Mock Grade 7

Maths Booklet 6

Paper 2H
Calculator

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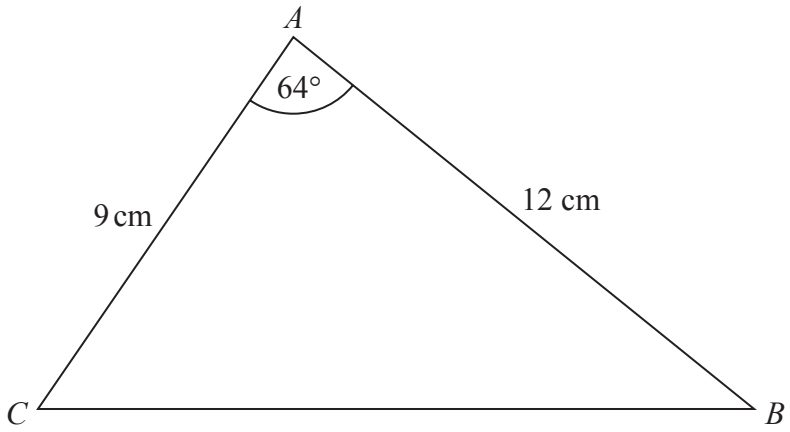
1 Here is triangle ABC.



(a) Find the length of BC.
Give your answer correct to 3 significant figures.

..... cm

(3)

(b) Find the area of triangle ABC.
Give your answer correct to 3 significant figures.

..... cm^2

(2)

(Total for Question 1 is 5 marks)

2 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)

The values of x_1, x_2 and x_3 found in part (a) are estimates of the solution of an equation of the form $x^3 + ax^2 + b = 0$ where a and b are integers.

(b) Find the value of a and the value of b.

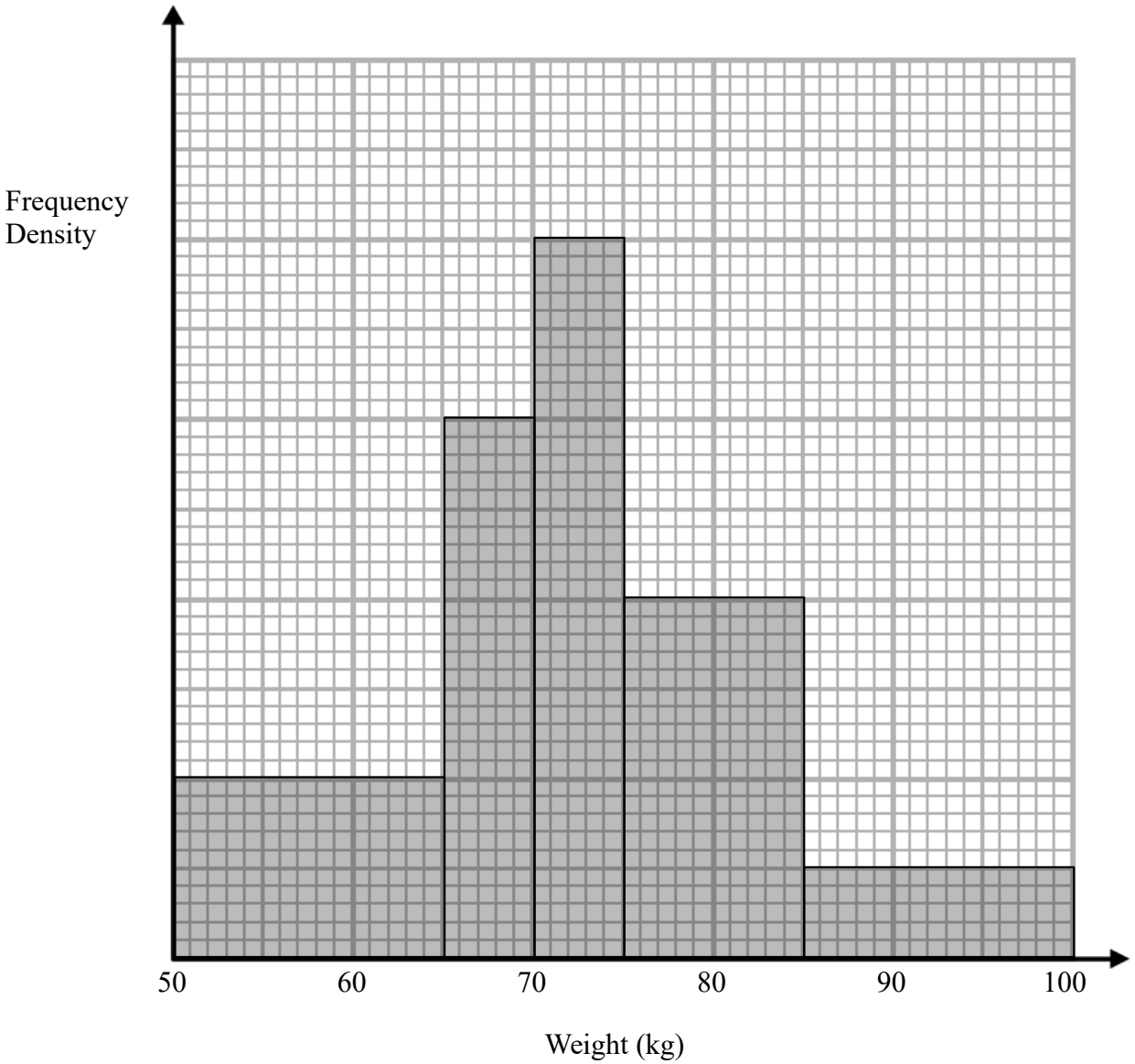
$a =$ .....

