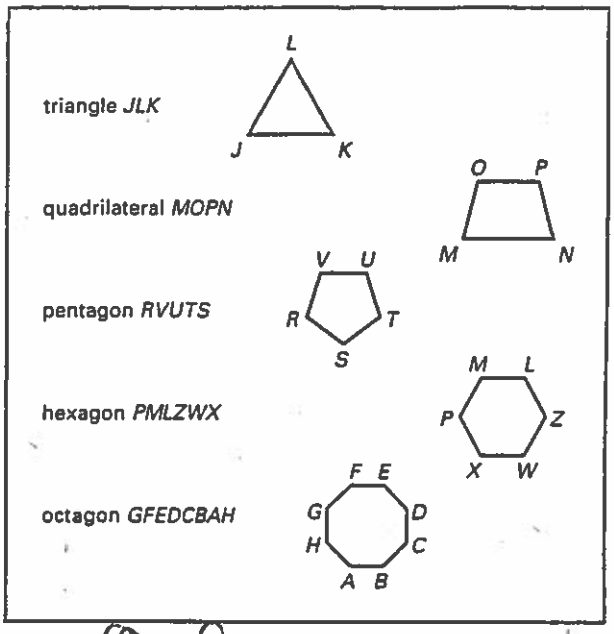
Name: _____ Part 2

RETEACHING 4-2 ch. 4

POLYGONS AND POLYHEDRA

① Polygon-

Examples of commonly used polygons are given below. Each polygon is named by the letters at its vertices, listed in order.



② Concave-

③ Convex-

④ Regular Polygon-

⑤ Polyhedra-

⑥ face-

⑦ Edge-

⑧ Vertex

EXERCISES

Draw a figure on your own paper to illustrate each of the following.

1. an octagon
2. a quadrilateral with no two sides equal in length
3. triangle *LMN*
4. a pentagon with only two sides equal in length
5. hexagon *RSTUVW*
6. a quadrilateral with vertices *A*, *B*, *C*, and *D*
7. a triangle with sides $\overline{XY}$, $\overline{YZ}$, and $\overline{ZX}$
8. octagon *MNPQRSTU*
9. pentagon *DEFGH*

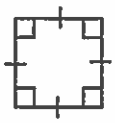
Name _____ Date _____

EXTRA PRACTICE 4-2

POLYGONS AND POLYHEDRA

EXERCISES

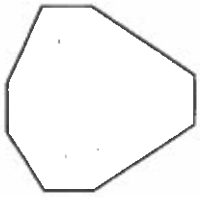
Identify each polygon. State whether it is regular.

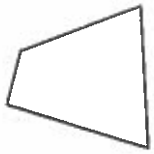
1. 

2. 

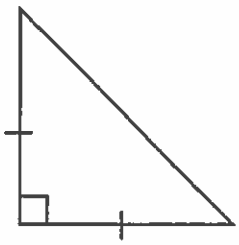
3. 

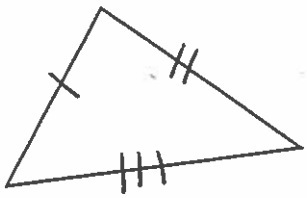
4. 

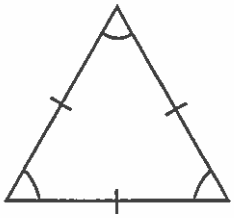
5. 

6. 

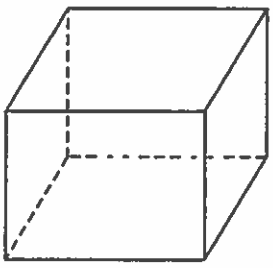
Classify each triangle.

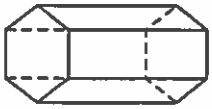
7. 

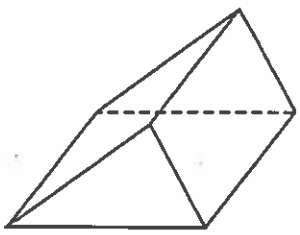
8. 

9. 

Identify the number of faces, vertices and edges for each figure.

10. 

11. 

12. 

