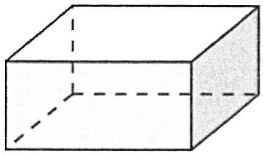
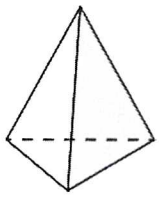
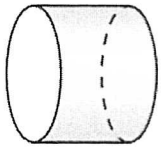
Name _____ 11. 4 Work

Use section 11.4 in the book to help you navigate through this work and the following puzzle. THEN complete the rest of the puzzles in this packet. **Turn in this packet when you are done.** Finally, clean up any test corrections / sticky note problem work! If you get everything done, then work on something for another class.

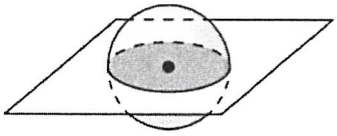
**In Exercises 1–3, tell whether the solid is a polyhedron. If it is, name the polyhedron.**

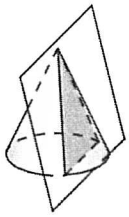
1. 

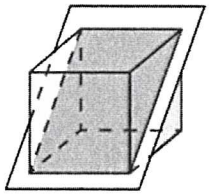
2. 

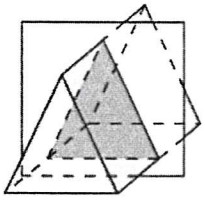
3. 

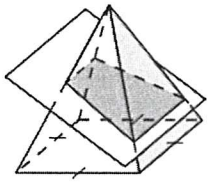
**In Exercises 4–9, describe the cross section formed by the intersection of the plane and the solid.**

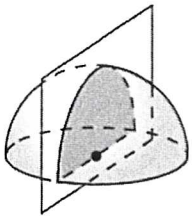
4. 

5. 

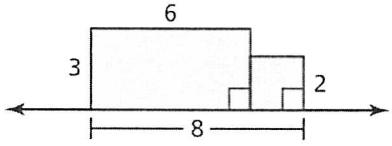
6. 

7. 

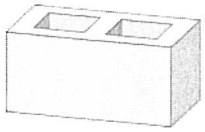
8. 

9. 

10. Sketch the composite solid produced by rotating the composite figure around the given axis. Then identify and describe the composite solid.



**11.** Is the block shown a polyhedron? Explain your reasoning.



**12a.** Sketch a cube. Is it possible for a cross section of a cube to be a square? Explain your reasoning.

**12b.** Sketch a cube. Is it possible for a cross section of a cube to be a rectangle? Explain your reasoning.

**12c.** Sketch a cube. Is it possible for a cross section of a cube to be a triangle? Explain your reasoning.

**12d.** Sketch a cube. Is it possible for a cross section of a cube to be _____ (something else)? Explain your reasoning.

Name _____ Date _____

# 11.4 Puzzle Time

## Why Was Everyone So Tired On April 1st?

| A | B | C | D | E | F |
|---|---|---|---|---|---|
| G | H | I | J | | |

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

**Complete the sentence.**

**A.** A(n) _____ is a solid that is bounded by polygons called faces.

**B.** The intersection of a plane and a solid is called a _____ section.

**C.** An edge of a polyhedron is a line segment formed by the _____ of two faces.

**D.** A(n) _____ of a polyhedron is a point where three or more edges meet.

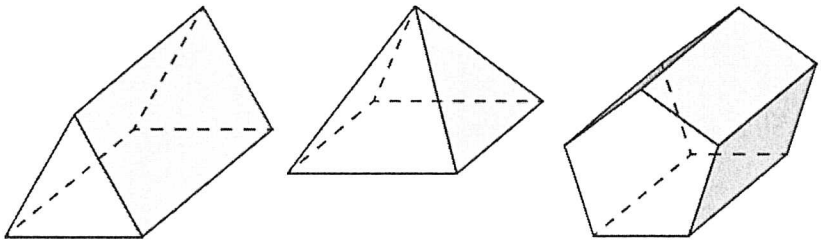
**E.** There are six Platonic solids. True or false?

**Identify what solid is produced by rotating the indicated figure around the given axis.**

**F.** a 4-by-4 square on a vertical axis

**G.** a 3-by-3 right triangle on a vertical axis

**Identify the polyhedron.**



| | |
|---|---|
| true<br>MOST | rectangular pyramid<br>THIRTY-ONE |
| cylinder<br>A | hat box<br>HOME |
| Egyptian triangle<br>BEFORE | prism<br>FOOLS |
| polyhedron<br>BECAUSE | intersection<br>HAD |
| merging<br>MIDNIGHT | plain<br>SLEEP |
| pentagonal prism<br>DAYS | cross<br>THEY |
| platonic hut<br>FOR | box<br>AND |
| vertex<br>JUST | false<br>FINISHED |
| tritex<br>OIL | cone<br>MARCH |
| triangular prism<br>OF | pyramid<br>THE |

Name _____ Date _____

# 11.3 Puzzle Time

## What Dog Keeps The Best Time?

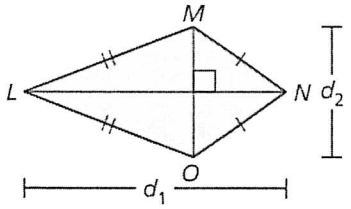
Circle the letter of each correct answer in the boxes below. The circled letters will spell out the answer to the riddle.

