MATHLETICS

Perimeter and Area

Student Book - Series J-1

Mathletics Instant Workbooks

Perimeter and area
Student Book - Series J

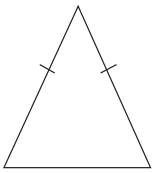
Contents

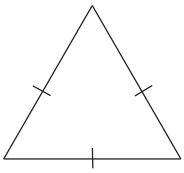
Author of The Topics and Topic Tests: AS Kalra

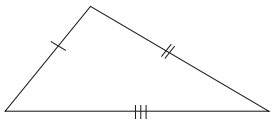
Perimeter and area

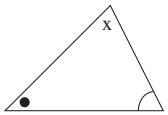
Topic 1: Plane shapes

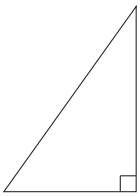
QUESTION **1** Name the following triangles.

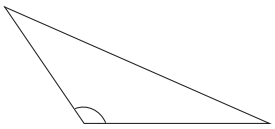
a 

b 

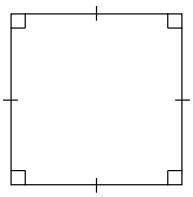
c 

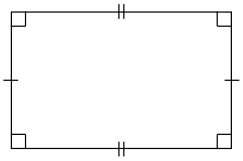
d 

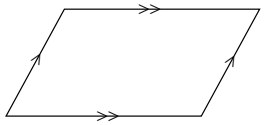
e 

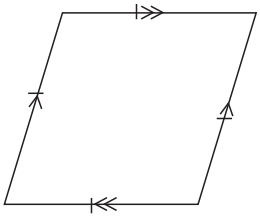
f 

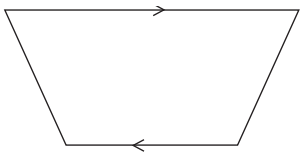
QUESTION **2** Name the following quadrilaterals.

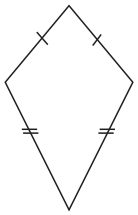
a 

b 

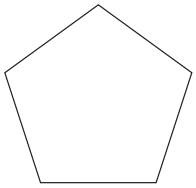
c 

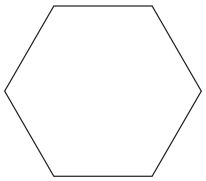
d 

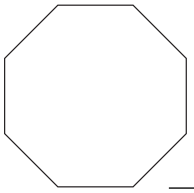
e 

f 

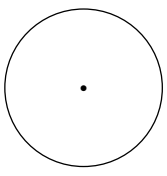
QUESTION **3** Name the following polygons.

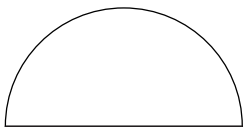
a 

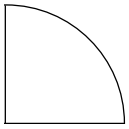
b 

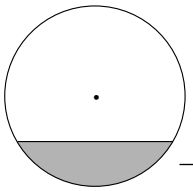
c 

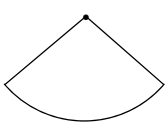
QUESTION **4** Name the following shapes.

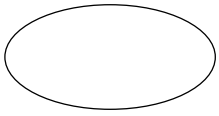
a 

b 

c 

d 

e 

f 

Perimeter and area

Topic 2: Perimeter of regular shapes

QUESTION **1** Write the perimeter formula next to each shape.

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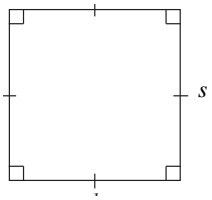

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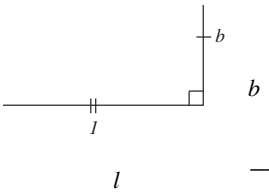

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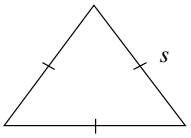

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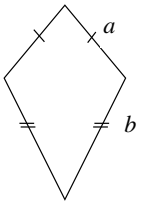

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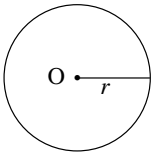

