GCSE Grade 6

Maths Booklet 2

Paper 3H
Calculator

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1 Jane bought a new car three years ago.

At the end of the first year the value of the car had decreased by 12.5%
The value of the car then decreased by 10% each year for the next two years.

At the end of the three years, the value of the car was £17 010

Work out the value of the car when Jane bought it three years ago.

£.....

(Total for Question 1 is 3 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

2 Rayheem has

16 shirts
5 pairs of jeans
3 jackets

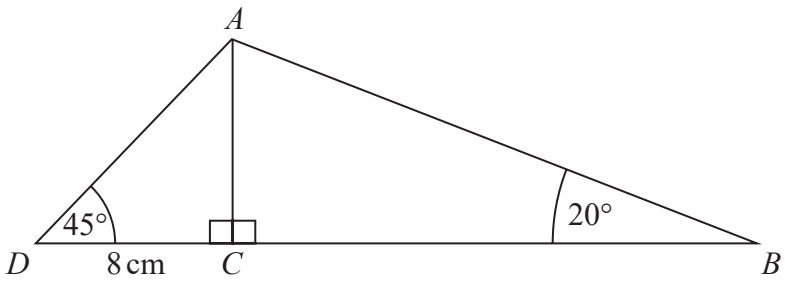
Rayheem chooses an outfit to wear.
An outfit is 1 shirt, 1 pair of jeans and 1 jacket.

Work out how many different outfits Rayheem can choose.

.....

(Total for Question 2 is 2 marks)

3 *ABC* and *ACD* are right-angled triangles.



DC = 8 cm
Angle *ADC* = 45°
Angle *ABC* = 20°

Work out the length of *AB*.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 3 is 3 marks)

4 **a** and **b** are vectors such that

$$\mathbf{a} = \begin{pmatrix} 2 \\ -3 \end{pmatrix} \quad \text{and} \quad 3\mathbf{a} - 2\mathbf{b} = \begin{pmatrix} 8 \\ -17 \end{pmatrix}$$

Find **b** as a column vector.

$\begin{pmatrix} \ldots\ldots \\ \ldots\ldots \end{pmatrix}$

(Total for Question 4 is 3 marks)

5 (a) Expand and simplify $(x - 2)(2x + 3)(x + 1)$

.....

(3)

$$\frac{y^4 \times y^n}{y^2} = y^{-3}$$

(b) Find the value of n.

.....

(2)

(c) Solve $5x^2 - 4x - 3 = 0$
Give your solutions correct to 3 significant figures.

.....

(3)

(Total for Question 5 is 8 marks)

6 $f(x) = 4\sin x°$

(a) Find f(23)
Give your answer correct to 3 significant figures.

.....

(1)

$g(x) = 2x - 3$

(b) Find fg(34)
Give your answer correct to 3 significant figures.

.....

(2)

$h(x) = (x + 4)^2$

Ivan needs to solve the following equation $h(x) = 25$

He writes

$(x + 4)^2 = 25$
$x + 4 = 5$
$x = 1$

This is not fully correct.

(c) Explain why.

