

CHAPTER 10

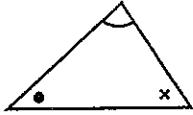
Measurement, area, surface area and volume



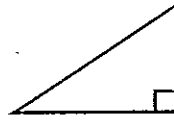
UNIT 1: Plane shapes

QUESTION 1 Name the following triangles.

a



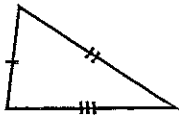
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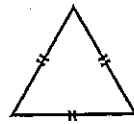
c



d



e

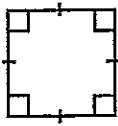


f

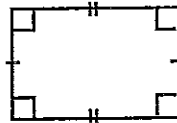


QUESTION 2 Name the following quadrilaterals.

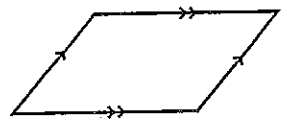
a



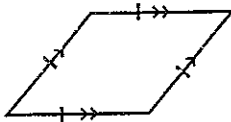
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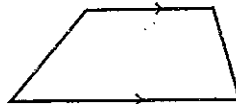
c



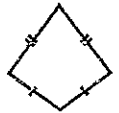
d



e



f

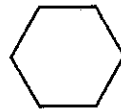


QUESTION 3 Name the following polygons.

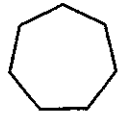
a



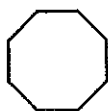
b



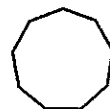
c



d



e

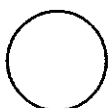


f



QUESTION 4 Name the following shapes.

a



b



c



Measurement, area, surface area and volume

UNIT 2: Angle sum of plane shapes

QUESTION 1 Complete the following table.

	Name of the shape	Number of sides (n)	Number of triangles formed from one vertex ($n - 2$)	Angle sum of the shape $(n - 2)180^\circ$
a	Triangle	3	1	$(3 - 2)180^\circ = 180^\circ$
b	Quadrilateral			
c	Pentagon			
d	Hexagon			
e	Heptagon			
f	Octagon			
g	Nonagon			
h	Decagon			
i	Undecagon			
j	Dodecagon			

QUESTION 2 Complete the following sentences.

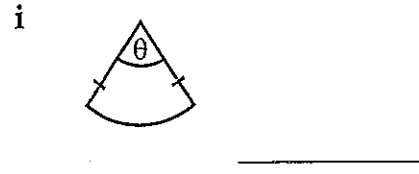
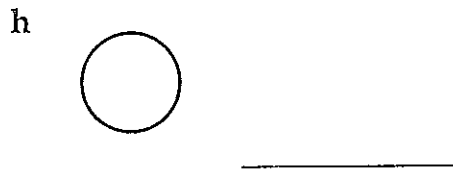
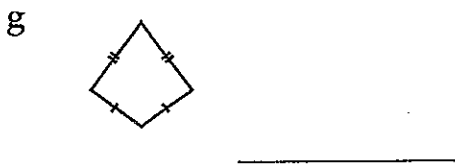
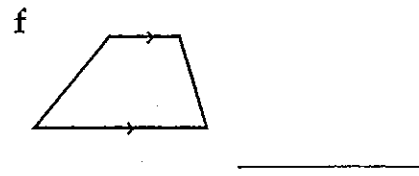
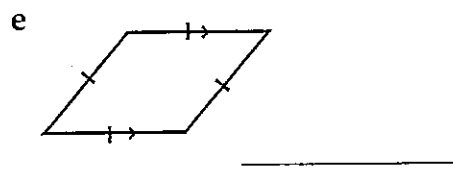
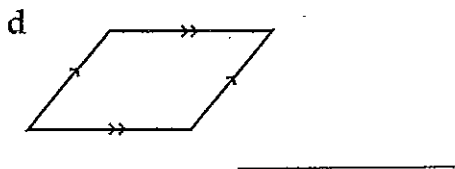
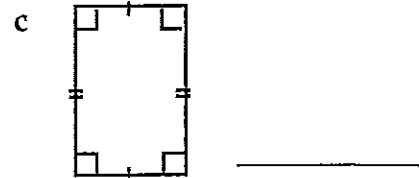
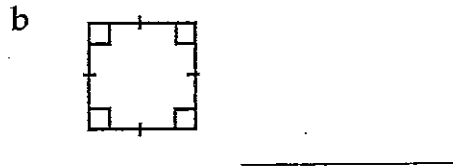
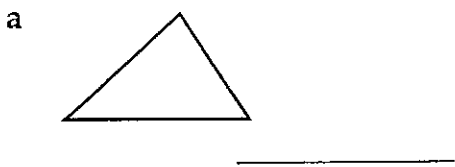
- a The angle sum of a triangle is equal to _____
- b The angle sum of a quadrilateral is equal to _____
- c The angle sum of a pentagon is equal to _____
- d The angle sum of a hexagon is equal to _____
- e The angle sum of a heptagon is equal to _____
- f The angle sum of an octagon is equal to _____
- g The angle sum of a nonagon is equal to _____
- h The angle sum of a decagon is equal to _____
- i The angle sum of an undecagon is equal to _____
- j The angle sum of a dodecagon is equal to _____
- k The angle sum of a polygon with n sides is equal to _____
- l The angle sum of the exterior angles of a polygon is always equal to _____

