

Geometry - Chapter 3 Review

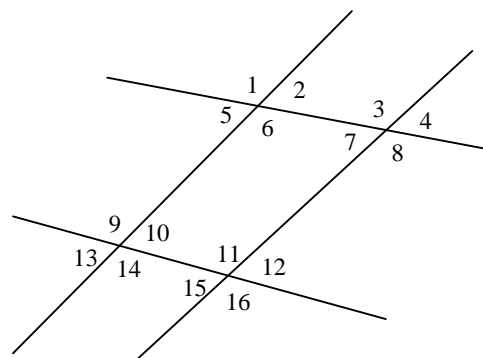
Identify each statement as true (T) or false (F). For many of the problems, it would help (but not necessary) to make a drawing or to do a counterexample.

- 1) If two angles are vertical angles, then they are congruent. _____
- 2) If two angles are a linear pair, then they are congruent. _____
- 3) If two parallel lines are cut by a transversal, then the corresponding angles, alternate interior angles, and alternate exterior angles are supplementary. _____
- 4) If two lines are cut by a transversal to form pairs of congruent corresponding angles, congruent alternate interior angles, and congruent exterior angles, then the lines are parallel. _____
- 5) The x -coordinate of the midpoint of a segment is the average of the x -coordinates of the segment's endpoints. _____
- 6) If (a,b) and (c,d) are the coordinates of two points on a line, then the slope m of the line is given $m = \frac{d-b}{c-a}$. _____
- 7) In a coordinate plane, two lines are perpendicular if and only if their slopes are reciprocals of each other. _____
- 8) On a plane, if two lines are perpendicular to the same line, then they must be parallel to each other. _____
- 9) In a coordinate plane, if s is the slope of the line and t is the y -intercept of the line, then the slope-intercept form of the equation of the line is $y = sx + t$. _____
- 10) In a coordinate plane, if k is the slope of the line and (c,d) is a point on the line, then the point-slope form of the equation of the line is $y - d = k(x - c)$. _____
- 11) If lines x , y , and z are in the same plane, and $x \parallel y$ and $y \parallel z$, then $x \parallel z$. _____
- 12) If lines x , y , and z are not all in the same plane, and $x \parallel y$ and $y \parallel z$, then $x \parallel z$. _____
- 13) If lines x , y , and z are in the same plane, and $x \perp y$ and $y \perp z$, then $x \parallel z$. _____
- 14) If lines x , y , and z are not in the same plane, and $x \perp y$ and $y \perp z$, then $x \parallel z$. _____
- 15) If two angles are both congruent and a linear pair, then each angle must be a right angle. _____

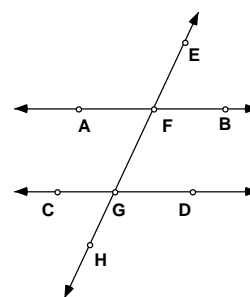
- 16) If point A is $(0, 0)$, point B is $(3, 2)$, point C is $(6, 9)$, and point D is $(10, 3)$, then $\overline{AB} \perp \overline{CD}$. _____

For #17-20, classify each pair of angles as corresponding angles, alternate interior angles, same-side interior angles, alternate exterior angles or none of these. You may use CA, AIA, SSI, & AEA.

- 17) $\angle 6$ and $\angle 3$ _____ 19) $\angle 11$ and $\angle 8$ _____
 18) $\angle 1$ and $\angle 14$ _____ 20) $\angle 10$ and $\angle 6$ _____



- If $\overline{AB} \parallel \overline{CD}$ and $m\angle AFE = 130^\circ$, find the following angles:
 21) $m\angle HGD =$ _____
 22) $m\angle EFB =$ _____
 23) $m\angle AFG + m\angle CGF =$ _____



Find the slope of the line going through each pair of points.

- 24) $A(7, 8)$ & $B(-6, 10)$ 25) $C(3, 8)$ & $D(3, 2)$

Determine the slope and y-intercept of the following line.

