Geometry Midterm Study Guide – Vocab **Name:**

Chapter 1

- Collinear points _____
- Betweeness _____
- Midpoint _____
- Perpendicular bisector _____
- Angle bisectors _____
- Vertical Angles _____
- Linear Pairs _____
- Complementary Angles _____
- Supplementary Angles _____

Chapter 2

- Inductive Reasoning _____
- Deductive Reasoning _____
- Counterexample _____
- Law of Syllogism _____
- Law of Detachment _____
- Conjunction _____
- Disjunction _____
- If-Then Statements _____
- Conditional _____
- Converse _____
- Inverse _____
- Contrapositive _____
- Biconditional Statements _____
- 2-5 Postulates

Chapter 3

- Transversals _____
- Alternate Interior Angles _____
- Alternate Exterior Angles _____
- Corresponding Angles _____
- Consecutive Interior Angles _____
-Perpendicular Transversal Theorem _____

Chapter 4

- Scalene _____
- Isosceles _____
- Equilateral _____
- Acute _____
- Right _____
- Obtuse _____
- Angle Sum Theorem _____
- Exterior Angle Theorem _____
- SSS, SAS, ~~AAS, ASA, HL, CPCTC~~

Chapter 5

- Points of Concurrency _____
  - Circumcenter _____
  - Incenter _____
  - Centroid _____
  - Orthocenter _____
- Lines that create the points
  - Perpendicular Bisectors _____
  - Angle Bisectors _____
  - Medians _____
  - Altitudes _____
- Exterior Angle Inequalities _____
- Theorem 5.9 and 5.10 – Opposite angles/sides _____

_____

Chapter 6

_____

_____

_____

_____

_____

_____

_____

_____

_____

Midterm Review Packet

Geometry Review 1.1 – 1.3 **Name:**_____

#1-7 Define the following terms using <u>COMPLETE SENTENCES</u>.

1. Collinear: _____

_____

2. Congruent: _____

_____

3. Midpoint: _____

_____

4. Coplanar: _____

_____

5. Line: _____

_____

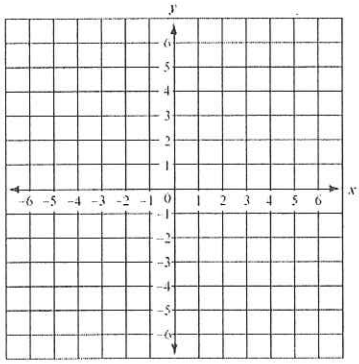
6. Plane: _____

_____

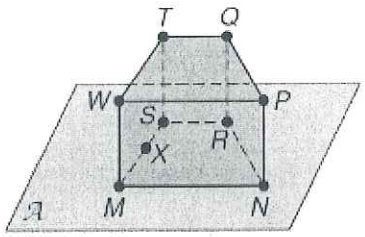
7. Point: _____

_____

8. Lines $\overleftrightarrow{GH}$ and $\overleftrightarrow{JK}$ intersect at point *L* for *G*(-1, -3), *H*(5, 0), *J*(-2, 4), and *K*(2, -4). Point *M* is coplanar with the points, but not collinear with $\overleftrightarrow{GH}$ or $\overleftrightarrow{JK}$. Graph $\overleftrightarrow{GH}$ and $\overleftrightarrow{JK}$, and points *L* and *M*.



Refer to the figure at the right for #9-12.



9. How many planes are shown in the figure?

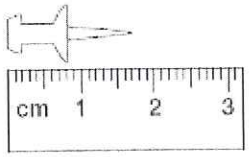
10. Name three collinear points.

11. Name four points that are coplanar.

12. Name one plane in this picture.

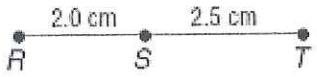
13. Name a line that intersects $\overline{WM}$.

14. Find the length of the pushpin.

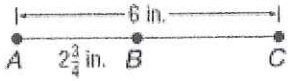


For #15 and 16 find the length of each segment given.

