

NAME \_\_\_\_\_

Module 10 Coordinate Geometry and Spatial Visualization  
Lesson 4 Three-Dimensional Shapes

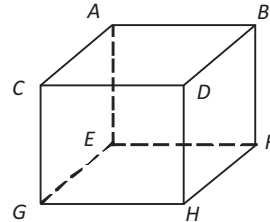
# Independent Practice

## 10.4

Use the cube for Problems 1 – 4.

1. Complete the list of vertices.

$A, B, C, D, E, F, G, H$



2. Complete the list of edges.

$\overline{AB}, \overline{AC}, \overline{BD}, \overline{CD}, \overline{AE}, \overline{BF}, \overline{CG}, \overline{DH}, \overline{EF}, \overline{EG}, \overline{FH}, \overline{GH}$

3. Complete the list of faces.

$ABDC, EFHG, AEGC, AEFB, BFHD, HGCD$

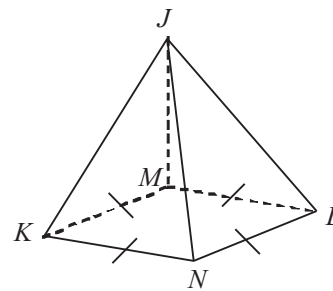
4. Classify the cube based on its number of sides. **Hexahedron**

Use the pyramid for Problems 5 – 8.

5. Classify the pyramid. **Square pyramid**

6. Complete the list of lateral faces.

$\triangle JMK, \triangle JML, \triangle JLN, \triangle JNK$



7. Name the vertex of the pyramid. **J**

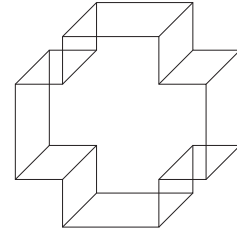
8. Is the pyramid convex or nonconvex? **Convex**

Use the polyhedron for Problems 9 – 11.

9. How many vertices are there? **24**

10. How many faces are there? **14**

11. Is the polyhedron convex or nonconvex? **Nonconvex**



Tell if each statement is *true* or *false*.

12. An octahedron has eight congruent faces. **True**

13. A triangular prism can have four faces. **False**

14. A triangular pyramid can have four faces. **True**

15. All radii of a sphere are congruent. **True**

16. A cylinder is a polyhedron. **False**

Tell if each object is shaped like a sphere. Write *yes* or *no*.

17. Egg **No**

18. Globe **Yes**

19. CD **No**

20. Plate **No**

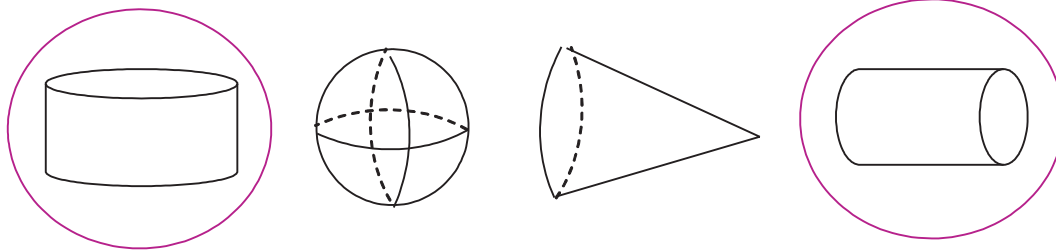
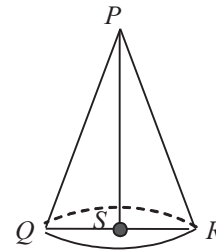
21. Tennis ball **Yes**

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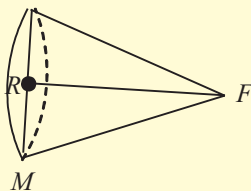
Use the cone for Problems 22-24.

- 22. Name the vertex of the cone.    ***P***
- 23. Name the altitude of the cone.     **$\overline{PS}$**
- 24. Name the radii of the cone.     **$\overline{SQ}$  and  $\overline{SR}$**
- 25. Circle the figures that are cylinders.



