PARCC
Partnership for Assessment of Readiness for College and Careers

Assessment Reference Sheet

Grade 6

1 inch = 2.54 centimeters
1 meter = 39.37 inches
1 mile = 5280 feet
1 mile = 1760 yards
1 mile = 1.609 kilometers

1 kilometer = 0.62 mile
1 pound = 16 ounces
1 pound = 0.454 kilograms
1 kilogram = 2.2 pounds
1 ton = 2000 pounds

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 gallon = 3.785 liters
1 liter = 0.264 gallons
1 liter = 1000 cubic centimeters

Triangle	$A = \frac{1}{2}bh$
Right Rectangular Prism	$V = Bh$ or $V = lwh$

PARCC
Partnership for Assessment of Readiness for College and Careers

Assessment Reference Sheet

Grade 7

1 inch = 2.54 centimeters
1 meter = 39.37 inches
1 mile = 5280 feet
1 mile = 1760 yards
1 mile = 1.609 kilometers

1 kilometer = 0.62 mile
1 pound = 16 ounces
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1 ton = 2000 pounds

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 gallon = 3.785 liters
1 liter = 0.264 gallons
1 liter = 1000 cubic centimeters

Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$A = \pi r^2$
Circle	$C = \pi d$ or $C = 2\pi r$
General Prisms	$V = Bh$

3 Area of Irregular Figures

Warm Up

Find the area of the following figures.

1. a triangle with a base of 12.4 m and a height of 5 m

2. a parallelogram with a base of 36 in. and a height of 15 in.

3. a square with side lengths of 2.05 yd

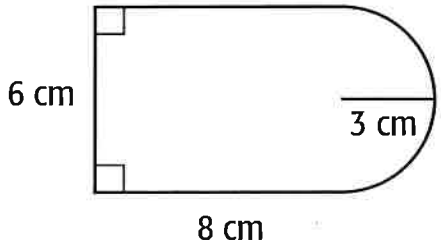
Problem of the Day

It takes a driver about $\frac{3}{4}$ second to begin braking after seeing something in the road. How many feet does a car travel in that time if it is going 10 mph? 20 mph? 30 mph?

Lesson Quiz

Find the perimeter and area of each figure. Use 3.14 for π.

1.



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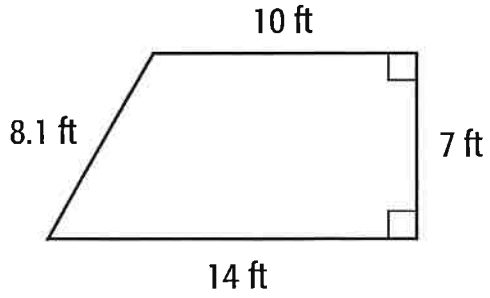

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LESSON 3

Measurement and Geometry

Review for Mastery: Area of Irregular Figures

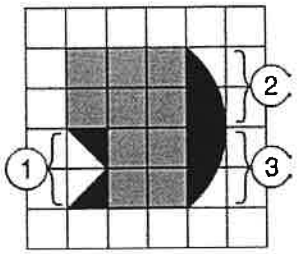
When an irregular figure is on graph paper, you can estimate its area by counting whole squares and parts of squares. Follow these steps.

- Count the number of whole squares. There are 10 whole squares.
- Combine parts of squares to make whole squares or $\frac{1}{2}$-squares

  Section 1 = 1 square

  Section 2 $\approx 1\frac{1}{2}$ squares

  Section 3 $\approx 1\frac{1}{2}$ squares

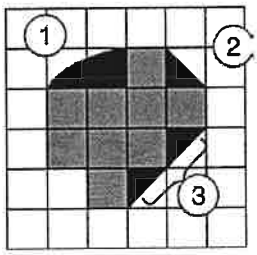


- Add the whole and partial squares.

  $10 + 1 + 1\frac{1}{2} + 1\frac{1}{2} = 14$

  The area is about 14 square units.

Estimate the area of the figure.



1. There are _____ whole squares in the figure.

   Section 1 ≈ _____ square(s)

   Section 2 = _____ square(s)

   Section 3 = _____ square(s)

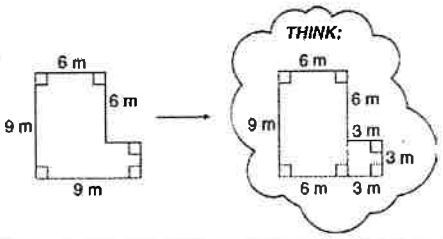
   A = _____ + _____ + _____ + _____ = _____ square units

You can break a composite figure into shapes that you know. Then use those shapes to find the area.

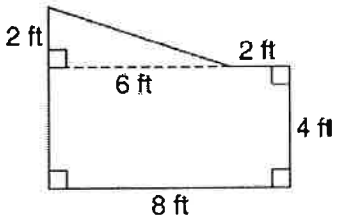
A (rectangle) = $9 \cdot 6 = 54$ m^2

A (square) = $3 \cdot 3 = 9$ m^2

A (composite figure) = $54 + 9 = 63$ m^2



Find the area of the figure.



