

# Skills Practice

Name \_\_\_\_\_ Date \_\_\_\_\_

## Visiting Washington, D.C. Transversals and Parallel Lines

### Vocabulary

Write the term from the box that best completes each statement.

plane	transversal	alternate exterior angles
coplanar	interior angles	same-side interior angles
parallel lines	exterior angles	same-side exterior angles
skew lines	alternate interior angles	corresponding angles

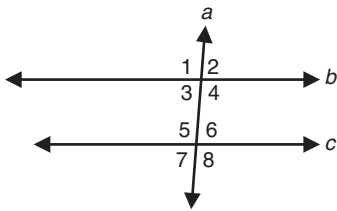
1. A(n) \_\_\_\_\_ is a line that intersects two or more other lines in the same plane at different points.
2. When two lines are cut by a transversal, \_\_\_\_\_ are formed, which are two angles that lie between the two lines and on opposite sides of the transversal.
3. When two lines are cut by a transversal, \_\_\_\_\_ are formed, which are two angles that lie outside the two lines on the same side of the transversal.
4. \_\_\_\_\_ are two lines in the same plane that do not intersect.
5. \_\_\_\_\_ of two similar or congruent figures are pairs of angles that are in the same relative position in both figures.
6. When two lines are cut by a transversal, \_\_\_\_\_ are formed, which are any angles that lie outside the two lines on either side of the transversal.
7. \_\_\_\_\_ are two lines that are not coplanar and do not intersect.
8. A(n) \_\_\_\_\_ is a flat surface that extends without end in two dimensions.
9. When two lines are cut by a transversal, \_\_\_\_\_ are formed, which are any angles that lie inside the two lines on either side of the transversal.
10. When two lines are cut by a transversal, \_\_\_\_\_ are formed, which are two angles that lie outside the two lines and on opposite sides of the transversal.
11. \_\_\_\_\_ lines are lines that lie in the same plane.
12. When two lines are cut by a transversal, \_\_\_\_\_ are formed, which are two angles that lie between the two lines on the same side of the transversal.

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## Working with Iron Parallel Lines and Proofs

### Vocabulary

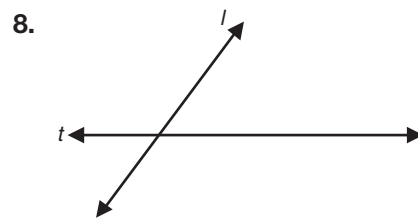
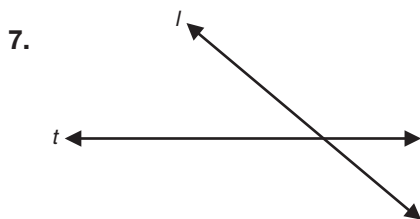
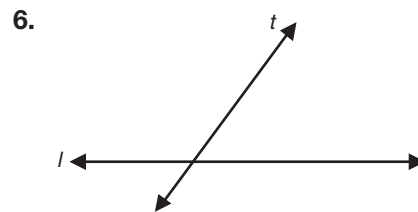
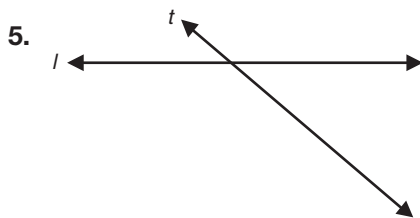
Classify each pair of angles as corresponding angles, same-side interior angles, same-side exterior angles, alternate interior angles, or alternate exterior angles.



- |                              |                              |
|------------------------------|------------------------------|
| 1. $\angle 1$ and $\angle 5$ | 2. $\angle 3$ and $\angle 6$ |
| 3. $\angle 4$ and $\angle 6$ | 4. $\angle 2$ and $\angle 7$ |

### Problem Set

Given a line  $l$  and transversal  $t$ , use a compass and straightedge to construct a line parallel to  $l$ .



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## Parking Lot Design Parallel and Perpendicular Lines in the Coordinate Plane

### Vocabulary

Write the term from the box that best completes each statement.

negative reciprocals	slope	point-slope form	vertical line
perpendicular lines	y-intercept	horizontal line	
slope-intercept form	reciprocals	parallel lines	

- Two numbers are \_\_\_\_\_ if their product is  $-1$ .
- The \_\_\_\_\_ of a nonvertical line is the ratio of the vertical change to the horizontal change.
- The \_\_\_\_\_ of a linear equation that passes through the point  $(x_1, y_1)$  and has slope  $m$  is  $y - y_1 = m(x - x_1)$ .
- Two lines in the same plane are \_\_\_\_\_ if they intersect at right angles.
- The \_\_\_\_\_ is the point at which a line intersects the  $y$ -axis.
- A(n) \_\_\_\_\_ has an equation of the form  $y = a$  where  $a$  is any real number.
- The \_\_\_\_\_ of a linear equation is  $y = mx + b$ , where  $m$  is the slope of the line and  $b$  is the  $y$ -intercept of the line.
- Two non-zero numbers are \_\_\_\_\_ if their product is  $1$ .
- A(n) \_\_\_\_\_ has an equation of the form  $x = b$  where  $b$  is any real number.
- Two lines in the same plane are \_\_\_\_\_ if they do not intersect.

