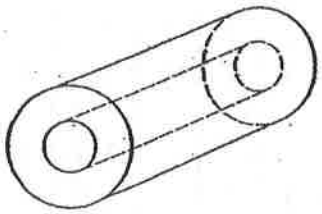
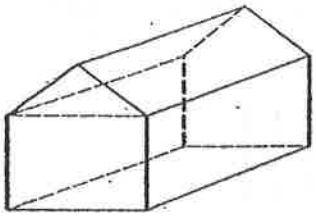
Name _____

Surface Area and Volume of Composite Solids



Volume = volume of large cylinder – volume of small cylinder

Surface area = area of large cylinder's curved face
+ area of small cylinder's curved face
+ area of large cylinder's circular faces
– area of small cylinder's circular faces

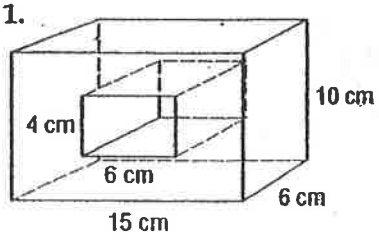


Volume = volume of rectangular prism
+ volume of triangular prism

Surface area = area of 5 faces of rectangular prism
+ area of 4 faces of triangular prism

Find the volume.

1.



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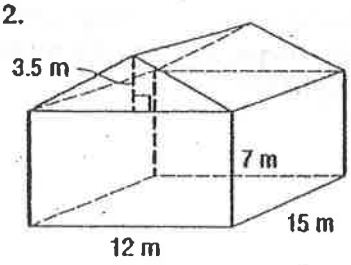
2.



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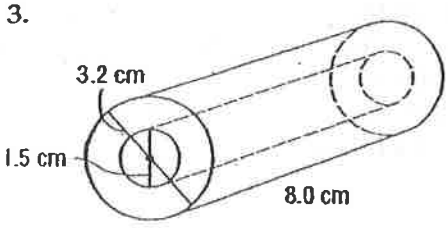
Find the surface area.

3.



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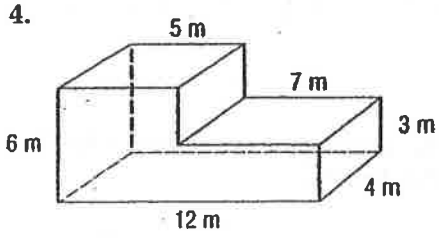
4.



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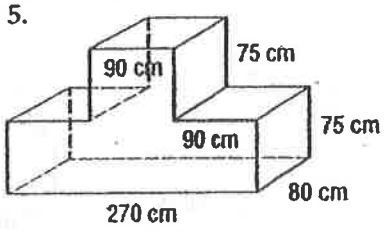
Find the surface area and the volume.

5.



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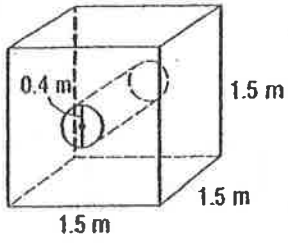
6.



_____

_____

① $672 cm^3$ ③ $130.7 cm^2$ ⑤ $121200 cm^2$
② $810 m^2$ ④ $246 m^2$ ⑥ $15.1 m^2$

Name _____

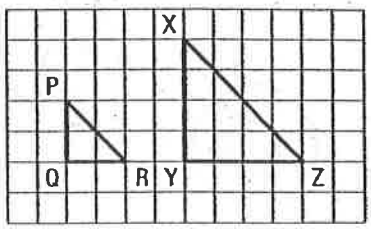
Similar Triangles

When 2 triangles are **similar**, the corresponding pairs of angles are equal and the ratios of the corresponding sides are equal.

In $\triangle PQR$ and $\triangle XYZ$, $\angle P = \angle X$, $\angle Q = \angle Y$, and $\angle R = \angle Z$.

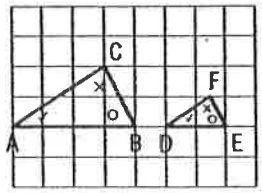
$\frac{PQ}{XY} = \frac{1}{2}$, $\frac{QR}{YZ} = \frac{1}{2}$, and $\frac{PR}{XZ} = \frac{1}{2}$.

So, $\triangle PQR$ and $\triangle XYZ$ are similar.



In each diagram, the triangles are similar. Write the ratio of the lengths of the sides $\frac{BC}{EF}$.

1.



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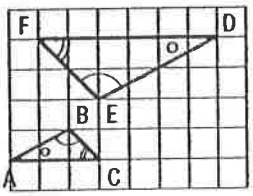
2.



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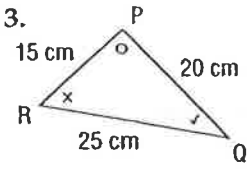
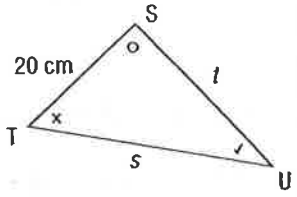
The triangles in each pair are similar. Find the unknown side lengths.

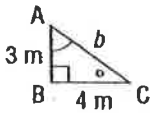
3.

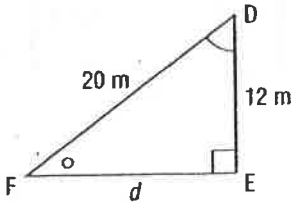




$s =$ _____ $t =$ _____

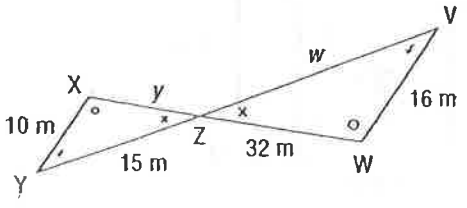
4.