Measurement, area, surface area and volume

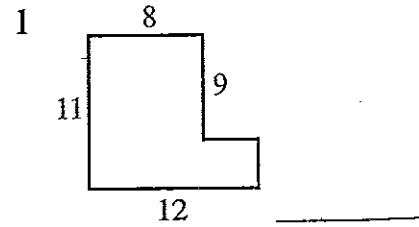
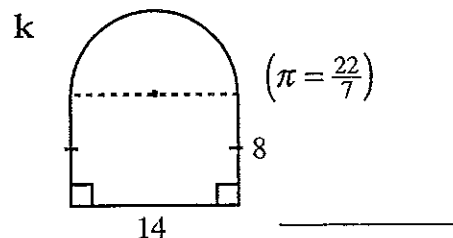
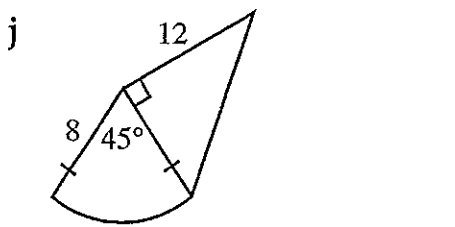
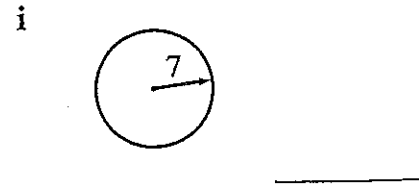
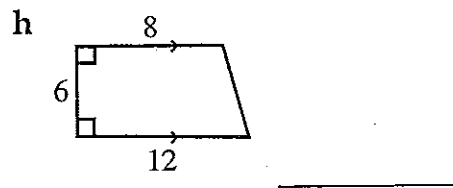
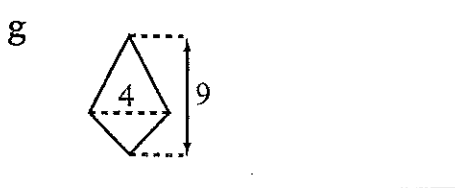
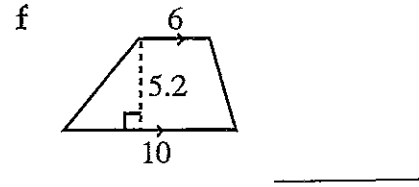
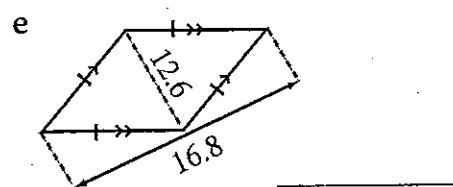
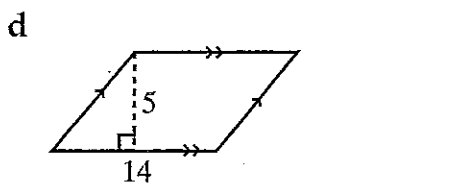
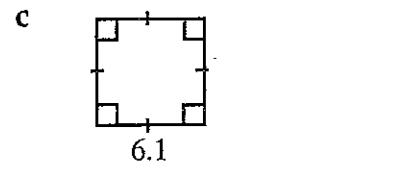
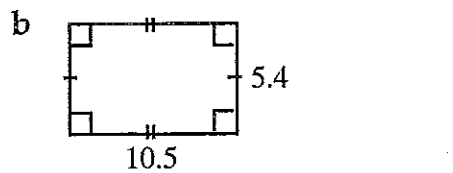
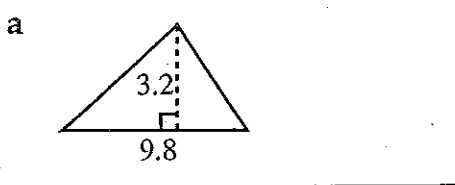


