



TOPIC: 2026 Predicted Diet Exam Papers

Paper 2 (Calculator)

Duration — 1 hour 30 minutes

Total marks — 50

Attempt ALL questions.
You may use a calculator.

To earn full marks you must show your working in your answers.
State the units for your answer where appropriate.
Write your answers clearly in the spaces provided.

1. A local business buys a new commercial printer for £25,000.
Its value depreciates by 15% in the first year.
Its value then depreciates by 8% each subsequent year.
Calculate the value of the printer at the end of 3 years.

3

2. A farmer records the weights, in kilograms, of a sample of 6 newborn calves.
The weights are:

38, 42, 45, 39, 43, 45

4

(a) Calculate the mean and standard deviation of these weights.

(b) A second sample of calves from a different breed has a mean weight of 46 kg and a standard deviation of 1.8 kg.
Make **one** valid comment comparing the weights of the two breeds of calves.

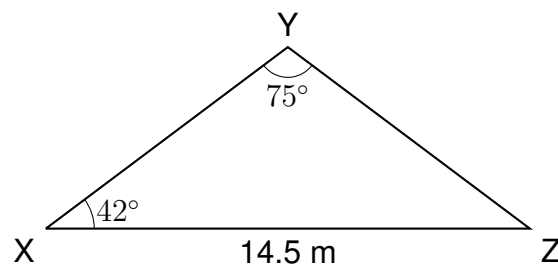
1



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3. In triangle XYZ:

- angle YXZ = 42°
- angle XYZ = 75°
- the length of XZ is 14.5 metres.



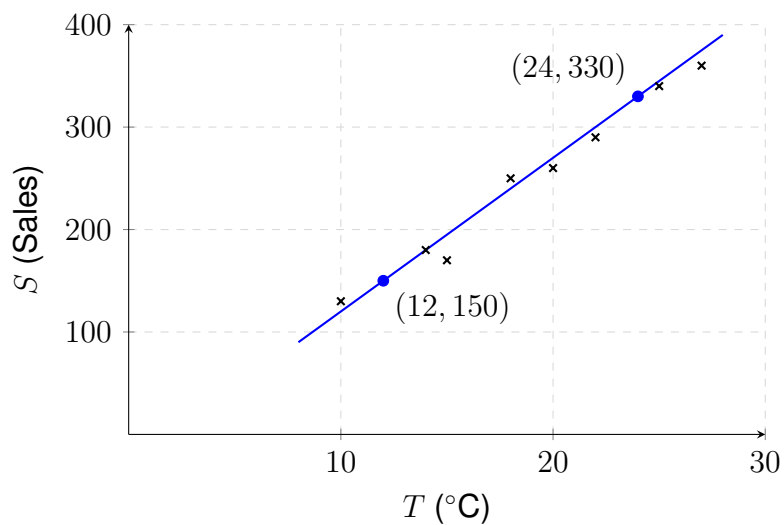
3

Calculate the length of YZ.



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4. A researcher is investigating the relationship between the outside temperature, T degrees Celsius, and the number of ice creams sold, S , by a vendor. A line of best fit has been drawn on a scattergraph. The line passes through the points $(12, 150)$ and $(24, 330)$.



3

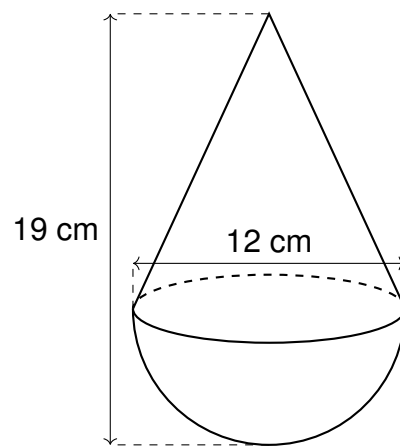
Find the equation of the line of best fit in terms of T and S .



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5. A wooden toy is made in the shape of a cone attached to a hemisphere, as shown.

- The diameter of the toy is 12 centimetres.
- The total height of the toy is 19 centimetres.



5

Calculate the total volume of the wooden toy.
Give your answer correct to **2 significant figures**.



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6. Solve the equation

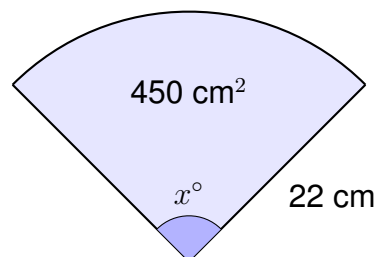
$$4x^2 + 5x - 7 = 0$$

4

Give your answers correct to **1 decimal place**.

7. A decorative hand fan is made in the shape of a sector of a circle with radius 22 centimetres.

The area of the paper used to make the fan is 450 square centimetres.



3

Calculate the size of the angle at the centre of the sector.

8. The mass of a proton is 1.67×10^{-27} kilograms.

The mass of an electron is 9.11×10^{-31} kilograms.

Calculate how many times heavier a proton is than an electron.

