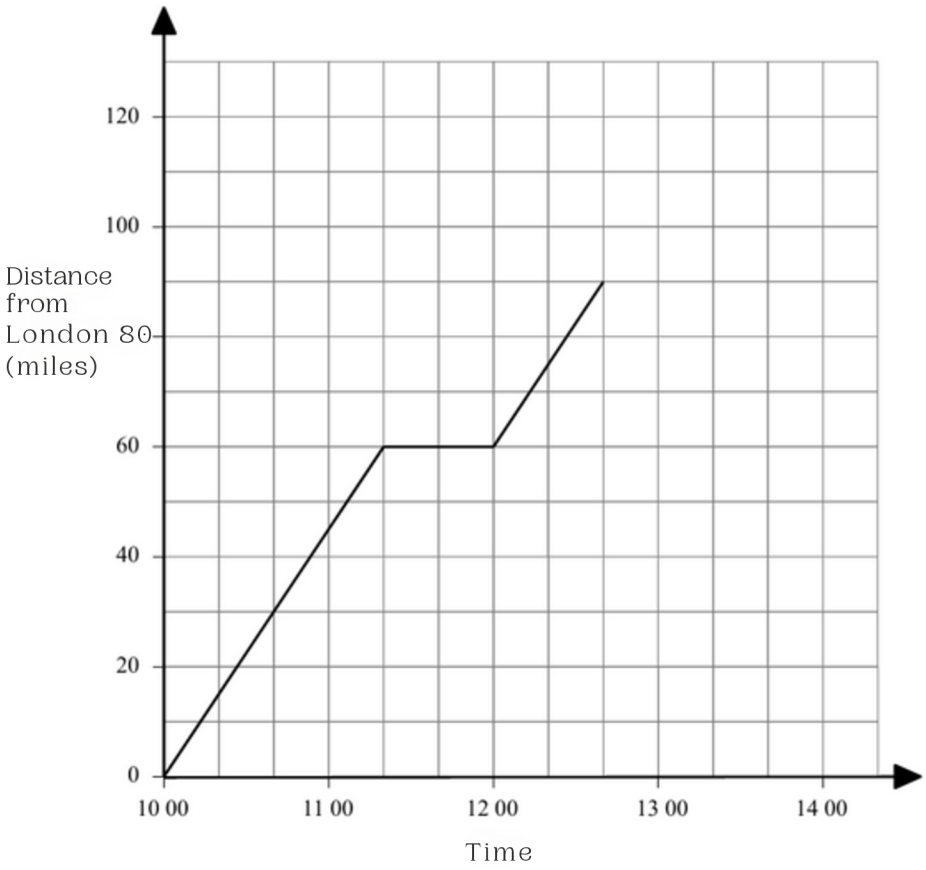
(b) Find the Lowest Common Multiple (LCM) of 36 and 80

.....

(2)

(Total for Question 2 is 4 marks)

3 Arthur drove from London to Bath.
He made one stop at a service station.
Here is part of Arthur's travel graph.



(a) For how many minutes did Arthur stop at the service station?

.....minutes
(1)

(b) What was Arthur 's average speed between London and the service station?

.....miles/hour
(2)

(c) Bath is 115 miles from London. Arthur arrived in Bath at 14 00.
Complete the graph.

