

Year 11 Higher Maths Practice Paper 1

This paper covers: Ratio and proportion, Area and volume, Transformations.

TIME ALLOWED

55 minutes

TOTAL MARKS

45

QUESTIONS

26

Name _____

Class _____ Date _____

INSTRUCTIONS

- Use black ink or a black ball-point pen.
- Answer every question in the space given.
- You may use a calculator.
- Show your working. Some marks are given for a correct method, even when the answer is wrong.

INFORMATION

- The marks for each question are shown in brackets, for example [1 mark].
- The questions start easier and get harder as you go.
- Diagrams are not drawn accurately unless the question says so.
- Check your answers if you have time at the end.

FOR THE MARKER

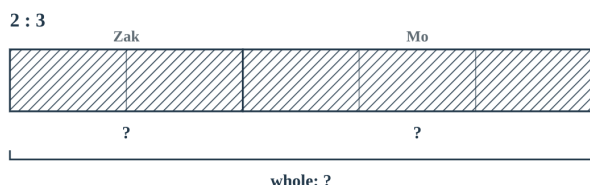
 Score _____ **out of 45**

Percentage _____ %

01 Questions

Answer every question. Show your working.

- 1** Zak and Mo share 10 sweets in the ratio 2 : 3. The bar shows the shares. How many equal parts is it cut into? [1 mark]



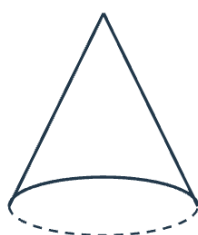
ANSWER

- 2** Omar and Ava share in the ratio 3 : 4. Cut the bar so Omar's share is on the left. Draw the line that cuts the bar. [1 mark]

3 : 4



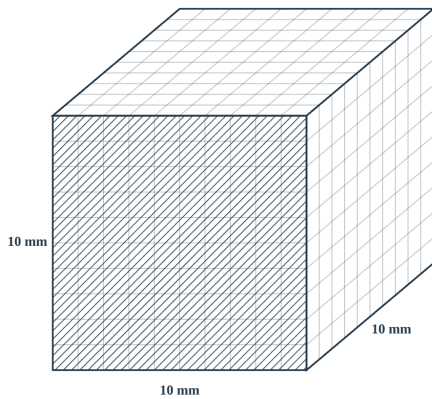
- 3** The measurements of this cone are given: it has a base radius of 5 centimetres and a perpendicular height of 12 centimetres. What is the area of the circular base, to one decimal place? [1 mark]



The solid

ANSWER

- 4 The cube is 1 cm along each edge, built from millimetre cubes. How many cubic millimetres is it? [1 mark]



ANSWER

- 5 Work out the volume of a cone that has a base radius of 5 centimetres and a perpendicular height of 4 centimetres. Give your answer to one decimal place. [2 marks]

ANSWER

- 6 A corner of a shape is at $(0, -1)$. The shape slides 3 left and 1 up. Where is that corner now? Write both answers. [1 mark]

ANSWER

- 7 $200 \text{ mm}^3 = ? \text{ cm}^3$. What number goes in the box? [1 mark]

ANSWER

- 8 A cone and a cylinder have the same base and the same height. The cylinder has a volume of 804.2 cubic centimetres. What is the volume of the cone, to one decimal place? [2 marks]

ANSWER

- 9 A cone has a base radius of 8 centimetres and a slant height of 17 centimetres. What is its surface area, to one decimal place? [2 marks]

ANSWER

- 10 Match each solid to the rule that gives its volume. Draw a line from each item on the left to its match on the right. [1 mark]

square-based pyramid

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• $\pi \times \text{radius}^2 \times \text{height} \div 3$

cone

•

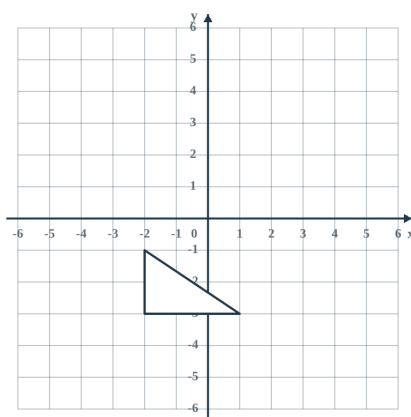
• the area of the base $\times$ the height $\div 3$

cuboid

•

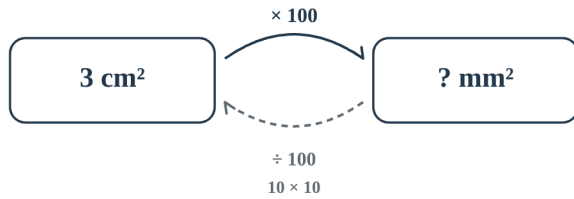
• length $\times$ width $\times$ height

- 11 Slide the shape 1 left and 1 down. Draw the shape in its new position. [1 mark]



