Name _____ Date _____ Class _____

LESSON
10-6

Problem Solving
Three-Dimensional Figures

Write the correct answer.

1. Pamela folded an origami figure that has 5 faces, 8 edges, and 5 vertices. What kind of three-dimensional figure could Pamela have created?

   _____

   _____

2. Look at your classroom chalkboard. What kind of three-dimensional figure is the board eraser? What kind of three-dimensional figure is the chalk?

   _____

   _____

3. If you cut a cylinder in half between its two bases, what two three-dimensional figures are formed?

   _____

4. You have two hexagons. How many rectangles do you need to create a hexagonal prism?

   _____

5. All four of the faces of a paperweight are triangles. Is this enough information to classify this three-dimensional figure? Explain.

   _____

   _____

   _____

6. Paulo says that if you know the number of faces a pyramid has, you also know how many vertices it has. Do you agree? Explain.

   _____

   _____

   _____

Circle the letter of the correct answer.

7. How is a triangular prism different from a triangular pyramid?

   A The prism has 2 bases.

   B The pyramid has 2 bases.

   C All of the prism's faces are triangles.

   D The pyramid has 5 faces.

8. Which of these statements is not true about a cylinder?

   F It has 2 circular bases.

   G It has a curved surface.

   H It is a three-dimensional figure.

   J It is a polyhedron.

9. A museum needs to ship a sculpture that has a curved surface and one flat circular base. In what shape box should they mail the sculpture?

   A cone   C cylinder

   B cube   D triangular prism

10. A glass prism reflects white light as a multicolored band of light called a spectrum. The prism has 5 glass faces with 9 edges and 6 vertices. What kind of prism is it?

   F cube   H triangular pyramid

   G cone   J triangular prism

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Puzzles, Twisters & Teasers

1. 113.04
2. 19.63
3. 30.18
4. 132.67
5. 63.59
6. 94.99

B O T T O M

LESSON 10-6

Practice A

1. 6
2. 12
3. 8
4. rectangle
5. rectangular prism
6. no; a cylinder
7. yes; triangular prism
8. no; sphere
9. a rectangular prism
10. Answers will vary, but should identify and name 5 three-dimensional figures in the classroom. Possible answers include eraser: rectangular prism; chalk: cylinder; globe: sphere; mug: cylinder; desk: rectangular prism.

Practice B

1. 6 faces; 12 edges; 8 vertices
2. 4 faces; 6 edges; 4 vertices
3. 5 faces; 8 edges; 5 vertices
4. no; cone
5. yes; rectangular pyramid
6. no; sphere
7. She needs 6 square pieces of wood because a cube has 6 square faces.
8. It is a triangular pyramid, because a pyramid has only 1 base, and the shape of that base defines what kind of pyramid it is.

Practice C

1. yes; triangular prism; 5 faces; 9 edges; 6 vertices

2. no; sphere; no faces; no edges; no vertices
3. yes; hexagonal pyramid; 7 faces; 12 edges; 7 vertices
4. no; cylinder; 2 faces; no edges; no vertices
5. yes; pentagonal prism; 7 faces; 15 edges; 10 vertices
6. yes; octagonal pyramid; 9 faces; 16 edges; 9 vertices
7. the rectangular prism building Possible answer: because it has one more side to paint.

Review for Mastery

1. 6, 12, 8
2. 5, 8, 5
3. no, cone
4. yes, rectangular prism

Challenge

Triangular Prism	Rectangular Prism	Pentagonal Prism	Hexagonal Prism
3	4	5	6
5	6	7	8
6	8	10	12
9	12	15	18

faces = $n + 2$; vertices = $2n$; edges = $3n$

Triangular Pyramid	Rectangular Pyramid	Pentagonal Pyramid	Hexagonal Pyramid
3	4	5	6
4	5	6	7
4	5	6	7
6	8	10	12

faces = $n + 1$; vertices = $n + 1$; edges = $2n$

Problem Solving

1. a rectangular or square pyramid
2. eraser: rectangular prism; chalk: cylinder
3. 2 cylinders

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4. 6 rectangles

5. Yes, It is a triangular pyramid.

6. Yes, A pyramid always has the same number of faces and vertices.

7. A   8. J

9. A   10. J

Reading Strategies

1. faces

2. triangles

3. polygons

4. one; two

Puzzles, Twisters & Teasers

LESSON 10-7

Practice A

1. $V = 27 \text{ in}^3$ 2. $V = 24 \text{ ft}^3$

3. $V = 960 \text{ yd}^3$ 4. $V = 210 \text{ m}^3$

5. $V = 125 \text{ cm}^3$ 6. $V = 540 \text{ yd}^3$

7. $V = 60 \text{ cm}^3$ 8. $V = 27 \text{ in}^3$

9. $V = 80 \text{ m}^3$

10. the rectangular prism

11. 90 building blocks

Practice B

1. 857.375 in^3 2. $1,800 \text{ ft}^3$

2. $6,800 \text{ yd}^3$ 4. 231.556 m^3

5. 980 yd^3 6. $3,511.808 \text{ cm}^3$

7. 910 cm^3 8. 73.5 ft^3

9. $22,500 \text{ in}^3$ 10. 15 ft^3

11. 144 cubic inches of wood

Practice C

1. $274\dfrac{5}{8} \text{ in}^3$ 2. 0.48 m^3

3. $98\dfrac{9}{32} \text{ ft}^3$ 4. $1,137.4425 \text{ cm}^3$

5. $17\dfrac{119}{128} \text{ ft}^3$ 6. 0.02275 m^3

7. 2 m   8. 9.5 ft

9. 12 yd   10. 10 in.

11. $1,600 \text{ ft}^3$ 12. 42 ft^3

Review for Mastery

1. 16 square units   2. 30 square units

3. 16 square units   4. 15 square units

Challenge

$5,760 \text{ in}^3$; about 25; koi goldfish

$2,970 \text{ in}^3$; about 13; clown loach

$1,170 \text{ in}^3$; about 5; redtail shark

$1,600 \text{ in}^3$; about 7; angelfish

Problem Solving

1. about $586,491,840 \text{ ft}^3$ of concrete

2. about $1,110.375 \text{ ft}^3$ of black granite

3. 1.56 cm^3 of benitoite

4. 9.375 in^3 of bronze

5. D   6. H

7. B   8. J

Reading Strategies

1. 4 cubes   2. 3 cubes

3. 12 cubes   4. 4 cubes

5. 3 cubes   6. 12 cubes

7. 24 cubes   8. 24 cubic units

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