**Complete the sentence.**

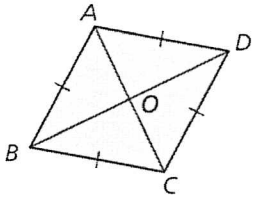
1. The center of a regular polygon is the center of its _____ circle.
2. The distance from the center to any side of a regular polygon is called the _____ of the polygon.
3. A(n) _____ angle of a regular polygon is an angle formed by two radii drawn to consecutive vertices of the polygon.
4. The area of a regular $n$-gon with side length $s$ is one half the product of the apothem and the _____.
5. The area of a rhombus or kite is half the product of the _____.

**Find the area. Round your answer to the nearest whole number.**

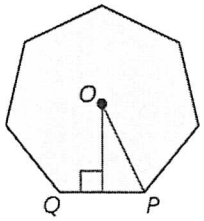
6. $d_1 = 14, d_2 = 7$



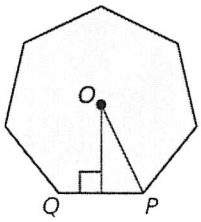

7. $AO = 8, BO = 11$




8. $OP = 11, OQ = 5$




9. $OP = 9, QP = 4$




| A | P | O | O | W | A | T | D | C |
|---|---|---|---|---|---|---|---|---|
| diagonals | right | outside | sides | central | perimeter | 343 | tangent | 49 |
| **L** | **H** | **E** | **D** | **C** | **O** | **H** | **G** | **O** |
| 88 | 226 | 256 | apothem | radius | 176 | 98 | circumscribed | 185 |

Name _____ Date _____

# 11.6 Puzzle Time

## What Do You Get When It Rains On Your Convertible?

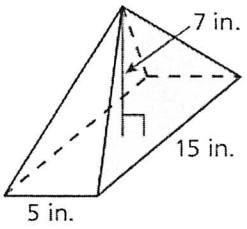
Circle the letter of each correct answer in the boxes below. The circled letters will spell out the answer to the riddle.

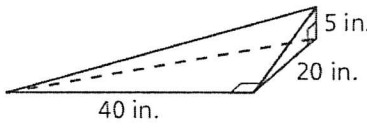
**Round your answer to nearest tenth.**

1. A pyramid with a square base has a volume of 60 cubic meters and a height of 2 meters. Find the side length in meters of the square base.
2. A pyramid with a rectangular base has a volume of 180 cubic inches and a height of 4 inches. The width of the rectangular base is 6 inches. Find the length in inches of the rectangular base.
3. The side lengths of the bases and length of the heights of two similar square pyramids, Pyramid A and Pyramid B, have a scale factor $k$ of $\frac{1}{2}$. The smaller pyramid (Pyramid A) has a height of 3 units and a volume of 100 cubic units. Find the volume in cubic units of Pyramid B.

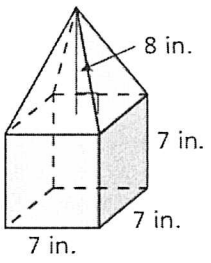
**Find the volume (in cubic inches) of the figure. Round your answer to nearest tenth.**

4.



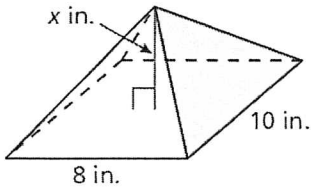




6.



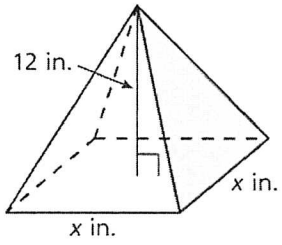

**Find the value of the variable. Round your answer to nearest tenth.**

7.




Volume = 120 in.$^3$

8.




Volume = 600 in.$^3$

| A | W | E | C | B | A | T | M |
|---|---|---|---|---|---|---|---|
| 22.5 | 489.3 | 30.5 | 800 | 130.7 | 473.7 | 15 | 24.4 |
| **S** | **R** | **P** | **A** | **O** | **M** | **O** | **L** |
| 4 | 4.5 | 175 | 5.5 | 9.5 | 200 | 12.2 | 666.7 |

Name _____ Date _____

# 11.5 Puzzle Time

## What Starts With A "P," Ends With An "E," And Has One Million Letters In It?

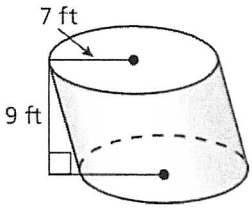
Write the letter of each answer in the box containing the exercise number.