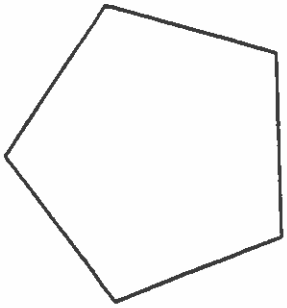
2

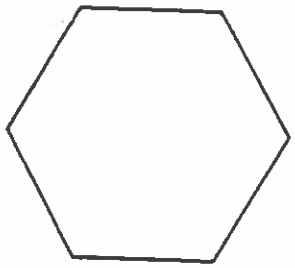
Polygons

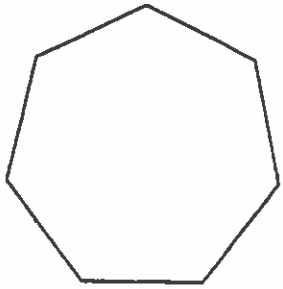
Skill: finding the sum of the measures of the angle

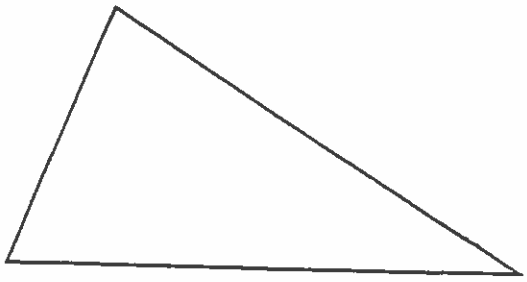
Name _____

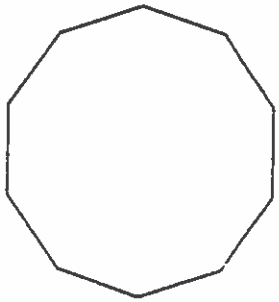
Name each polygon and find the sum of the measures of the angles.

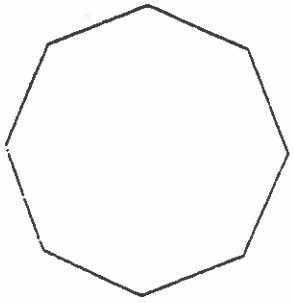
1. 

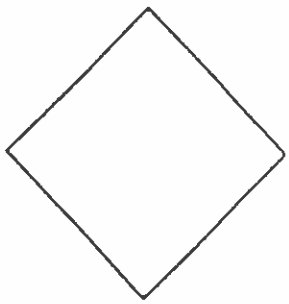
2. 

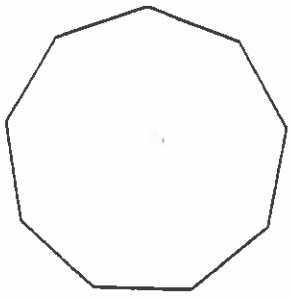
3. 

4. 

5. 

6. 

7. 

8. 

3

Polygon Angle Sum

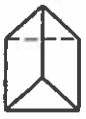
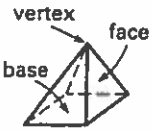
Regular Polygons for one interior and one exterior angle

Name	Number of sides	Number of triangles	Total sum of interior angles	one interior angle	one exterior	all exterior
Triangle	3					
Quadrilateral	4					
Pentagon	5					
Hexagon	6					
Heptagon/Septagon	7					
Octagon	8					
Nonagon	9					
Decagon	10					

Name _____ Date _____

RETEACHING 4-3

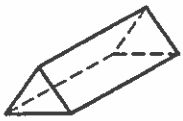
VISUALIZE AND NAME SOLIDS

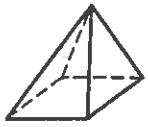
<table>
<tr><td rowspan="2">POLYHEDRA
(each surface is a polygon)</td><td>PRISMS
(two identical, parallel bases)</td><td>triangular
  </td><td>square
 
(cube)</td><td>rectangular
  </td><td>pentagonal
  </td></tr>
<tr><td>PYRAMIDS
(one base and one vertex)</td><td>  </td><td> 
vertex
face
base</td><td>  </td><td>  </td></tr>
<tr><td rowspan="2">OTHER 3-DIMENSIONAL FIGURES
(some or all surfaces are curved)</td><td colspan="3">cylinder
(two identical, parallel, circular bases)
  </td><td colspan="2" rowspan="2">sphere
(all surface points equally distant from the center of the sphere)
  </td></tr>
<tr><td colspan="3">cone
(one circular base, one vertex)
  </td></tr>
</table>

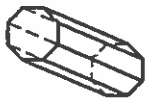
EXERCISES

Match each figure with its description or with the pattern that can be folded to form it. Identify the figure.

