

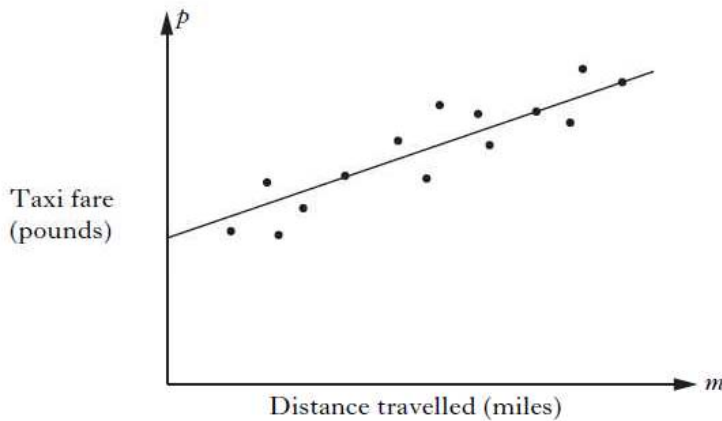
National 5 Revision D Paper 2 Based on Int 2 2010

1. An industrial machine costs £176 500.
 Its value depreciates by 4.25% each year.
 How much is it worth after 3 years?
 Give your answer correct to **three** significant figures. 4

2. Paul conducts a survey to find the most popular school lunch.
- 30 pupils vote for Pasta
 - 40 pupils vote for Baked Potato
 - 2 pupils vote for Salad
- 2
- Paul wishes to draw a pie chart to illustrate his data. How many degrees must he use for each sector in his pie chart?

Do not draw the pie chart.

3. The scattergraph shows the taxi fare, p pounds, plotted against the distance travelled, m miles. A line of best fit has been drawn.



1

The equation of the line of best fit is $p = 2 + 1.5m$.

Use this equation to predict the taxi fare for a journey of 6 miles.

4. A rugby team scored the following points in a series of matches.

13 7 0 9 7 8 5

- (a) For this sample, calculate:
- (i) the mean; 1
 - (ii) the standard deviation. 3

Show clearly all your working.

The following season, the team appoints a new coach.

A similar series of matches produces a mean of 27 and a standard deviation of 3.25.

- (b) Make two valid comparisons about the performance of the team under the new coach. 2

5. Solve algebraically the system of equations

$$\begin{aligned} 2x - 5y &= 24 \\ 7x + 8y &= 33. \end{aligned}$$

3

6. Express

$$\frac{s^2}{t} \times \frac{3t}{2s}$$

2

as a fraction in its simplest form.

7. Change the subject of the formula

$$P = 2(L + B)$$

2

to L .

8. Express

$$\sqrt{63} + \sqrt{28} - \sqrt{7}$$

3

as a surd in its simplest form.

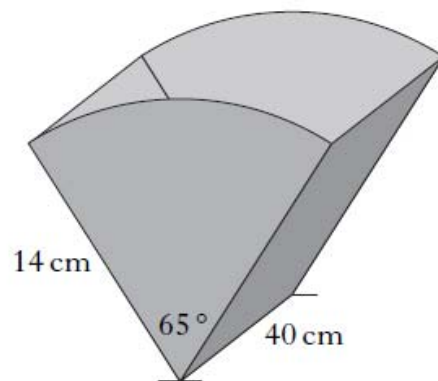
9. The ends of a magazine rack are identical.

Each end is a sector of a circle with radius 14 centimetres.

The angle in each sector is 65° .

The sectors are joined by two rectangles, each with length 40 centimetres.

The exterior is covered by material.
What area of material is required?



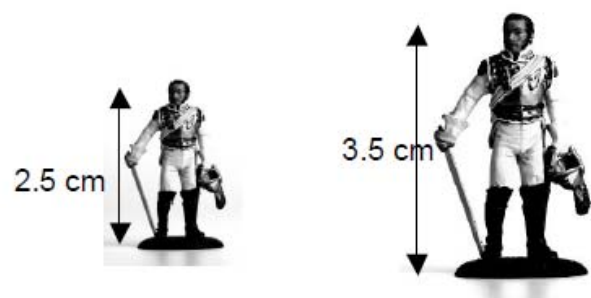
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10.