2. A (rectangle) = _____ ft^2

   A (triangle) = _____ ft^2

   A (irregular figure) = _____ + _____

   = _____ ft^2

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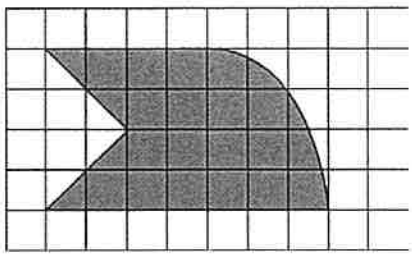
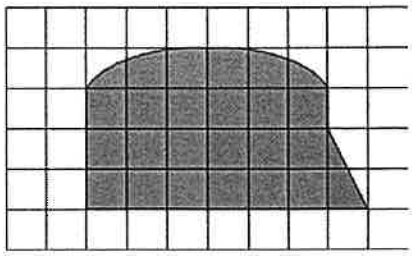
LESSON 3

Measurement and Geometry

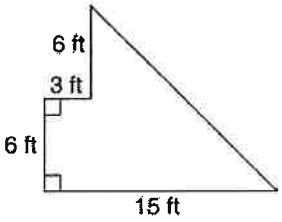
Practice B: Area of Irregular Figures

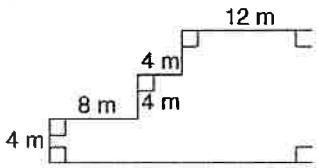
Estimate the area of each figure. Each square represents 1 square foot.

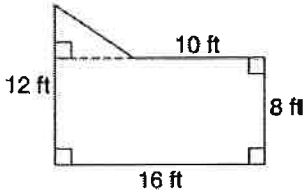
1. 

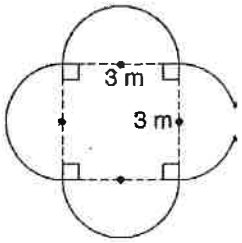
2. 

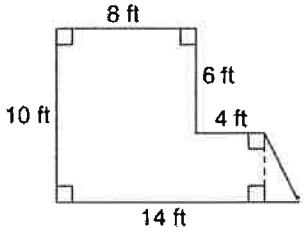
Find the area of each figure. Use 3.14 for π.

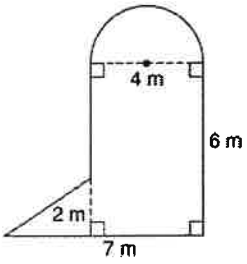
3. 

4. 

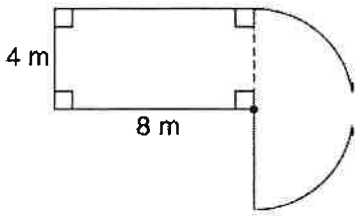
5. 

6. 

7. 

8. 

9. Marci is going to use tile to cover her terrace. How much tile does she need?



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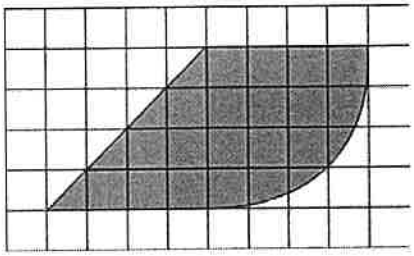
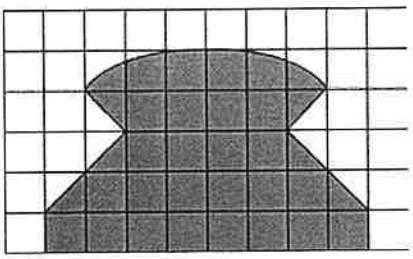
LESSON 3

Measurement and Geometry

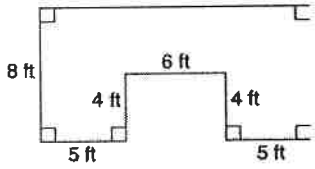
Practice C: Area of Irregular Figures

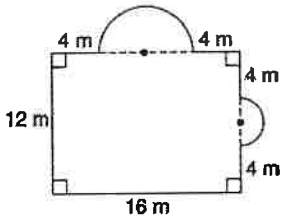
Estimate the area of each figure. Each square represents 1 square foot.

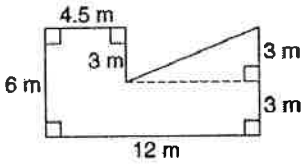
1. 

2. 

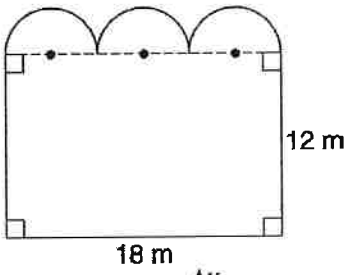
Find the area of each figure. Use 3.14 for π.

3. 

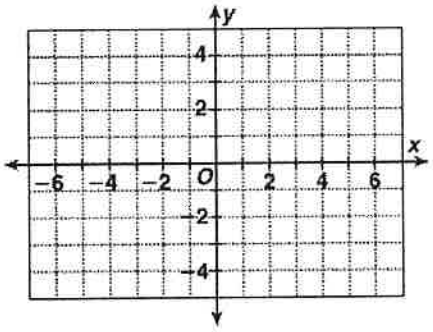
4. 

5. 

6. The figure shows the dimensions of a room in which wedding receptions are held. The room is being carpeted. The three semi-circular parts of the room are congruent. How much carpet is needed?



7. A polygon has vertices at $F(-5, 2)$, $G(-3, 2)$, $H(-3, 4)$, $J(1, 4)$, $K(1, 1)$, $L(4, 1)$, $M(4, -2)$, $N(6, -2)$, $P(6, -3)$, and $Q(-5, -3)$. Graph the figure on the coordinate plane. Then find the area and the perimeter of the figure.



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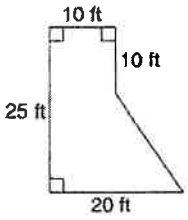
LESSON 3

Measurement and Geometry

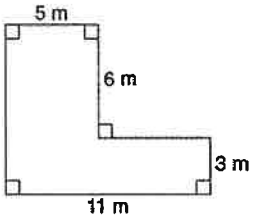
Problem Solving: Area of Irregular Figures

Write the correct answer.