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## Problem Set

Determine whether the lines are parallel, perpendicular, or neither. Explain your answer.

11. line  $l$ :  $y = -2x - 4$

line  $m$ :  $y = -2x + 8$

12. line  $p$ :  $y = 3x + 5$

line  $q$ :  $y = \frac{1}{3}x + 5$

13. line  $r$ :  $y = -5x + 12$

line  $s$ :  $y = \frac{1}{5}x - 6$

14. line  $t$ :  $y = 3x + 1$

line  $u$ :  $y = 3x - 7$

15. line  $l$ :  $y = 6x + 2$

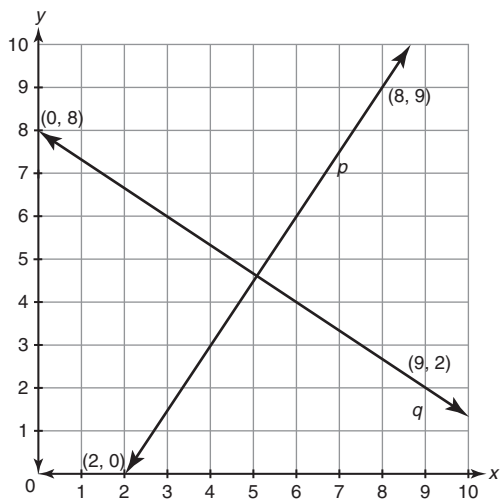
line  $m$ :  $y = -6x - 2$

16. line  $n$ :  $y = x - 8$

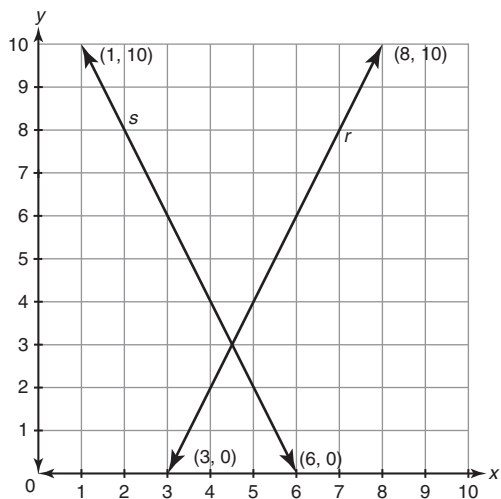
line  $o$ :  $y = -x + 1$

Determine whether the lines shown on each graph are parallel, perpendicular, or neither. Explain your answer.

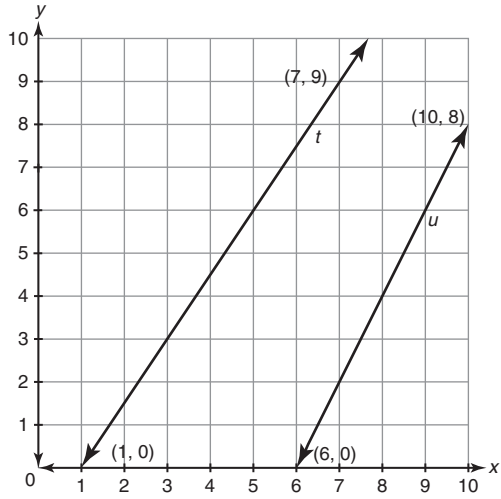
17.



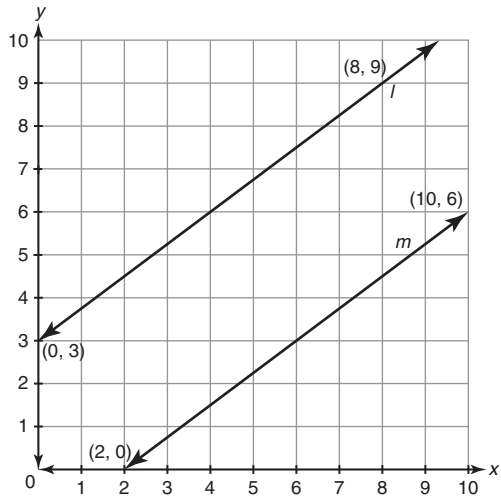
18.