- 26) $-8y - 20x = 12$ 27) $-12y + 30x = 18$

- 28) Write the equations in both slope-intercept and point-slope forms for the line passing through the given point and having the given slope.
 $(-1, -3), m = 4$

- 29) Write the equations in both slope-intercept and point-slope forms for the line passing through the given points.
 $(-3, 1) (3, 2)$

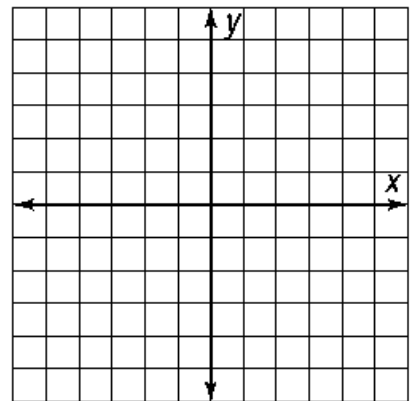
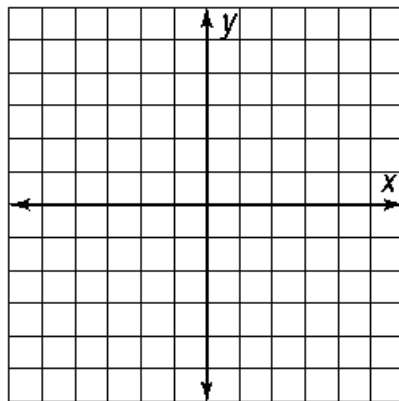
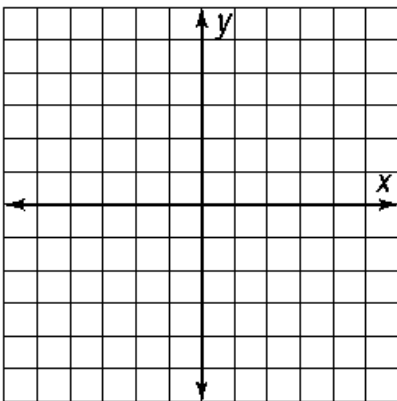
- 30) Find the midpoint of \overline{AB} if its endpoints are $A(3,4)$ and $B(7,12)$.

- 31) One endpoint of \overline{AB} is $A(-3, 10)$ and the midpoint is $M(1,4)$. Find the coordinates of its other endpoint.

32) $y = -4x - 1$

33) $-3x - 4y = 12$

34) $y - 5 = -4(x + 3)$



35) Solve using any method.

$$\frac{y}{2} = 2 - x$$

$$6x + 3y = 12$$

36) Determine if $\overline{AB} \perp \overline{CD}$ or not? Show why (not). 37) Find y if the line thru $(2,8)$ and $(7,y)$ has a slope of 2.

$$A(8, 3)$$

$$B(4, 11)$$

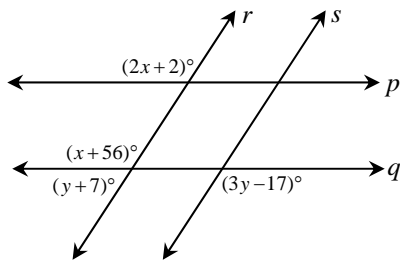
$$C(3, 3)$$

$$D(5, 7)$$

38) Write the equation of the line through point $B(1,2)$ perpendicular to the line: $-2x + 4y = 8$.

39) \overline{AB} two endpoints are $A(3,-1)$ and $B(1,5)$. Write the equation of the line that is the perpendicular bisector of \overline{AB} .

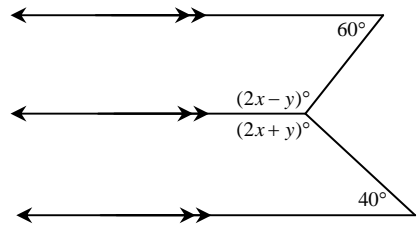
40) Use the diagram.



a) Find x so that $p \parallel q$.

b) Find y so that $r \parallel s$.

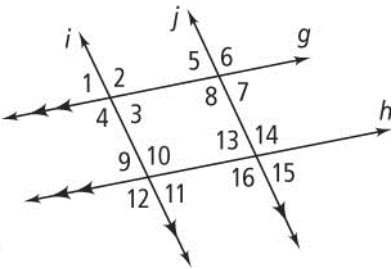
41) Find the value of x and y .



Complete the following proof.

42) Given: $g \parallel h$ and $i \parallel j$

Prove: $\angle 1$ is supplementary to $\angle 16$.



