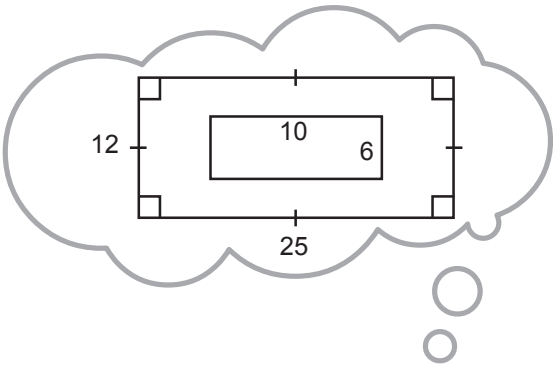
MATHLETICS
Inspiring Better Results

Area, Volume and Capacity

Student Book - Series H-2



Mathletics Instant Workbooks

Copyright © 3P Learning

Area, volume and capacity

Student Book - Series H 2

Contents

Author of The Topics and Topic Tests: AS Kalra

Mathletics Instant Workbooks – Series H 2 Copyright © 3P Learning

Area, volume and capacity

Topic 1: Area of a square

QUESTION **1** Draw a diagram for each of the squares (sides are given) and then find its area.

a 4 m

b 12 m

c 13 cm

d 25 m

e 16 mm

f 45 mm

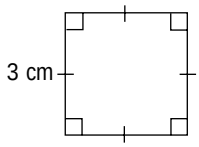
QUESTION **2** Complete the following.

	Side length of square	Area
a	1 cm	
b	2 cm	
c	15 cm	
d		25 cm^2
e		144 cm^2

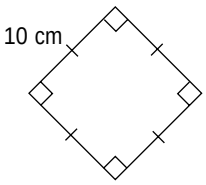
	Side length of square	Area
f		729 cm^2
g	18 cm	
h		625 cm^2
i	23 cm	
j		289 cm^2

QUESTION **3** Find the area of each square.

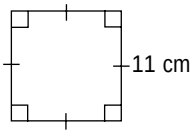
a



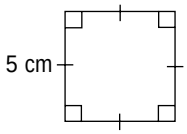
b



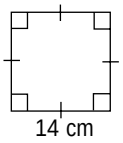
c



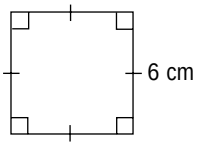
d



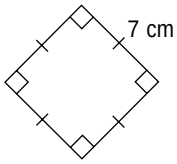
e



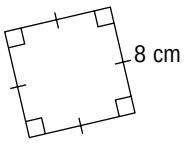
f



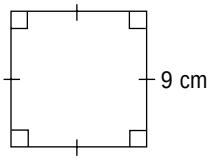
g



h



i



Mathletics Instant Workbooks – Series H 2 Copyright © 3P Learning

Area, volume and capacity

Topic 2: Area of a rectangle

QUESTION **1** Draw a diagram for each of these rectangles and then find its area.

a length 10 cm, breadth 9 cm

b length 13 cm, breadth 5 cm

c length 16 m, breadth 8 m

d length 25 mm, breadth 9 mm

e length 12 m, breadth 4 m

f length 16 m, breadth 12 m

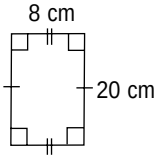
QUESTION **2** Complete the following.

	Length	Breadth	Area
a	8 m	6 m	
b	9 cm		45 cm^2
c	21 cm	8 cm	
d	15 cm		90 cm^2
e	31 m		155 m^2

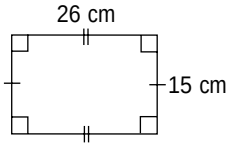
	Length	Breadth	Area
f	17 m		204 m^2
g	23 cm	14 cm	
h		12 cm	192 cm^2
i	38 mm		494 mm^2
j		26 cm	650 cm^2

QUESTION **3** Find the area of each rectangle.