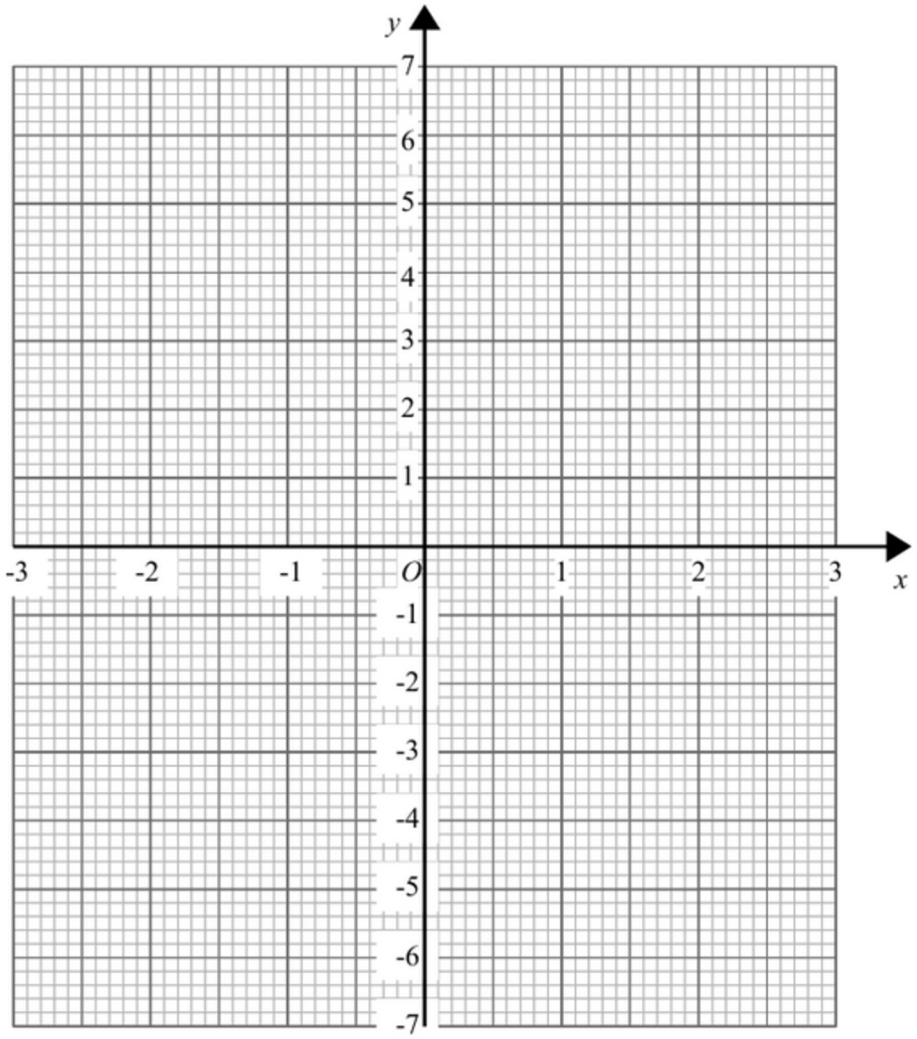
(2)

(Total for Question 3 is 5 marks)

4 Complete the table of values for $y = x^2 + x - 6$

x	-3	-2	-1	0	1	2	3
y				-6		0	

(2)



(a) On the grid draw the graph of $y = x^2 + x - 6$ for values of x from –3 to 3 (2)

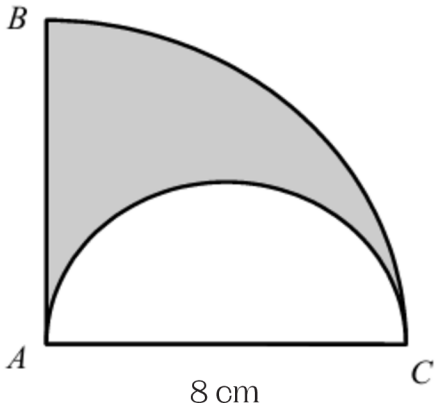
(b) Use the graph to find estimates of the solutions to the equation $x^2 + x - 6 = -2$

.....

(2)

(Total for Question 4 is 6 marks)

5 BAC is a sector of a circle, centre A.
AC is the diameter of a semi circle.
AC is 8 cm.

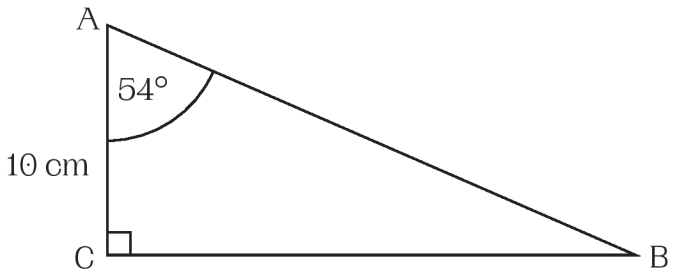


Find the area of the shaded region.
Give your answer in terms of π.

..... cm^2

(Total for Question 5 is 4 marks)

6 ABC is a right-angled triangle.



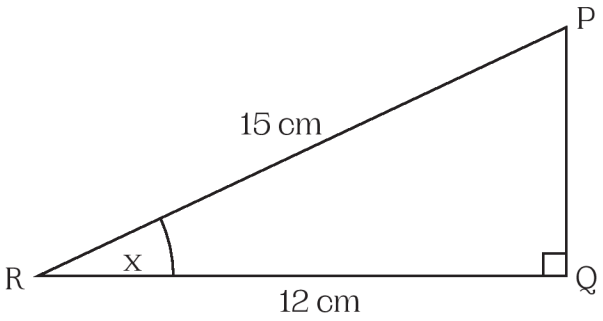
(a) Work out the length of BC

Give your answer correct to 1 decimal place.