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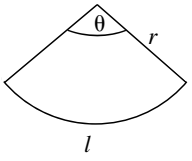

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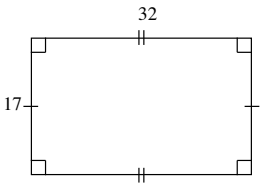
QUESTION **2** Find the perimeter of each shape. All measurements are in centimetres.

a



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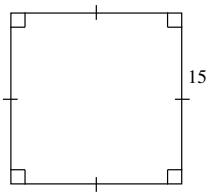

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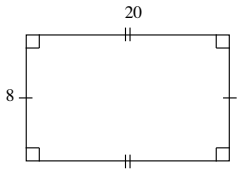

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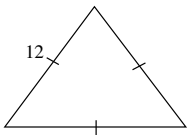
QUESTION **3** Find the perimeter of each triangle. All measurements are in centimetres.

a



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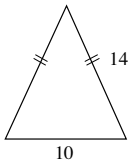

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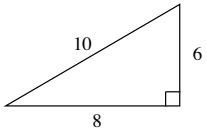

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QUESTION **4** Find the perimeter of each shape. All measurements are in centimetres.

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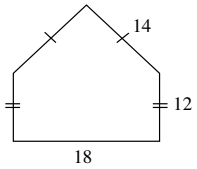

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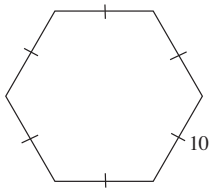

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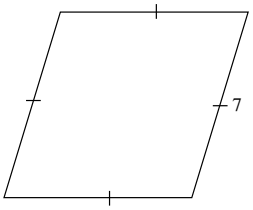

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Perimeter and area

Topic 3: Perimeter of irregular plane shapes

QUESTION **1** Find the perimeter of the following shapes. All measurements are in centimetres.

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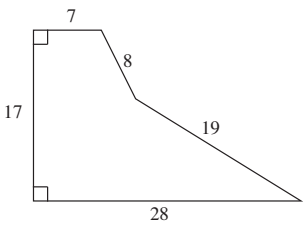

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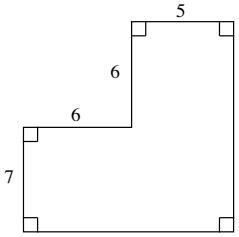

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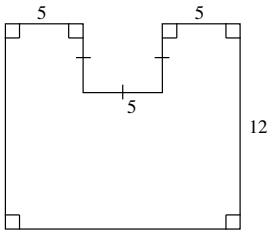

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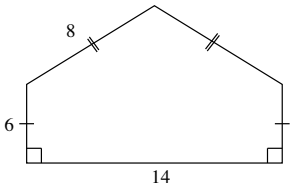

QUESTION **2** Find the perimeter.

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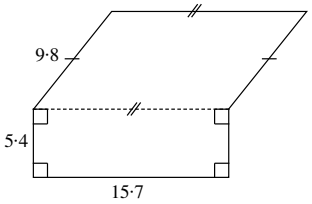

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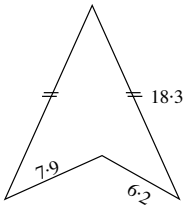

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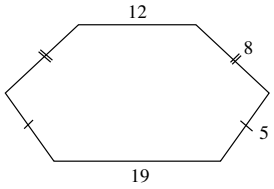

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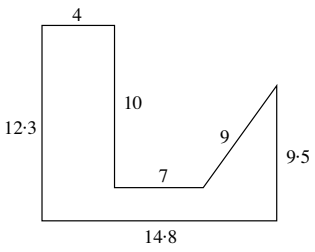


QUESTION **3** Three sides of a pentagon are each equal to 7·5 cm and the remaining two sides are 6·8 cm and 7·2 cm. Find its perimeter.

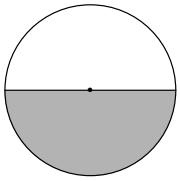
QUESTION **4** A room measures 15·74 m long and 9·86 m wide. The other two sides are each equal to 10·32 m. Find its perimeter.