1. Explain how to find the area of the composite figure below. Then find the area.



2. Mr. Bemis carpets the living room shown below. If he pays $20 per square meter, what is the total cost of the carpet?



3. A figure is made of a square and a semi-circle. The square has sides of 16 cm each. One side of the square is also the diameter of the semi-circle. What is the total area of the figure? Use 3.14 for π.

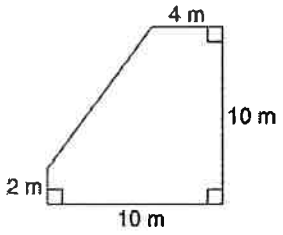
4. A figure is made of a rectangle and an isosceles right triangle. The rectangle has sides of 6 in. and 3 in. One of the short sides of the rectangle is also one of the legs of the right triangle. What is the total area of the figure?

Choose the letter of the correct answer.

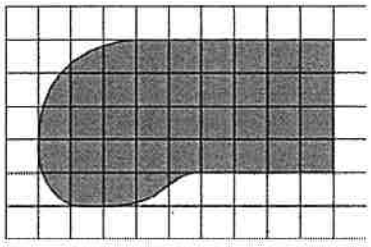
5. Norene builds the deck at the right. The area of the deck is 10 m^2 greater than was originally planned. What is the area of the deck?

   A 110 m^2 C 66 m^2

   B 76 m^2 D 56 m^2



6. The grid to the right shows a swimming pool. Each square represents 1 square meter. What is the best estimate of the area of the swimming pool?



   F 45 m^2 H 37 m^2

   G 41 m^2 J 32 m^2

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4 Introduction to Three-Dimensional Figures

Warm Up

Identify each two-dimensional figure described.

1. four sides that are all congruent

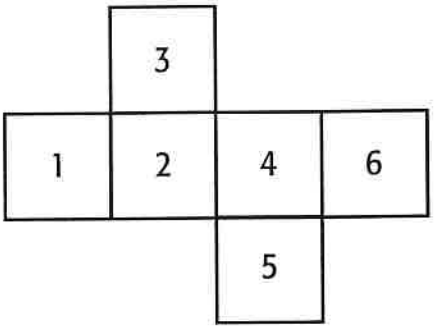
2. six sides

3. four sides with parallel opposite sides

4. four right angles and four congruent sides

Problem of the Day

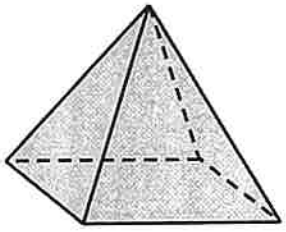
If the figure shown is folded into a cube so that 6 is on the top, what number would be on the bottom?



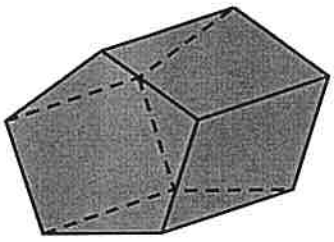
Lesson Quiz

Identify the bases and faces of each figure. Then name each figure.

1.

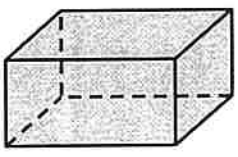


2.



Classify each figure as a polyhedron or not a polyhedron. Then name the figure.

3.



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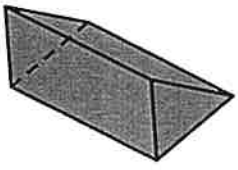

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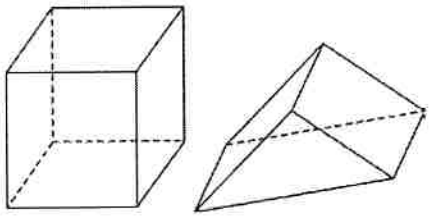
LESSON 4

Measurement and Geometry

Review for Mastery: Introduction to Three-Dimensional Figures

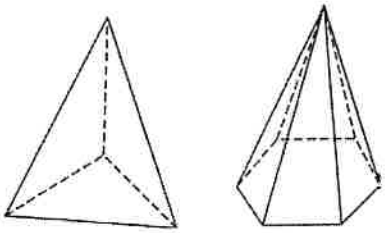
A **polyhedron** is a three-dimensional figure whose faces are polygons. There are two types of polyhedrons.

Prisms



A **prism** has 2 bases that are congruent and parallel polygons. The other faces are parallelograms or rectangles.

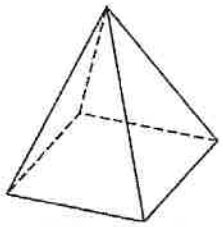
Pyramids



A **pyramid** has one base that is a polygon. Its faces are triangles that meet at one vertex.

Prisms and pyramids are named by their bases.

1. Look at the figure at the right.

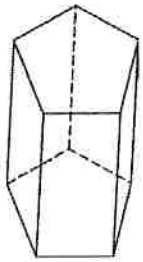


Its base is a

Its faces are

It is called a square pyramid.

2. Look at the figure at the right.



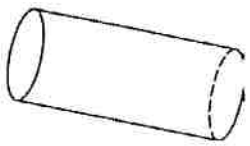
It has 2 congruent and parallel bases

that are

Its faces are

It is called a pentagonal prism.

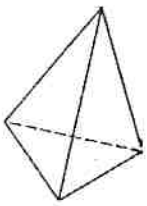
If a three-dimensional figure has a surface that is curved, it is not a polyhedron.



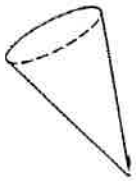
not a polyhedron

Is each figure a polyhedron?

3.



4.