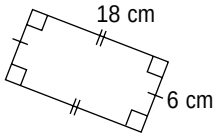
a



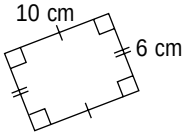
b



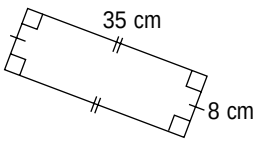
c



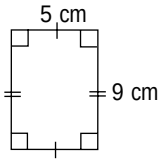
d



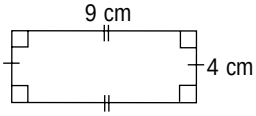
e



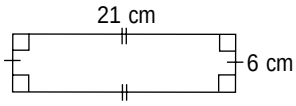
f



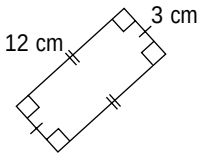
g



h



i



Mathletics Instant Workbooks – Series H 2 Copyright © 3P Learning

Area, volume and capacity

Topic 3: Area of a triangle

QUESTION **1**

a A triangle has a base of 60 cm and a height of 25 cm. What is its area?

_____

b A triangle has an area of 832 cm^2 and a base length of 32 cm. Find its height.

_____

c The area of a triangle is 42 m^2 and its base is 6 m. Find its height.

_____

QUESTION **2** Find the area of the triangles whose base and height are given. (All measurements are in cm.)

	Base	Height	Area
a	8	6	
b	16	11	
c	22	20	

	Base	Height	Area
d	42	14	
e	21	20	
f	27	10	

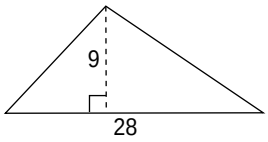
QUESTION **3** Complete the following. (All measurements are in cm.)

	Base	Height	Area of Δ
a	19	4	
b	12		60
c	18	8	

	Base	Height	Area of Δ
d		15	510
e	46	20	
f		13	338

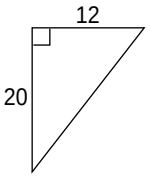
QUESTION **4** Find the area of each triangle. (All measurements are in cm.)

a



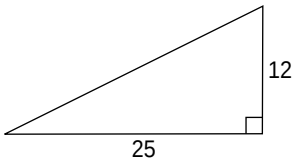
_____

b



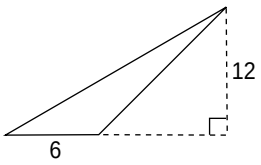
_____

c



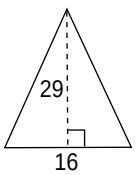
_____

d



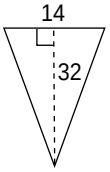
_____

e



_____

f



_____

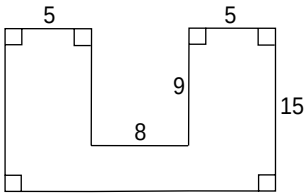
Mathletics Instant Workbooks – Series H 2 Copyright © 3P Learning

Area, volume and capacity

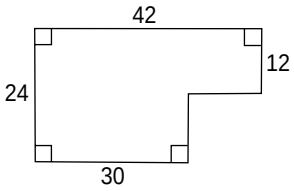
Topic 4: Composite areas

QUESTION **1** Find the area of each composite figure by dividing it into different shapes. (All measurements are in cm.)

