Name_____ Date _____ Per_____

# <u>Geometry - Chapter 3 Review</u>

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 alternate   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 $m = \dfrac{d-b}{c-a}$.

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 $y - c = k(x - d)$.

11) If lines x, y, and z are in the same plane, and $x \parallel y$ and $y \parallel z$, then $x \perp z$. _____

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
    $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$. _____

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) ∠6 and ∠3 _____

18) ∠1 and ∠14 _____
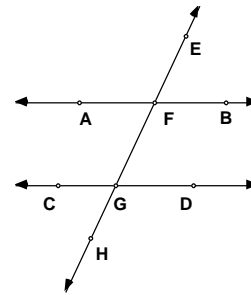
19) ∠11 and ∠8 _____

20) ∠10 and ∠6 _____
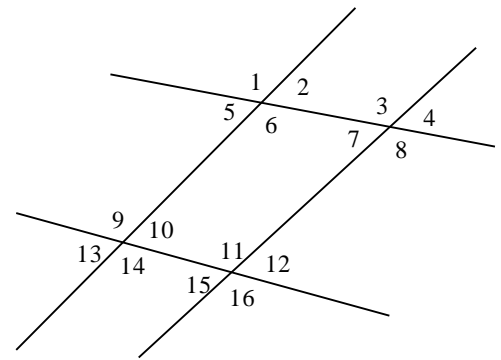
If $\overrightarrow{AB} \parallel \overrightarrow{CD}$ and $m\angle AFE = 130°$, find the following angles:

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.

$(-1, -3), \quad m = 4$

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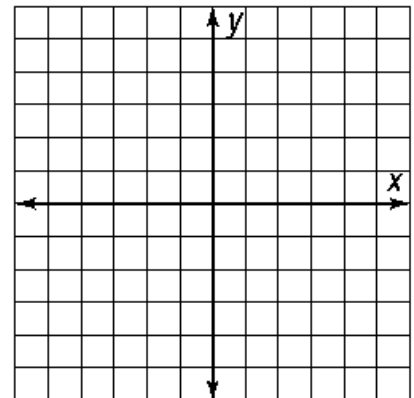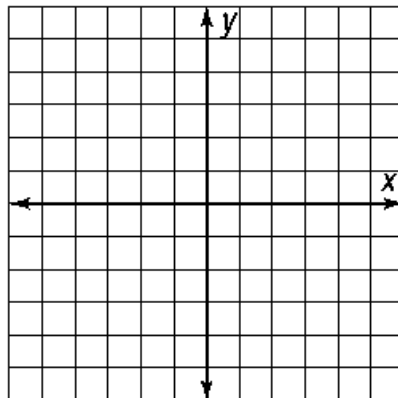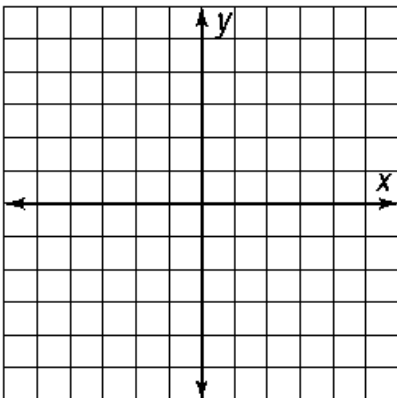
$(-3, 1) \; (3, 2)$

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).

$A(8, 3)$

$B(4, 11)$

$C(3, 3)$
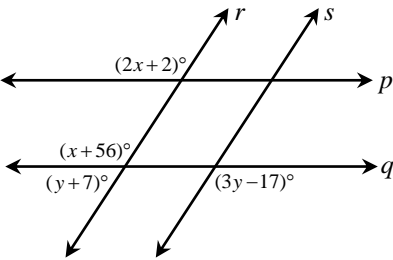
$D(5, 7)$

37) Find y if the line thru (2,8) and (7,y) has a slope of 2.

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

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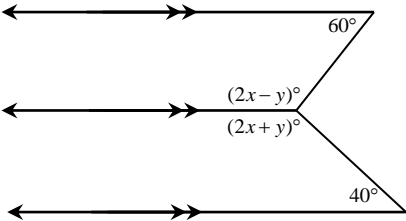
40) Use the diagram.

r   s

(2x+2)°

p

(x+56)°
(y+7)°   (3y−17)°

q

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

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

41) Find the value of x and y.