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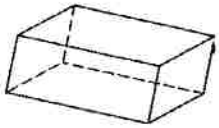

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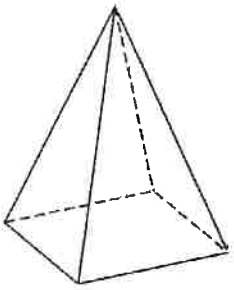
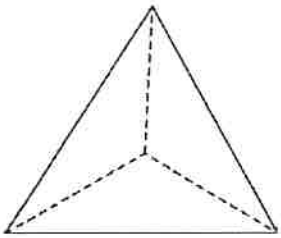
LESSON 4

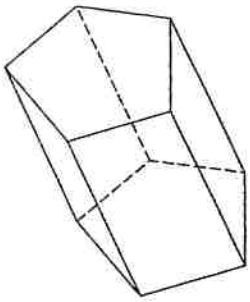
Measurement and Geometry

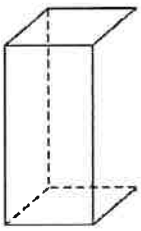
Practice B: Introduction to Three-Dimensional Figures

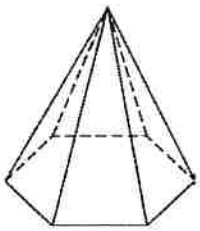
Identify the bases and faces of each figure. Then name the figure.

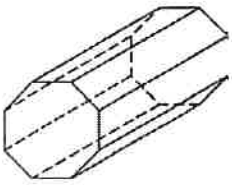
1. 

2. 

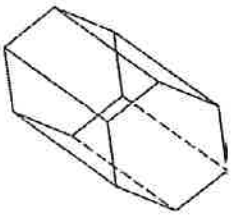
3. 

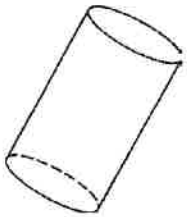
4. 

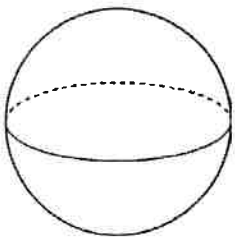
5. 

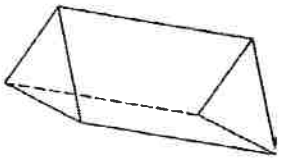
6. 

Classify each figure as a polyhedron or not a polyhedron. Then name the figure.

7. 

8. 

9. 

10. 

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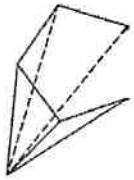
12. 

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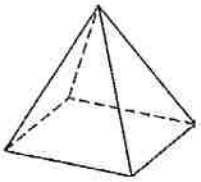
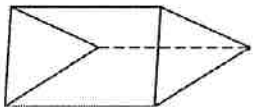
LESSON 4

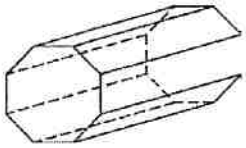
Measurement and Geometry

Practice C: Introduction to Three-Dimensional Figures

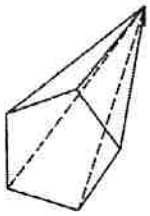
Identify the bases and faces of each figure. Then name the figure.

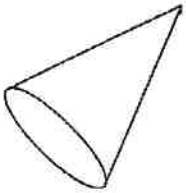
1. 

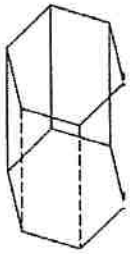
2. 

3. 

Classify each figure as a polyhedron or not a polyhedron. Then name the figure.

4. 

5. 

6. 

Identify the three-dimensional figure described.

7. three pairs of congruent rectangular sides _____

8. square base, four triangular faces _____

9. equilateral triangular base, three congruent equilateral triangular faces _____

10. two pentagonal bases, five parallelogram faces _____

11. two congruent circular bases _____

12. hexagonal base, six triangular faces _____

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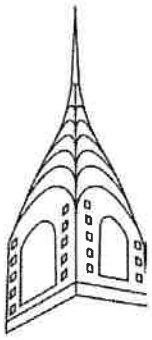
LESSON 4

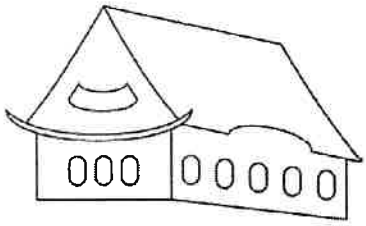
Measurement and Geometry

Problem Solving: Introduction to Three-Dimensional Figures

Write the correct answer.



1. The picture above shows the top of the Chrysler Building in New York City. It was completed in 1930. Does the top of the tower most resemble a prism or a pyramid? Explain.



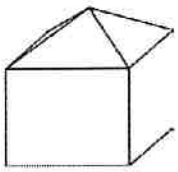
2. The picture above shows the rooftop of Himeji Castle, completed in 1614 in Donjon, Himeji City, Japan. Do the rooftops resemble pyramids or prisms? Explain.

3. An architect designed a structure for the top of building. The structure has a vertex, one circular base, and a curved surface. What three-dimensional figure is it?

4. On a farm, grain is stored in a silo. This is a very tall structure with a circular base and top and a curved surface. What three-dimensional figure does it resemble?

Choose the letter of the correct answer.

5. James put two blocks together to build the figure shown. Identify the two figures he used.



A two pyramids

B a pyramid and a prism

C a pyramid and a cone

D two prisms

6. Jaime constructs a figure that has one rectangular base and four triangular faces. What is the figure?

F a cone

G a triangular pyramid

H a rectangular pyramid

J a rectangular prism

7. The shape of a log is most like which figure?

A cylinder C prism

B pyramid D cone

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5 Volume of Prisms and Cylinders

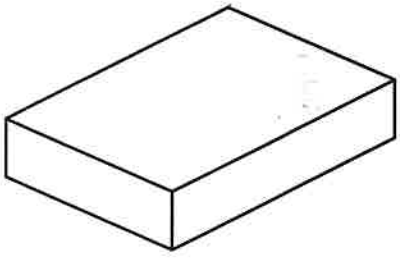
Warm Up

Identify the figure described.

