High School
Mathematics Test 2013
Volume

Year
8

Name_____

Skills and Knowledge Assessed:
- Draw different views of prisms and solids formed from combinations of prisms (ACMMG161)
- Choose appropriate units of measurement for area and volume and convert from one unit to another (ACMMG195)
- Develop the formulas for volumes of rectangular and triangular prisms and prisms in general. Use formulas to solve problems involving volume (ACMMG198)
- Calculate the surface area and volume of cylinders and solve related problems (ACMMG217) Extension

Answer all questions in the spaces provided on this test paper by:
   Writing the answer in the box provided.
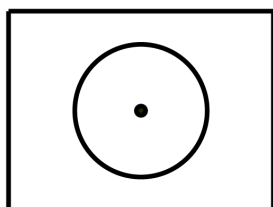   **or**
   Shading in the bubble for the correct answer from the four choices provided.
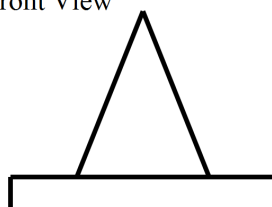**Show any working out on the test paper.**

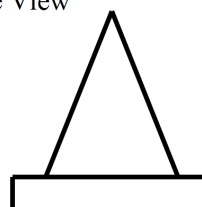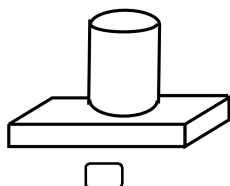1. The top, front and side views of a solid are shown.
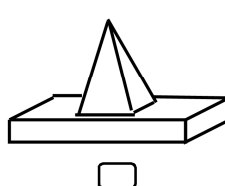
Top View   Front View   Side View

Which of these could be the solid?
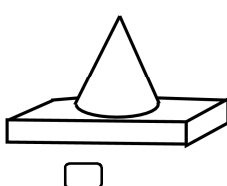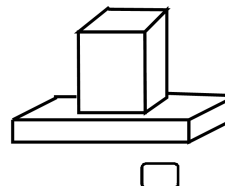
2. A triangular prism is shown at right. Which diagram could represent the top view of this prism?
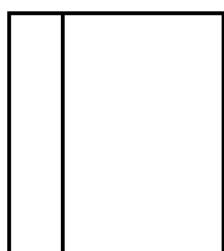
3.   What is the volume of a cube with sides measuring 8 cm?

$$\text{Volume} = \boxed{} \text{ cm}^3$$
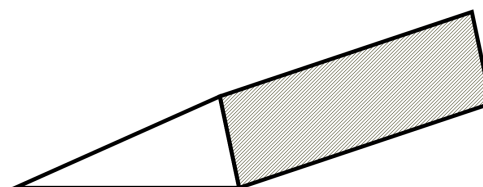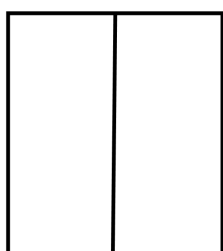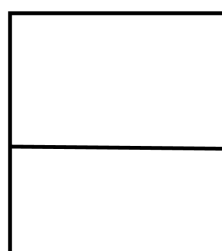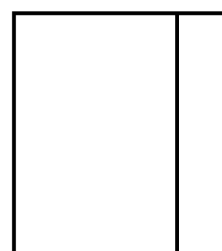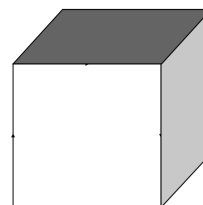
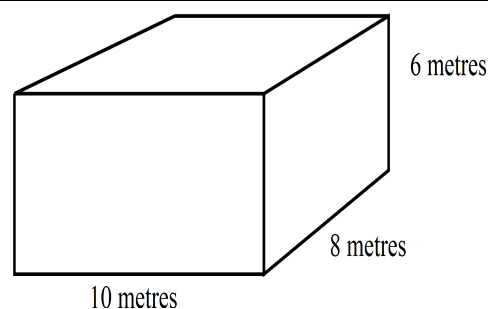4.   A container has a volume of 100 000 cm^3. How many cubic metres is this?