1.  _____

2.  _____

3.  _____

4.  _____

5.  _____

6.  _____

a. a square base and four triangular faces

b. 

c. a curved surface having a center equally distant from all points on the surface

d. two octagons as bases

e. four pairs of opposite faces that are squares

f. a single base and five triangular faces

Name _____ Date _____

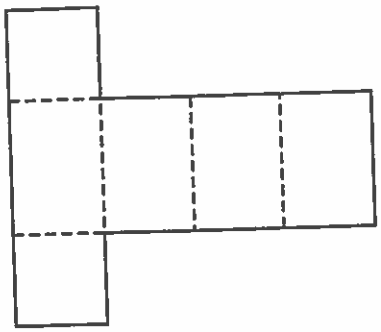
RETEACHING 4-4

PROBLEM SOLVING SKILLS: NETS

The surface of a three-dimensional figure can be shown as a two-dimensional figure called a net. The surface of the three-dimensional figure is formed by folding the net.

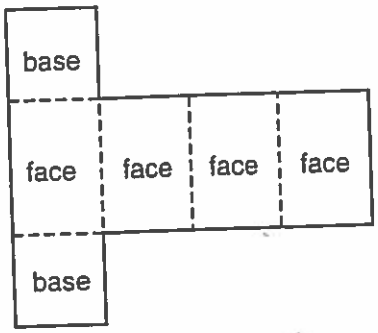
Example

Identify the three-dimensional shape formed by the net at the right.



Solution

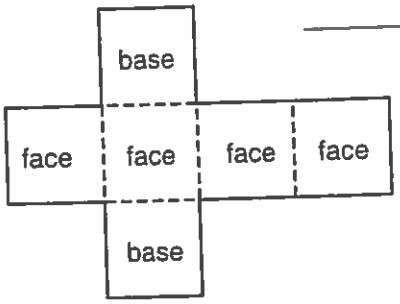
The net shows two rectangular bases and four rectangular faces. So the net must be a rectangular prism.



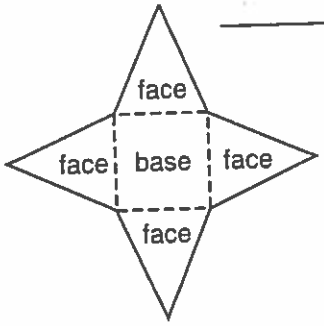
EXERCISES

Label the base(s) and faces of each net. Then identify the three-dimensional shape formed by the net.

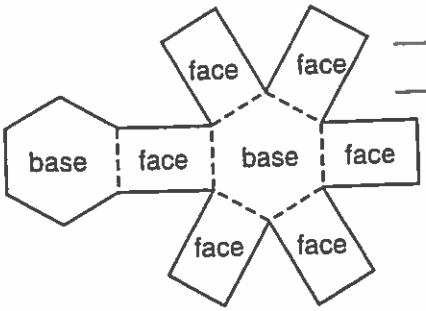
1. _____



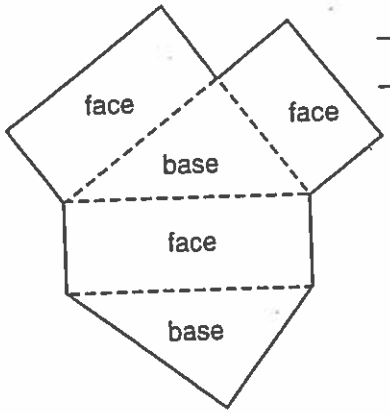
2. _____



3. _____



4. _____



Name _____ Date _____

RETEACHING 4-7

VOLUME OF PRISMS AND CYLINDERS

You can find the volume of an object by counting the number of unit cubes that would fill the space. You can also use a formula. The volume of a prism or a cylinder is equal to the area of its base times its height, so you can use these formulas.

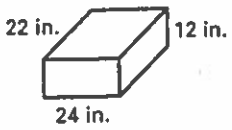
For a rectangular prism: $V = (l \cdot w) \cdot h$

For a triangular prism: $V = \left(\frac{1}{2} b \cdot h\right) \cdot h$

For a cylinder: $V = \pi r^2 \cdot h$

Example 1

Find the volume of the rectangular prism.