1. two triangular bases and the other faces in the shape of parallelograms
2. one hexagonal base and the other faces in the shape of triangles
3. one circular base and a curved lateral surface that forms a vertex

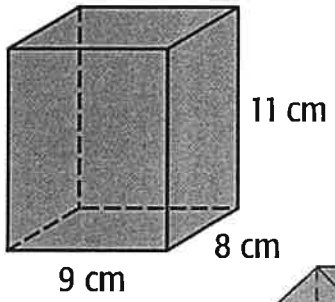
Problem of the Day

How can you cut the rectangular prism into 8 pieces of equal volume by making only 3 straight cuts?

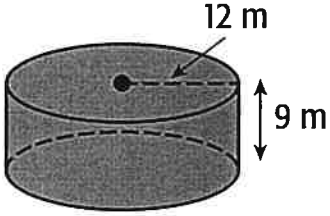


Lesson Quiz

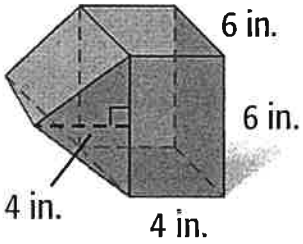
1. Find the volume of the prism.



2. A storage tank is shaped like a cylinder. Find its volume to the nearest tenth. Use 3.14 for π.



3. Find the volume of the composite figure.



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LESSON 5

Measurement and Geometry

Review for Mastery: Volume of Prisms and Cylinders

The **volume** of a three-dimensional figure is the amount of space it takes up. Volume is measured in cubic units.

Find the volume of the prism.

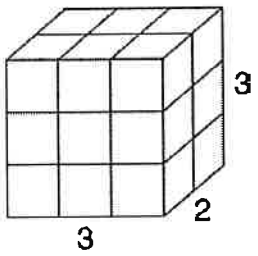
1. Think of the prism as layers of cubes.

   There are ____ cubes in the bottom layer.

2. There are ____ layers of cubes.

3. Multiply the number of cubes in the bottom layer by the number of layers.

   The volume of the prism is ____ cubic units.



The volume of a prism or a cylinder is the area of its base times its height.

volume = base • height, or $V = B \cdot h$

Find the volume of the prism.

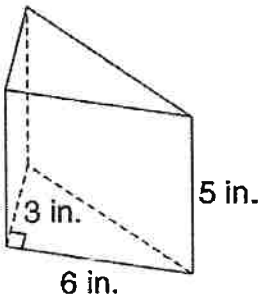
4. What is the shape of the base?

5. The area of the base is $B = \frac{1}{2}bh$

   $B = \frac{1}{2} \cdot __ \cdot __ = __ \text{ in}^2$

6. The height of the prism is ____ in.

7. $V = B \cdot h = __ \cdot __ = __ \text{ in}^3$



Find the volume of the cylinder to the nearest whole number.

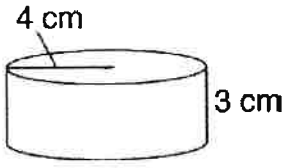
8. What is the shape of the base?

9. The area of the base is $A = \pi r^2$.

   $A = 3.14 \cdot __^2 = __ \text{ cm}^2$

10. The height of the cylinder is ____ cm.

11. $V = B \cdot h = __ \cdot __ = __ \text{ cm}^3$



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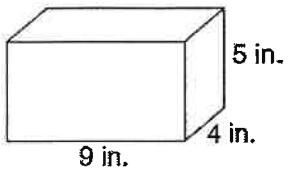
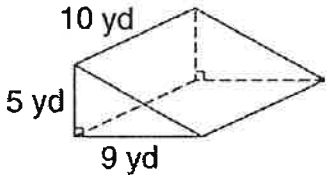
LESSON 5

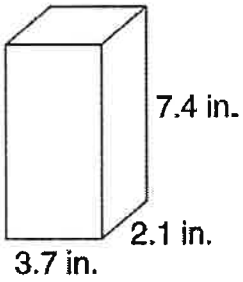
Measurement and Geometry

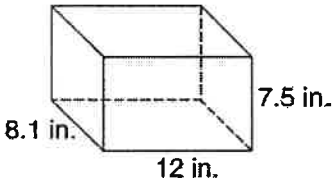
Practice B: Volume of Prisms and Cylinders

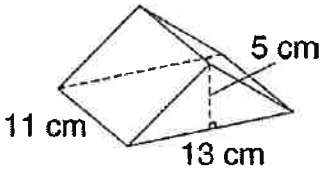
Find the volume of each figure.

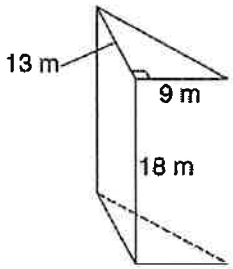
1. 

2. 

3. 

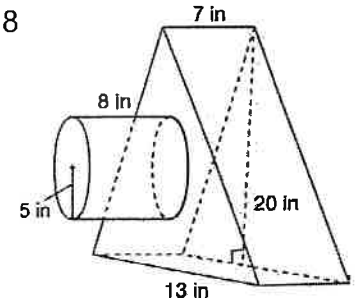
4. 

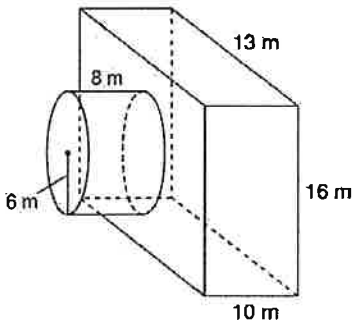
5. 