    ☐   0.01 m^3 ☐   0.1 m^3 ☐   1 m^3 ☐ 10 m^3

5.   What metric unit would a builder use to measure the volume of concrete in a delivery by a concrete truck?

    `   ☐ cubic centimetres   ☐ cubic metres

       ☐ cubic millimetres   ☐ tonnes

6.   What is the volume of the rectangular prism shown?

$$\text{Volume} = \boxed{} \text{ m}^3$$

6 metres

8 metres

10 metres

7.   The solid shown is built using cubes with 6 cm edges. What is the volume of the solid?

    ☐   36 cm^3 ☐ 216 cm^3

    ☐   1 728 cm^3 ☐ 1 944 cm^3
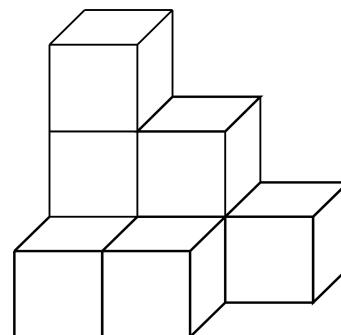
8.   A fish tank has the dimensions shown. When it is partially filled with 45 000 cm^3 of water, the depth of water is d cm. What is the value of d?

$$d = \boxed{}$$

d cm

40 cm

30 cm

50 cm

9.   Draw a three dimensional sketch of the prism whose net is shown below.
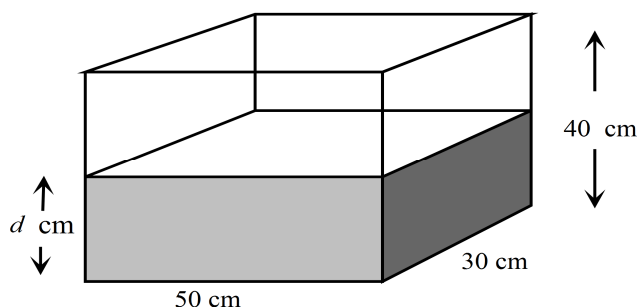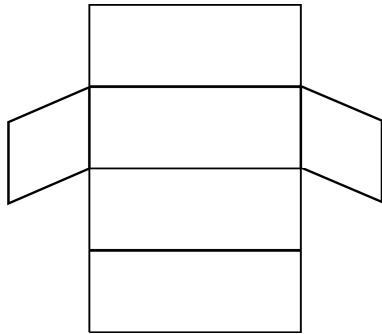
10.   What is the volume of the cube whose net is shown here?

Volume = ☐ cm^3
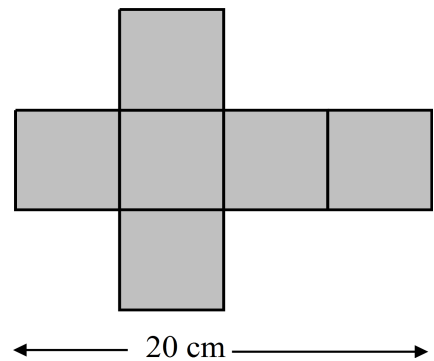
← 20 cm →

11.   What is the volume of the triangular prism shown?   13 cm

☐   240 cm^3 ☐   260 cm^3

☐   390 cm^3 ☐   520 cm^3

5 cm

8 m

12 cm
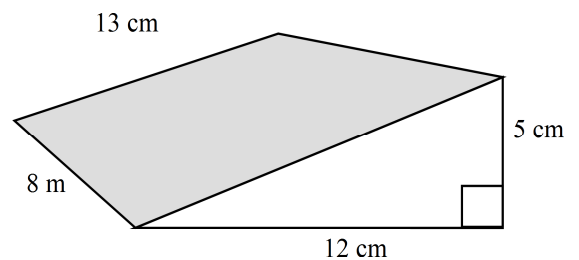
12.   A vase has a base in the shape of a hexagon
      which has an area of 94 cm^2.

      The sides are rectangles which measure 6 cm by
      11 cm and are perpendicular to the base.

      Calculate the volume of the vase.

11 cm

Area = 94 cm^2

Volume = ☐ cm^3

6 cm
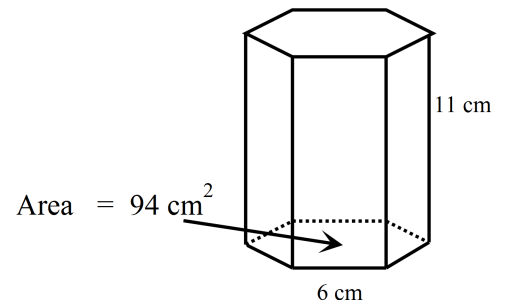
13. A cylinder has a circular base with radius
    6 cm and a perpendicular height of 10 cm.
    Which expression would give its volume?