12 Use the ladder. How many square millimetres is 3 cm^2 ?

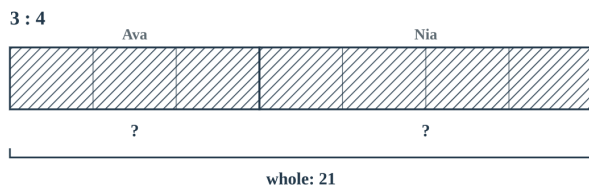
[2 marks]



ANSWER

13 Ava and Nia share 21 in the ratio 3 : 4. How much does Ava get?

[2 marks]



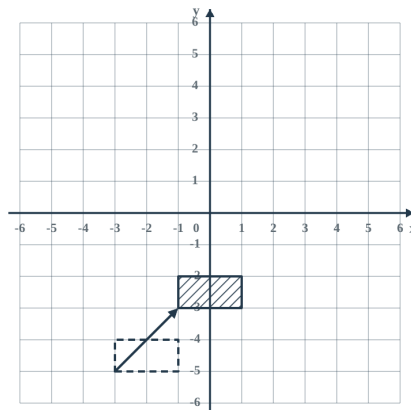
ANSWER

14 Leah says the shape moved -1 right because its left edge is now at -1. How has it really moved? Circle your answer.

[1 mark]

☐ 1 left and 2 up

☐ 2 right and 2 up



15 The base radius of a cone is 5 centimetres and its slant height is 13 centimetres. What is its curved surface area, to one decimal place?

[2 marks]

ANSWER

- 16** A sphere has a volume of 4188.8 cubic centimetres. What is its radius, to the nearest centimetre? [2 marks]

ANSWER

- 17** The curved part of a cone has an area of 427.3 square centimetres and its base radius is 8 centimetres. What is its slant height, in centimetres? [2 marks]

ANSWER

- 18** Mo casts a sphere in metal. It has a radius of 7 centimetres. One cubic centimetre of the metal has a mass of 8 grams. What is the mass of the casting, to the nearest gram? [2 marks]

ANSWER

- 19** Priya paints the whole outside of a sphere that has a radius of 10 centimetres. One pot of paint covers 50 square centimetres. How many whole pots are needed? [3 marks]

ANSWER

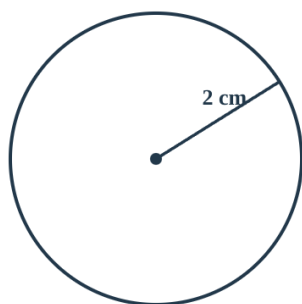
- 20 A cone has a volume of 1005.3 cubic centimetres and a base radius of 8 centimetres. [2 marks]
What is its perpendicular height, in centimetres?

ANSWER

- 21 Leah and Dev share some counters in the ratio 1 : 4. Dev has 18 more than Leah. How [3 marks]
many do they have altogether?

ANSWER

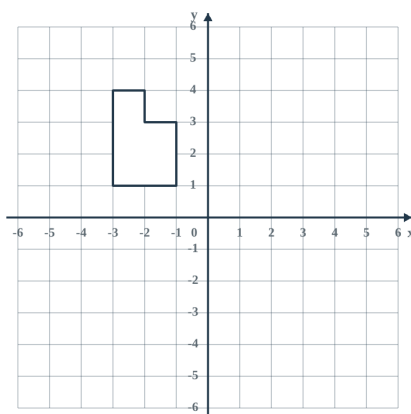
- 22 A box holds 3 identical solids like this one. Each one has a radius of 2 centimetres. [3 marks]
What is their total volume, to one decimal place?