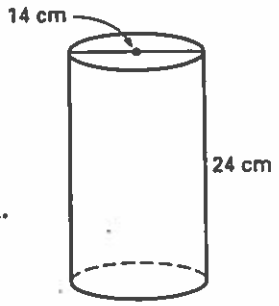
Solution

$V = (l \cdot w) \cdot h$
$V = (22 \cdot 24) \cdot 12$
$V = 6336$

The volume of the prism is 6336 in.^{3}.

Example 2

Find the volume of the cylinder. Round to the nearest cubic centimeter. Use $\pi \approx 3.14$.



Solution

The diameter of the base is 14 cm, so the radius is 7 cm.
$V = \pi r^2 \cdot h$
$V \approx 3.14 \cdot 7^2 \cdot 24$
$V \approx 3692.64$
The volume is approximately 3693 cm^3.

EXERCISES

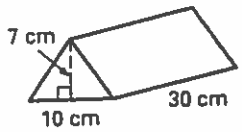
Find the volume of each rectangular prism.

1. $l = 2$ ft, $w = 4$ ft, $h = 6$ ft _____
2. $l = 8$ cm, $w = 5$ cm, $h = 6$ cm _____
3. $l = 10$ m, $w = 5$ m, $h = 4$ m _____
4. $l = 16$ in., $w = 15$ in., $h = 18$ in. _____

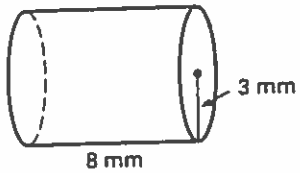
Find the volume of each cylinder.

5. $r = 2$ in., $h = 5$ in. _____
6. $r = 4$ ft, $h = 10$ ft _____
7. $r = 6$ m, $h = 4$ m _____
8. $r = 12$ cm, $h = 20$ cm _____

Find the volume.

9. 

_____

10. 

_____

7

Skill: volume of prisms and cylinders

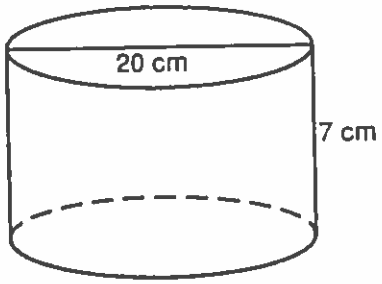
Volume

Name _____

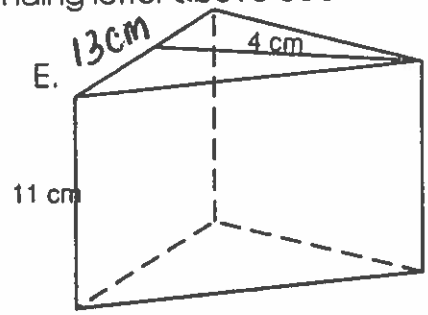
What famous portrait was painted by Humphrey Bogart's mother?

To find out, find the volumes of the following shapes. Then, find the answer at the bottom of the page and put the corresponding letter above each answer. Use 3.14 for π.

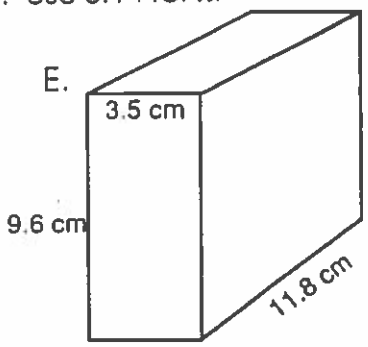
B.



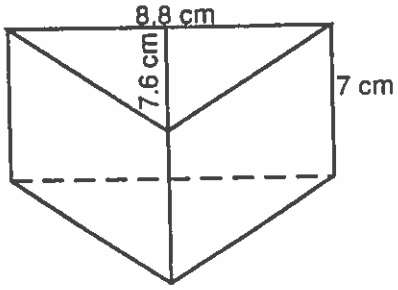
E.



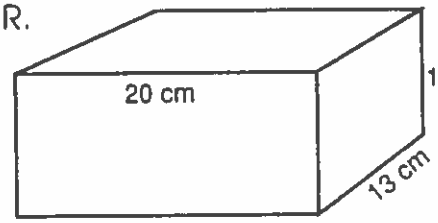
E.



