

NAME	MARK SCHEMPT
TEACHER	

Year 9 Mathematics
January Assessment 2025

Paper 1
CALCULATOR

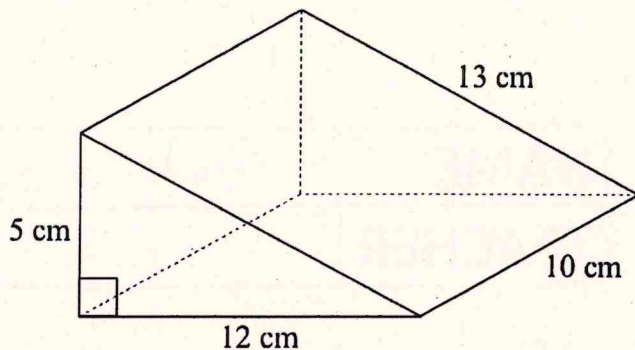
30 minutes
28 marks

Show all your working next to the question

1

The diagram shows a triangular prism.

Find the total surface area of the triangular prism.



$$\begin{array}{r}
 2 \Delta's \quad \frac{5 \times 12}{2} \times 2 = 60 \\
 \text{base} \quad 10 \times 12 = 120 \\
 \text{back} \quad 5 \times 10 = 50 \\
 \text{slope} \quad 10 \times 13 = 130 \\
 \hline
 360
 \end{array}$$

M1 correct attempt at area of Δ

M1 added their 5 sides

Answer: 360 ^{AI} cm²

[3 marks]

2
(a)

£5000 is invested, compound interest is added at 1.4% per year.

How much interest is added after 1 year?

$$0.014 \times 5000 = 70$$

[1 mark]

Answer: £ 70

(b)

How much in total is the investment worth after 2 years?

$$5000 \times 1.014^2 = 5140.98$$

M1 for 1.014 of good attempt at alternative method

$$[5000 \times 1.014 = 5070]$$

[2 marks]

Answer: £ 5140.98

3

$$s = ut + \frac{1}{2}at^2$$

$$u = -5, a = 4 \text{ and } t = 3$$

Work out the value of s .

$$s = -5 \times 3 + \frac{1}{2} \times 4 \times 3^2 \quad \text{M1}$$

$$= -15 + 18$$

$$= 3$$

Answer: 3 ^{A1}

[2 marks]

4

(a) Expand $(3x + 2)(4x - 3)$

	$3x$	2
$4x$	$12x^2$	$8x$
-3	$-9x$	-6

or M1

$$= 12x^2 - 9x + 8x - 6 \quad \text{M1}$$

$$= 12x^2 - x - 6$$

Answer: $12x^2 - x - 6$ ^{A1}

(b) Factorise fully $18a^2bc + 30abc^2$

M1 - partially factorised or 1 error

Answer: $6abc(3a + 5c)$ ^{A1}

[4 marks]

5 Calculate, writing your answer in standard form

$$(2.05 \times 10^5) \times (8.17 \times 10^3) = 1674850000 \quad \text{M1}$$

Answer: 1.67485×10^9

[2 marks]

- 6 Lauren is given a 12% pay rise.
Her new salary is £24,080

What was Lauren's salary before the pay rise?

$$24080 \div 1.12 = 21500$$

MI

or

$$24080 = 112\%$$

$$215 = 1\%$$

$$21500 = 100\%$$

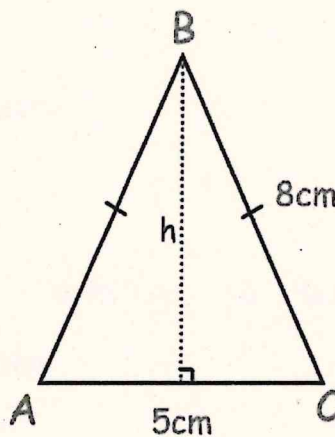
MI

Answer: £ 21500

[3 marks]

- 7 ABC is an isosceles triangle.

AB = BC = 8cm
AC = 5cm



Not drawn accurately

Calculate the height of the triangle, h.

Give your answer to 1 decimal place.

$$h^2 = 8^2 - 2.5^2$$

MI

$$h = \sqrt{64 - 6.25}$$

$$= \sqrt{57.75}$$

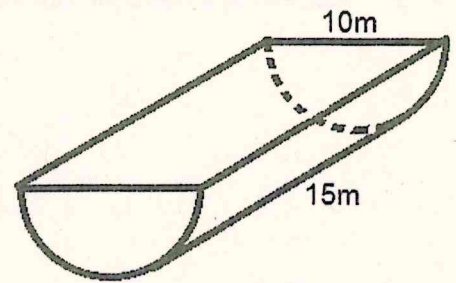
$$= 7.5993...$$

Answer: 7.6 cm

AI

[3 marks]

- 8 Find the volume of this prism.
The cross-section is a semi-circle.
Give your answer to 1 decimal place.



$$r = 5\text{m}$$

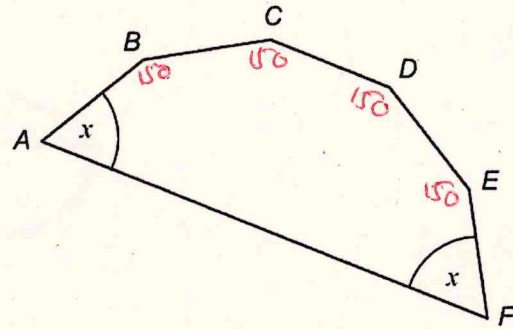
$$\begin{aligned}\text{Volume} &= \frac{1}{2} \times \pi r^2 \times L \\ &= \frac{1}{2} \times \pi \times 5^2 \times 15 \\ &= \frac{375\pi}{2} \\ &= 589.048\dots \\ &= 589.0 \text{ m}^3\end{aligned}$$

Answer: 589.0 m³

[3 marks]

TURN OVER

9 ABCDEF is a hexagon but AB, BC, CD, DE and EF also form five sides of a regular 12-sided dodecagon.



Not drawn accurately

Work out the size of angle x

or
 ext angle dodecagon = $360 \div 12 = 30^\circ$ MI

int angle dodecagon = $180 - 30 = 150^\circ$ MI

sum interior angles of dodecagon
 = $(12 - 2) \times 180$ MI
 = 1800

interior angle dodecagon
 = $1800 \div 12 = 150^\circ$ MI

sum interior angles hexagon = $(6 - 2) \times 180$ MI
 = 720°

$2x = 720 - 4 \times 150$ MI

$2x = 720 - 600$

$2x = 120$

$x = 60^\circ$ MI

Answer: 60 °

[5 marks]

END OF EXAM