Perimeter and area

Topic 4: Perimeter of a sector

QUESTION **1** What fraction of the complete circle is each shaded sector?

a



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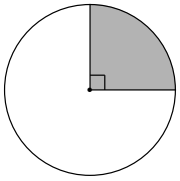

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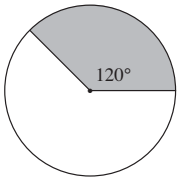

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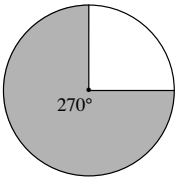

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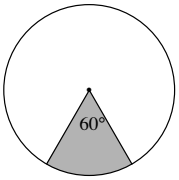

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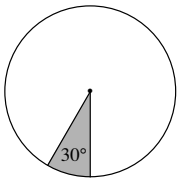

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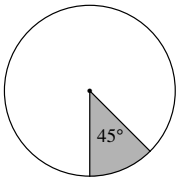

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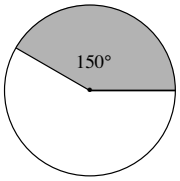

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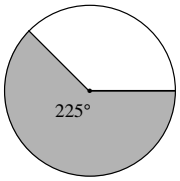

QUESTION **2** Find the arc length of the following, leaving your answers in exact form.

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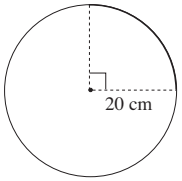

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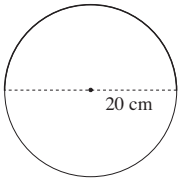

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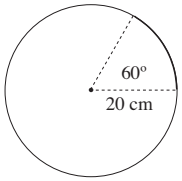

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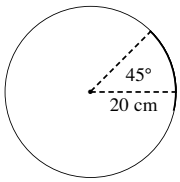

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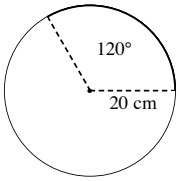

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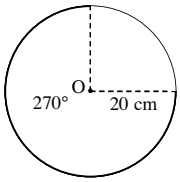
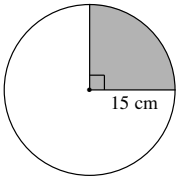
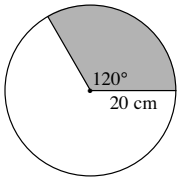


QUESTION **3** Find the perimeter of each shaded sector, correct to one decimal place.

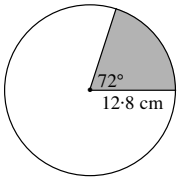
a



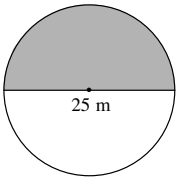
b



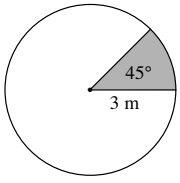
c



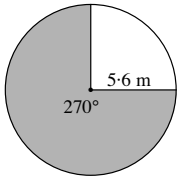
d



e



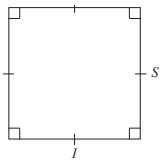
f

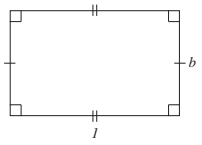


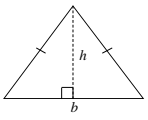
Perimeter and area

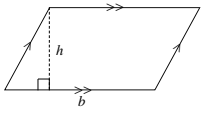
Topic 5: Areas of plane shapes

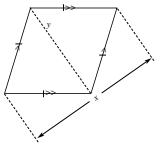
QUESTION 1 Write the area formula for each shape below.

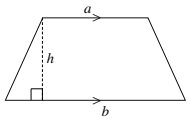
a 

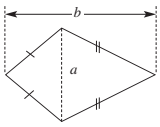
b 

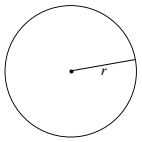
c 

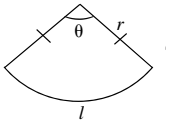
d 

e 

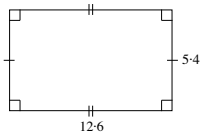
f 

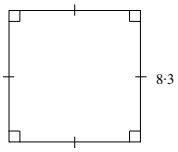
g 

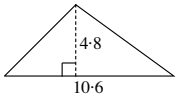
h 

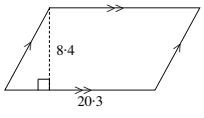
i 

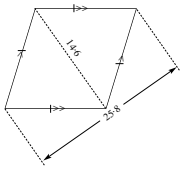
QUESTION 2 Find the area of the following shapes. All measurements are in centimetres.