$b =$ .....

(1)

(Total for Question 2 is 4 marks)

6 The histogram shows information about the weight of pigs.



30 pigs weigh between 50 and 65 kg.

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

….....

(3)

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

….....

….....

(1)

(Total for question 6 is 4 marks)

4 The equation of a circle is $x^2 + y^2 = 90.25$

Find the diameter of the circle.

.....

(Total for Question 4 is 1 mark)

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5 There are only red counters and blue counters in a bag.

Joe takes at random a counter from the bag.
The probability that the counter is red is 0.45
Joe puts the counter back into the bag.

Mary takes at random a counter from the bag.
She puts the counter back into the bag.

(a) What is the probability that Joe and Mary take counters of different colours?

.....

(2)

There are 117 red counters in the bag.

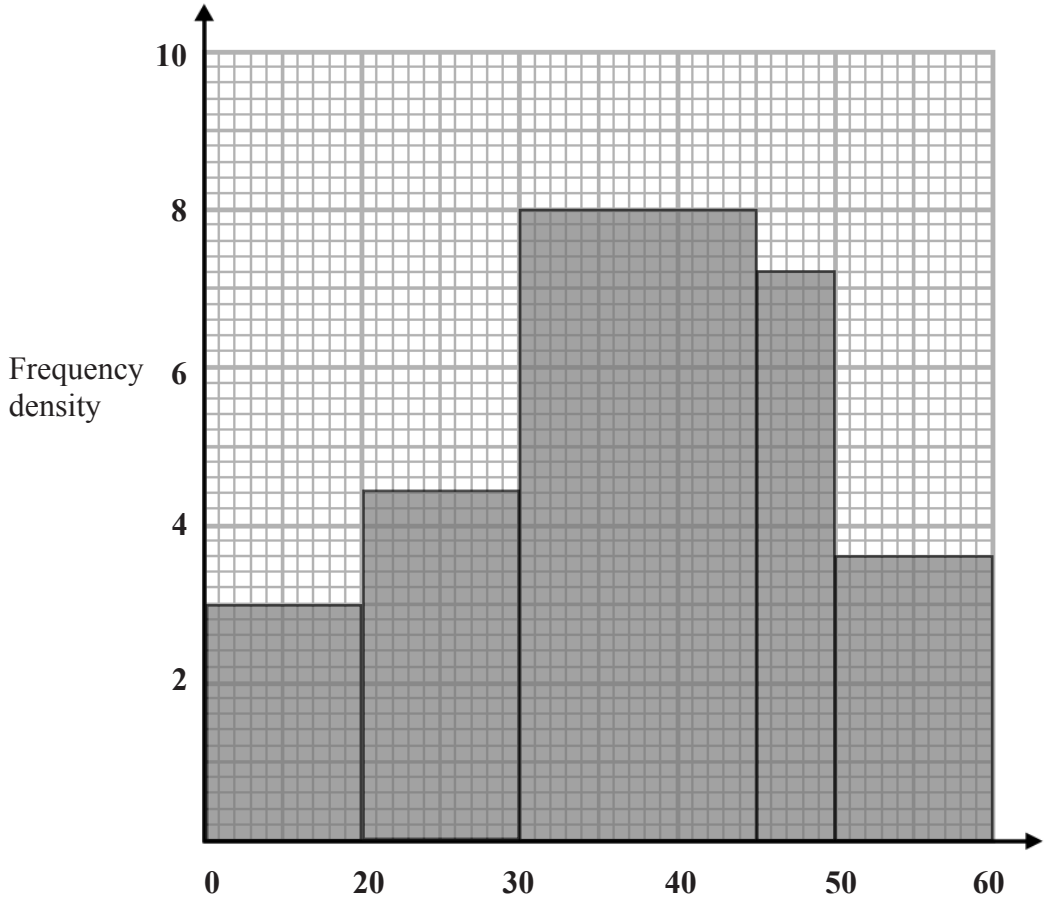
(b) How many blue counters are there in the bag?