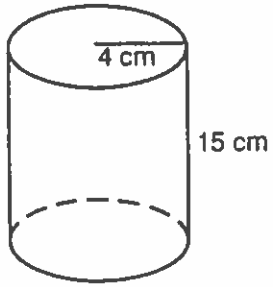
E.



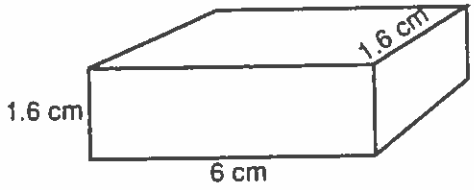
R.



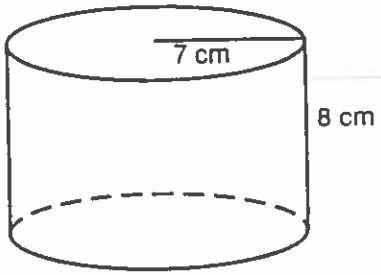
Y.



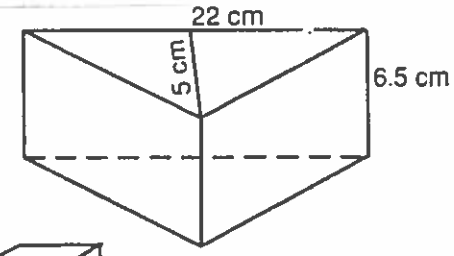
T.



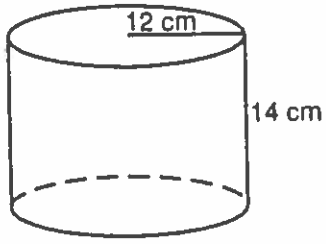
G.



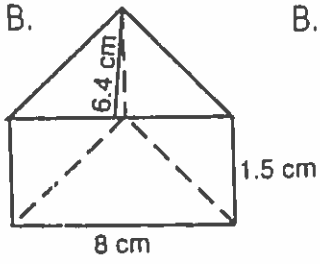
A.



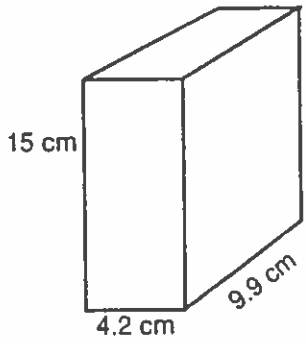
H.



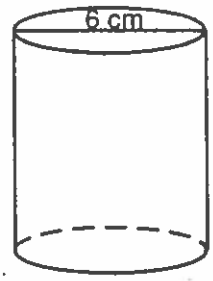
B.



B.



R.



15.36 cm³	6330.24 cm³	286 cm³			
1230.88 cm³	234.08 cm³	141.3 cm³	38.4 cm³	396.48 cm³	3120 cm³
623.7 cm³	357.5 cm³	2198 cm³	753.6 cm³		

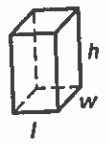
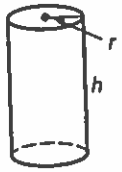
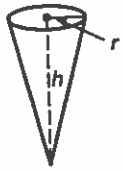
8

Name _____ Date _____

RETEACHING **4-8**

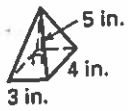
VOLUME OF PYRAMIDS AND CONES

Formulas for the volume of a pyramid and a cone are given below. Compare the formula for the volume of a prism with that of a pyramid. Then compare the formula for the volume of a cone with that of a cylinder.

Rectangular Prism	Rectangular Pyramid	Cylinder	Cone
			
You know	New	You know	New
$V = B \cdot h$	$V = \frac{1}{3} \cdot B \cdot h$	$V = B \cdot h$	$V = \frac{1}{3} \cdot B \cdot h$
$V = (l \cdot w) \cdot h$	$V = \frac{1}{3} \cdot l \cdot w \cdot h$	$V = \pi r^2 \cdot h$	$V = \frac{1}{3} \cdot \pi r^2 \cdot h$

Example

Find the volume to the nearest whole number. Use $\pi \approx 3.14$.

a. 

b. 