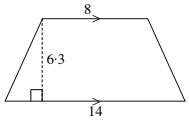
a 

b 

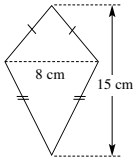
c 

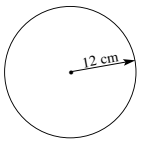
d 

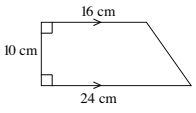
e 

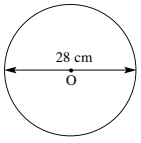
f 

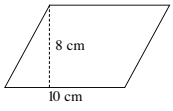
QUESTION 3 Find the area of each shape.

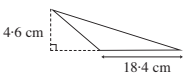
a 

b 

c 

d 

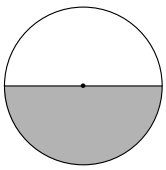
e 

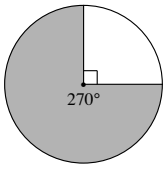
f 

Perimeter and area

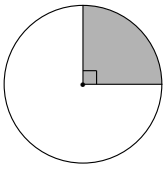
Topic 6: Area of a sector

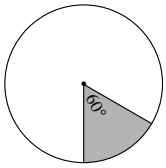
QUESTION **1** These six circles have the same radius. List the sectors in ascending order of area.

a  _____

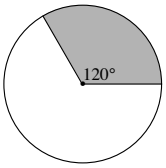
b 

_____

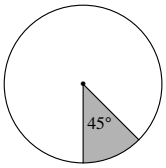
c  _____

d 

_____

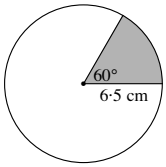
e 

_____

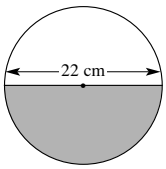
f 

_____

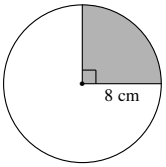
QUESTION **2** Calculate the area of each sector correct to two significant figures.

a 

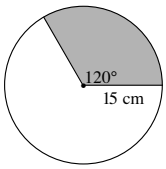
_____

b 

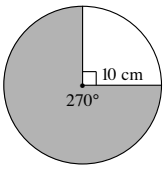
_____

c 

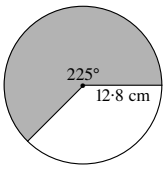
_____

d 

_____

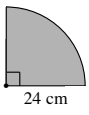
e 

_____

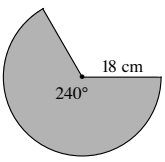
f 

_____

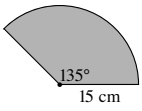
QUESTION **3** Find the area of each sector, leaving your answer in terms of π.

a 

_____

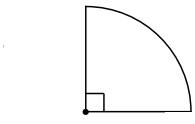
b 

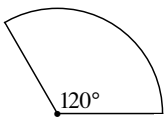
_____

c 

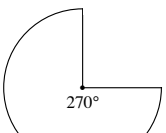
_____

QUESTION **4** Find the radius, correct to one decimal place, for each sector.

a 
$A = 42 \text{ cm}^2$
_____

b 

$A = 75 \text{ cm}^2$
_____

c 

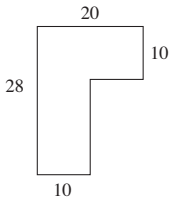
$A = 120 \text{ cm}^2$
_____

Perimeter and area

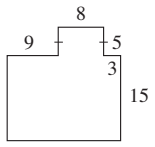
Topic 7: Composite and shaded areas

QUESTION 1 Find the area of each composite figure by dividing it into different shapes. All measurements are in cm and all angles are right angles.

