Year 10 Mock Practice Paper 2

Calculators are allowed

Q1.

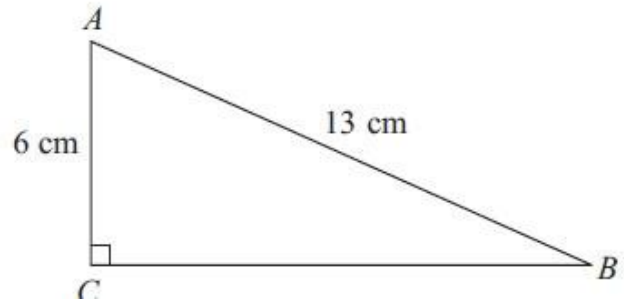


Diagram **NOT** accurately drawn

ABC is a right-angled triangle.
AC = 6 cm
AB = 13 cm

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

.....

(3)

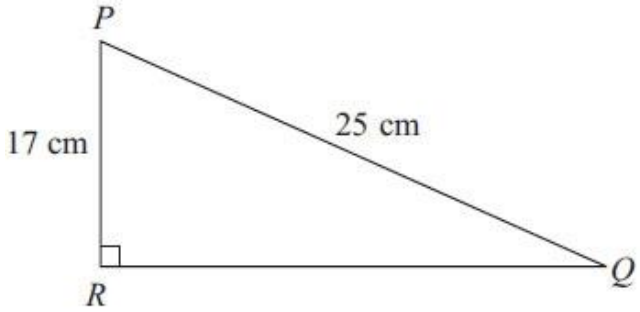


Diagram **NOT** accurately drawn

PQR is a right-angled triangle.
PR = 17 cm
PQ = 25 cm

(b) Work out the size of angle *RPQ.*
Give your answer correct to 1 decimal place.

.....

(3)

(Total for Question is 6 marks)

Q2.

Work out the value of $(7.5 \times 10^4) \times (2.5 \times 10^3)$
Give your answer in standard form.

.....

(Total for Question is 2 marks)

Q3.

Carol spins a spinner 80 times.

The table shows information about her results.

Outcome	Frequency
J	39
K	25
L	16

Dan spins this spinner 300 times.

Work out an estimate for the number of times that Dan will get an L.

.....

(Total for question = 3 marks)

Q4.

m is an integer such that $-2 < m \leq 3$

(a) Write down all the possible values of m.

.....

(2)

(b) Solve $7x - 9 < 3x + 4$

.....

(2)

(Total for Question is 4 marks)

Q5.

(a) Simplify $(x^{-2})^{-3}$

.....

(1)

(b) Factorise $2y^2 - 5y - 3$

.....

(2)

(Total for question = 3 marks)

Q6.

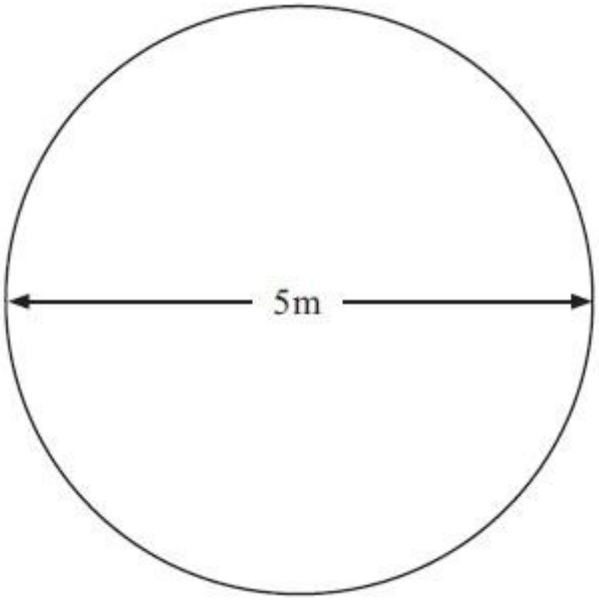


Diagram **NOT** accurately drawn

Jon has a flower garden in the shape of a circle.
The diameter of the garden is 5 metres.

Jon wants to put fencing around the edge of the garden.
The fencing costs £1.80 per metre.

Work out the total cost of the fencing.

£ . . . . . .

(Total for Question is 3 marks)

Q7.

Jarek uses the formula

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

to work out the area of a triangle.

For this triangle,

a = 7.8 cm correct to the nearest mm.
b = 5.2 cm correct to the nearest mm.
C = 63° correct to the nearest degree.