Solution

a. $V = \frac{1}{3} \cdot l \cdot w \cdot h$

$V = \frac{1}{3} \cdot 3 \cdot 4 \cdot 5$

The volume of the pyramid is approximately 20 in.^{3}.

b. $V = \frac{1}{3} \cdot \pi r^2 \cdot h$

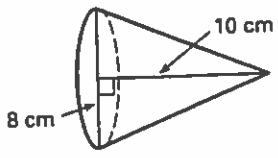
$V \approx \frac{1}{3} \cdot 3.14 \cdot 4^2 \cdot 6$

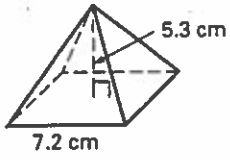
$V \approx \frac{1}{3} \cdot 3.14 \cdot 16 \cdot 6$

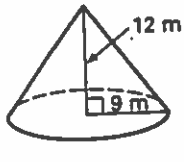
The volume of the cone is approximately 100 in.^{3}.

EXERCISES

Find the volume of each, to the nearest tenth. Use $\pi \approx 3.14$.

1. 

2. 

3. 

_____ _____ _____

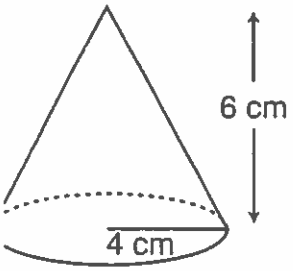
olume

Skill: volume of pyramids and cones

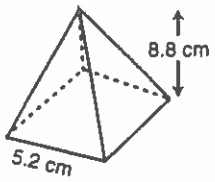
Name _____

crazy law in Charleston, South Carolina, requires all horses that pull carriages
) do what?

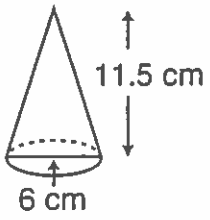
nd out, find the volume of each shape. Then, find the answer at the bottom of the
e and put the corresponding letter above each answer. Use 3.14 for π and round to
nearest hundredth.

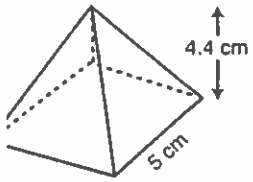


A.

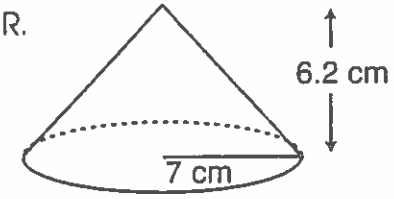


E.

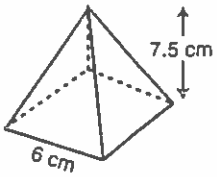


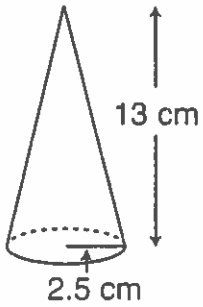


R.

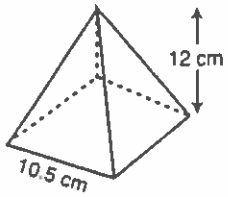


P.

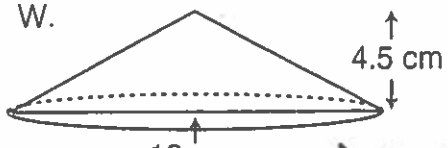


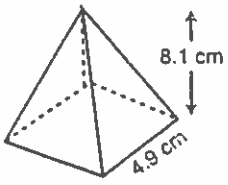


E.