15. $\overline{RT}$

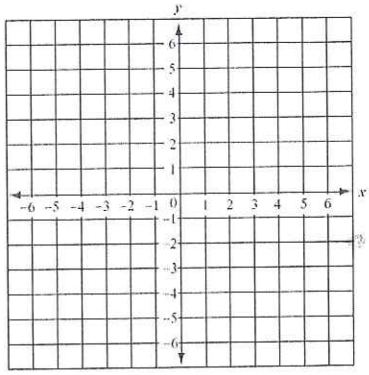


16. $\overline{BC}$



17. Point *S* is between points *R* and *T*. If $RS = 2x$, $ST = 5x + 4$, and $RT = 32$, find the length of *x* and the length of *ST*.

18. Use the Pythagorean Theorem to find the distance between (2, 3) and (4, 4).



19. Use the Distance Formula to find the distance between (-2, 2) and (5, 2).

20. Find the midpoint of $\overline{NQ}$ using the points N(2, 0) and P(5, 2).

For # 21 and #22 Find the coordinates of the missing endpoint given that P is the midpoint of $\overline{NQ}$.

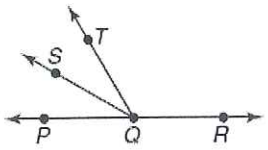
21. *N*(5, 4), *P*(6, 3)

22. *Q*(3, 9), *P*(-1, 5)

1-4/1-5 Angle Measures & Relationships

Name:_____

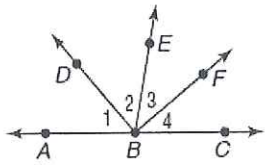
$\overrightarrow{QS}$ bisects $\angle PQT$, and $\overrightarrow{QP}$ and $\overrightarrow{QR}$ are opposite rays.



1. If $m\angle PQT = 60$ and $m\angle PQS = 4x + 14$, find the value of x.

2. If $m\angle PQS = 3x + 13$ and $m\angle SQT = 6x - 2$, find $m\angle PQT$.

$\overrightarrow{BA}$ and $\overrightarrow{BC}$ are opposite rays, $\overrightarrow{BF}$ bisects $\angle CBE$, and $\overrightarrow{BD}$ bisects $\angle ABE$.



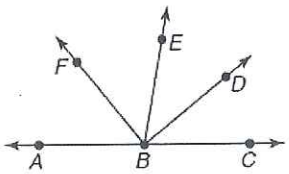
3. If $m\angle EBF = 6x + 4$ and $m\angle CBF = 7x - 2$, find $m\angle EBC$.

4. If $m\angle 1 = 4x + 10$ and $m\angle 2 = 5x$, find $m\angle 2$.

5. If $m\angle 2 = 6y + 2$ and $m\angle 1 = 8y - 14$, find $m\angle ABE$.

6. Is $\angle DBF$ a right angle? Explain.

ALGEBRA In the figure, $\overrightarrow{BA}$ and $\overrightarrow{BC}$ are opposite rays, $\overrightarrow{BD}$ bisects $\angle EBC$, and $\overrightarrow{BF}$ bisects $\angle ABE$.



7. If $m\angle EBD = 4x + 16$ and $m\angle DBC = 6x + 4$, find $m\angle EBD$.

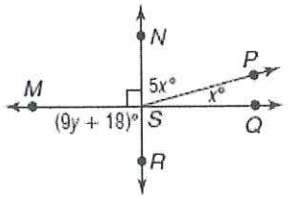
8. If $m\angle ABF = 7x - 8$ and $m\angle EBF = 5x + 10$, find $m\angle EBF$.

9. Find the measures of an angle and its complement if one angle measures 18 degrees more than the other.

10. The measure of the supplement of an angle is 36 less than the measure of the angle. Find the measures of the angles.

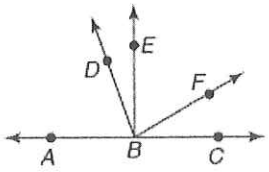
11. Find x and y so that $\overline{NR} \perp \overline{MQ}$.

12. Find $m\angle MSN$.

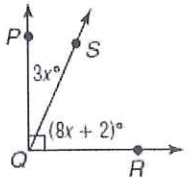


13. $m\angle EBF = 3x + 10$, $m\angle DBE = x$, and $\overline{BD} \perp \overline{BF}$. Find x.