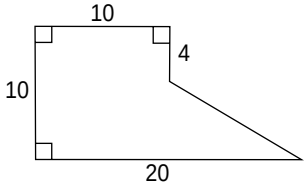
a



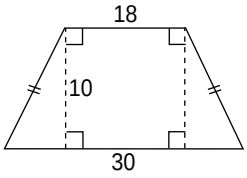
b



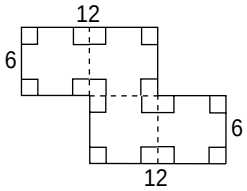
c



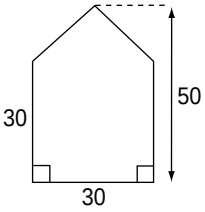
d



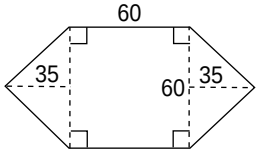
e



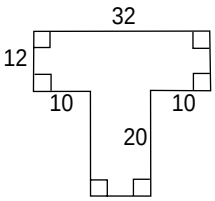
f



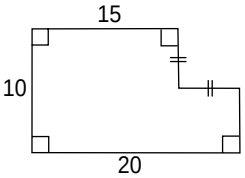
g



h

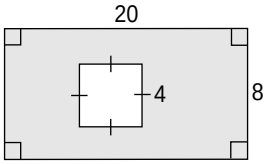


i

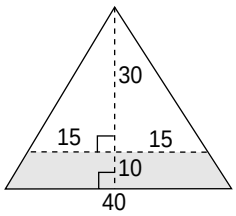


QUESTION **2** Find the shaded area of each shape. (All measurements are in cm.)

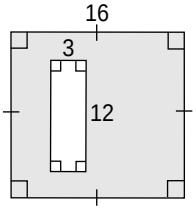
a



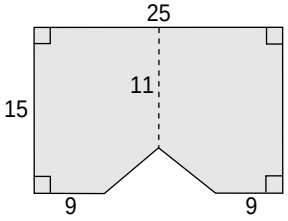
b



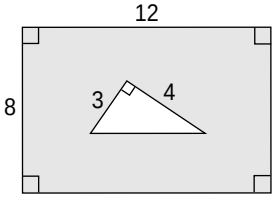
c



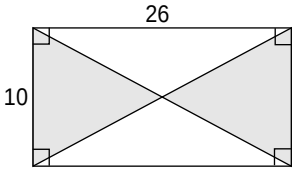
d



e



f



Mathletics Instant Workbooks – Series H 2 Copyright © 3P Learning

Area, volume and capacity

Topic 5: Volume of a cube

QUESTION **1** Calculate the volume of each of the following cubes whose side length is given. Show all your working.

a 1 cm

b 14 cm

c 16 cm

d 5 m

e 9 m

f 17 m

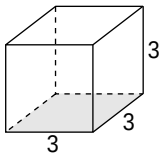
g 18 cm

h 20 m

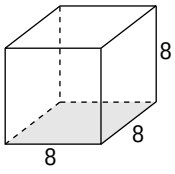
i 28 m

QUESTION **2** Find the volume of each cube. (All measurements are in metres.)

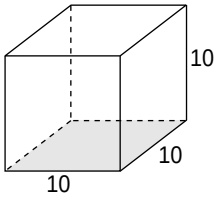
a



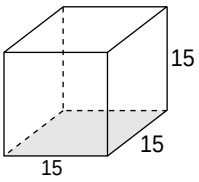
b



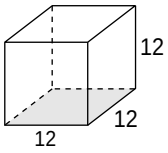
c



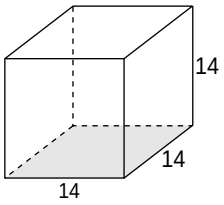
d



e



f



QUESTION **3**

a The volume of a cube is 729 cm^3. What is the length of each edge?

b The volume of a cube is 2197 cm^3. Find its side length.

Mathletics Instant Workbooks – Series H 2 Copyright © 3P Learning

Area, volume and capacity

Topic 6: Volume of a rectangular prism

QUESTION **1** Find the volume of each rectangular prism whose dimensions are given below. (All measurements are in cm.)

	Length	Breadth	Height	Volume
a	12	8	7	
b	9	5	7	
c	12	8	5	

	Length	Breadth	Height	Volume
d	14	7	8	
e	16	9	10	
f	10	5	4	

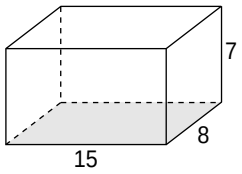
QUESTION **2** Complete the following. (All measurements are in cm.)