Calculate the lower bound for the area of the triangle.

..... cm^2

(Total for question = 3 marks)

Q8.

The diagram shows a triangle inside a rectangle.

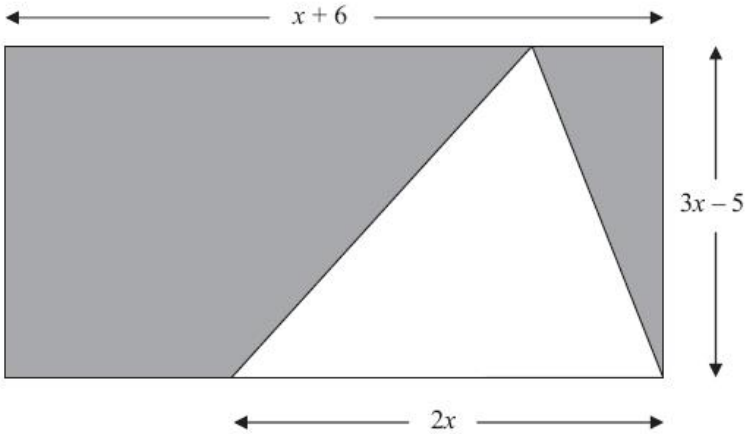


Diagram **NOT** accurately drawn

All measurements are given in centimetres.

Show that the total area, in cm^2, of the shaded regions is $18x - 30$

(Total for Question is 4 marks)

Q9.

Vicky makes 8 purses and 9 key rings to sell for charity.The price of a purse will be twice as much as the price of a key ring. Vicky wants to get a total of exactly £40 when she sells all the purses and all the key rings. Work out the price Vicky needs to charge for each purse and for each key ring.

(Total for Question is 4 marks)

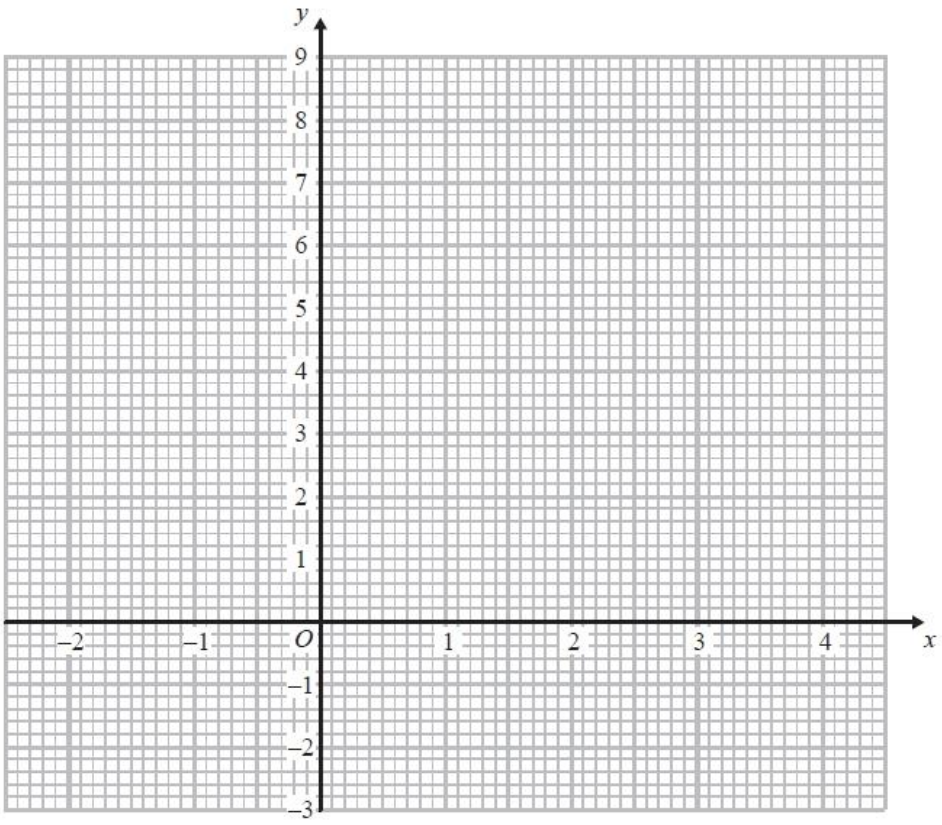
Q10.