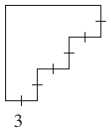
a



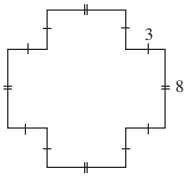
b



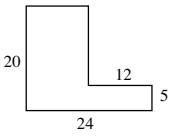
c



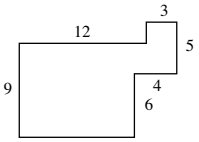
d



e

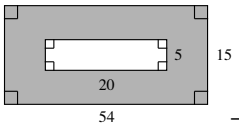


f

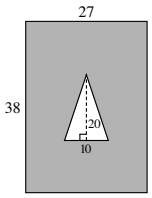


QUESTION 2 Find the area of the following shaded shapes. All measurements are in centimetres.

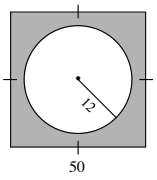
a



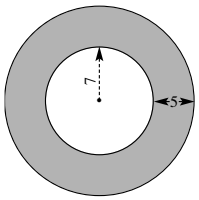
b



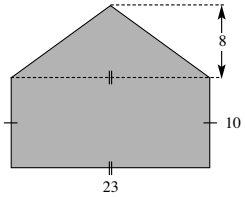
c



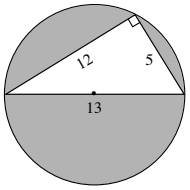
d



e

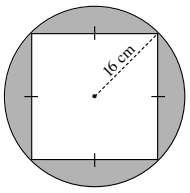


f

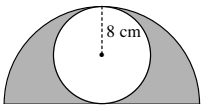


QUESTION 3 Find the area of each shaded shape.

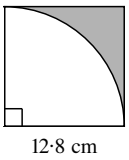
a



b



c



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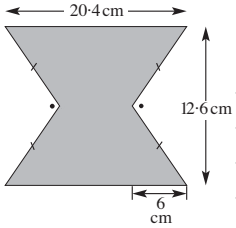

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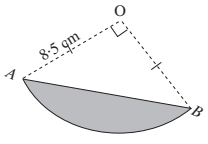
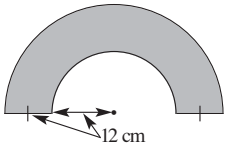


O is the centre of the circle with arc *AB*

f



Perimeter and area

Topic 8: Applications of area

QUESTION **1** A rectangular lawn has a concrete path 1·5 m wide all around it. If the lawn is 45 m by 28 m, find the total area of concrete. _____

_____

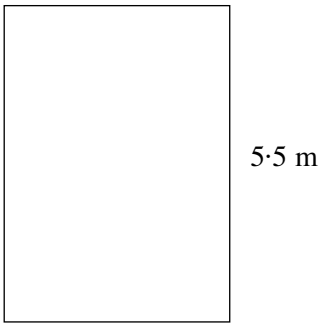
_____

QUESTION **2** A circular pond has a diameter of 7 m. A concrete path 2·5 m wide is placed all around it. Find the area of the path correct to the nearest square metre. _____

_____

_____

QUESTION **3** A bathroom of the size shown is to be covered with 25 cm by 25 cm tiles. Assume that offcuts from the tiles cannot be used elsewhere.



a How many tiles are needed to fit across the length of the bathroom?

_____

_____

b How many tiles are needed for the width of the bathroom? _____

_____

_____

c How many tiles are needed altogether? _____

_____

_____

d Given that tiles cost \$39.80/m^2, and the tiler charges \$27/m^2 (of floor space), what is the cost of tiling the bathroom floor? _____

_____

_____

QUESTION **4** A farmer wants to spread 450 kg of fertilizer per hectare. Find the weight of the fertilizer in tonnes needed to fertilize an 800 m by 650 m field. _____