UNIT 3: Areas of plane shapes

QUESTION 1 Write the area formula next to the shapes given below.



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

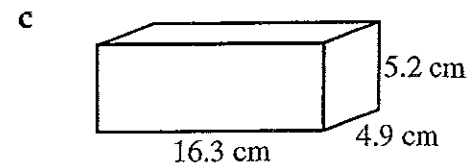
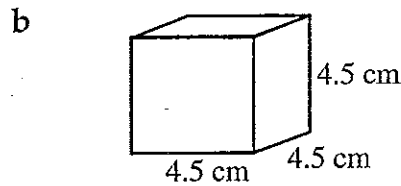
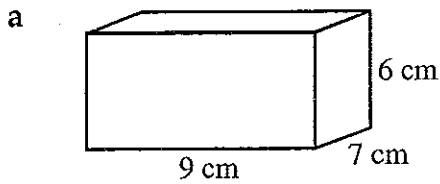


Measurement, area, surface area and volume

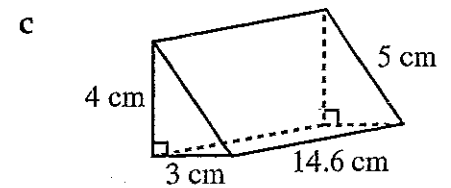
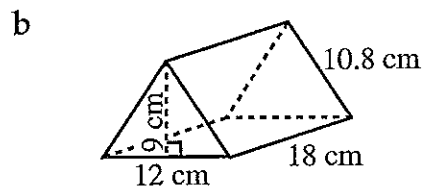
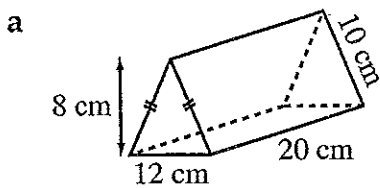


UNIT 4: Surface area of a solid

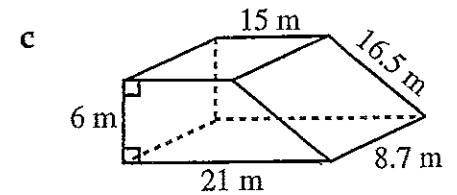
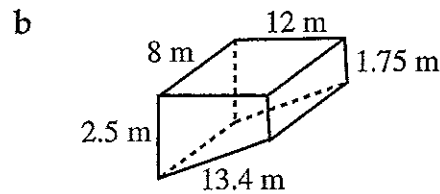
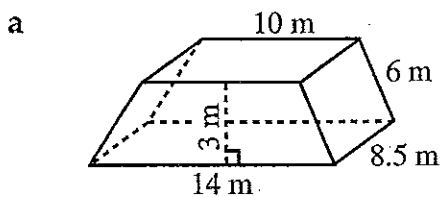
QUESTION 1 Find the surface area of the following rectangular prisms.