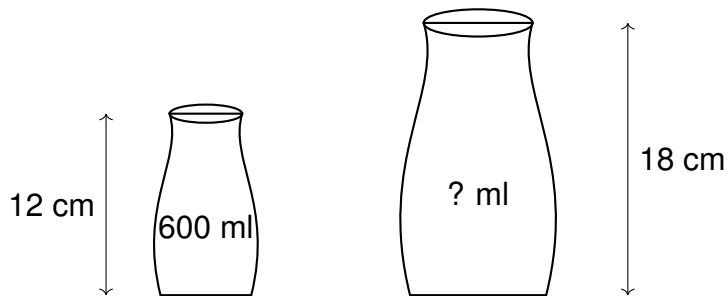
Give your answer in scientific notation correct to **2 significant figures**.

3



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9. Two mathematically similar glass vases are shown below.



3

The smaller vase has a height of 12 centimetres and a volume of 600 millilitres.
The larger vase has a height of 18 centimetres.
Calculate the volume of the larger vase.

10. A ticket for a music festival costs £50.40.

This price includes a 12% booking fee.

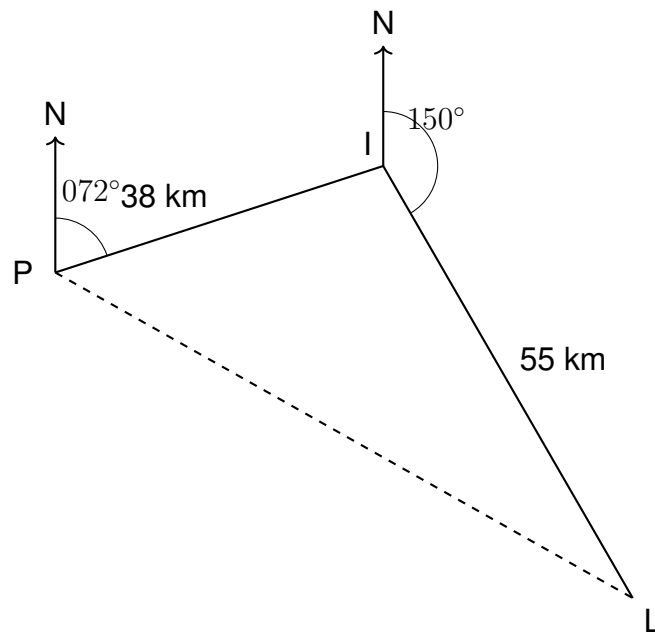
Calculate the original price of the ticket before the booking fee was added.

3



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11. A ferry leaves Port P and travels 38 kilometres on a bearing of 072° to reach an island, I.
It then leaves the island and travels 55 kilometres on a bearing of 150° to reach a lighthouse, L.



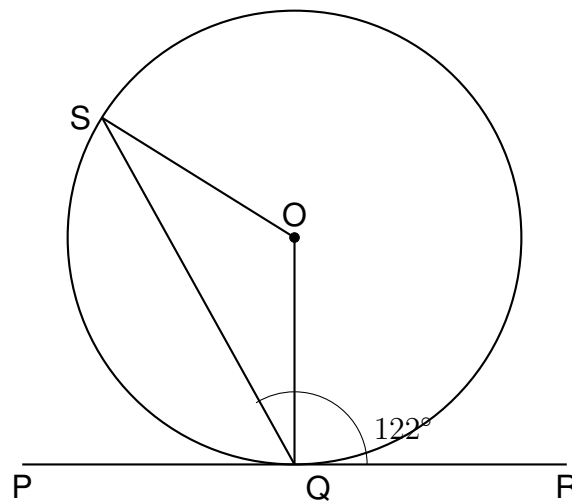
5

Calculate the direct distance from Port P to the lighthouse L.



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- 12.** The diagram shows a circle, centre O.
PR is a tangent to the circle at Q.
SQ is a chord of the circle.
Angle RQS is 122° .



3

Calculate the size of angle SOQ.

- 13.** Expand and simplify

$$\cos x^\circ (\tan x^\circ + \cos x^\circ)$$

2



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14. Change the subject of the formula to h :

$$V = \frac{1}{3}\pi r^2 h$$

2



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15. The equation $2x^2 + kx + 8 = 0$ has equal roots.
Determine the possible values of k .

3

[END OF QUESTION PAPER 2]



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Paper 2 (Answers)

1. £17,986
2. (a) Mean = 42 kg, Standard Deviation = 2.97 kg
(b) The second breed is heavier on average ($46 > 42$). **OR** The second breed's weights are more consistent / less spread out ($1.8 < 2.97$).
3. 10.0 m (to 1 d.p.)
4. $S = 15T - 30$
5. 940 cm^3
6. $x = 0.8$ and $x = -2.1$
7. 106.5°
8. 1.8×10^3
9. 2025 ml
10. £45
11. 73.1 km
12. 116°
13. $\sin x^\circ + \cos^2 x^\circ$
14. $h = \frac{3V}{\pi r^2}$
15. $k = 8$ and $k = -8$ (or $k = \pm 8$)

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