	Length	Breadth	Height	Volume
a	18	12	9	
b	28	20	12	
c	8	9		936

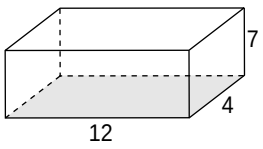
	Length	Breadth	Height	Volume
d		9	7	756
e	10		8	800
f	8	7	6	

QUESTION **3** Find the volume of each rectangular prism. (All measurements are in cm.)

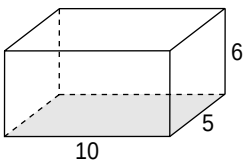
a



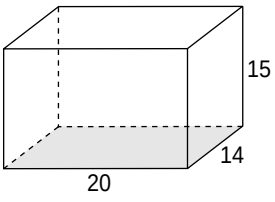
b



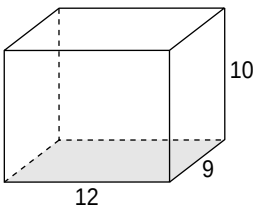
c



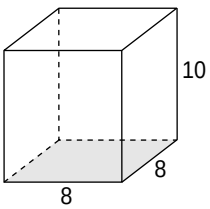
d



e



f



Mathletics Instant Workbooks – Series H 2 Copyright © 3P Learning

Area, volume and capacity

Topic 7: Volume of a triangular prism

QUESTION **1** Find the volume of each of the following triangular prisms whose dimensions are given below. (All measurements are in cm.)

	Base area	Height	Volume
a	60	16	
b	45	12	
c	128	25	

	Base area	Height	Volume
d	96	40	
e	45	12	
f	120	36	

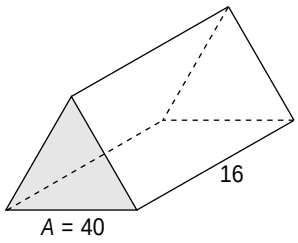
QUESTION **2** Complete the following. (All lengths are in cm, volumes are in cm^3.)

	Base area	Height	Volume
a	36	6	
b		12	672
c	108	12	
d	56		1400

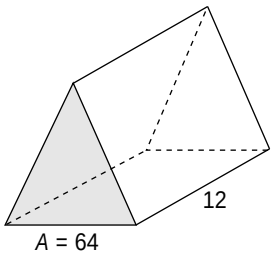
	Base area	Height	Volume
e		9	738
f	35		980
g	128	45	
h	98	12	

QUESTION **3** Find the volume of each triangular prism. (All lengths are in cm, areas are in cm^2.)

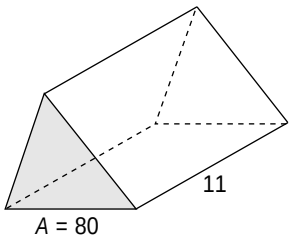
a



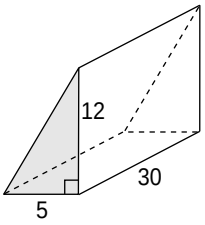
b



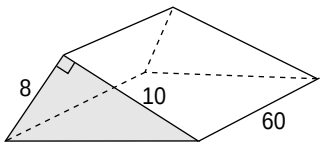
c



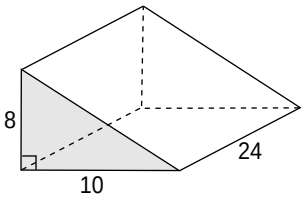
d



e



f

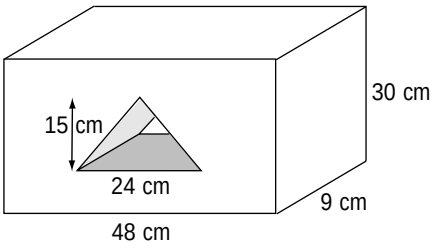


Mathletics Instant Workbooks – Series H 2 Copyright © 3P Learning

Area, volume and capacity

Topic 8: Volume of prisms — miscellaneous

QUESTION **1** Complete the following questions for the given solid.



a Find the area of the front rectangle.

_____

b Find the area of the front triangle.