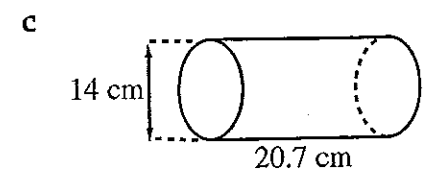
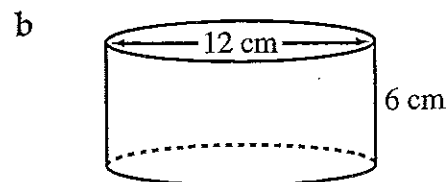
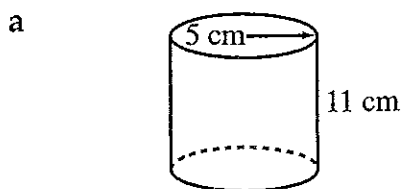
QUESTION 2 Find the surface area of the following triangular prisms.



QUESTION 3 Find the surface area of the following trapezoidal prisms.



QUESTION 4 Find the surface area of the following cylinders.

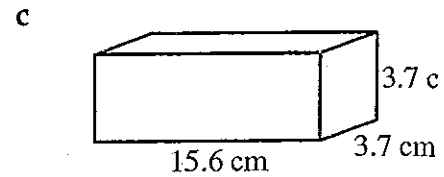
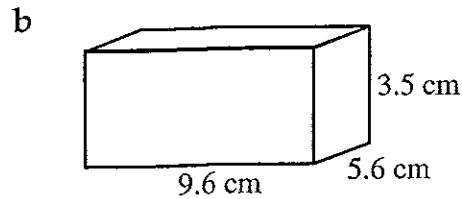
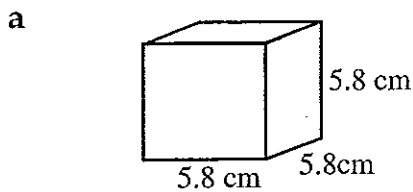




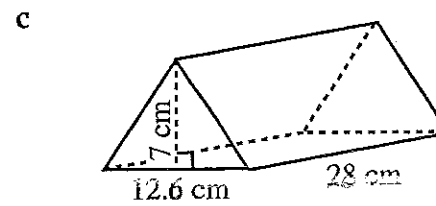
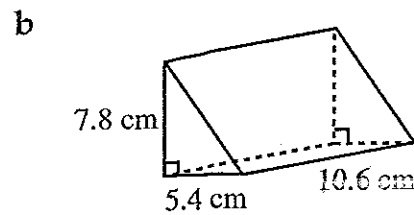
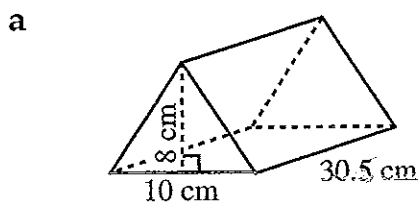
Measurement, area, surface area and volume

UNIT 5: Volume of a prism

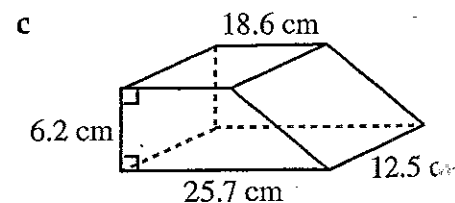
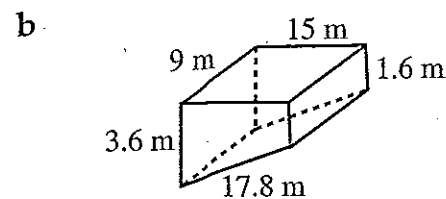
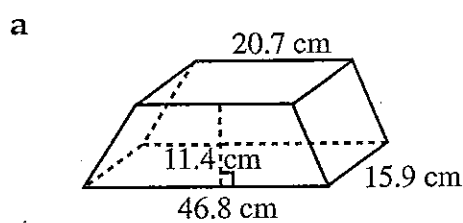
QUESTION 1 Find the volume of the following rectangular prisms (give answers correct to one decimal place).