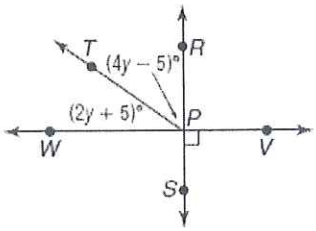
14. If $m\angle EBF = 7y - 3$ and $m\angle FBC = 3y + 3$, find y so that $\overline{EB} \perp \overline{BC}$.



15. Find x, $m\angle PQS$, and $m\angle SQR$.



16. Find y, $m\angle RPT$, and $m\angle TPW$.

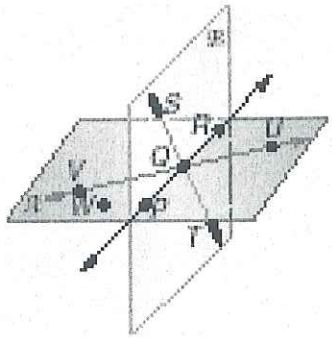


Best Wishes to _____

Geometry Practice Test Chapter 1

For questions 1 to 3, use the picture to the right.

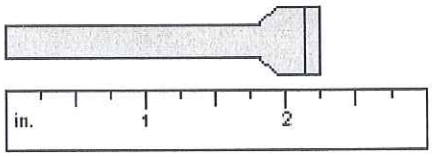
1. Name three points that are collinear.



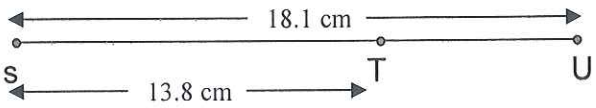
2. What is the intersection of plane B and plane A?

3. Name three points that are coplanar but NOT collinear.

4. What is the length of the object at the right?



5. Find the length of $\overline{TU}$ at the right.



6. Find x if *F* is between *G* and *H*, *GF* is 2x + 5, *FH* is 3x, and *GH* is 60. (Draw a picture first)

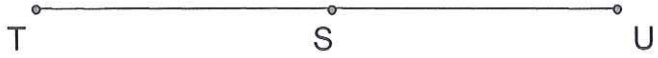
7. Using your answer from #6, how long is *GF* and how long is *FH*?

GF = _____ *FH* = _____

8. Find the distance between P(-2, 10) and Q(-4, 3) using the distance formula.

9. Find the coordinates of the midpoint of $\overline{LM}$ if $L(11, -2)$ and $M(-9, 13)$.

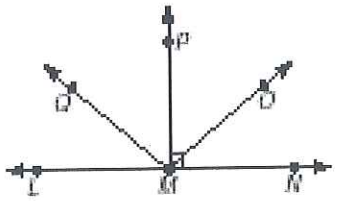
10. Find the coordinates of the endpoint U given endpoint $T(8, 4)$ and midpoint $S(10, 3)$.



Use the figure to the right to answer questions 11 – 15.

11. Is $\angle PMN$ acute, right, or obtuse?

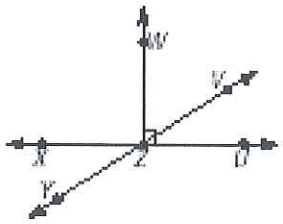
12. Is $\angle NMQ$ acute, right, or obtuse?



13. If $\overrightarrow{MO}$ bisects $\angle PMN$, then what two angles are congruent?

14. Name a pair of complementary angles.

Use the following figure for questions 15 – 19.



15. Name a pair of supplementary angles.

16. Name a pair of vertical angles.

17. Find $m\angle VZU$ if $\angle XZV$ and $\angle VZU$ are supplementary and $m\angle XZV$ is five times $m\angle VZU$.

18. If $m\angle XZW = 12x + 6$, find x so that $\overline{XZ} \perp \overline{WZ}$.

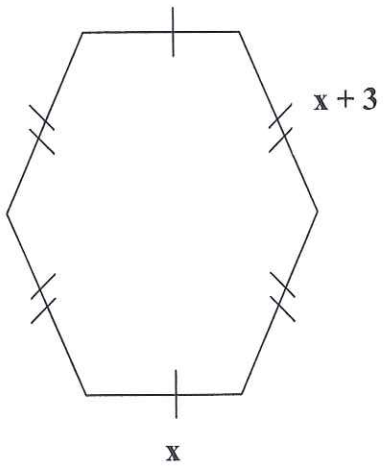
19. If $m\angle XZV = 3x - 28$ and $m\angle VZU = 8x - 12$, find x and $m\angle XZV$.

