4.12 Surface Area: 30-minute Pack

EDEXCEL 1MA1 · Calculator allowed · about 30 minutes

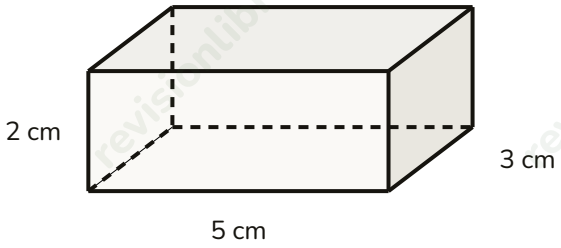
Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A rectangular prism measures 5 cm by 3 cm by 2 cm. Calculate its total surface area.

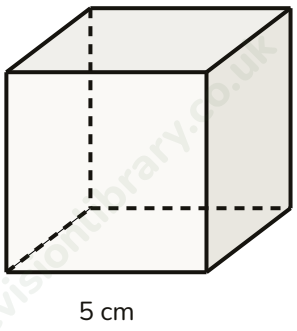
Diagram NOT accurately drawn



(Total for Question 1 is 2 marks)

2 The net of a cube is made up of six identical squares. Each square has side 5 cm. Work out the total surface area of the cube.

Diagram NOT accurately drawn

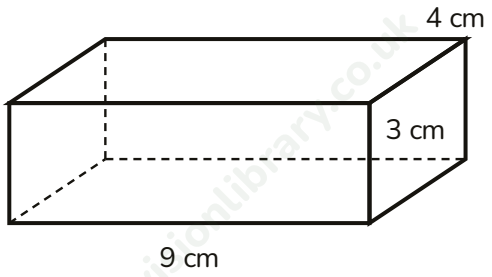


(Total for Question 2 is 1 mark)

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3 The diagram shows a cuboid with length 9 cm, width 4 cm and height 3 cm. Work out the total surface area of the cuboid.

Diagram NOT accurately drawn

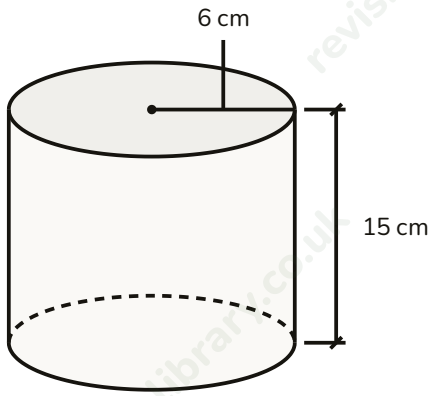


(Total for Question 3 is 3 marks)

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4 A closed cylinder has radius 6 cm and height 15 cm. Show that the total surface area of the cylinder is 792 cm², correct to 3 significant figures.

Diagram NOT accurately drawn

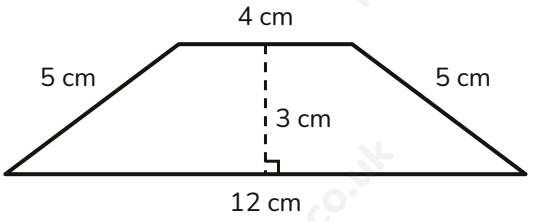


(Total for Question 4 is 3 marks)

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5 A prism has a trapezium cross-section with parallel sides 4 cm and 12 cm, perpendicular height 3 cm between the parallel sides, and the two sloping sides are each 5 cm. The prism has length 10 cm. Work out the total surface area of the prism.

Diagram NOT accurately drawn



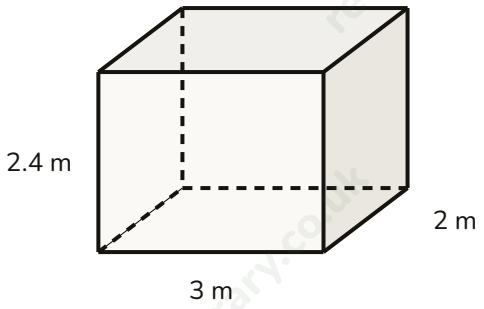
Prism length 10 cm

(Total for Question 5 is 4 marks)

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6 A garden shed (excluding floor and roof) is a cuboid measuring 3 m long, 2 m wide and 2.4 m high. Dan wants to paint the four external walls only (not the roof or floor). One tin of paint covers 5 m² and costs £12.50. Work out the total cost of the paint Dan needs to buy.

Diagram NOT accurately drawn



(Total for Question 6 is 5 marks)

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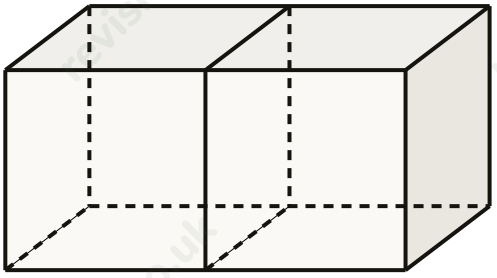
7 A wooden crate measures 30 cm by 20 cm by 10 cm. The crate is to be painted on all outer faces except the bottom, which measures 30 cm by 20 cm (the crate sits on the ground). Calculate the painted surface area in square centimetres.

(Total for Question 7 is 3 marks)

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8 Two identical cubes of side 3 cm are glued together on one face so they form a single solid. Find the total surface area of the combined solid.

Diagram NOT accurately drawn



(Total for Question 8 is 3 marks)

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Mark scheme · 4.12 Surface Area: 30-minute Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

correct method, e.g. 2(lw + lh + wh) or listing faces 5x3, 5x2, 3x2 and doubling	**M1**
62 cm² cao	**A1**

Answer: 62 cm^2

Question 2

150 cm² cao	**B1**

Answer: 150 cm^2

Question 3

at least two correct face areas from 36, 27, 12	**M1**
complete method, e.g. 2(36 + 27 + 12)	**M1**
150 cm² cao	**A1**

Answer: 150 cm^2

Question 4

2 x π x 6^2 (= 72pi or 226.19) seen	**M1**
2 x π x 6 x 15 (= 180pi or 565.49) seen	**M1**
792 cm² cso, from unrounded value 791.68... (or better)	**A1**

Answer: 792 cm^2 (given, cso)

Question 5

trapezium area 0.5x(4+12)x3 (= 24), doubled (= 48)	**M1**
perimeter of trapezium 4+5+12+5 (= 26)	**M1**
26 x 10 (= 260), or complete method	**M1**
308 cm² cao	**A1**

Answer: 308 cm^2

Question 6

one pair of walls: 2 x (3x2.4) (= 14.4)	**M1**
other pair of walls: 2 x (2x2.4) (= 9.6)	**M1**
total wall area 14.4 + 9.6 (= 24) m^2	**M1**
24 / 5 (= 4.8), rounded up to 5 tins (must buy whole tins)	**M1**
£62.50 cao	**A1**

Answer: £62.50

Question 7

calculate total SA = 2(30*20 + 30*10 + 20*10) = 2200 cm²	**M1**
subtract bottom area 30*20 = 600 cm²	**M1**
painted area = 1600 cm² cao	**A1**

Answer: 1600 cm^2

Question 8

area of one cube = 6*3^2 = 54, two cubes give 108 or method for counting faces	**M1**
subtract the two faces that become internal (2 * 9 = 18) or recognise shared face removes both faces	**M1**
90 cm² cao	**A1**

Answer: 90 cm^2

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