



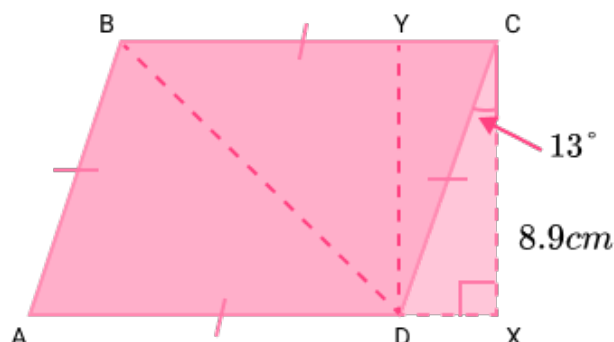
THIRD SPACE
LEARNING

GCSE Exam Questions

The Hypotenuse | Geometry &
Measure

GCSE Exam Questions: The Hypotenuse

- 1) (a) Work out the area of the rhombus $ABCD$



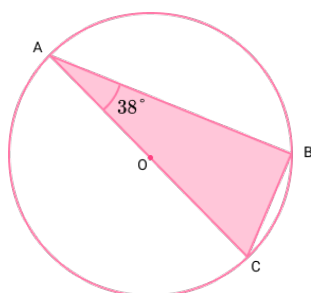
(2)

- (b) The point Y is directly above D . Calculate the length of the diagonal BD .

(4)

(6 marks)

- 2) A circle has a radius $r = 5.9\text{cm}$. Each point of the triangle ABC is on the circumference of the circle.



- (a) Calculate the area of the circle. Write your answer in the form $\frac{a}{b}\pi$

(1)

- (b) Using your answer to part (a), calculate the percentage of the circle that is shaded, to 2 significant figures.

(6)

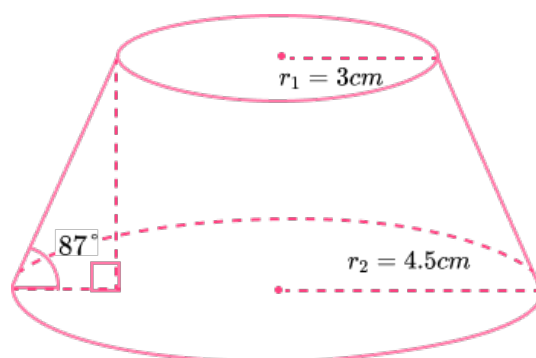
(7 marks)

GCSE Exam Questions: The Hypotenuse

- 3) The volume of a frustum can be written as

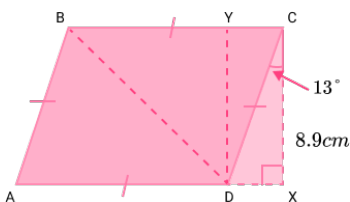
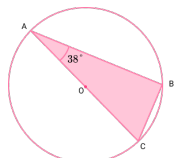
$$V = \frac{\pi h}{3} (r_1^2 + r_2^2 + (r_1 \times r_2))$$

Calculate the volume of the frustum given below. Write your answer in litres



(4 marks)

GCSE Exam Questions: The Hypotenuse Answers

	Question	Answer	Marks
1) (a)	<p>Work out the area of the rhombus $ABCD$:</p> 	$CD = \frac{8.9}{\cos(13)} = 9.1341065593 \text{ cm}$ $CD \times 8.9 = 81.2935 \text{ cm}^2$	<p>(1)</p> <p>(1)</p>
(b)	<p>The point Y is directly above D. Calculate the length of the diagonal BD.</p>	$DX = 8.9 \tan(13) = 2.0547269010$ $BY = 7.08 \text{ cm}$ $BD = \sqrt{7.08^2 + 8.9^2}$ $BD = 11.37 \text{ cm}$	<p>(1)</p> <p>(1)</p> <p>(1)</p> <p>(1)</p>
2) (a)	<p>A circle has a radius $r = 5.9 \text{ cm}$. Each point of the triangle ABC is on the circumference of the circle.</p> <p>Calculate the area of the circle. Write your answer in the form $\frac{a}{b}\pi$</p>	 $\text{Area of circle} = \pi \times 5.9^2$ $= \frac{3481}{100}\pi \text{ cm}^2$	<p>(1)</p>
(b)	<p>Using your answer to part (a), calculate the percentage of the circle that is shaded, to 2 significant figures.</p>	<p>Angle ABC is equal to 90°.</p> $AC = 11.8 \text{ cm}$ $BC = 11.8 \sin(38) = 7.264805409 \text{ cm}$ $AB = 11.8 \cos(38) = 9.298526893 \text{ cm}$ <p>Area of $ABC =$</p> $7.26... \times 9.29... \div 2 = 33.77599423 \text{ cm}^2$ <p>Area of Triangle \div Area of Circle from part (a) $\times 100$</p> $= 31\%$	<p>(1)</p> <p>(1)</p> <p>(1)</p> <p>(1)</p> <p>(1)</p> <p>(1)</p>

3)

$$V = \frac{\pi \hbar}{3} (\mathbf{r}_1^2 + \mathbf{r}_2^2 + (\mathbf{r}_1 \times \mathbf{r}_2))$$

Diagram of a frustum of a cone. The top radius is $r_1 = 3\text{ cm}$ and the bottom radius is $r_2 = 4.5\text{ cm}$. The slant height is 87 cm . A right angle is indicated between the slant height and the vertical axis.

$$\text{Vertical height} = 1.5 \tan(87)$$
$$V = 1.28 \text{ L}$$

(1)

(1)

(1)

(1)

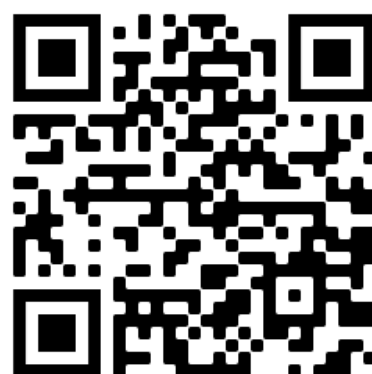
(1)

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