(a) Complete the table of values for $y = x^2 - 2x - 1$

x	−2	−1	0	1	2	3	4
y	7			−2	−1		

(2)

(b) On the grid, draw the graph of $y = x^2 - 2x - 1$ for values of x from −2 to 4



(2)

(c) Solve $x^2 - 2x - 1 = x + 3$

.....

(2)

(Total for Question is 6 marks)

Q11.

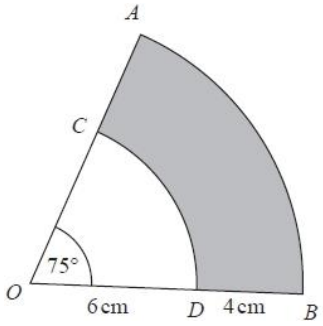


Diagram **NOT** accurately drawn

OAB is a sector of a circle, centre *O*.
OCD is a sector of a circle, centre *O*.
OCA and *ODB* are straight lines.

Angle *AOB* = 75°
OD = 6 cm
DB = 4 cm

Calculate the perimeter of the shaded region. Give your answer correct to 3 significant figures.

..... cm

(Total for question = 3 marks)

Q12.

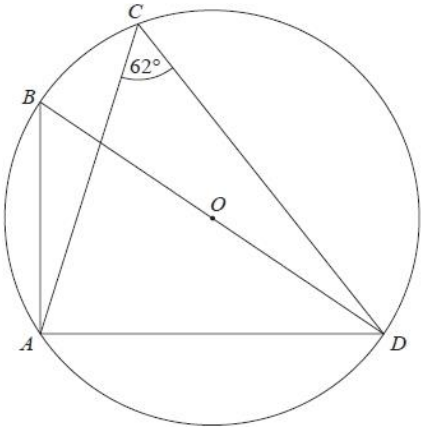


Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are points on the circumference of a circle, centre *O*.
BOD is a straight line. Angle *ACD* = 62°

Find the size of angle *ADB*. Give a reason for each stage in your working.

(Total for question = 4 marks)

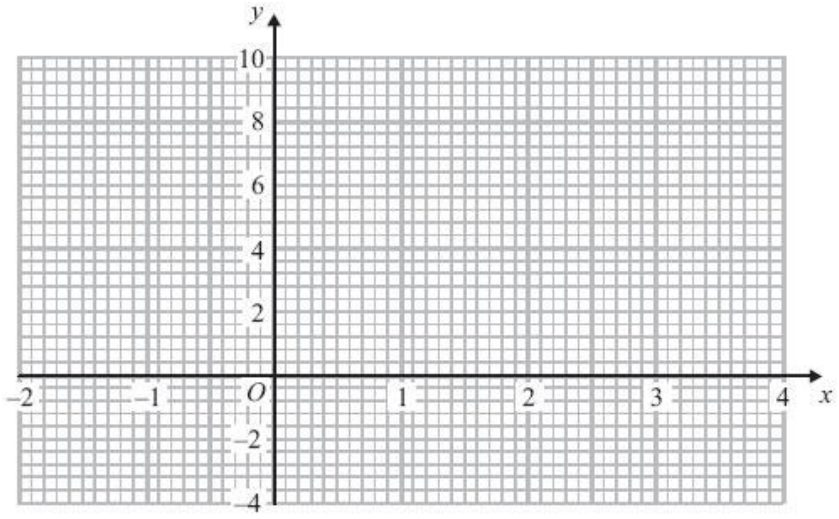
Q13.

(a) Complete the table of values for $y = x^2 - 2x$

x	–2	–1	0	1	2	3	4
y		3	0			3	

(2)

(b) On the grid, draw the graph of $y = x^2 - 2x$ for values of x from –2 to 4



(2)

(c) Solve $x^2 - 2x - 2 = 1$

.....

(2)

(Total for Question is 6 marks)

Q14.

Steve travelled from Ashton to Barnfield.

He travelled 235 miles, correct to the nearest 5 miles.
The journey took him 200 minutes, correct to the nearest 5 minutes.

Calculate the lower bound for the average speed of the journey.
Give your answer in **miles per hour**, correct to 3 significant figures. You must show all your working.

..... mph

(Total for question = 4 marks)

Q15.