20. If $\angle PQR$ and $\angle RQS$ form a linear pair, find the $m\angle PQR$ if $m\angle RQS = 72°$. (Draw a picture first)

Use the figure at the right to answer questions 21 – 22.

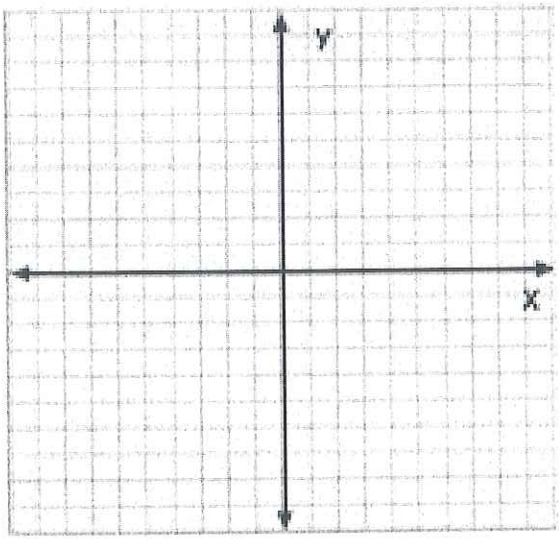
21. Which of the following describes this figure?

    a. Hexagon, concave, irregular
    b. Hexagon, convex, regular
    c. Hexagon, convex, irregular
    d. Pentagon, convex, irregular



22. What is x for a perimeter of 102 feet?

23. Determine the perimeter of quadrilateral ABCD with vertices A(-3, 2), B(1, 2), C(1, -4), and D(-3, -4).



24. Use a protractor to draw a 150-degree angle.

25. Use a protractor to draw a 35-degree angle.

2.1 & 2.2 Review

Make a conjecture about the next number in the sequence.

1. 1, 10, 100, 1000

2. $1, \frac{6}{5}, \frac{7}{5}, \frac{8}{5}$

Make a conjecture based on the given information. Draw a figure to illustrate your conjecture.

3. A(-1, -1), B(2, 2), C(4, 4)

4. $\angle ABC$ and $\angle DBE$ are vertical angles.

5. $\angle 1$ and $\angle 2$ form a right angle.

6. $\angle E$ and $\angle F$ are right angles.

Determine whether each conjecture is true or false. Give a counterexample for any false conjecture.

7. **Given:** $\angle ABC$ and $\angle DEF$ are supplementary.
   Conjecture: $\angle ABC$ and $\angle DEF$ form a linear pair

8. **Given:** $\overline{DE} \perp \overline{EF}$
   Conjecture: $\angle DEF$ is a right angle.

Write a compound statement for each conjunction and disjunction. Then find its truth value.

p: 10 + 8 = 18 q: September has 31 days r: A rectangle has four sides

9. p and q

10. q or r

Construct a truth table for each compound statement.

11. $q \wedge \sim r$

12. $p \wedge (\sim p \vee q)$

Quiz 2.4 – 2.6 Review

Name_____
Date_____Hour_____

State the property that justifies each statement.

1. If $3(x + 2) = 6$, then $3x + 6 = 6$.
2. If $10x = 20$, then $x = 2$.
3. If $AB + 20 = 45$, then $AB = 25$.
4. If $3 = CD$ and $CD = XY$, then $3 = XY$.

Write a two-column proof.

5. If $5 = 2 - \frac{1}{2}x$, then $x = -6$

6. If $2x + 6 = 3 + \frac{5}{3}x$, then $x = -9$

Determine whether the following statements are ALWAYS, SOMETIMES, or NEVER true. State the postulate that can be used to determine this.

7. The intersection of two lines can be a line.
8. If plane T contains $\overleftrightarrow{EF}$ and $\overleftrightarrow{EF}$ contains point G, then plane T contains point G.
9. For $\overleftrightarrow{XY}$, if X lies in plane Q and Y lies in plane R, then plane Q intersects plane R.
10. If points N, M, and O lie in plane T, then they are collinear.
11. $\overleftrightarrow{GH}$ contains three noncollinear points.
12. If three planes have a point in common, then they have a whole line in common.
13. There is exactly one plane that contains noncollinear points P, Q, and R.
14. There are at least two lines through M and N.