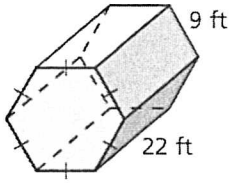
**Complete the sentence.**

1. The _____ of a solid is the number of cubic units contained in its interior.
2. _____ Principle states that if two solids have the same height and the same cross-sectional area at every level, then they have the same volume.
3. _____ is the amount of matter that an object has per unit volume.

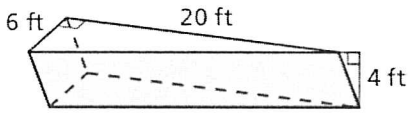
**Find the volume in square feet of the figure. Round your answer to the nearest hundredth.**

4.



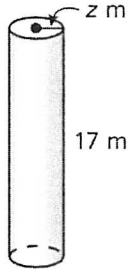




6.



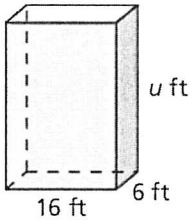

**Find the value of the variable.**

7.



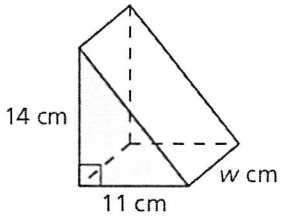

$V = 213.52 \text{ m}^3$

8.




$V = 2304 \text{ ft}^3$

9.




$V = 770 \text{ cm}^3$

10. An element has a volume of 20.2 cubic centimeters and a mass of 121.2 grams. Find the density (in grams per cubic centimeter).

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 6 | 8 | 3 | | 5 | 9 | 2 | 10 | 7 | 1 |
| | | | | | | | | | | |

**Answers**

**E.** volume
**I.** 6
**J.** area
**O.** 4629.77
**P.** Shepherd's
**Q.** 16
**S.** 24
**T.** 5
**F.** Cavalieri's
**C.** 2
**D.** mass
**E.** 1440
**F.** 15
**O.** 240
**P.** 1385.44
**T.** density
**U.** 2202.5
**F.** 10
**G.** 2315.82
**P.** 1384.74

Name _____ Date _____

# 11.7 Puzzle Time

## Why Do Traffic Lights Never Go Swimming?

| A | B | C | D | E | F |
|---|---|---|---|---|---|
| G | | | | | |

Complete each exercise. Use $\pi \approx 3.14$. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

| | |
|---|---|
| 418.7<br>CHANGE | 16.9<br>STOP |
| lateral<br>BECAUSE | 339.1<br>LONG |
| side<br>THE | 417.8<br>AND |
| 342.5<br>WET | 248.5<br>GREEN |
| 575.7<br>TO | 36.7<br>THEY |
| 612.7<br>WATER | 525.7<br>WAIT |
| 470.5<br>TOO | 376.8<br>TAKE |

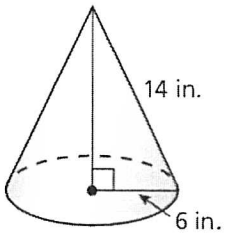
**Complete the sentence.**

**A.** The _____ surface of a cone consists of all segments that connect the vertex with points on the base edge.

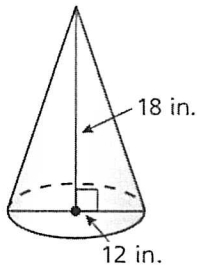
**B.** A right cone has a radius of 2 feet and a slant height of 9 feet. The volume is _____ cubic feet. Round your answer to the nearest tenth.

**Find the surface area (in square units) of the cone. Round your answer to the nearest tenth.**

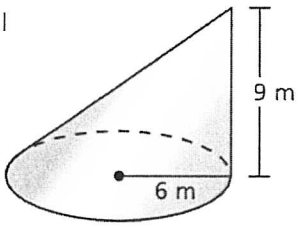
**C.**



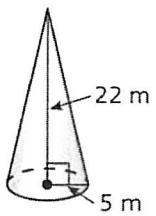

**D.**



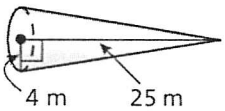

**I**




**F.**




**G.**



**3.** Name that common solid:

a) Side view and front view are triangles. Top view is a circle

b) Side view and front view are rectangles. Top view is a circle.

c) Side view and front view are triangles. Top view is a square.

d) Side view and front view are triangles. Top view is a rectangle.

e) Side view and front view are rectangles. Top view is a rectangle.

f) Side view, front view and top view are all congruent squares.

g) Side view, front view, and top view are all congruent, and all triangles.

**4.** If possible, sketch each of the following. If it is not possible, then give a reason why it cannot be sketched:

a) a quadrilateral that has exactly one right angle and no parallel sides.

b) a quadrilateral that has exactly two right angles and no parallel sides.

c) a quadrilateral that has exactly three right angles.

d) a quadrilateral that has exactly one right angle and exactly one pair of parallel sides.