    ☐ 36π cm^3 ☐ 180π cm^3

    ☐ 360π cm^3 ☐ 720π cm^3

6 cm

10 cm

14. One cubic centimetre holds one millilitre of water. How many litres of water would be held by a
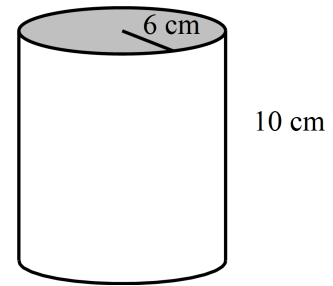   container which has a volume of 2 600 cm^3?

    ☐ 0.26 litres   ☐ 2.6 litres   ☐ 26 litres   ☐ 260 litres

15. A volume of one cubic metre holds 1 kilolitre
    of water.
    The water tank shown is in the shape of a
    rectangular prism.
    How many litres of water would it hold?

2 metres

2 metres

3 metres
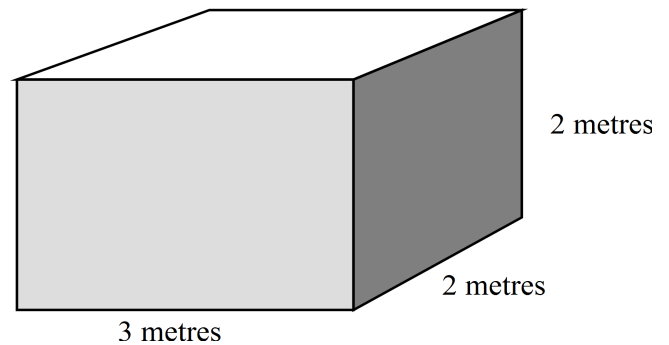
    ┌─────────┐
    │   │ litres.
    └─────────┘

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    Writing the answer in the box provided.
      or
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Show any working out on the test paper. Calculators are allowed.

1.   Which of the solids shown below is a prism?

    ☐   ☐   ☐   ☐

2.   An octagonal prism is shown below.

    A = the area of the octagon.
    l = the length of the prism
    s = the side length of the octagon.

    Which formula could be used to find its volume (V)?

    ☐ $V = Al$.   ☐ $V = As$.   ☐ $V = sl$.   ☐ $V = s^2 l$.
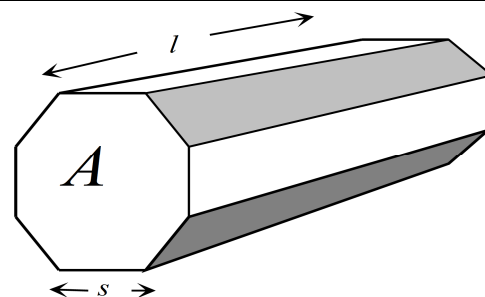
3.   A cube has a volume of 3 500 **mm³**. What is its volume in **cm³**?
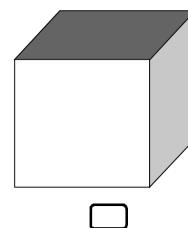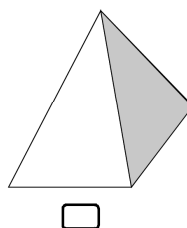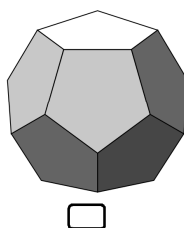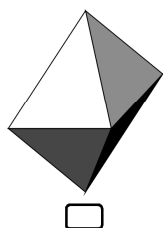
    ☐ 3.5 cm^3 ☐ 35 cm^3 ☐ 350 cm^3 ☐ $35\,000 \text{ cm}^3$
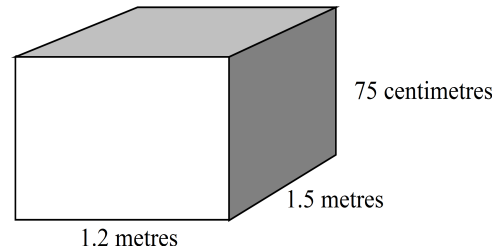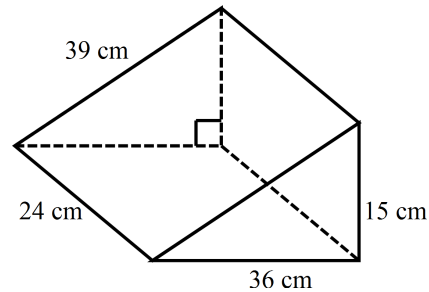
4.   What is the volume of the prism shown?