_____

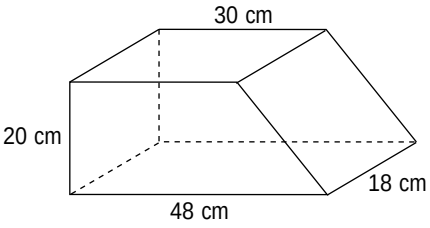
c Find the cross-sectional area.

_____

d Find the volume of the solid.

_____

QUESTION **2** Complete the following questions for the given solid.



a Find the number of faces.

_____

b Find the number of vertices.

_____

c Find the number of edges.

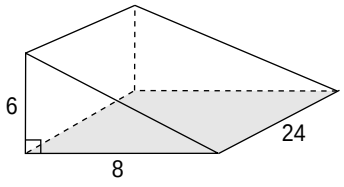
_____

d Draw a line to divide it into a rectangular prism and a triangular prism.

e Find the total volume of the solid. _____

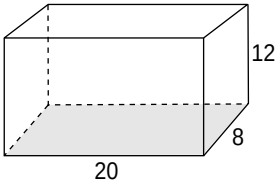
QUESTION **3** Find the volume of each prism. (All measurements are in cm.)

a



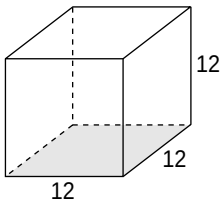
_____

b



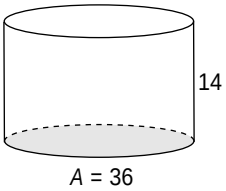
_____

c



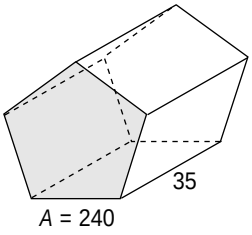
_____

d



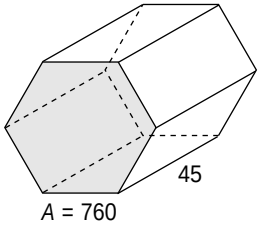
_____

e



_____

f



_____

Mathletics Instant Workbooks – Series H 2 Copyright © 3P Learning

Area, volume and capacity

Topic 9: Capacity and volume

QUESTION **1** Convert the following to the units given.

a 5000 mL = _____ L **b** 5.125 L = _____ mL **c** 6.7 kL = _____ L

d 9.5 L = _____ mL **e** 9.2 kL = _____ L **f** 8.35 L = _____ mL

g 2 kL = _____ L **h** 6875 mL = _____ L **i** 5153 mL = _____ L

j 8540 mL = _____ L **k** 8.56 L = _____ mL **l** 3.6 kL = _____ L

QUESTION **2** Convert the following to the units given.

a 1000 mm^3 = _____ cm^3 **b** 1 mL = _____ cm^3 **c** 9640 cm^3 = _____ L

d 8000 L = _____ kL **e** 3000 mm^3 = _____ cm^3 **f** 16 000 cm^3 = _____ L

g 1000 cm^3 = _____ L **h** 5000 cm^3 = _____ L **i** 8560 mm^3 = _____ cm^3

j 1 000 000 cm^3 = _____ m^3 **k** 6483 mL = _____ cm^3 **l** 9672 L = _____ cm^3

QUESTION **3**

a A jug has a volume of 15 000 cm^3. How many litres of water can it hold?

_____

b A swimming pool holds 28 000 L of water. How many kilolitres is this?

_____

c A bottle contains $\frac{3}{8}$ of a litre of drink. How many millilitres is this?

_____

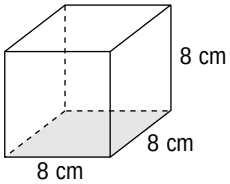
A fish tank measures 90 cm × 70 cm × 25 cm.

d Find the volume of the tank in cm^3. _____

e How many litres of water will the tank hold? _____

QUESTION **4** Find the volume of the following prisms and then find how many millilitres of liquid each would hold. Show your working.