..... cm

(2)

PQR is a right-angled triangle.



(b) Work out the size of the angle marked x.

Give your answer correct to 1 decimal place.

.....°

(2)

(Total for Question 6 is 4 marks)

7 Liquid A has a density of 1.2 g/cm ^{3}
130 cm^3 of Liquid A is mixed with some of Liquid B to make Liquid C.
Liquid C has a mass of 240 g and a density of 1.22 g/cm^3
Find the density of Liquid B

..... g/cm3

(Total for Question 7 is 3 marks)

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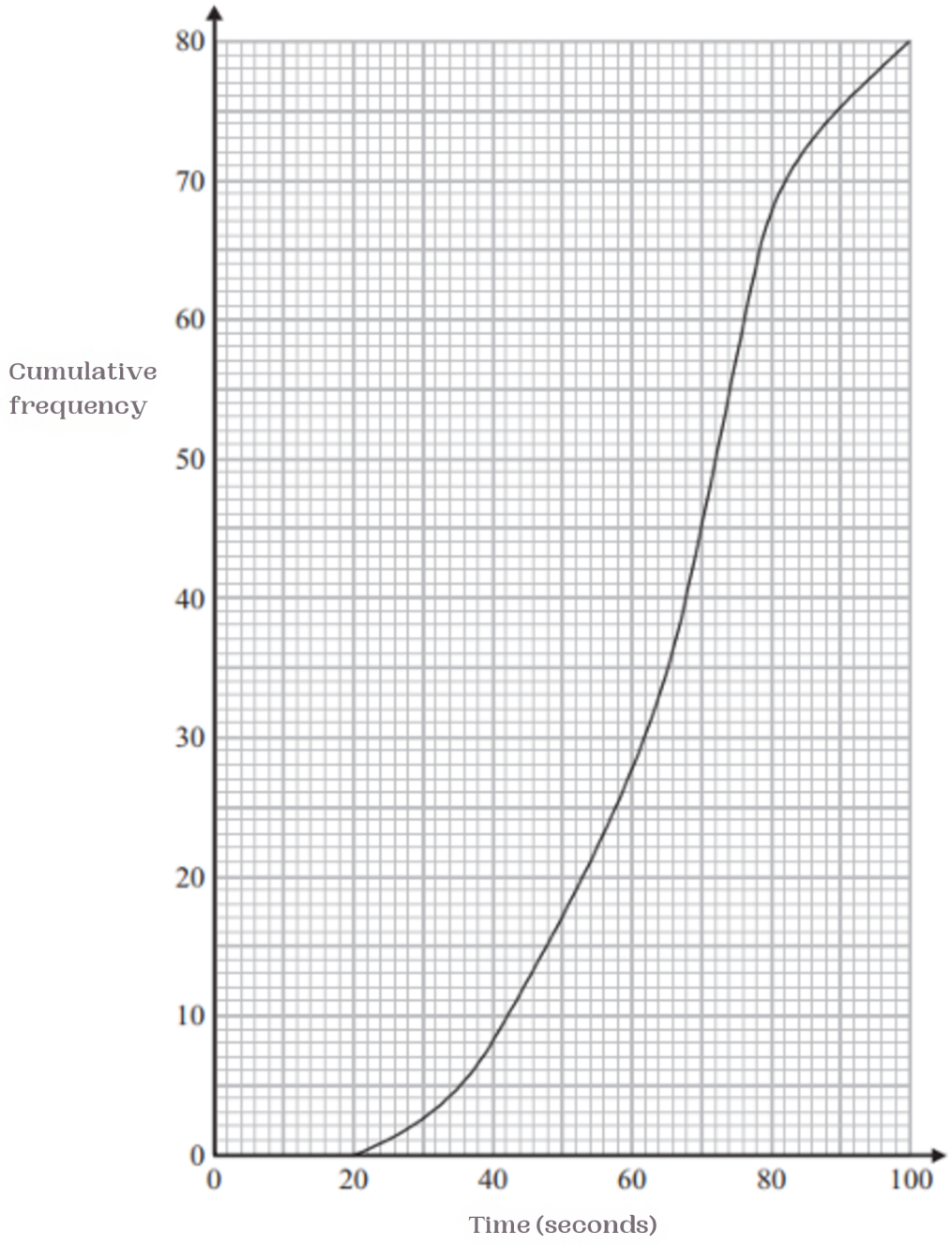
8 The cumulative frequency graph gives some information the times it took people to complete a challenge.