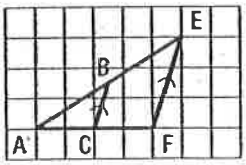
$b =$ _____ $d =$ _____

5.



$y =$ _____ $w =$ _____

6. Explain why $\triangle ABC$ is similar to $\triangle AEF$.



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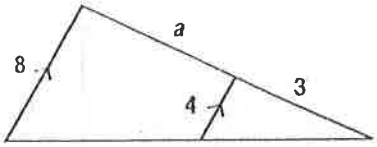
_____

7. Find *a*.

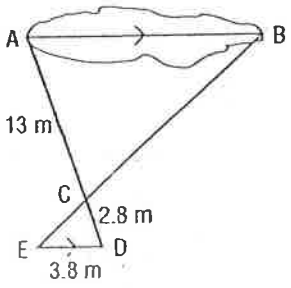


$a =$ _____

8. Nida is 1.8 m tall and casts a shadow 1.5 m long. At the same time, a microwave relay tower casts a shadow 32 m long. Draw and label 2 triangles depicting the information. Determine the height of the tower.

_____

9. Ranin marked out the following triangles to determine the length of a pond. Calculate the length of the pond, AB, to the nearest tenth of a metre.



_____

3. $s = 33.3$
$t = 26.7$

4. $b = 5$
$d = 16$

5. $y = 20$
$w = 24$

7. $a = 3$

8. 38.4m

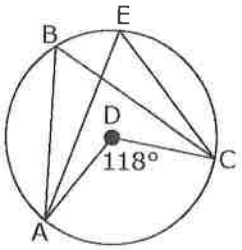
9. 17.6m

Name: _____ Date: _____

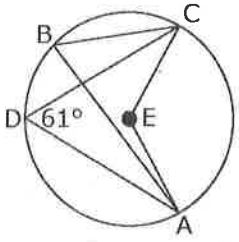
Extra Practice

1. Determine the measure of ∠ABC and ∠AEC. Explain how you determined your answers.

a)

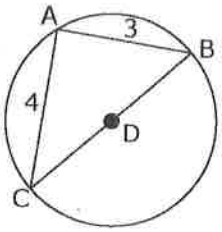


b)

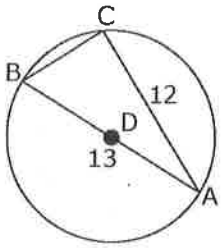


2. Determine the length of chord BC in each of the following.

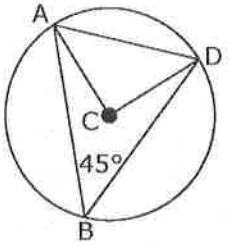
a)



b)

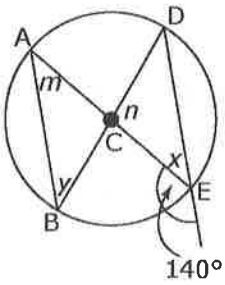


3. Point C is the centre of a circular flower bed with a radius of 8 m. The flower bed is divided as shown in the diagram. If ∠ABD = 45°, determine the length of AD to the nearest tenth of a metre.



4. Find the unknown angle measure in each of the following diagrams.

a)

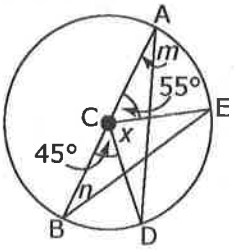


∠m =

∠n =

∠x =

b)



∠m =

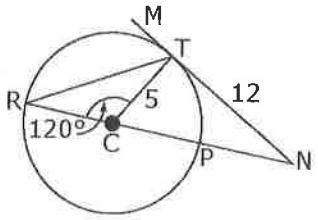
∠n =

∠x =

Name: _____ Date: _____

Extra Practice

1. In the diagram, MN is tangent to the circle at T, the radius is 5 cm, TN is 12 cm, and $\angle RCT = 120^\circ$.

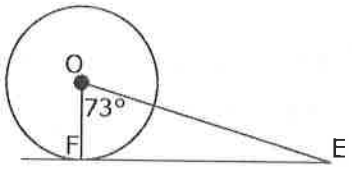


a) What type of triangle is $\triangle RCT$? Explain your answer.

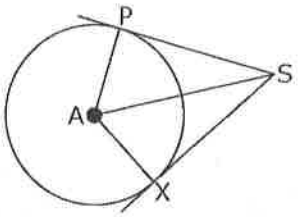
b) What is the measure of $\angle TRC$?

c) What is the length of PN? Show your calculations.

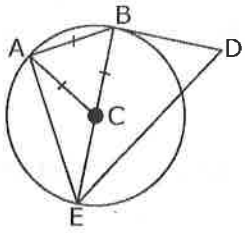
2. a) In the diagram, EF is tangent to the circle at F, and the radius is OF. What is the measure of $\angle OEF$?



b) In the diagram, SP is tangent to the circle at P. SX is tangent to the circle at X. SP = 6 cm, SA = 10 cm, and A is the centre of the circle. What is the length of AX?



3. On the map, DB is tangent to the circle at B, the diameter is BE, DB = 5 km, and $\triangle ABC$ is an equilateral triangle. The radius of the circle is 6 km.



a) What is the length of BE?

b) Jorge starts at point D, cycles to E, and then to C. Sarah cycles to A, then to C, and then to E. Who travels the shorter distance? By how much? Show your calculations.

4. Two concentric circles have radii of 24 cm and 26 cm. What is the length of the chord that is tangent to the inner circle? Include a sketch with your answer.

5. RT is tangent to each circle at S and R. If OR = 9 m, PS = 3 m, ST = 6 m, and RT = 10 m, how far apart are the centres? Round your answer to the nearest tenth of a metre.