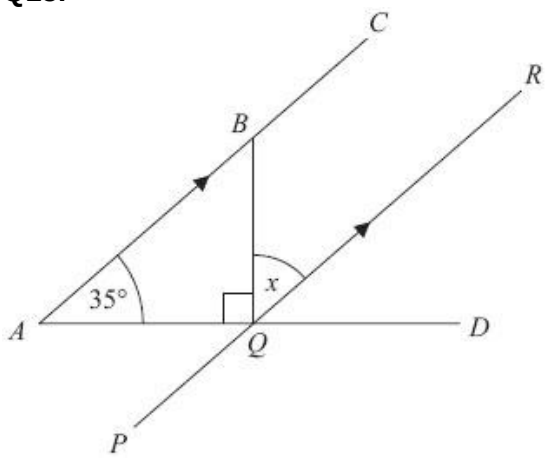


Diagram **NOT** accurately drawn

ABC, *PQR* and *AQD* are straight lines.
ABC is parallel to *PQR.*

Angle *BAQ* = 35°
Angle *BQA* = 90°

Work out the size of the angle marked *x*.
Give reasons for each stage of your working.

x = ... °

(Total for Question is 4 marks)

Q16.

Here is a parallelogram.

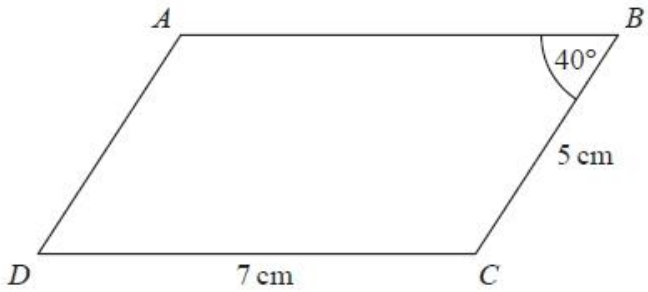


Diagram **NOT** accurately drawn

DC = 7 cm
CB = 5 cm
Angle *ABC* is 40°

Work out the area of the parallelogram. Give your answer correct to 1 decimal place.

..... cm^2

(Total for question = 3 marks)

Q17.

Gemma has the same number of sweets as Betty.

Gemma gives 24 of her sweets to Betty.
Betty now has 5 times as many sweets as Gemma.

Work out the total number of sweets that Gemma and Betty have.

.....

(Total for question = 4 marks)

Q18.

The diagram represents a metal frame.

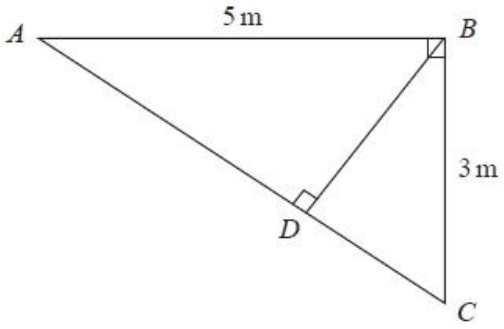


Diagram **NOT** accurately drawn

The frame is made from four metal bars, *AB*, *AC*, *BC* and *BD*.

Angle *ABC* = angle *ADB* = 90°
AB = 5 m
BC = 3 m

Work out the total length of the four metal bars of the frame.
Give your answer correct to 3 significant figures.

..... m

(Total for question = 5 marks)

Q19.

The diagram shows a metal bar in the shape of a prism.

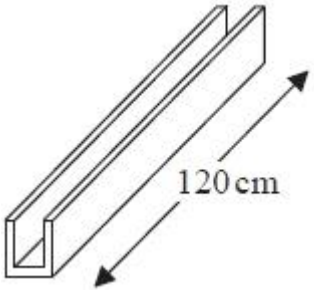


Diagram **NOT** accurately drawn

The length of the metal bar is 120 cm.
The cross section of the metal bar is shown below.

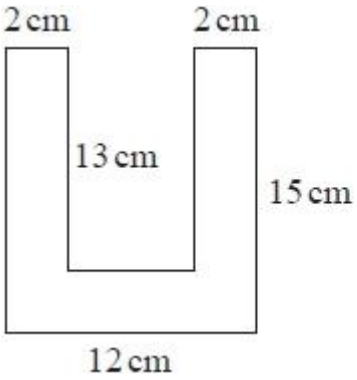


Diagram **NOT** accurately drawn

All corners are right angles.

The metal bar is made from steel with density 8 g/cm^3.

Sean has a trolley.
The trolley can carry a maximum mass of 250kg.

How many metal bars can the trolley carry at the same time?
You must show your working.

.....

(Total for question = 5 marks)

Q20.

Prove algebraically that the difference between the squares of any two consecutive integers is equal to the sum of these two integers.

(Total for Question is 4 marks)