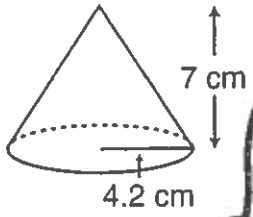


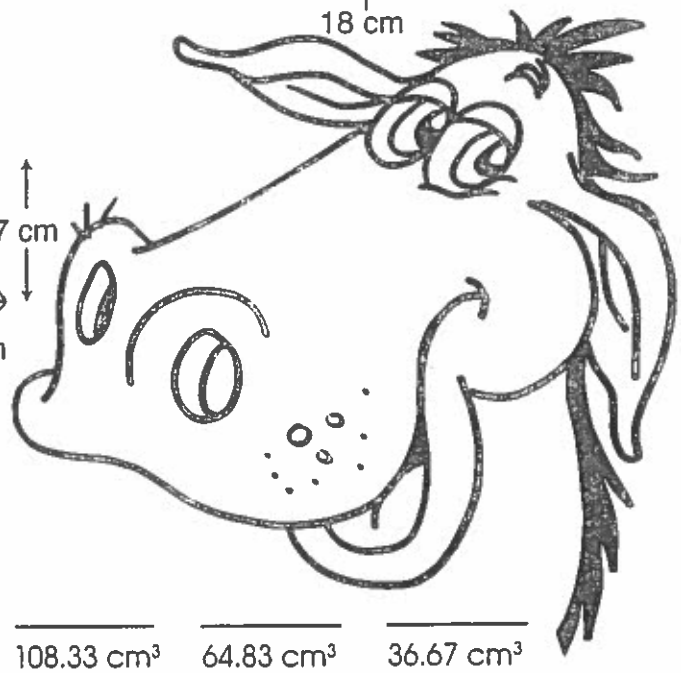
W.





I.





51 cm³	441 cm³	79.32 cm³	317.98 cm³			
4 cm³	129.24 cm³	100.48 cm³	90 cm³	108.33 cm³	64.83 cm³	36.67 cm³

10

Name _____ Date _____

RETEACHING 4-9

SURFACE AREA OF PRISMS AND CYLINDERS

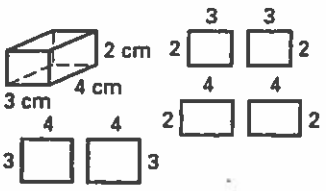
To find the surface area, *SA*, of a prism, find the sum of the areas of all its faces. To find the surface area of a cylinder, add the area of the curved surface to the sum of the areas of the two circular bases. Use these formulas.

rectangular prism: $SA = 2 \cdot (l \cdot w + l \cdot h + w \cdot h)$ **cylinder:** $SA = 2\pi rh + 2\pi r^2$

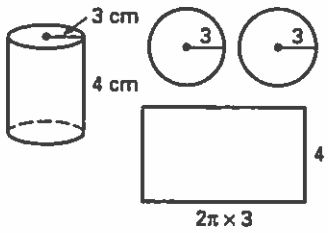
Example

Sketch and label the unfolded faces of each figure. Then use a formula to find the surface area. Use $\pi \approx 3.14$. Round to the nearest whole number.

a.



b.



Solution

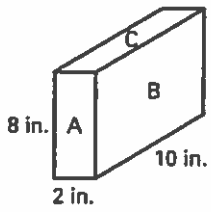
a. $2 \cdot (2 \cdot 3) = 12$
$2 \cdot (2 \cdot 4) = 16$
$2 \cdot (3 \cdot 4) = 24$
$SA = 12 + 16 + 24 = 52$
$SA = 52 \text{ cm}^2$

b. $SA = 2\pi rh + 2\pi r^2$
$2\pi rh \approx 2 \cdot 3.14 \cdot 3 \cdot 4$
≈ 75.36
$2\pi r^2 \approx 2 \cdot 3.14 \cdot 3^2$
$\approx 2 \cdot 3.14 \cdot 9$
≈ 56.52
$SA \approx 75.36 + 56.52$
≈ 207.24
$SA \approx 207 \text{ cm}^2$

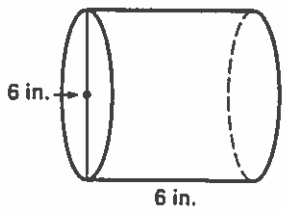
EXERCISES

Sketch and label the unfolded faces of each figure on another sheet of paper. Then use a formula to find the surface area. Use $\pi \approx 3.14$. Round to the nearest whole number.

1.



2.



Surface Area

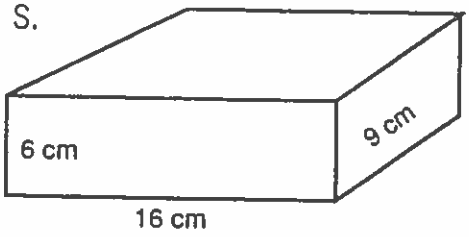
Skill: surface area of cylinders, cubes and rectangular prisms

Name _____

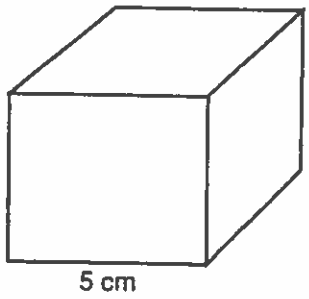
Who won the first World Series in 1903?