    12 mm
    25 mm
    160 mm

    Volume = ☐ mm^3
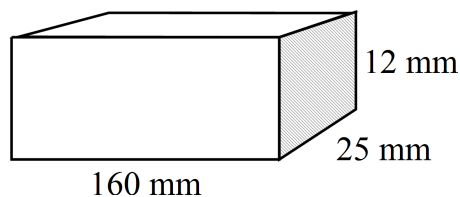
5.   Calculate the volume of this prism, giving
      your answer in cubic metres.

      Volume = [   ] cubic metres.
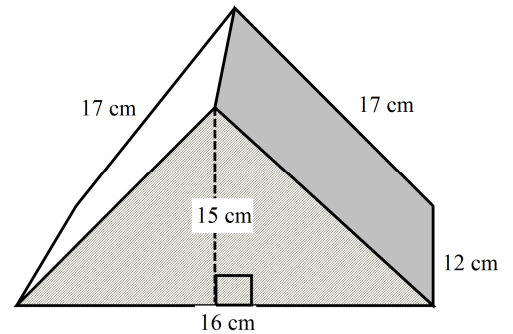
      75 centimetres

      1.5 metres

      1.2 metres

6.   A right triangular prism is shown below.
      Calculate its volume.

      Volume = [   ] cm³

      39 cm

      24 cm   15 cm

      36 cm

7.   What is the volume of the triangular prism shown?

      ☐ 720 cm³
      ☐ 1 440 cm³
      ☐ 1 530 cm³
      ☐ 1 632 cm³

      17 cm   17 cm

      15 cm

      12 cm

      16 cm

8.   The prism shown has a parallelogram as its front face.
      What is the volume of the prism?

      ☐ 18 000 cm³
      ☐ 20 160 cm³
      ☐ 21 000 cm³
      ☐ 37 800 cm³

      25 cm

      24 cm   28 cm

      30 cm
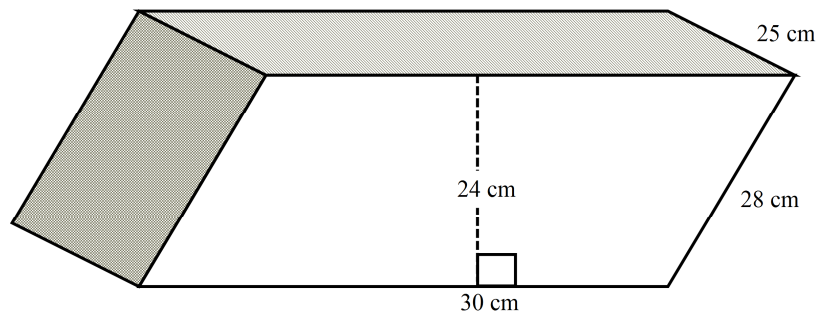
9.   The prism has an irregular pentagon
      which has an area of 3 m², as its
      front face.
      The length of the prism is 80 cm.
      Calculate the volume of the prism
      in m³.

      Volume = [   ] m³.
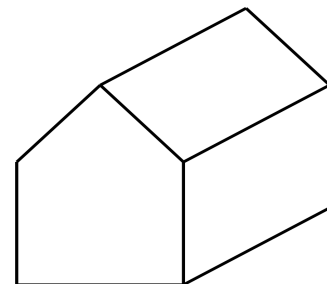
10.   Find the volume of cylinder to the nearest
        10 cm^3.

        Volume = [____] cm^3

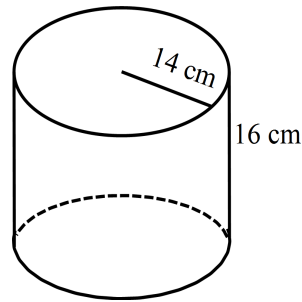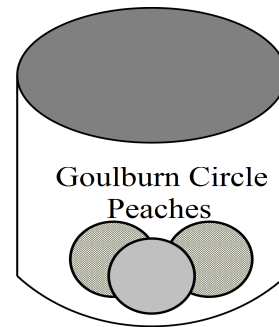11.   A can of peaches is a cylinder with
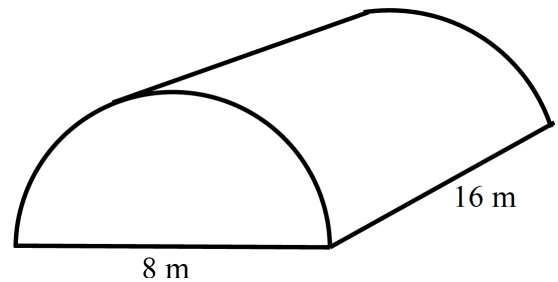   diameter 7.2 cm and depth 9 cm.