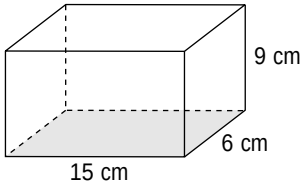
a



_____

_____

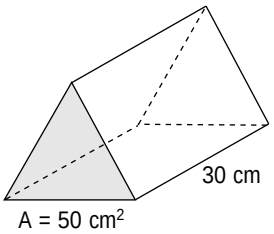
b



_____

_____

c



_____

_____

Mathletics Instant Workbooks – Series H 2 Copyright © 3P Learning

Area, volume and capacity

Topic 10: Problem solving with area, volume and capacity

1 A rectangular tank with dimensions 95 cm × 30 cm × 35 cm is filled with water. How much water will it hold?

_____

2 A dripping tap loses 8 mL of water every 30 seconds. How much water will be lost in 2 hours?

_____

3 Find the side length of a cube that has a volume of 1728 cm^3.

_____

4 Madeleine Brunsdon drank $\frac{5}{8}$ of a litre of milk. How many millilitres is this?

_____

5 Thirty-five children went on a picnic. Each child drank a can of drink containing 375 mL. How many litres was this?

_____

6 A rectangular prism has dimensions 5 cm x 8 cm x 10 cm.

a What is its volume? _____

b What would be its volume if all the dimensions were doubled. _____

7 Find the area of a photograph that is 50 cm long and 30 cm wide.

_____

8 The perimeter of a square is 48 cm. Find its area.

_____

9 A triangle has an area of 240 cm^2. If the base of the triangle is 40 cm long, find its height.

_____

10 Jasbir drank 0.875 litres of milk. How many millilitres is this?

_____

11 One of the faces of a cube has an area of 81 cm^2. What is the volume of the cube?

_____

12 Find the total area of the four walls of a room 12 m long, 10 m wide and 4 m high.

_____

Mathletics Instant Workbooks – Series H 2 Copyright © 3P Learning

Area, volume and capacity

Topic Test — PART A

Instructions This part consists of 12 multiple-choice questions
Each question is worth 1 mark
Fill in only ONE CIRCLE for each question
Calculators are NOT allowed