(a) Find the median time.

..... seconds
(1)

(b) Find the number of people who took longer then 80 seconds to complete the challenge.

.....

(1)

(Total for question 8 is 2 marks)

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9 Simplify $(x^5)^5$

.....

(1)

(Total for question 9 is 1 mark)

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10 Richard wants to invest £8000 for three years.
He can choose between Bank A and Bank B.

Bank A	Bank B
1.2% compound interest per annum	2% compound interest in the first year 1% compound interest for each extra year

Which bank will give Richard the most interest after three years.
You must show your working.

.....

(Total for Question 10 is 4 marks)

11 The point A has the coordinates (2,5)
The point B has the coordinates (6,7)

(a) Find the mid point of AB

.....

(2)

(b) Find the equation of the perpendicular bisector to AB

.....

(3)

(Total for Question 11 is 5 marks)

12 Expand and simplify $(x - 4)(3x + 5)(x + 4)$

.....

(Total for Question 12 is 3 marks)

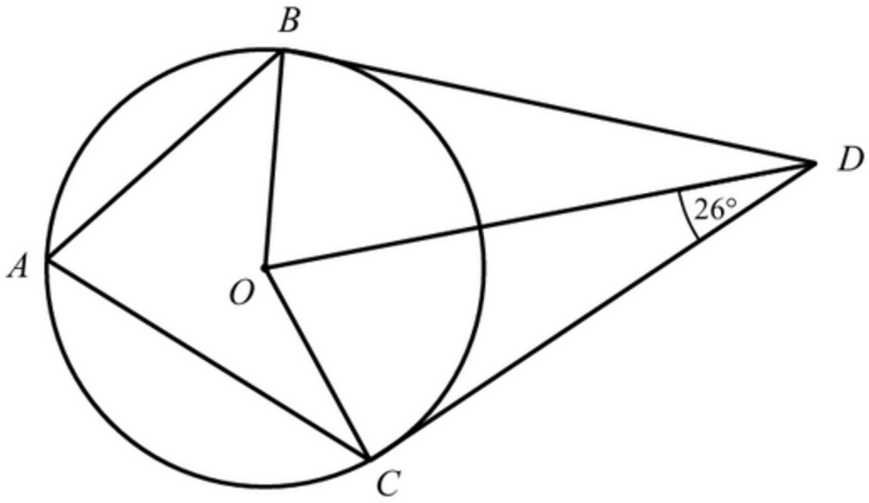
13 In a sports academy, there are 12 coaches and 150 players.
Out of these players, 80 are men and 70 are women.
One coach, one male player, and one female player are to be selected to represent the academy.

Work out the number of different ways there are to choose coach, one male player, and one female player.

.....

(Total for Question 13 is 2 marks)

14



A, B and C are points on the circumference of a circle, centre O.
BD and CD are tangents to the circle.

Angle ODC = 26°

Find the size of angle BAC.
Give reasons for each stage of your working

.....°

(Total for Question 14 is 4 marks)

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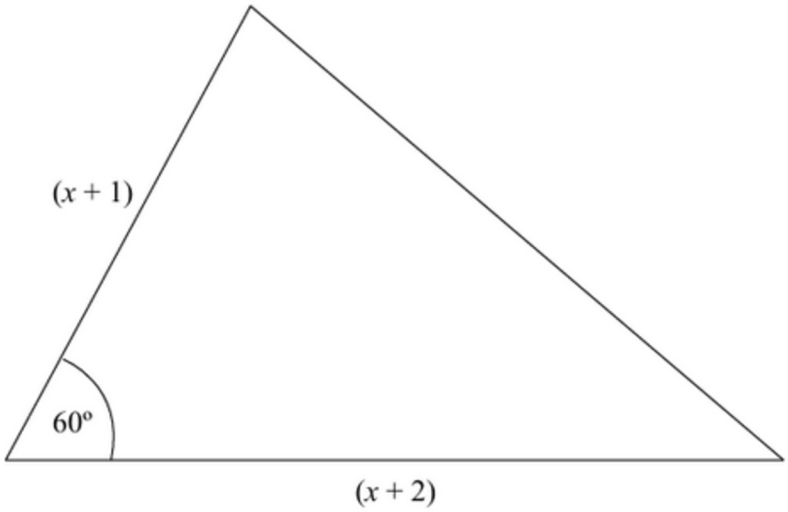
15



The area of the triangle is 25 cm^2.
Work out the value of x.
Give your answer to 3 significant figures.