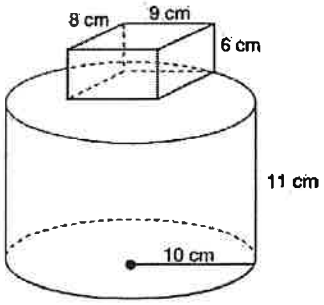
6. 

7. A travel mug is shaped like a cylinder. It is 9 centimeters wide and 15 centimeters tall. Find its volume to the nearest tenth. Use 3.14 for π.

Find the volume of the composite figure to the nearest tenth. Use 3.14 for π.

8. 

9. 

10. 

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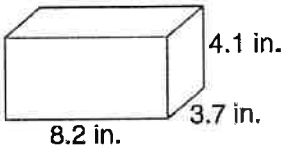
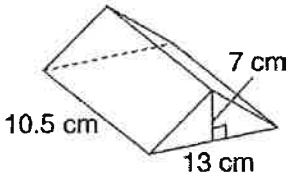
LESSON 5

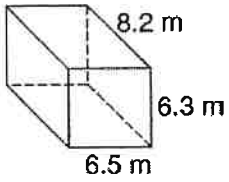
Measurement and Geometry

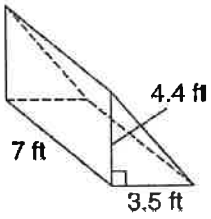
Practice C: Volume of Prisms and Cylinders

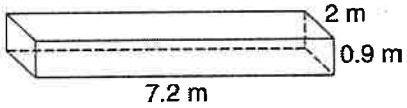
Find the volume of each figure to the nearest tenth.

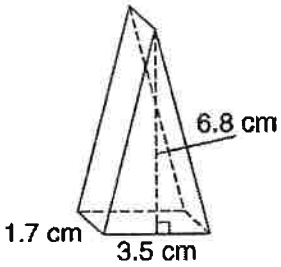
1. 

2. 

3. 

4. 

5. 

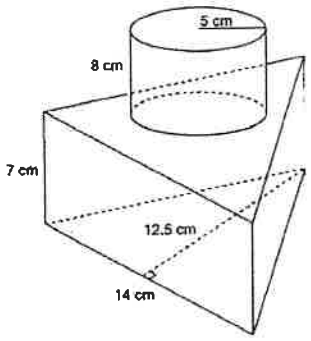
6. 

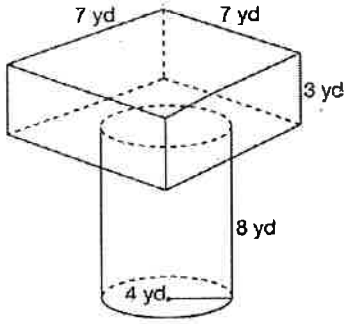
7. A vase is in the shape of a cylinder with a diameter of 5 inches and a height of 9 inches. What is the volume of the vase? Use 3.14 for π. _____

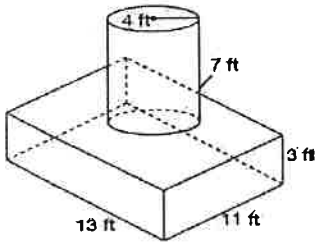
8. A glass is shaped like a cylinder. The glass has a volume of 602.88 centimeters and a radius of 4 centimeters. What is the height? _____

9. The base of a triangular prism is a right triangle with hypotenuse 13 inches long and one leg 12 inches long. The height of the prism is 8 inches. What is the volume of the prism? _____

Find the volume of the composite figure to the nearest tenth. Use 3.14 for π.

10. 

11. 

12. 

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LESSON 5

Measurement and Geometry

Problem Solving: Volume of Prisms and Cylinders

Write the correct answer.

1. The eight Corinthian columns at the National Building Museum in Washington, DC, are each 75 feet high and 8 feet in diameter. What is the volume of each column?

2. A cubic centimeter holds 1 milliliter of liquid. How many liters of water to the nearest tenth are required to fill a fish tank that is 24 centimeters high, 28 centimeters long, and 36 centimeters wide?

3. There are 231 cubic inches in a gallon. A large juice can has a diameter of 6 inches and a height of 10 inches. How many gallons of juice does the can hold? Round your answer to the nearest tenth.

4. A small gift box that holds a ring is shaped like a cube. The box measures 1.4 inches on each side. What is the volume of the gift box? Round your answer to the nearest tenth.

Choose the letter of the correct answer.

5. The Leaning Tower of Pisa in Italy appears to be cylindrical in shape. Its height is about 56 meters. If the volume of the tower is about 9,891 cubic meters, what is the diameter of the base?

   A about 3.5 m C about 15 m

   B about 7 m D about 20 m

6. A bricklayer is building a brick rectangular post to anchor a mailbox. The post is 3 feet tall, 2 feet deep, and 2 feet wide. Each brick is 3 inches by 6 inches by 3 inches. How many bricks does he need?

   F 12 bricks H 197 bricks

   G 54 bricks J 384 bricks

7. The average stone on the lowest level of the Great Pyramid in Egypt was a rectangular prism 5 feet long by 5 feet high by 6 feet deep and weighed 15 tons. What was the volume of the average stone?

   A 1,800 ft^3 C 150 ft^3

   B 1,800 ft^2 D 150 ft^2

8. A cylindrical barrel is 2.8 feet in diameter and 8 feet high. If a cubic foot holds about 7.5 gallons of liquid, how many gallons of water will this barrel hold?