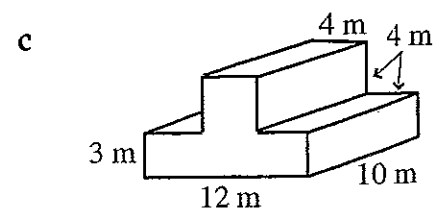
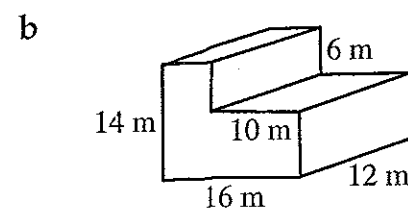
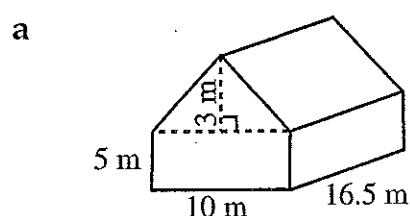
QUESTION 2 Find the volume of the following triangular prisms (give answers correct to four significant figures).



QUESTION 3 Find the volume of the following trapezoidal prisms (give answers correct to two decimal places).



QUESTION 4 Find the volume of the following solids.

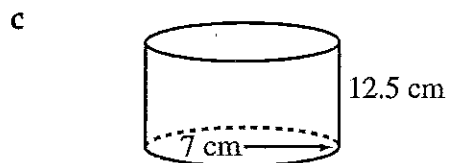
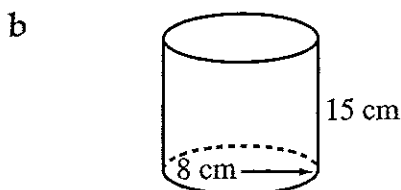
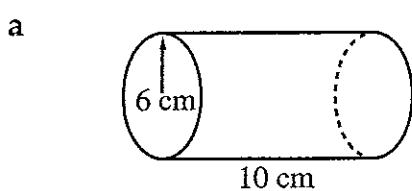




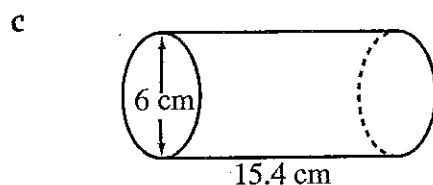
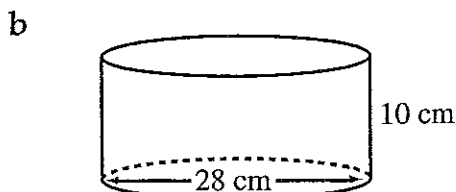
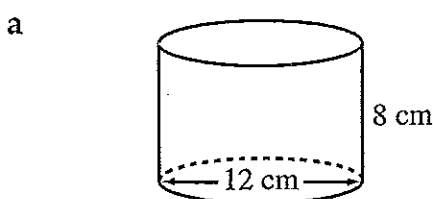
Measurement, area, surface area and volume

UNIT 6: Volume of a cylinder

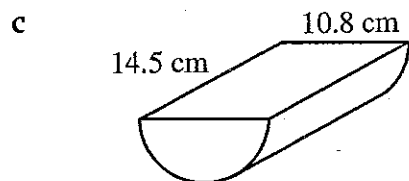
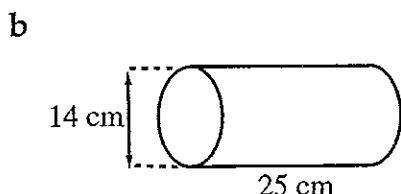
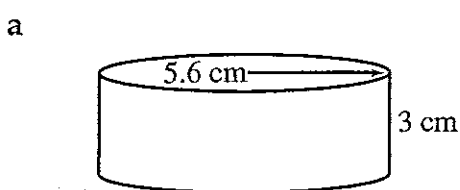
QUESTION 1 Find the volume of the following cylinders (correct to one decimal place).



