

## Unit 1 A/B Test

1. Gail currently has a salary of £20,000. It is time to negotiate a pay rise. Her present employer has given her two options:

Option 1: An increase of 5% per annum for the next three years.

Option 2: An increase of 15% this year and no pay rise in year 2 and year 3.

Which option would you advise Gail to accept? **Justify your answer** (5)

2. Factorise: a)  $5x^2 - 125$  (2)

b)  $4x^2 - 12x + 9$  (2)

3. A storage barn is prism shaped, as shown.

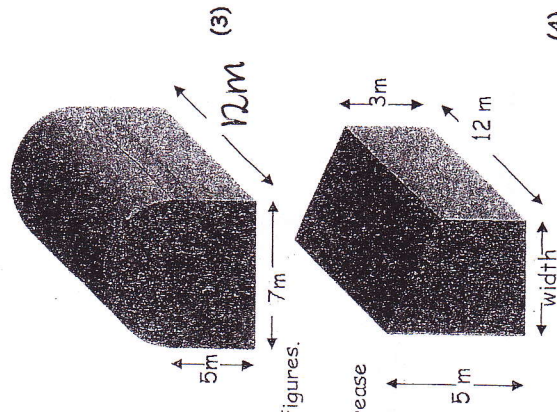
The cross section of the storage barn consists of a rectangle measuring 7 metres by 5 metres and a semi-circle of diameter 7 metres.

a) Find the volume of the storage barn.

Give your answer correct to 2 significant figures.

b) An extension to the barn is planned to increase the volume by 200 cubic metres.

The uniform cross section of the extension consists of a rectangle and a right angled triangle. Find the width of the extension.

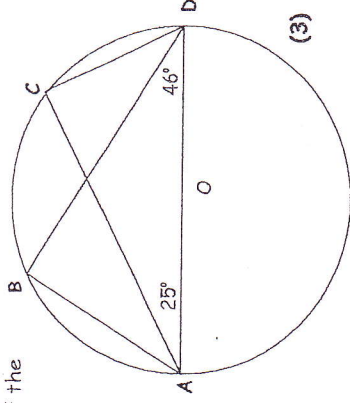


B and C are points on the circumference of the circle.

Angle CAD =  $25^\circ$

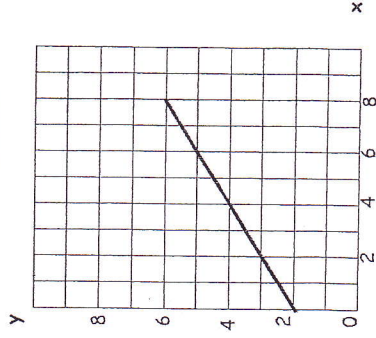
Angle BDA =  $46^\circ$

Calculate the size of angle BAC.



(3)

5. Find the equation of the straight line.



(3)

6. The diagram below shows a circular cross section of a cylindrical oil tank.

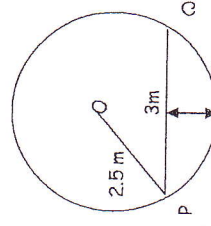
O represents the centre of the circle

PQ represents the surface of the oil in the tank

PQ is 3 metres

The radius OP is 2.5 metres

Find the depth, d metres, of oil in the tank.

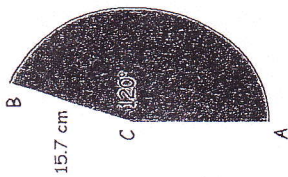


(4)

7. A straight line has equation  $3y = 12 - 4x$ . Find the coordinates of the point where it crosses the x-axis.

(2)

8. The diagram below shows a sector of a circle centre C. The radius is 15.7 centimetres and angle ACB is  $120^\circ$ . Calculate the area of the sector ABC.



(3)

9. Multiply out the brackets and simplify:  $(x - 2)(3x^2 + 4x - 5)$

(3)

10. Jane is selling her car. It has depreciated by 23% since she bought it and she is asking for £13 475. How much did Jane pay for the car?

(3)

{END OF QUESTION PAPER}

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