.....

(Total for Question 15 is 5 marks)

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16 Using $x_{n+1} = \frac{5}{x_n^2} + 2$

With $x_0 = 2.5$

(a) Find the values of x_1, x_2 and x_3.

$x_1 =$ .....

$x_2 =$ .....

$x_3 =$ .....

(3)

(b) Explain the relationship between the values of x_1, x_2 and x_3 and the equation $x^3 - 2x^2 - 5 = 0$

.....

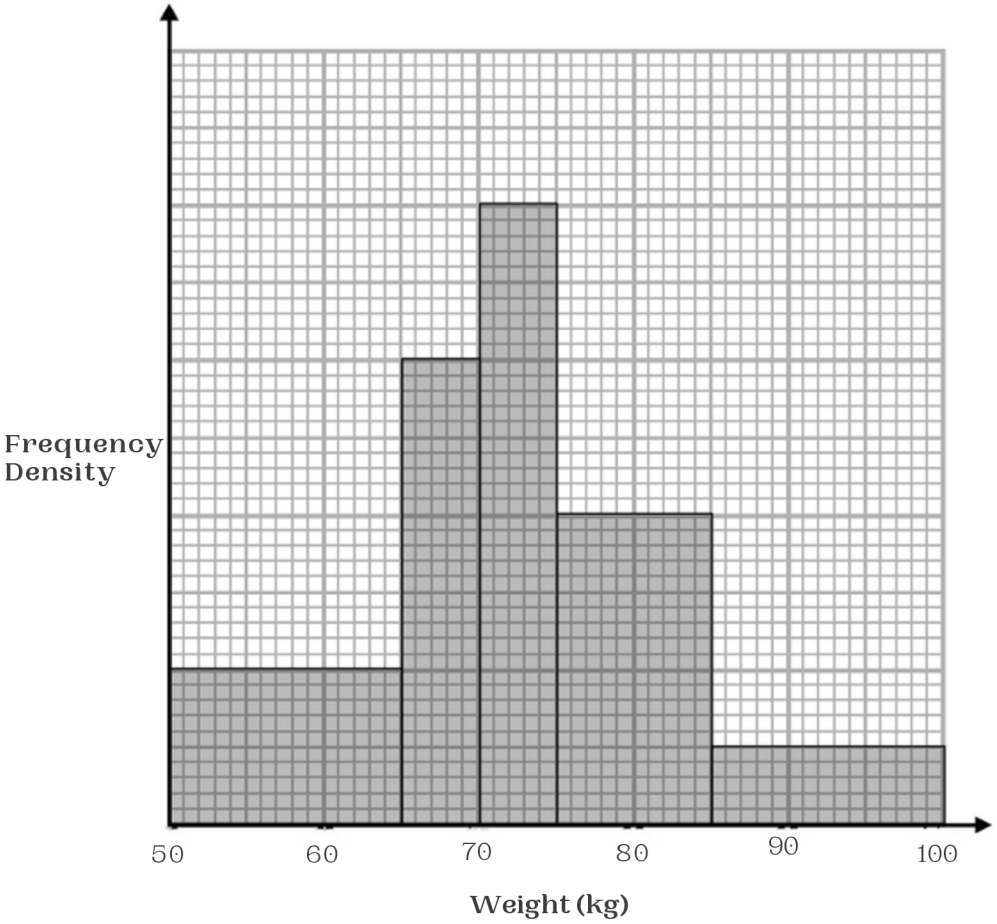
.....

.....

(2)

(Total for Question 16 is 5 marks)

17 The histogram shows information about the weight of Puppies.



30 puppies weigh between 50 and 65 kg.

(a) Work out an estimate for the number of puppies which weigh more than 80kg.

.....

(3)

(b) Explain why your answer to part a is only an estimate.