        What is the volume of the can to the
        nearest 10 cm^3?

        ☐ 65 cm^3

        ☐ 200 cm^3

        ☐ 370 cm^3

        ☐ 1 470 cm^3

        Goulburn Circle
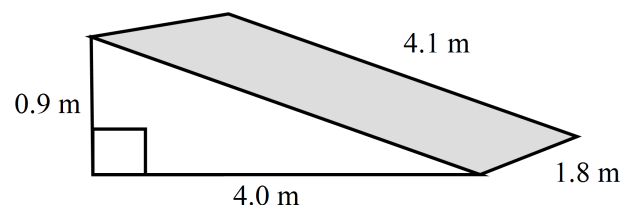   Peaches

12.   A storage hut is in the shape of a half
        cylinder.
        The diameter of the semicircle is 8 metres
        and the length of the hut is 16 metres.
        What volume does the hut hold?

        Volume = [____] m^3
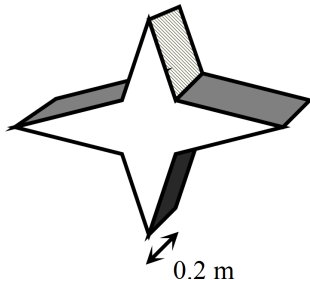
13.   A ramp for access to a hall is in the
        shape of a right triangular prism and is
        made entirely of concrete.

        What volume of concrete is needed to
        make the ramp?

        0.9 m   4.1 m
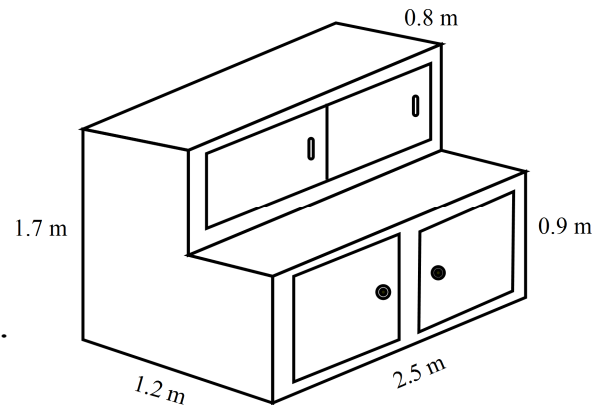   4.0 m   1.8 m

        Volume of concrete = [____] m^3.

14.

For a play, a large star is required as a prop. The star is made of papier mache and has an area 65 00 cm^2 and is 0.2 m thick. What volume of papier mache is needed for the star?

0.2 m

The volume of papier mache is [   ] cm^3.

15.   A storage cabinet is in the shape shown.
What volume of storage does the cabinet provide?

0.8 m

1.7 m

0.9 m

Storage Volume = [   ] m^3.

1.2 m

2.5 m

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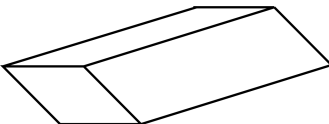
Year 8

Volume

ANSWERS

Non Calculator Section

1.	The second one
2.	The last one.
3.	512 cm^3
4.	0.1 m^3
5.	cubic metres
6.	480 m^3
7.	1 728 cm^3
8.	30 cm

9.	
10.	125 cm^3
11.	240 cm^3
12.	1034 cm^3
13.	360π cm^3
14.	2.6 litres
15.	12 000 L or 12kL

Calculator Allowed Section

1.	The last one
2.	$V = Al$
3.	3.5 cm^3
4.	48 000 mm^3
5.	1.35 cubic metres.
6.	6 480 cm^3
7.	1 440 cm^3
8.	18 000 cm^3

9.	2.4 m^3
10.	9 850 cm^3
11.	370 cm^3
12.	402 m^3
13.	3.24 m^3
14.	130 000 cm^3
15.	4.3 m^3