**Journal**

- 1. How are prisms and pyramids alike? How are they different?
- 2. What must be true about a solid for it to be a Platonic solid?
- 3. In the figure below, explain why  $\overline{FR}$  is the altitude of the cone rather than  $\overline{FM}$ .



# Cumulative Review

Name the quadrant in which each point is located.

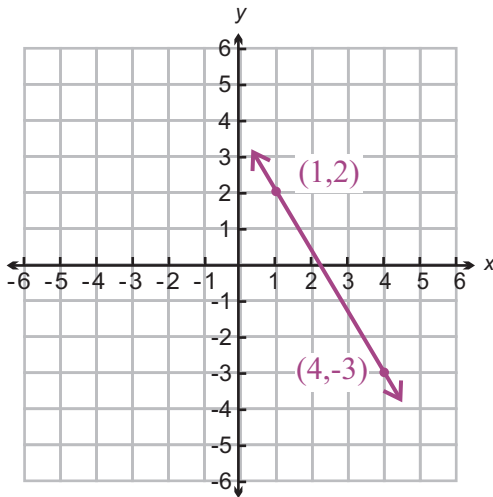
1.  $(-3, 8)$  **Quadrant II**
2.  $(1, -1)$  **Quadrant IV**

Name the axis on which each point is located.

3.  $(-6, 0)$  **x-axis**
4.  $(0, 8)$  **y-axis**

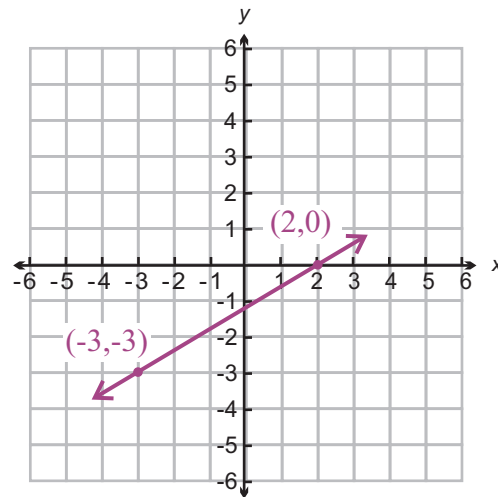
Graph the line that contains the given pair of points. Then, find the slope of the line.

5.  $(1, 2)$  and  $(4, -3)$



$$\text{Slope} = -\frac{5}{3}$$

6.  $(-3, -3)$  and  $(2, 0)$



$$\text{Slope} = \frac{3}{5}$$

7. What is the slope of a line that is perpendicular to a line whose slope is 4?  $-\frac{1}{4}$

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The distance from point  $X$  to point  $Y$  on a number line is 11 units.  
The coordinate of point  $X$  is  $-7$ .

8. What are the possible coordinates for point  $Y$ ?     **$-18$  and  $4$**
9. What are the possible coordinates for the midpoint of  $\overline{XY}$ ?     **$-12\frac{1}{2}$  and  $-1\frac{1}{2}$**

**Possible Journal Answers**

1. Prisms and pyramids are alike in that they are both polyhedra because all of their surfaces are polygons. They are different in that a prism has two bases, which are congruent and parallel, while a pyramid has only one base. A pyramid has one common vertex where all the lateral edges intersect while a prism does not. This is because the lateral edges of a prism are parallel.
2. For a solid to be a Platonic solid, the solid must first be a polyhedron, meaning that all of its faces are polygons. It must also be convex. There are no sides that “cave in” towards the center of the solid. In addition, the polygons that make up the faces must be congruent regular polygons. That is, all the faces are the same size and shape, and in each, all the sides and all the angles are congruent.
3.  $\overline{FR}$  is the altitude because it is a segment that connects the vertex of the cone to the base of the cone at a right angle.  $\overline{FM}$  is not the altitude because it does not make a right angle with the base.

