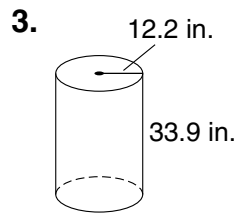
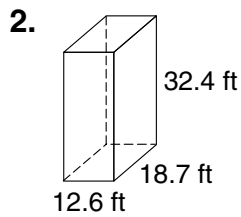
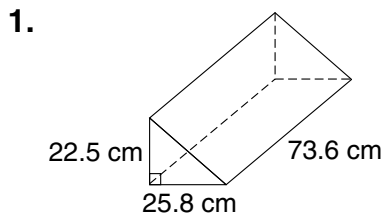


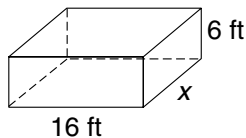
LESSON **Practice C**
6-6 **Volume of Prisms and Cylinders**

Find the volume to the nearest tenth of a unit.

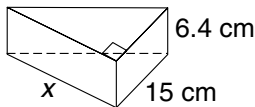


Find the missing measure to the nearest tenth of a unit.

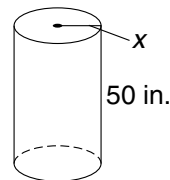
4. volume is 1152 ft^3



5. volume is 1132.8 cm^3



6. volume is $39,193.48 \text{ in}^3$



7. Atmo's Theater's large-sized popcorn container is a cylinder with a diameter of 9 in. and is 6 in. tall. The medium-sized container has a diameter of 6 in. and is 8 in. tall. Find the difference in the volumes.

8. The Blackmans have a new 10-ft by 20-ft rectangular swimming pool in their backyard. It has a uniform depth of 5 ft. What is the volume of water needed to fill the pool?

9. Donna decorated a three-tiered cake for her parent's anniversary party. The bottom tier had a 12-in. diameter, the middle tier, a 9-in. diameter, and the top tier, a 6-in. diameter. Each tier was 4 in. tall. What was the total volume of the cake to the nearest tenth of a unit?

10. A company produces 100,000 boxes of cereal with dimensions of 12 in. (height) by 8 in. by 1.5 in. The manufacturer is trying to cut production cost per box so the height of the box is decreased by one inch. Approximately how many more boxes of cereal can be produced in a month with the new dimensions using the same amount of cereal? Round the answer to the nearest integer.

LESSON Practice C
6-6 Volume of Prisms and Cylinders

Find the volume to the nearest tenth of a unit.

1. $21,362.4 \text{ cm}^3$
2. 7634.1 ft^3
3. $15,843.4 \text{ in}^3$

Find the missing measure to the nearest tenth of a unit.

4. volume is 1152 ft^3
 12 ft
5. volume is 1132.8 cm^3
 23.6 cm
6. volume is $39,193.48 \text{ in}^3$
 15.8 in.
7. Atmo's Theater's large-sized popcorn container is a cylinder with a diameter of 9 in. and is 6 in. tall. The medium-sized container has a diameter of 6 in. and is 8 in. tall. Find the difference in the volumes. 155.43 in^3
8. The Blackmans have a new 10-ft by 20-ft rectangular swimming pool in their backyard. It has a uniform depth of 5 ft. What is the volume of water needed to fill the pool? 1000 ft^3
9. Donna decorated a three-tiered cake for her parent's anniversary party. The bottom tier had a 12-in. diameter, the middle tier, a 9-in. diameter, and the top tier, a 6-in. diameter. Each tier was 4 in. tall. What was the total volume of the cake to the nearest tenth of a unit? 819.5 in^3
10. A company produces 100,000 boxes of cereal with dimensions of 12 in. (height) by 8 in. by 1.5 in. The manufacturer is trying to cut production cost per box so the height of the box is decreased by one inch. Approximately how many more boxes of cereal can be produced in a month with the new dimensions using the same amount of cereal? Round the answer to the nearest integer. 9091 boxes

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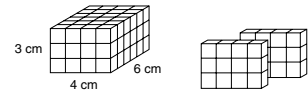
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LESSON Reteach
6-6 Volume of Prisms and Cylinders

Volume = number of cubic units inside a solid figure

To find the volume of this solid figure: Count the number of cubic centimeters in one "slice" of the figure.
 $4 \times 3 = 12$



Multiply by the number of "slices." $12 \times 6 = 72 \text{ cm}^3$

Complete to find the volume of each solid figure.

1. number in^3 in a slice = $4 \times 2 = 8$
 number of slices = 2
 volume = 16 in^3
2. number cm^3 in a slice = $3 \times 5 = 15$
 number of slices = 4
 volume = 60 cm^3
3. number mm^3 in a slice = $5 \times 6 = 30$
 number of slices = 4
 volume = 120 mm^3

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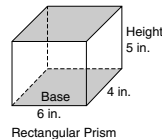
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LESSON Reteach
6-6 Volume of Prisms and Cylinders (continued)

Prism: solid figure named for the shape of its two congruent bases

Volume V of a prism = area of base $B \times$ height h
 $V = Bh$
 $V = (6 \times 4)5$
 $V = 24(5)$
 $V = 120 \text{ in}^3$



Rectangular Prism

Complete to find the volume of each prism.

4. rectangular prism
 base is a rectangle
 $V = Bh$
 $V = (8 \times 6) \times 4 = 192 \text{ cm}^3$
5. cube
 base is a square
 $V = Bh$
 $V = (3 \times 3) \times 3 = 27 \text{ mm}^3$
6. triangular prism
 base is a right Δ
 $V = \frac{1}{2} Bh$
 $V = \frac{1}{2} (3 \times 4) \times 6 = 36 \text{ ft}^3$

Cylinder: solid figure with a circular base
 Volume V of a cylinder = area of base $B \times$ height h
 $V = Bh$
 $V = (\pi \times 4^2)7 = (16\pi)7$
 $V = 112\pi$
 $V \approx 112(3.14) \approx 351.7 \text{ units}^3$



Complete to find the volume of the cylinder.

7. $V = Bh$
 $V = (\pi \times 5^2) \times 3$
 $V = 75\pi \approx 235.5 \text{ units}^3$

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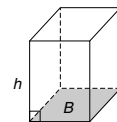
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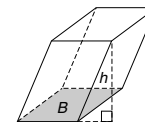
LESSON Challenge
6-6 Looking Askance

So far, you have considered prisms in which the outside edges are perpendicular to the plane of the base.

Now, you will consider prisms in which the outside edges are not perpendicular to the plane of the base.



Right Prism



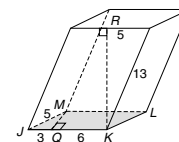
Oblique Prism

1. Explain why these two prisms have the same volume.

Areas of bases are equal; heights are equal.

A prism can have any polygon as its base. Consider an oblique prism with a base that is a parallelogram.

To find the volume of this prism, first look at parallelogram $JKLM$ which is the base of the prism.



2. How long is JK , the base of parallelogram $JKLM$?

$JK = 9 \text{ units}$

3. Find MQ , the height of parallelogram $JKLM$. Explain your method.

$MQ = 4 \text{ units; Pythagorean Theorem}$

4. What is the area of the base of the prism?

$B = 9 \times 4 = 36 \text{ units}^2$

5. Find KR , the height of the prism. Explain your method.

$KR = 12 \text{ units; Pythagorean Theorem}$

6. Find the volume of the prism.

$V = 36 \times 12 = 432 \text{ units}^3$

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