_____

_____

_____

Perimeter and area

Topic Test — PART A

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

Marks

1 How many centimetres are there in 5·2 metres?
Ⓐ 52 Ⓑ 5200 Ⓒ 250 Ⓓ 520 [1]

2 The area of a circle is given by the formula
Ⓐ πr^2 Ⓑ πd^2 Ⓒ $2\pi r^2$ Ⓓ $2\pi d^2$ [1]

3 The perimeter of a circle is called its
Ⓐ radius Ⓑ diameter Ⓒ circumference Ⓓ semi-circle [1]

4 How many mm^2 in 8 cm^2?
Ⓐ 8 Ⓑ 80 Ⓒ 800 Ⓓ 8000 [1]

5 What is the cost of tiling a floor 12 m by 8 m at $30 per square metre?
Ⓐ $240 Ⓑ $360 Ⓒ $2880 Ⓓ $8280 [1]

6 What is the perimeter in cm of a square that has an area of 64 cm^2?
Ⓐ 16 cm Ⓑ 24 cm Ⓒ 32 cm Ⓓ 40 cm [1]

7 How many tiles, each measuring 20 cm × 20 cm are needed for a floor 10 m × 10 m?
Ⓐ 2500 Ⓑ 5000 Ⓒ 25 000 Ⓓ 50 000 [1]

8 The radius of the Earth is approximately 6400 km. What is the circumference of the Earth at the Equator?
Ⓐ 88 840 km Ⓑ $1{\cdot}287 \times 10^8$ km Ⓒ 40 212 km Ⓓ 20 106 km [1]

9 What is the area of a circle of radius 5·8 m? Answer to the nearest square metre.
Ⓐ $18m^2$ Ⓑ 36 m^2 Ⓒ 106 m^2 Ⓓ 212 m^2 [1]

10 The circumference of a bicycle wheel is 2·1 m. How far does the cyclist travel in 1000 turns of the wheel?
Ⓐ 4410 m Ⓑ 6597 m Ⓒ 2100 m Ⓓ 13 194 m [1]

11 Find the perimeter of an equilateral triangle of side 2·35 m.
Ⓐ 12·98 m Ⓑ 4·7 m Ⓒ 7·05 m Ⓓ None of these [1]

12 The distance from the earth to the sun is 150 million kilometres. The earth revolves once around the sun each year. What distance is this to the nearest million kilometres?
Ⓐ 471 Ⓑ 942 Ⓒ 4712 Ⓓ 9425 [1]

13 Find the circumference of a wheel with diameter 98 cm. Answer to the nearest cm.
Ⓐ 308 Ⓑ 616 Ⓒ 154 Ⓓ 380 [1]

14 What is the side length of a square that has the same perimeter as a rectangle of 12 m by 6 m?
Ⓐ 4 Ⓑ 6 Ⓒ 9 Ⓓ 12 [1]

15 A square has a perimeter of 48 cm. Its area in cm^2 is
Ⓐ 48 Ⓑ 60 Ⓒ 96 Ⓓ 144 [1]

Total marks achieved for PART A [/15]

Perimeter and area

Topic Test — PART B

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

Marks

Question 1

a What is the side length of a square that has an area of 250 000 m^2? _____ 1

b Convert 2·84 m^2 to cm^2. _____ 1

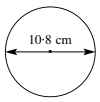
c If the area of a triangle is 120 cm^2 and its base is 24 cm, find the height of the triangle. _____ 1

d Calculate the radius of a semi-circle whose area is 48π cm^2. _____ 1

e A rhombus has diagonals 72 mm and 96 mm, find its area. _____ 1

Question 2 Find the perimeter of each of the following shapes.

a



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b

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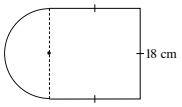
c



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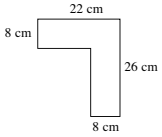

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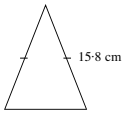
e



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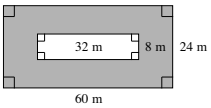
Question 3 Find each shaded area.

a



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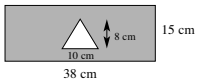

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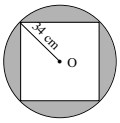

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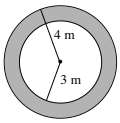

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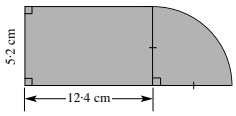

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Total marks achieved for PART B 15