a sphere of this radius

ANSWER

- 23** Corner A of the shape is at $(-3, 1)$. Slide the shape so that A lands on $(-4, 2)$. Draw the shape in its new position. [1 mark]



- 24** One sphere has a volume of 904.8 cubic centimetres. A second sphere has every length twice as big. What is its volume, to one decimal place? [2 marks]

ANSWER

- 25** One sphere has a surface area of 113.1 square centimetres. A second sphere has every length twice as big. What is its surface area, to one decimal place? [2 marks]

ANSWER

- 26** When a cone is cut half way up, what fraction of the whole volume does the small top cone hold? Write your answer as a fraction. [2 marks]

ANSWER

Practice Paper 1

FOR THE MARKER

The marks for every question, the answers to accept and what to award for part of an answer. 45 marks in total.

1	5	[1 mark]
2	3 of the 7 shares <i>Award the mark when the drawing or marking matches the answer shown.</i>	[1 mark]
3	78.5 cm ²	[1 mark]
4	1000 cubic millimetres	[1 mark]
5	104.7 cm ³ <i>Award 2 marks for the correct answer. Award 1 mark for a correct method, or for the correct value before rounding or rounded incorrectly.</i>	[2 marks]
6	-3 and 0	[1 mark]
7	0.2 cubic centimetres	[1 mark]
8	268.1 cm ³ <i>Award 2 marks for the correct answer. Award 1 mark for a correct method, or for the correct value before rounding or rounded incorrectly.</i>	[2 marks]
9	628.3 cm ² <i>Award 2 marks for the correct answer. Award 1 mark for a correct method, or for the correct value before rounding or rounded incorrectly.</i>	[2 marks]
10	square-based pyramid → the area of the base × the height ÷ 3; cone → $\pi \times \text{radius}^2 \times \text{height} \div 3$; cuboid → length × width × height <i>Award the mark only when every part is correct.</i>	[1 mark]
11	1 left and 1 down <i>Award the mark when the drawing or marking matches the answer shown.</i>	[1 mark]
12	300 square millimetres <i>Award 2 marks for the correct answer. Award 1 mark for a correct method with no more than one arithmetic error.</i>	[2 marks]
13	9 <i>Award 2 marks for the correct answer. Award 1 mark for a correct method with no more than one arithmetic error.</i>	[2 marks]

14	2 right and 2 up	[1 mark]
Award the mark for the correct choice only. Two or more choices marked scores no mark.		
15	204.2 cm ²	[2 marks]
Award 2 marks for the correct answer. Award 1 mark for a correct method, or for the correct value before rounding or rounded incorrectly.		
16	10 cm	[2 marks]
Award 2 marks for the correct answer. Award 1 mark for a correct method, or for the correct value before rounding or rounded incorrectly.		
17	17 cm	[2 marks]
Award 2 marks for the correct answer. Award 1 mark for a correct method with no more than one arithmetic error.		
18	11494 g	[2 marks]
Award 2 marks for the correct answer. Award 1 mark for a correct method, or for the correct value before rounding or rounded incorrectly.		
19	26	[3 marks]
Award 3 marks for the correct answer. Award 2 marks for a complete method with no more than one arithmetic error. Award 1 mark for a correct first step.		
20	15 cm	[2 marks]
Award 2 marks for the correct answer. Award 1 mark for a correct method with no more than one arithmetic error.		
21	30	[3 marks]
Award 3 marks for the correct answer. Award 2 marks for a complete method with no more than one arithmetic error. Award 1 mark for a correct first step.		
22	100.5 cm ³	[3 marks]
Award 3 marks for the correct answer. Award 2 marks for the correct value before rounding, or rounded incorrectly. Award 1 mark for a correct first step.		
23	1 left and 1 up	[1 mark]
Award the mark when the drawing or marking matches the answer shown.		
24	7238.2 cm ³	[2 marks]
Award 2 marks for the correct answer. Award 1 mark for a correct method, or for the correct value before rounding or rounded incorrectly.		
25	452.4 cm ²	[2 marks]
Award 2 marks for the correct answer. Award 1 mark for a correct method, or for the correct value before rounding or rounded incorrectly.		
26	$\frac{1}{8}$	[2 marks]
Award 2 marks for the correct answer. Award 1 mark for a correct method with no more than one arithmetic error.		

Total

45 marks