Statement

Reasons

1. $g \parallel h$ and $i \parallel j$

2. $\angle 1 \cong \angle 3$

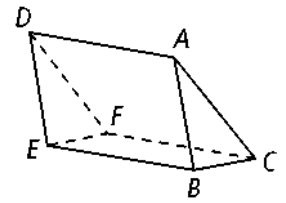
3. $\angle 3 \cong \angle 11$

4. $\angle 1 \cong \angle 11$

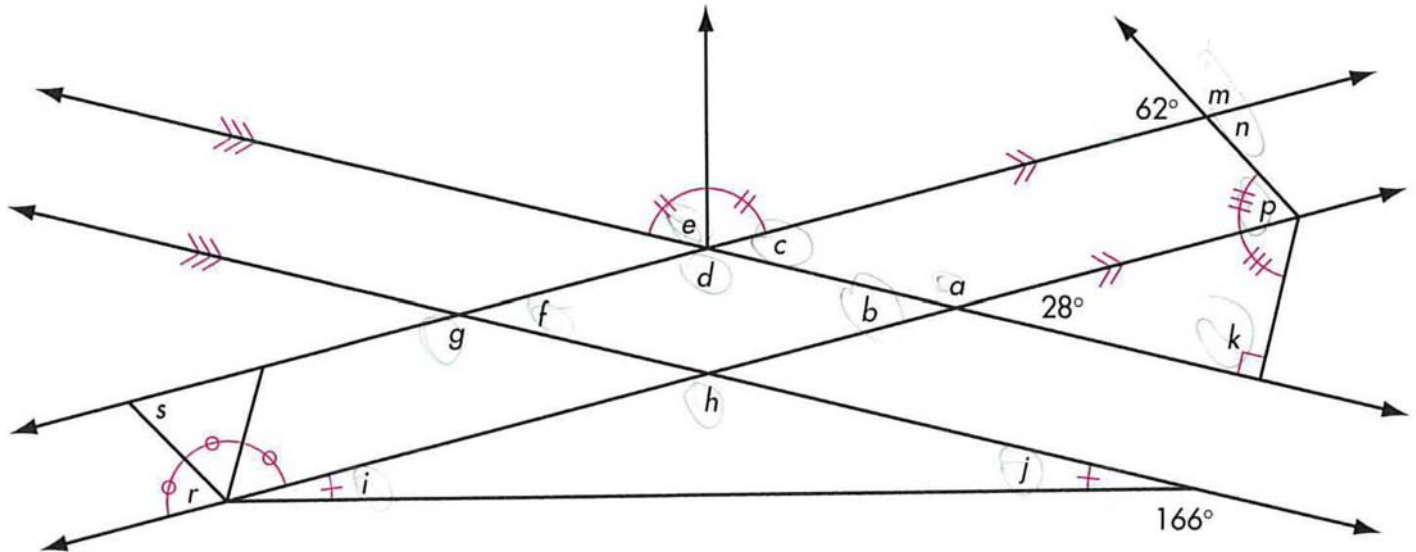
5. $\angle 11$ and $\angle 16$ are supplementary.

6. $\angle 1$ and $\angle 16$ are supplementary.

- 43) Using the figure to the right, a student says that according to Perpendicular Transversal Theorem that $\overleftrightarrow{AD} \parallel \overleftrightarrow{CF}$ and $\overleftrightarrow{AD} \perp \overleftrightarrow{AB}$, then $\overleftrightarrow{CF} \perp \overleftrightarrow{AB}$. Explain the student's error.



- 44) Calculate each lettered angle below.



$a = \underline{\hspace{1cm}}$ $d = \underline{\hspace{1cm}}$ $g = \underline{\hspace{1cm}}$ $j = \underline{\hspace{1cm}}$ $n = \underline{\hspace{1cm}}$ $s = \underline{\hspace{1cm}}$
 $b = \underline{\hspace{1cm}}$ $e = \underline{\hspace{1cm}}$ $h = \underline{\hspace{1cm}}$ $k = \underline{\hspace{1cm}}$ $p = \underline{\hspace{1cm}}$
 $c = \underline{\hspace{1cm}}$ $f = \underline{\hspace{1cm}}$ $i = \underline{\hspace{1cm}}$ $m = \underline{\hspace{1cm}}$ $r = \underline{\hspace{1cm}}$