

## Year 10 Term 3 Homework

<b>Student Name:</b> _____	<b>Grade:</b> _____
<b>Date:</b> _____	<b>Score:</b> _____

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## 2 Year 10 Term 3 Week 2 Homework

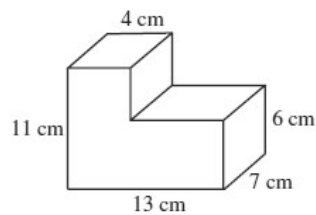
### 2.1 Volume and Surface Area

#### 2.1.1 Volume of a prism

The volume of a prism is given by:  $V = Ah$  where  $A$  is the cross-sectional area and  $h$  is the height of the prism.

#### Exercise 2.1.1

1. Find the volume of this solid:




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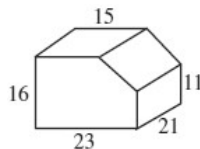


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2. Find the volume of this solid. All measurement are in cm.




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3. Find the surface area of a cube whose volume is  $729 \text{ cm}^3$ .

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4. Find the volume of a cube whose surface area is  $726 \text{ cm}^2$ .

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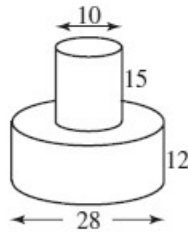
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**2.1.2 Volume of a cylinder**

The volume of a cylinder is given by  $V = \pi r^2 h$  where  $r$  is the radius of the base,  $h$  is the height of the cylinder.

**Exercise 2.1.2**

1. Find the volume of this solid, correct to the nearest  $\text{cm}^3$ .




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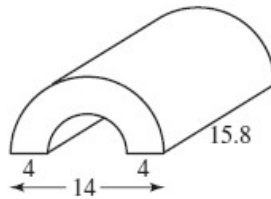


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2. Find the volume of the given solid, correct to the nearest  $\text{cm}^3$ .




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3. A cylinder has a volume of  $252\pi \text{ cm}^3$  and a radius of 6 cm. Find the exact surface area of the cylinder.

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4. A cylinder has a curved surface area of  $130\pi \text{ cm}^2$  and a diameter of 26 cm. Find the exact volume of the cylinder.

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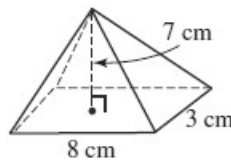
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**2.1.3 Volume of a pyramid**

- If a pyramid and a prism have equal base areas and equal heights, then the volume of the pyramid will be one-third of the volume of the prism.
- The volume of the a pyramid is given by:  $V = \frac{1}{3}Ah$ , where A is the area of the base, h is the height of the pyramid.

**Exercise 2.1.3**

1. Find the volume of this pyramid.




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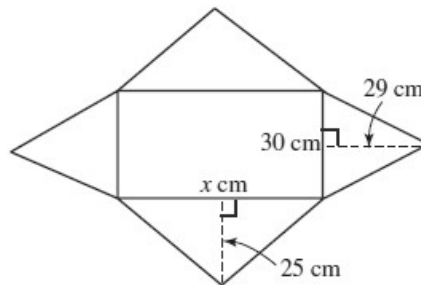


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2. For the net shown is that of a rectangular pyramid.



(a) Find the height of the pyramid

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(b) Find the value of x.

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(c) Hence, find the volume of the pyramid.

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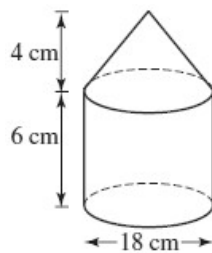
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**2.1.4 Volume of a cone**

- If a cylinder and a cone have equal base areas and equal heights, then the volume of the cone will be one-third of the volume of the cylinder.
- The volume of a cone is given by:  $V = \frac{1}{3}\pi r^2 h$ , where r is the radius of the base, h is the height of the cone.

**Exercise 2.1.4**

1. Find the total volume of the solid in terms of  $\pi$ .




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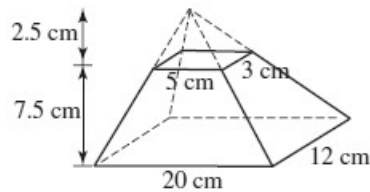


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2. A rectangular pyramid has its top removed as shown. Find the volume of the remaining solid.




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3. A cone with radius 9 cm has a volume of 2.4 L. Find the height of the cone, correct to 3 significant figures.

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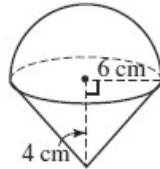
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**2.1.5 Volume of a sphere**

The volume of a sphere is given by:  $V = \frac{4}{3}\pi r^3$ , where  $r$  is the radius of the sphere.

**Exercise 2.1.5**

1. Find the total volume of this solid in terms of  $\pi$ .




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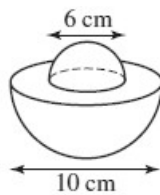


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2. Find the total volume of this solid correct to nearest  $\text{cm}^3$ .




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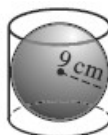


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3. A sphere of radius 9 cm fits tightly inside a cylinder as shown. Find the empty space the remains in the cylinder, correct to 1 decimal place.




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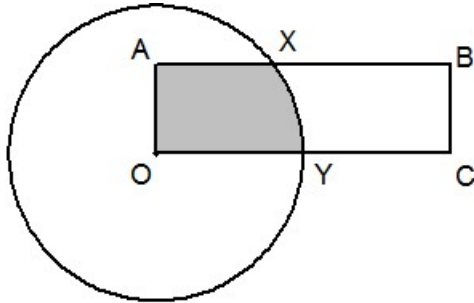
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## 2.2 Miscellaneous exercise

**Exercise 2.2.1**  $OABC$  is a rectangle. the width  $OA$ , of the rectangle is 4 cm and the radius,  $OY$  of the circle with centre  $O$  is 8 cm. Find



1. the size of  $\angle XOY$ .

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2. the length of  $AX$ , correct to two decimal places.

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3. the area of the shaded part, correct to one decimal place.

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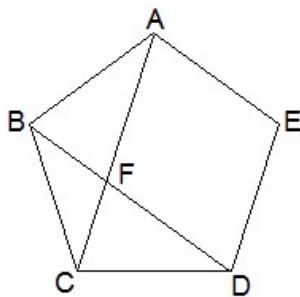


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**Exercise 2.2.2** In the diagram,  $ABCDE$  is a regular pentagon. The diagonals  $AC$  and  $BD$  intersect at  $F$ .



1. Show that the size of  $\angle ABC = 108^\circ$

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2. Find the size of  $\angle BAC$ . Give reasons for your answer.

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3. By considering the sizes of angles, show that  $\triangle ABF$  is isosceles.

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