19.



20.



**Determine an equation of the parallel line described. Write your answer in both point-slope form and slope-intercept form.**

**21.** What is the equation of a line parallel to  $y = \frac{4}{5}x + 2$  that passes through  $(1, 2)$ ?

**22.** What is the equation of a line parallel to  $y = -5x + 3$  that passes through  $(3, 1)$ ?

**23.** What is the equation of a line parallel to  $y = 7x - 8$  that passes through  $(5, -2)$ ?

**24.** What is the equation of a line parallel to  $y = -\frac{1}{2}x + 6$  that passes through  $(-4, 1)$ ?

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**Determine an equation of the perpendicular line described. Write your answer in both point-slope form and slope-intercept form.**

25. What is the equation of a line perpendicular to  $y = 2x - 6$  that passes through  $(5, 4)$ ?

26. What is the equation of a line perpendicular to  $y = -3x + 4$  that passes through  $(-1, 6)$ ?

27. What is the equation of a line perpendicular to  $y = -\frac{2}{5}x - 1$  that passes through  $(2, -8)$ ?

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28. What is the equation of a line perpendicular to  $y = \frac{3}{4}x + 12$  that passes through  $(12, 3)$ ?

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**Determine the equation of a vertical line that passes through the given point.**

29.  $(-2, 1)$

30.  $(3, 15)$

31.  $(9, -7)$

32.  $(-11, -8)$

**Determine the equation of a horizontal line that passes through the given point.**

33.  $(4, 7)$

34.  $(-6, 5)$

35.  $(-8, -3)$

36.  $(2, -9)$

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## Building a Roof Truss Angle and Line Segment Bisectors

### Vocabulary

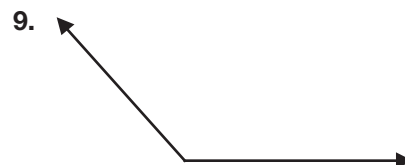
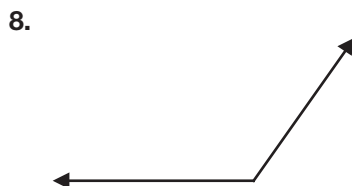
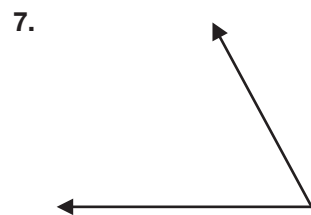
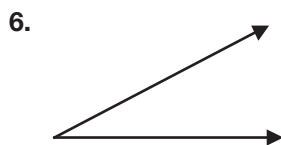
Define each term in your own words.

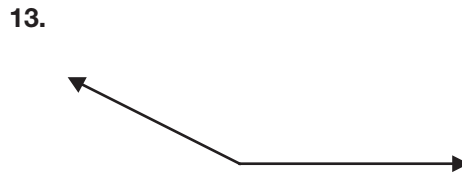
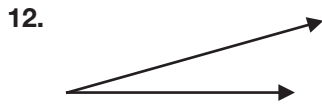
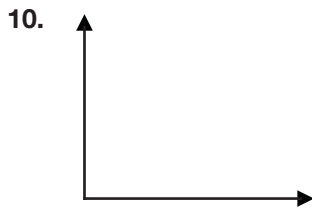
1. angle bisector
2. perpendicular bisector
3. bisect a line segment
4. bisect an angle
5. line segment bisector

5

### Problem Set

Use a compass and a straightedge to bisect each angle.





Given the measure of an angle, calculate the measure of each new angle formed when the angle is bisected.

14.  $m\angle A = 36^\circ$

15.  $m\angle B = 48^\circ$

16.  $m\angle C = 144^\circ$

17.  $m\angle D = 126^\circ$

18.  $m\angle E = 55^\circ$

19.  $m\angle F = 67^\circ$

20.  $m\angle G = 171^\circ$

21.  $m\angle H = 139^\circ$

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34.



35.



Given the length of a line segment, calculate the measure of each new segment formed when the line is bisected.

36.  $\overline{AB} = 16$  mm

37.  $\overline{CD} = 34$  inches

38.  $\overline{EF} = 328$  meters

39.  $\overline{GH} = 514$  feet

5

40.  $\overline{IJ} = 93$  cm

41.  $\overline{KL} = 47$  meters

42.  $\overline{IJ} = 127$  inches

43.  $\overline{KL} = 293$  yards