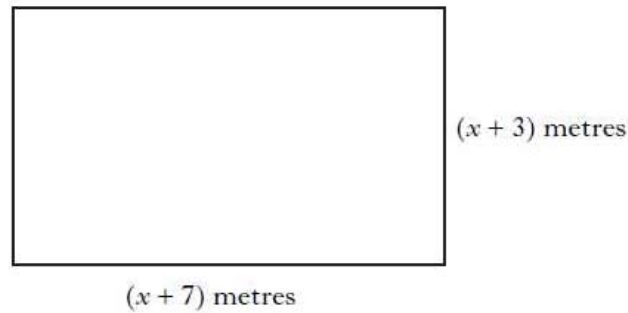
Die-cast metal figures come in different sizes, which are mathematically similar in shape. The cost of each figure depends on the volume of metal used to make the figure.

In the diagram opposite, the smaller figure costs £1.25.

Calculate the cost of the larger figure.



11. The diagram below represents a rectangular garden with length $(x + 7)$ metres and breadth $(x + 3)$ metres.



- (a) Show that the area, A square metres, of the garden is given by

$$A = x^2 + 10x + 21.$$

- (b) The area of the garden is 45 square metres. Find x .

Show clearly all your working.

12.

A cylindrical container has a volume of 3260 cubic centimetres.

The radius of the cross section is 6.4 centimetres.

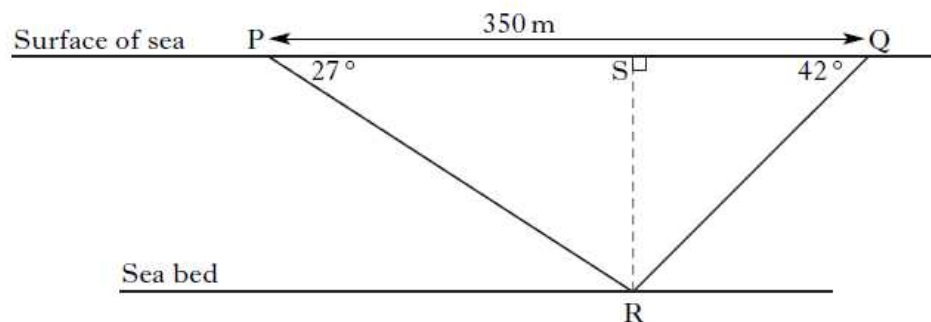
Calculate the height of the cylinder.



13.

Two ships have located a wreck on the sea bed.

In the diagram below, the points P and Q represent the two ships and the point R represents the wreck.



The angle of depression of R from P is 27° .

The angle of depression of R from Q is 42° .

The distance PQ is 350 metres.

Calculate QS, the distance ship Q has to travel to be directly above the wreck.

Do not use a scale drawing.

2

4

3

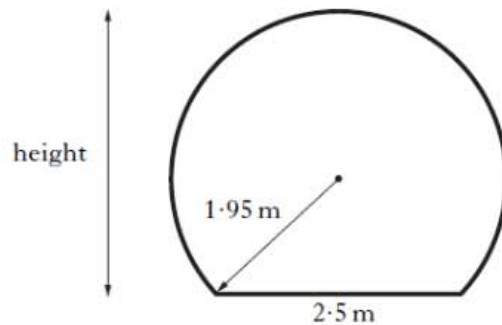
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14.

Ocean World has an underwater viewing tunnel.



The diagram below shows the cross-section of the tunnel. It consists of part of a circle with a horizontal base.



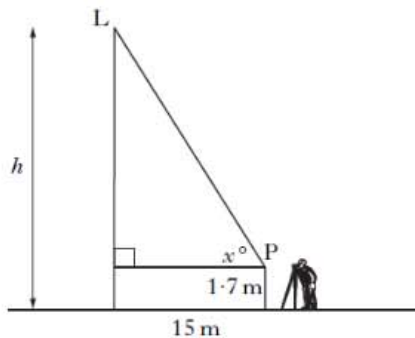
The radius of the circle is 1.95 metres and the width of the base is 2.5 metres.

Calculate the height of the tunnel.

4

15. A surveyor views a lift as it travels up the outside of a building.

In the diagram below, the point L represents the lift.



The height, h metres, of the lift above the ground is given by the formula

$$h = 15 \tan x^\circ + 1.7,$$

where x° is the angle of elevation of the lift from the surveyor at point P.

(a) What is the height of the lift above the ground when the angle of elevation from P is 25° ? 2

(b) What is the angle of elevation at point P when the height of the lift above the ground is 18.4 metres? 3

16. a) If A is the point (2, -3, 6) and B is the point (5, 8, -4), find the vector AB 2

b) Hence find the distance from A to B. 2