   F about 1,477 gal

   G about 369 gal

   H about 150 gal

   J about 470 gal

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DAILY TRANSPARENCY

6 Surface Area of Prisms and Cylinders

Warm Up

Find the volume of each figure to the nearest tenth. Use 3.14 for π.

1. rectangular pyramid 7 ft by 8 ft by 10 ft tall

2. cone with radius 2 ft and height 3 ft

3. triangular pyramid with base 54 ft^2 and height 9 ft

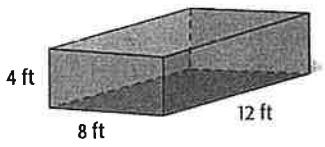
Problem of the Day

The volume of a 10-meter-tall square pyramid is 120 m^3. What is the length of each side of the base?

Lesson Quiz

Find the surface area of each figure to the nearest tenth.

1.



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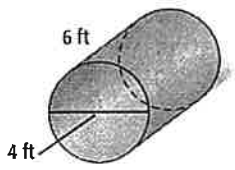
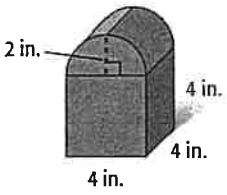


3. The jewelry box is a composite figure. What is its surface area to the nearest tenth? Use 3.14 for π.



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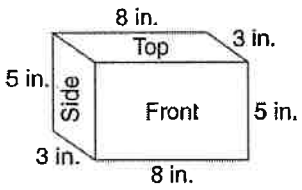
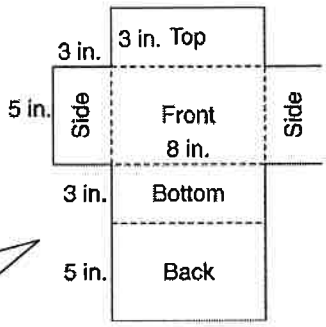
LESSON 6

Measurement and Geometry

Review for Mastery: Surface Area of Prisms and Cylinders

The surface area of a three-dimensional figure is the combined areas of the faces. You can find the surface area of a prism by drawing a **net** of the flattened figure.





Notice that the front and back faces are the same. The side faces are the same. The top and bottom faces are the same.

Find the surface area of the prism formed by the net above.

1. Find the area of the front face: $A =$ ____ • ____ = ____ in^2.

   The area of the front and back faces is 2 • ____ = ____ in^2.

2. Find the area of the side face: $A =$ ____ • ____ = ____ in^2.

   The area of the 2 side faces is 2 • ____ = ____ in^2.

3. Find the area of the top face: $A =$ ____ • ____ = ____ in^2.

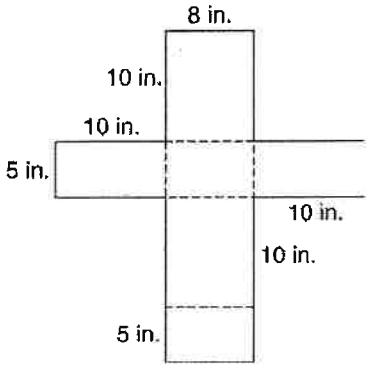
   The area of the top and bottom faces is 2 • ____ = ____ in^2.

4. Combine the areas of the faces: ____ + ____ + ____ = ____ in^2.

   The surface area of the prism is ____ in^2.

Find the surface area of the prism formed by each net.

5.



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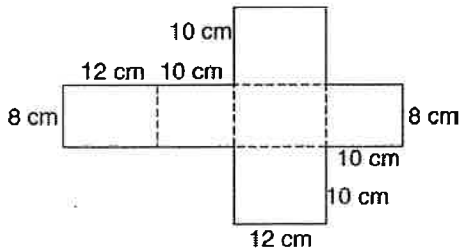

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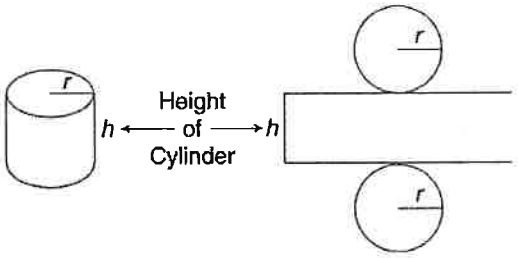
LESSON 6

Measurement and Geometry

Review for Mastery: Surface Area of Prisms and Cylinders (continued)

The surface area of a cylinder consists of a rectangle and 2 circular bases. The width of the rectangle is equal to the height of the cylinder. The length of the rectangle is equal to the circumference of the bases.



Find the surface area of the cylinder formed by the net. Round to the nearest whole number for the final answer.

7. Find the area of each circular base.

   $A = \pi r^2 = 3.14 \cdot$ _____ = _____ cm^2

8. Find the area of both circular bases.

   $A = 2 \cdot$ _____ = _____ cm^2

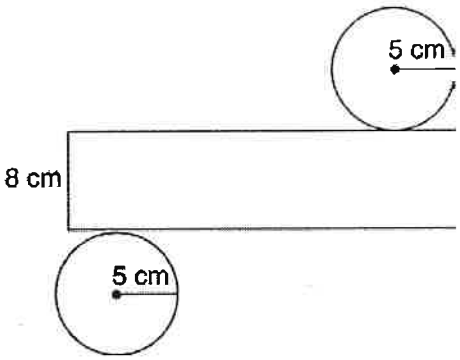
9. Find the area of the rectangle.

   $A = \ell \cdot w$

   $A = 2\pi r \cdot h$

   $A = 2 \cdot 3.14 \cdot$ _____ $\cdot$ _____

   $A =$ _____ cm^2

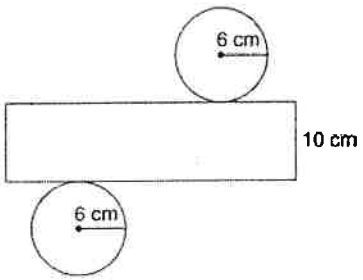


10. Combine the areas of the circular bases and the area of the rectangle to find the surface area, S, of the cylinder.

    $S =$ _____ + _____ = _____ cm^2

Find the surface area of the cylinder formed by each net. Round to the nearest whole number. Use 3.14 for π.