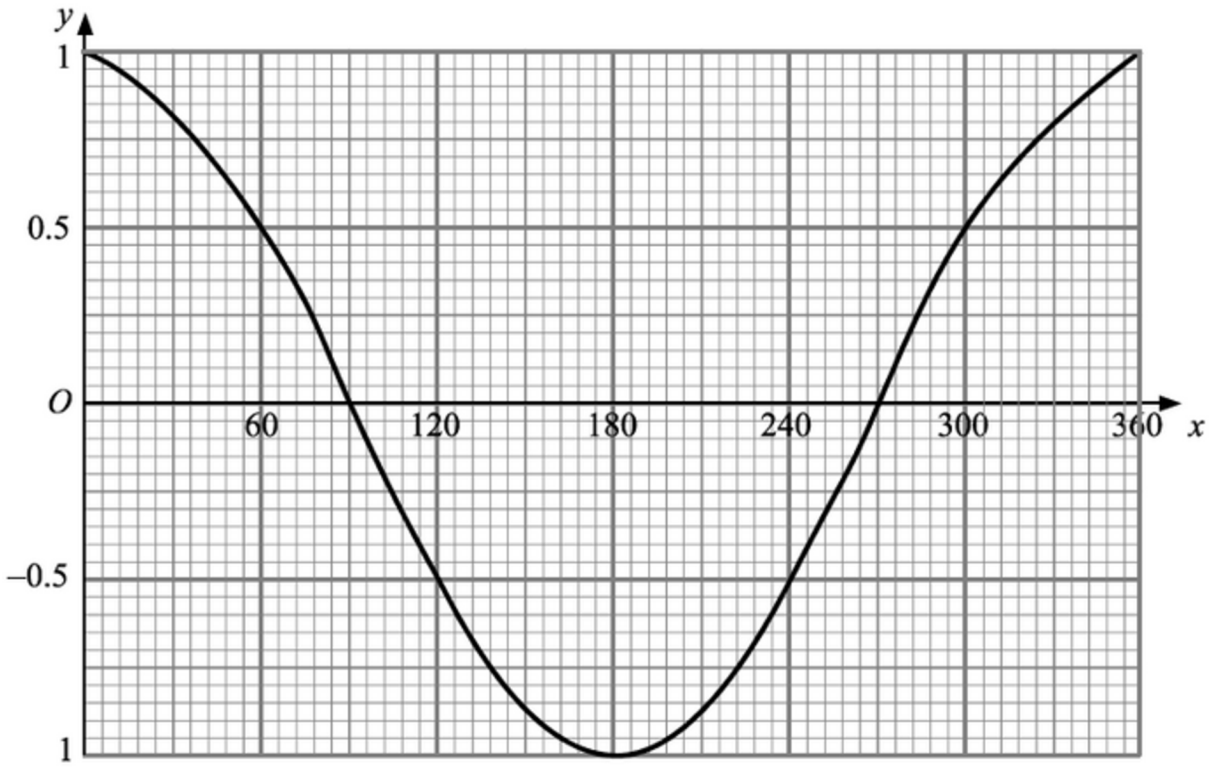
.....

.....

(1)

(Total for Question 17 is 4 marks)

18 Here is a sketch of the curve $y = \cos x°$ for $0 \leq x \leq 360$



Use the graph to find estimates of the solutions, in the interval $0 \leq x \leq 360$, of the equation:

i) $\cos(x) = -0.4$

.....

ii) $4\cos(x) = 3$

(2)

.....

(2)

(Total for Question 18 is 4 marks)

19 X, Y, and Z are three spheres.
The volume of sphere X is 64 cm^3.
The volume of sphere Y is 8 cm^3.
The ratio of the radius of sphere Y to the radius of sphere Z is 1:3
Work out the ratio of the surface area of sphere X to the surface area of sphere Z.

.....

(Total for Question 19 is 3 marks)

20 There are 10 counters in a bag.

5 of the counters are red.
4 of the counters are blue.
1 of the counters are green.

Ivy takes two counters are taken at random from the bag.

Work out the probability that both of the counters Ivy takes are the same colour.
You must show your working.

.....

(Total for Question 20 is 4 marks)

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21 $v^2 = u^2 + 2as$

v = 35.2 correct to 1 decimal place
a = 9.8 correct to 1 decimal place
s = 60.35 correct to 2 decimal places

Work out the upper bound for u.
Give your answer to 3 significant figures.

.....

(Total for Question 21 is 5 marks)

TOTAL FOR PAPER IS 80 MARKS