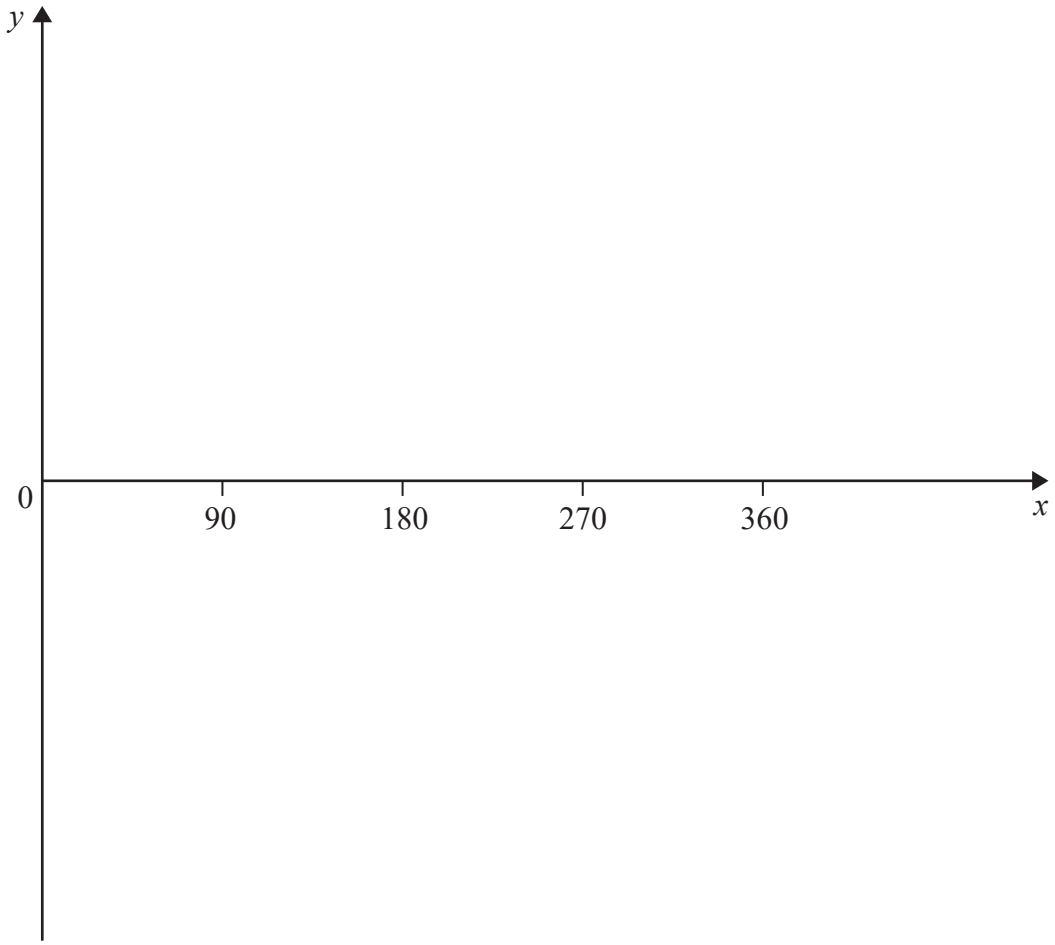
.....

.....

(1)

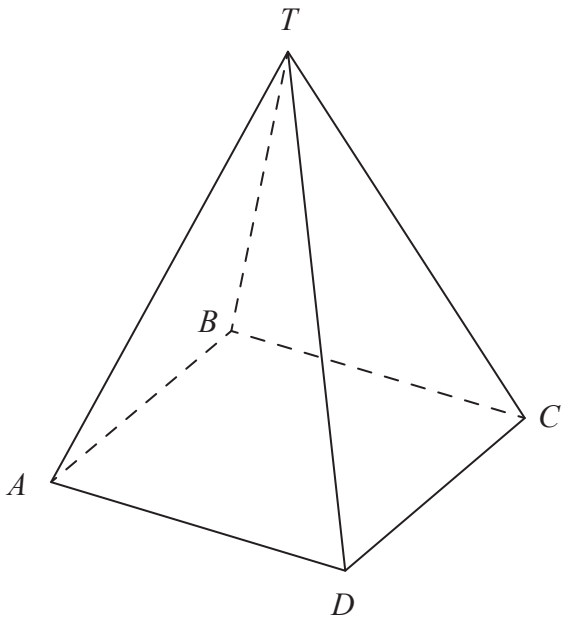
(Total for Question 6 is 4 marks)

7 Sketch the graph of $y = \tan x°$ for $0 \leqslant x \leqslant 360$



(Total for Question 7 is 2 marks)

8 Here is a pyramid with a square base $ABCD$.



$AB = 5\,\text{m}$

The vertex T is 12 m vertically above the midpoint of AC.

Calculate the size of angle TAC.

.....°

(Total for Question 8 is 4 marks)