Time allowed: 15 minutes **Total marks = 12**

Marks

1 How many mm^2 in 5 cm^2?

Ⓐ 5 Ⓑ 50 Ⓒ 500 Ⓓ 5000 — 1

2 How many mL in 8.5 L?

Ⓐ 85 Ⓑ 850 Ⓒ 8500 Ⓓ 85 000 — 1

3 How many kL in 8 m^3?

Ⓐ 8 Ⓑ 80 Ⓒ 800 Ⓓ 8000 — 1

4 How many cm^3 in 3 m^3?

Ⓐ 3000 Ⓑ 30 000 Ⓒ 300 000 Ⓓ 3 000 000 — 1

5 The volume of a rectangular prism 6 cm × 8 cm × 10 cm equals

Ⓐ 60 cm^3 Ⓑ 120 cm^3 Ⓒ 240 cm^3 Ⓓ 480 cm^3 — 1

6 The capacity of a drinking glass would be closest to

Ⓐ 30 mL Ⓑ 300 mL Ⓒ 3000 mL Ⓓ 3500 mL — 1

7 If the volume of a cube is 64 cm^3, then its side length is

Ⓐ 2 cm Ⓑ 4 cm Ⓒ 8 cm Ⓓ 16 cm — 1

8 A rectangle is 20 m long and 9 m wide. Its area equals

Ⓐ 60 m^2 Ⓑ 81 m^2 Ⓒ 180 m^2 Ⓓ 400 m^2 — 1

9 The area of a square of side length 13 cm is

Ⓐ 13 cm^2 Ⓑ 169 cm^2 Ⓒ 130 cm^2 Ⓓ 52 cm^2 — 1

10 What is the cost of tiling a floor, 9 m by 3 m, at $20 per square metre?

Ⓐ $450 Ⓑ $504 Ⓒ $540 Ⓓ $527 — 1

 Copyright © 3P Learning

Marks

11 How many tiles, each measuring 10 cm × 10 cm, are needed for a floor 6 m × 6 m?

Ⓐ 3600 Ⓑ 60 000 Ⓒ 30 000 Ⓓ 36 **1**

12 What is the area of a square, in cm^2, that has a perimeter of 32 cm?

Ⓐ 32 Ⓑ 60 Ⓒ 64 Ⓓ 72 **1**

13 What is the perimeter, in cm, of a square that has an area of 49 cm^2?

Ⓐ 14 Ⓑ 21 Ⓒ 24 Ⓓ 28 **1**

14 How many square centimetres are in 1 square metre?

Ⓐ 100 Ⓑ 1000 Ⓒ 10 000 Ⓓ 100 000 **1**

15 $\frac{2}{5}$ of one litre equals

Ⓐ 400 mL Ⓑ 500 mL Ⓒ 550 mL Ⓓ 600 mL **1**

Total marks achieved for PART A 15

 Copyright © 3P Learning

Area, volume and capacity

Topic Test — PART B

This part consists of 15 questions
Each question is worth 1 mark
Write answers in the answers-only column

		Marks
1 Find the volume of a cube of side 9 cm.		1
2 Find the volume of a rectangular prism 8 cm × 9 cm × 10 cm.		1
3 Find the volume of a triangular prism with a triangular base area of 50 cm^2 and height 12 cm.		1
4 How many litres in 7000 mL?		1
5 The volume of a cube is 3375 cm^3. Find its edge.		1
6 A rectangular prism has dimensions 4 cm by 5 cm by 6 cm. Find its volume.		1
7 If each of the dimensions given in Question 6 are doubled, what would be the prism's volume?		1
8 Find the area of a rectangle 12 m × 8 m.		1
9 Find the side length of a square whose area is 289 cm^2.		1
10 If the area of a triangle is 80 cm^2 and its base is 16 cm, find the height of the triangle.		1
11 There are 32 students in a class. Each student drinks 250 mL of milk. How many litres is this?		1
12 Find the area of a triangle with base 35 mm and height 60 mm.		1
13 Find the number of mm^3 in 1 cm^3.		1
14 How many millilitres are in 3 kilolitres?		1
15 A jug has a volume of 9000 cm^3. How many litres of water can it hold?		1

Total marks achieved for PART B 15

Mathletics Instant Workbooks – Series H 2 Copyright © 3P Learning

Area, volume and capacity

Topic Test — PART C

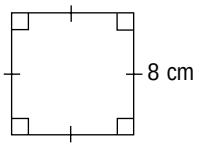
Instructions This part consists of 4 questions
Each question is worth 5 marks
Show all necessary

Time allowed: 20 minutes **Total marks = 20**

Questions **Marks**

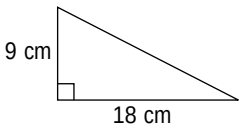
1 Find the area of the following shapes.

a



_____

b



_____

A rectangular garden, 8 m by 4 m, is to have a 0.5 m path around its border. Find:

c the area of the garden _____

d the total area of the garden and path _____

e the area of the path _____ **5**

2 Complete the following.

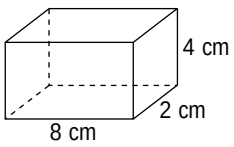
a 2 L = _____ mL **b** 8000 L = _____ kL

c 1 m^3 = _____ kL **d** 1 L = _____ cm^3

e 8500 mL = _____ L **5**

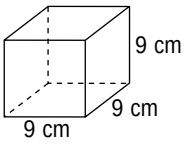
3 What is the volume of these prisms?

a



_____

b



_____

c What is the volume of a cube with an edge of 5 cm? _____

d What is the volume of a rectangular prism 3 m × 5 m × 7m? _____

e What is the capacity of a rectangular prism 2 m × 3 m × 5 m? _____ **5**

4 Complete the following.

a 12 500 mL = _____ L **b** 3.85 kL = _____ L

c 8.75 L = _____ mL **d** 5.625 kL = _____ mL

e 53 L = _____ cm^3 **5**

Total marks achieved for PART C 20

Mathletics Instant Workbooks – Series H 2 Copyright © 3P Learning