11.



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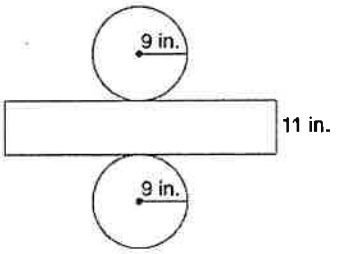

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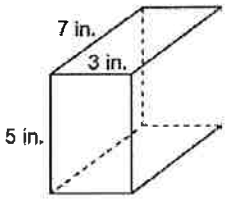
LESSON 6

Measurement and Geometry

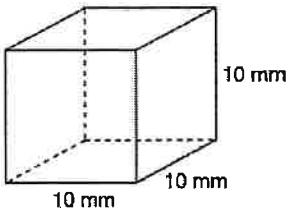
Practice B: Surface Area of Prisms and Cylinders

Find the surface area of each prism to the nearest tenth.

1.

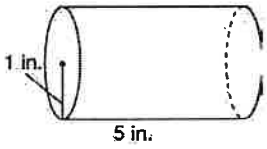


2.

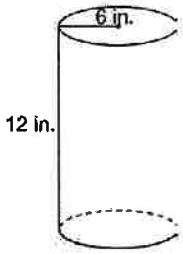


Find the surface area of each cylinder to the nearest tenth.

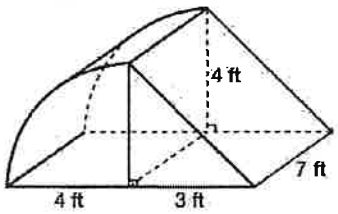
3.



4.



5. Trina is designing a tent with the dimensions shown. What is the surface area of the tent? Round to the nearest tenth.



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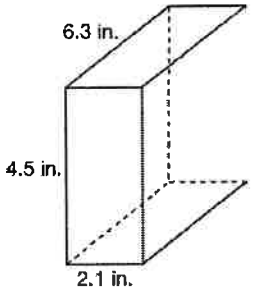
LESSON 6

Measurement and Geometry

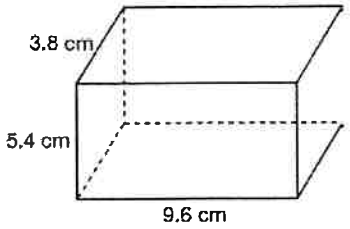
Practice C: Surface Area of Prisms and Cylinders

Find the surface area of each prism to the nearest tenth.

1.

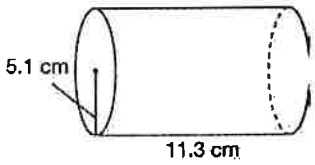


2.



Find the surface area of each cylinder to the nearest tenth.

3.



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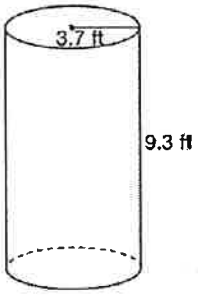
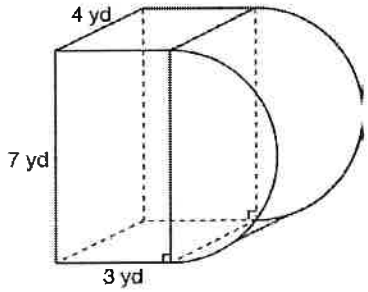


5. Amarisse wants to make a jewelry box with the dimensions shown. What is the surface area of the jewelry box? Round to the nearest tenth.



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LESSON 6

Measurement and Geometry

Problem Solving: Surface Area of Prisms and Cylinders

Write the correct answer.

1. A can of peas is 3 inches in diameter and 4.5 inches tall. What is the area of the label used around the can?

2. How much wrapping paper do you need to completely cover a rectangular box that is 20 inches by 18 inches by 2 inches?

3. Jan puts frosting on a circular cake. The cake has three layers, each with a diameter of 20 centimeters and a height of 5 centimeters. Jan puts frosting between the layers and on the outside, except for the bottom. What is the area that Jan frosts? Round to the nearest square centimeter.

4. A cardboard storage carton has a length of 3 feet, a width of 2 feet, and a volume of 12 ft^3. What is the minimum amount of cardboard needed to make the box?

Choose the letter of the correct answer.

5. A cylindrical building is 30 meters in diameter and 50 meters high. The outside of the building, excluding the roof, is completely covered in glass. To the nearest square foot, what is the total area of the glass?

   A 1,413 m^3 C 6,113 m^3

   B 4,710 m^3 D 9,420 m^3

6. Rebecca gives gifts to 12 employees. Each gift is in a box that is 12 inches by 10 inches by 3 inches. How much wrapping paper does Rebecca need to completely the cover the boxes?

   F 360 in^2 H 4,464 in^2

   G 1,720 in^2 J 14,400 in^2

7. A cylinder-shaped sculpture is 24 meters high with a diameter of 6.8 meters. An artist plans to spray-paint the entire surface with silver paint. If one can of spray paint covers 50 square meters, how many cans does the artist need to paint the sculpture?

   A 51 cans C 12 cans

   B 22 cans D 10 cans

8. A rectangular sofa cushion is 36 inches by 30 inches by 20 inches. How many cushions can be covered with 38,400 square inches of material?

   F 6 cushions H 39 cushions

   G 8 cushions J 10 cushions

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