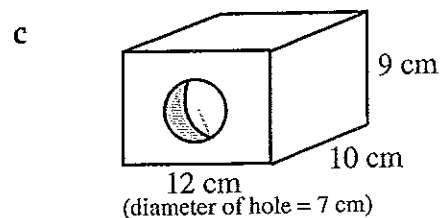
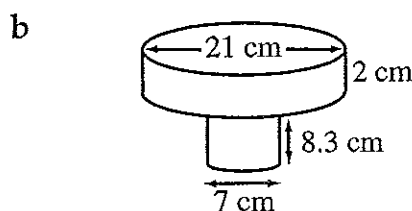
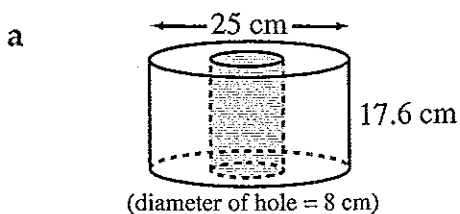
QUESTION 2 Find the volume of the following cylinders (correct to three significant figures).



QUESTION 3 Find the volume of the following (correct to two decimal places).



QUESTION 4 Find the volume of the following solids (correct to one decimal place).



Measurement, area, surface area and volume

Instructions for SECTION 1

- You have 15 minutes to answer Section 1
- Each question is worth 2 marks
- Attempt ALL questions
- Calculators are NOT to be used
- Fill in only ONE CIRCLE for each question

	Marks
<p>1 Find the area of a square with side length 12 cm.</p> <p>(A) 48 cm² (B) 288 cm² (C) 144 cm² (D) None of these</p>	2
<p>2 Calculate the volume of a cube with side length 5 cm.</p> <p>(A) 30 cm³ (B) 125 cm³ (C) 150 cm³ (D) None of these</p>	2
<p>3 A rectangular prism has sides of length 9 cm, 11 cm and 12 cm. Find its volume.</p> <p>(A) 32 cm³ (B) 339 cm³ (C) 594 cm³ (D) 1188 cm³</p>	2
<p>4 A cube has a volume of 4913 cm³. Find the length of each side of the cube.</p> <p>(A) 70 cm (B) 8.4 cm (C) 181 cm (D) 17 cm</p>	2
<p>5 Find the perimeter of a square of side 4.2 cm.</p> <p>(A) 17.64 cm (B) 74.1 cm (C) 16.8 cm (D) None of these</p>	2
<p>6 If the perimeter of a square is 36 cm, then the area of the square is</p> <p>(A) 6 cm² (B) 9 cm² (C) 36 cm² (D) 81 cm²</p>	2
<p>7 How many square centimetres are there in a square metre?</p> <p>(A) 100 (B) 1000 (C) 10 000 (D) 100 000</p>	2
<p>8 The radius of the Earth is approximately 6400 km. What is the circumference of the Earth at the equator?</p> <p>(A) 40 212 km (B) 1.29×10^8 km (C) 20 106 km (D) 38 340 km</p>	2
<p>9 What is the area of a circle of radius 3.2 m? Answer to the nearest square metre.</p> <p>(A) 101 m² (B) 32 m² (C) 129 m² (D) 8 m²</p>	2
<p>10 The volume of a rectangular prism is 216 cm³. Find the total surface area of a cube having the same volume.</p> <p>(A) 64 cm² (B) 216 cm² (C) 144 cm² (D) 196 cm²</p>	2

Total marks achieved for SECTION 1

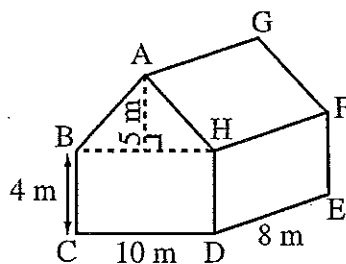
2

Measurement, area, surface area and volume

Instructions for SECTION 2

- You have 20 minutes to answer ALL of Section 2.
- Each question is worth 2 marks
- Attempt ALL questions
- Calculators may be used