60°

(2x−y)°
(2x+y)°

40°

Complete the following proof.

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

Prove: $\angle 1$ is supplementary to $\angle 16$.
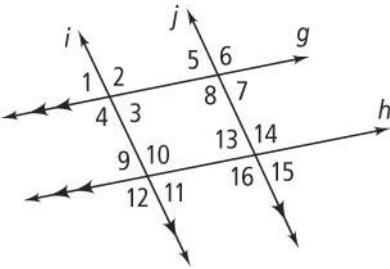
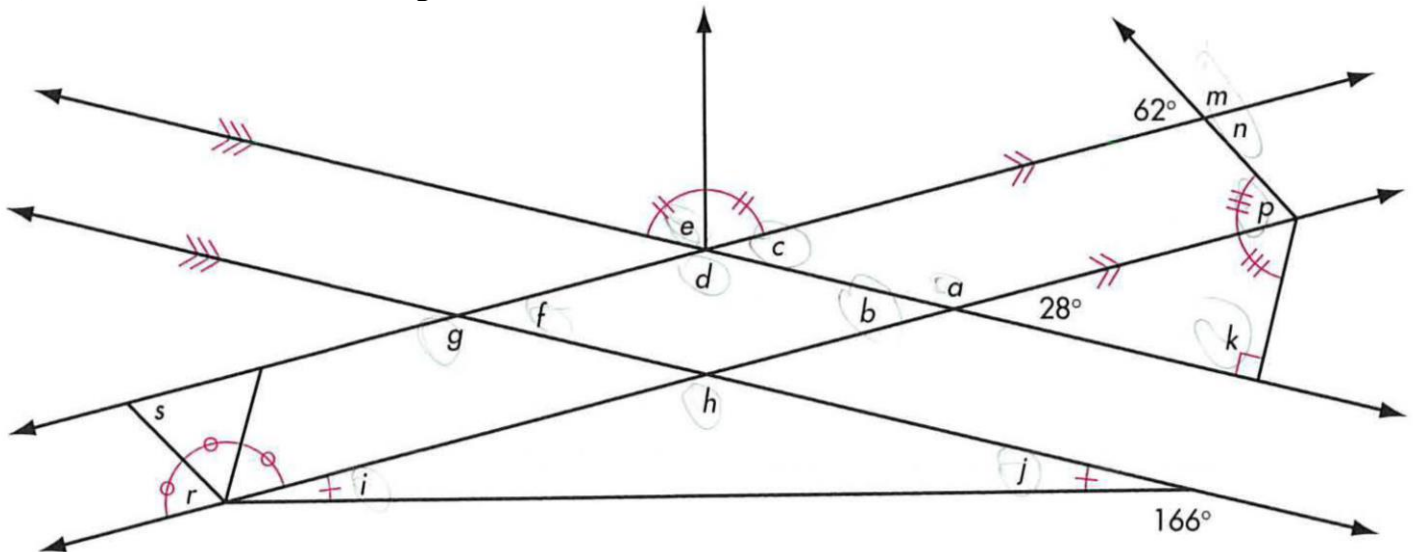| Statement	Reasons
1. $g\|h$ and $i\|j$	_____
2. $\angle 1 \cong \angle 3$	_____
3. $\angle 3 \cong \angle 11$	_____
4. $\angle 1 \cong \angle 11$	_____
5. $\angle 11$ and $\angle 16$ are supplementary.	_____
6. $\angle 1$ and $\angle 16$ are supplementary.	_____

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.
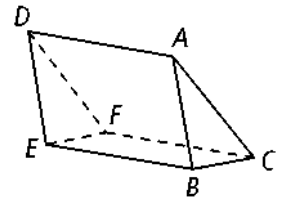
44) Calculate each lettered angle below.

a = _____   d = _____   g = _____   j = _____   n = _____   s = _____

b = _____   e = _____   h = _____   k = _____   p = _____

c = _____   f = _____   i = _____   m = _____   r = _____