.....

(2)

(Total for Question 5 is 4 marks)

6 The histogram shows some information about the ages of the 296 members of a sports club.



25% of the members of the sports club who are between 35 and 50 years of age are female.

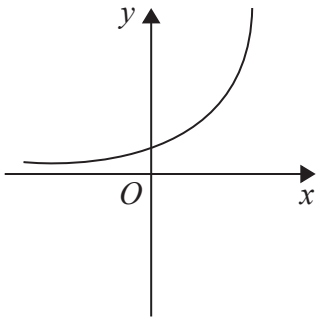
Work out an estimate for the number of female members who are over 50 years of age.

.....

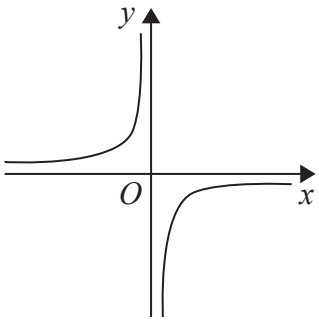
(Total for Question 6 is 3 marks)

7 Here are some graphs.

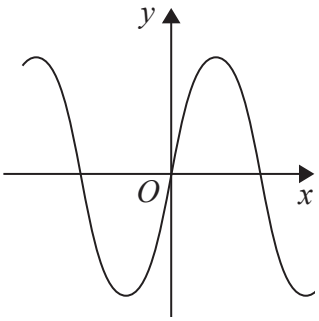
A



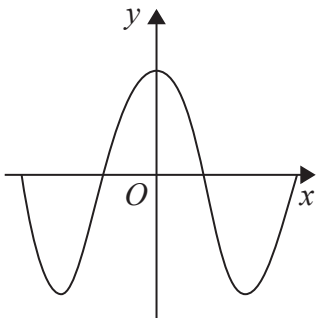
B



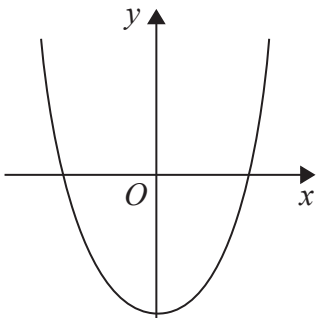
C



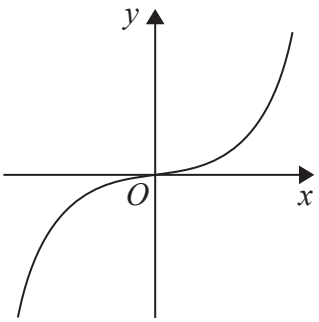
D



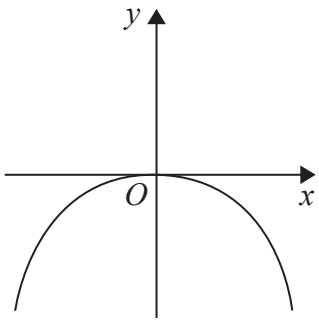
E



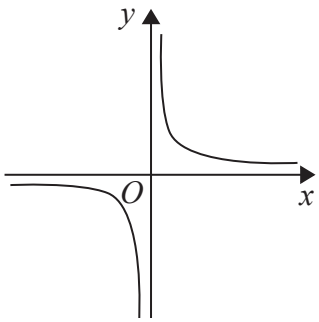
F



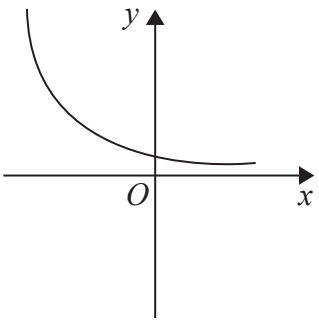
G



H



I

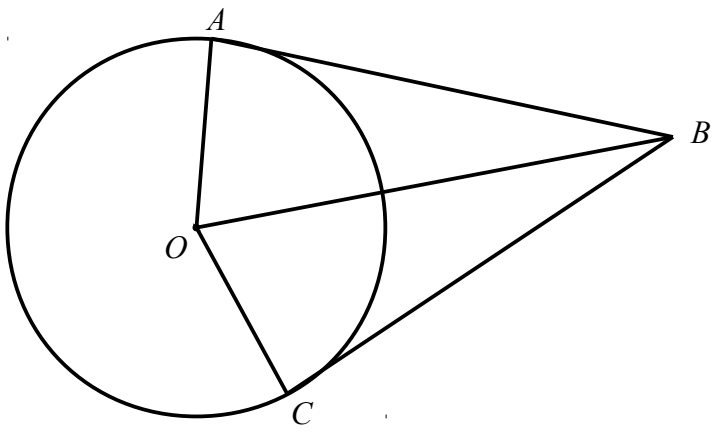


In the table below, match each equation with the letter of its graph.