Questions	Answers	Marks
1 State the formula for the area of a circle.	_____	2
2 Convert 1.68 m^2 to cm^2 .	_____	2
3 What is the side length of a square that has an area of $160\,000 \text{ m}^2$?	_____	2
4 How many square metres in 2 hectares?	_____	2
5 Calculate the surface area of a cube of side 2.5 m.	_____	2
6 Calculate the volume of a rectangular prism 3.5 m long, 3.4 m wide and 2.8 m high.	_____	2
7 Calculate the circumference of a circle with radius equal to 5 cm.	_____	2
For the solid given opposite, calculate:		
8 the area of rectangle $BCDH$.	_____	2
9 the area of triangle ABH .	_____	2
10 the area of $AHFG$.	_____	2
11 the total surface area.	_____	2
12 the volume.	_____	2
13 A cube has a volume of 3375 cm^3 . Find the length of each side of the cube.	_____	2
14 Find the perimeter of a square of side 5.6 cm.	_____	2
15 The volume of a cube is 216 cm^3 . Find its surface area.	_____	2



Answers

PAGE 1. 1 a acute angled triangle b right angled triangle c obtuse angled triangle d scalene triangle e equilateral triangle f isosceles triangle
2 a square b rectangle c parallelogram d rhombus e trapezium f kite 3 a pentagon b hexagon c heptagon d octagon e nonagon
f decagon 4 a circle b ellipse c sector

PAGE 2 1 a 3, 1, 180° b 4, 2, 360° c 5, 3, 540° d 6, 4, 720° e 7, 5, 900° f 8, 6, 1080° g 9, 7, 1260° h 10, 8, 1440° i 11, 9, 1620°
j 12, 10, 1800° 2 a 180° b 360° c 540° d 720° e 900° f 1080° g 1260° h 1440° i 1620° j 1800° k $(n-2)180^\circ$ l 360°

PAGE 3 1 a $A = \frac{1}{2}bh$ b $A = s^2$ c $A = lb$ d $A = bh$ e $A = \frac{1}{2}xy$ f $A = \frac{1}{2}h(a+b)$ g $A = \frac{1}{2}xy$ h $A = \pi r^2$ i $A = \frac{\theta}{360^\circ} \times \pi r^2$
2 a 15.68 cm² b 56.7 cm² c 37.21 cm² d 70 cm² e 105.84 cm² f 41.6 cm² g 18 cm² h 60 cm² i 153.9 cm² j 73.1 cm² k 189 cm² l 96 cm²

PAGE 4. 1 a 318 cm² b 121.5 cm² c 380.22 cm² 2 a ~~702.4~~ 736 cm² b 712.8 cm² c 187.2 cm² 3 a 378 m² b 288.2 m² c 724.95 m²
4 a 502.65 cm² b 452.4 cm² c 1218.3 cm²

PAGE 5 1 a 195.1 cm³ b 188.2 cm³ c 213.6 cm³ 2 a 1220 cm³ b 223.2 cm³ c 1235 cm³ 3 a 6117.53 cm³ b 351 m³ c 1716.63 cm³
4 a 1072.5 m³ b 1968 m³ c 520 m³

PAGE 6 1 a 1131.0 cm³ b 3016.0 cm³ c 1924.2 cm³ 2 a 905 cm³ b 6160 cm³ c 435 cm³ 3 a 295.56 cm³ b 3848.45 cm³
c 664.16 cm³ 4 a 7754.7 cm³ b 1012.1 cm³ c 695.2 cm³

PAGE 7 1 C 2 B 3 D 4 D 5 C 6 D 7 C 8 A 9 B 10 B

PAGE 8 1 $A = \pi r^2$ 2 16 800 cm² 3 400 m 4 20 000 m² 5 37.5 m² 6 33.32 m³ 7 31.4 cm 8 40 m² 9 25 m² 10 56.57 m²
11 387.14 m² 12 520 m³ 13 15 m 14 22.4 cm 15 216 cm²