To find out, find the surface areas of the following figures. Then, find the answers at the bottom of the page and put the corresponding letter above each answer.

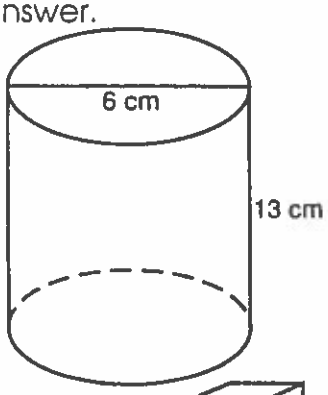
S.



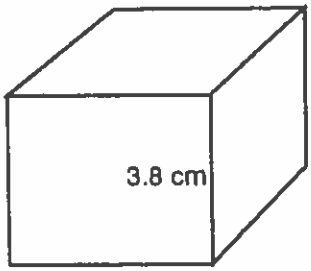
D.



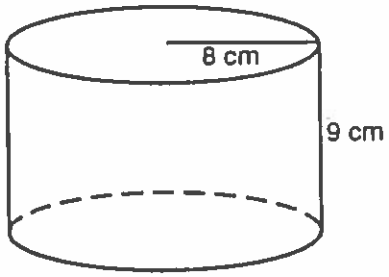
N.



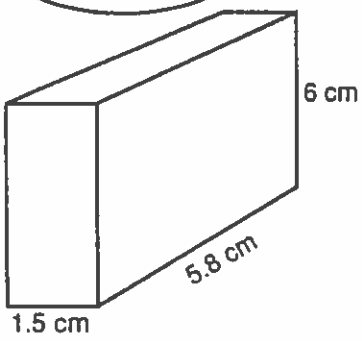
O.



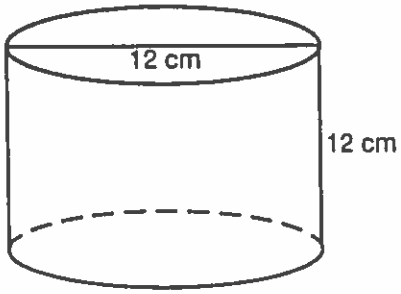
O.



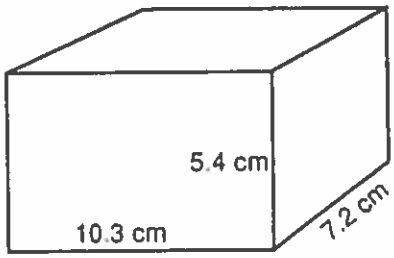
O.



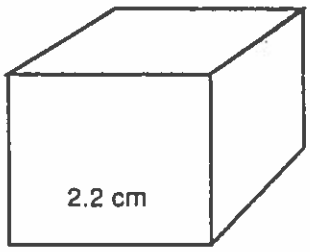
E.



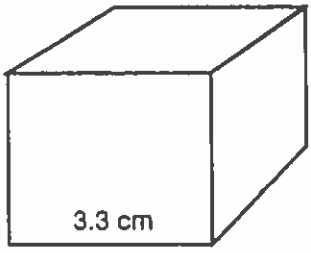
S.



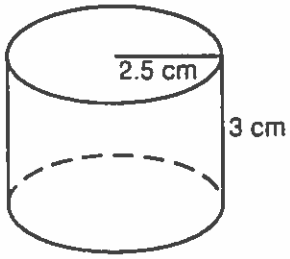
B.



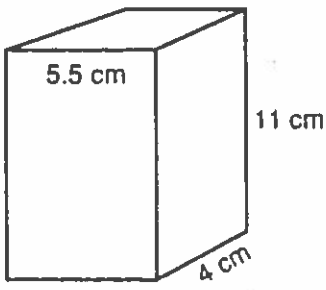
R.



X.



T.



29.04 cm²	105 cm²	588 cm²	253 cm²	854.08 cm²	301.44 cm²

65.34 cm²	678.24 cm²	150 cm²	337.32 cm²	86.64 cm²	86.35 cm²