Equation	Graph
$y = \cos x$	
$y = x^2 - 4$	
$y = 2^{-x}$	
$y = \frac{1}{x}$	

(Total for Question 7 is 3 marks)

8 A and C are points on a circle, centre O.
AB and BC are tangents to the circle.



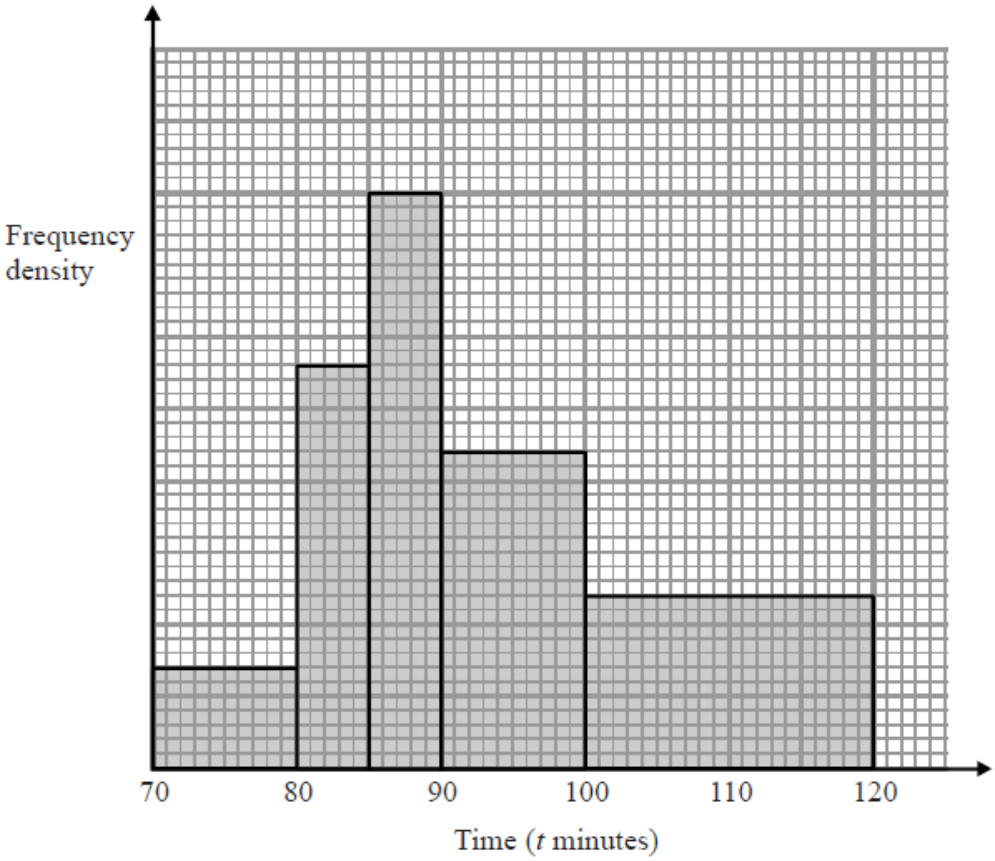
Prove that triangle ABO is congruent to triangle BCO.

(Total for Question 8 is 3 marks)

9 Work out: $0.\dot{3}\dot{9} \div 0.\dot{6}\dot{3}$

(Total for Question 9 is 3 marks)

10 The histogram shows information about the times taken by some cyclists to finish a cycle race.



(a) Complete the frequency table for this information.

Time taken (t minutes)	**Frequency**
$70 < t \leqslant 80$	7
$70 < t \leqslant 85$	
$85 < t \leqslant 90$	
$90 < t \leqslant 100$	
$100 < t \leqslant 120$	

(2)

(b) Find an estimate for the lower quartile of the times taken to finish the cycle race.

..... minutes

(2)

(Total for Question 10 is 4 marks)