Determine whether statement (3) follows from statements (1) and (2) by the Law of Detachment or the Law of Syllogism. If it does, state which law was used. If it does not follow, write *invalid.*

15. (1) If it snows outside, you will wear your winter coat.
    (2) It is snowing outside.
    (3) You will wear your winter coat.

16. (1) If a rectangle has four congruent sides, then it is a square.
    (2) A square has diagonals that are perpendicular.
    (3) A rectangle has diagonals that are perpendicular.

17. (1) If you like pizza with everything, then you'll like Cardo's Pizza.
    (2) If you like Cardo's Pizza, then you are a pizza connoisseur.
    (3) If you like pizza with everything, then you are a pizza connoisseur.

Write a two-column proof.

18. **Given:** T is the midpoint of $\overline{SU}$
    U is the midpoint of $\overline{TV}$
    Prove: $\overline{ST} \cong \overline{UV}$

19. **Given:** N is the midpoint of $\overline{MO}$
    Prove: $\overline{MN} \cong \overline{NO}$

Geometry Chapter 2 Practice Test Name: _____

1) Make a conjecture about the next term in this sequence: 5, -10, 20, -40…

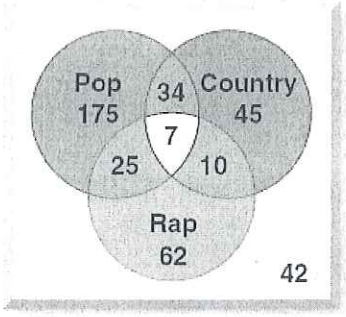
2) Make a conjecture given that AB = BC.

3) Make a conjecture given that $\overrightarrow{XY}$ bisects $\angle WXZ$.

4) Identify the hypothesis and conclusion in the following statement, **then write in if-then form**.

Hard working people deserve a great vacation.

5) The Venn diagram shows what kind of music that students listen to. How many students listen to pop or rap music?



Choose the property that justifies the following statements.

6) If 3 + x = 6, then x = 3

7) If m∠A = m∠A

8) If 3(x + 2) = 12, then 3x + 6 =12.

9) If m∠X ≅ m∠Y and m∠Y ≅ m∠Z, then m∠X ≅ m∠Z

10) **Given**: A, B, and C are three points
Conjecture: A, B, and C are collinear.
Sketch a counterexample in the space provided.

11) **Given:** $\angle 1$ and $\angle 2$ are complementary.
Conjecture: $\angle 1$ and $\angle 2$ form a right angle.
Sketch a counterexample in the space provided.

12) Use the **Law of Detachment** to write a valid conclusion for the given information.
a. If it is an equilateral triangle, then all sides are equal.
b. Triangle ABC is an equilateral triangle.

c. _____

13) Use the **Law of Syllogism** to write a valid conclusion for the given information.
a. If it is a scalene triangle, then all side lengths of the triangle are unequal.
b. If all side lengths of a triangle are unequal, then all angle measures are different.

c. _____

14) Determine whether statement (3) follows from statements (1) and (2) by the Law of Detachment or the Law of Syllogism. If it does, state which law was used. If it does not, write *invalid*.

(1) Perpendicular lines intersect.
(2) Lines m and n are perpendicular.
(3) Lines m and n intersect.

15) Complete the table below:

	STATEMENTS	TRUTH VALUE
Conditional	**If the cell phone works, then the batteries are charged.**	
Inverse		
Converse		
Contrapositive		

16) Complete the following two-column algebraic proofs.

Given: $\frac{w-4}{6} = 3$

Prove: w = 22

Given: 2(x – 2) = 4x + 10

Prove: x = -7

Determine whether the following are **ALWAYS, SOMETIMES, or NEVER** true. Make sure to state the postulate that you use for #17-22. Drawing pictures may also help you decide.

17) Three noncollinear points determine a plane. _____

18) The intersection of three planes is one line. _____

19) Three points lie on the same line. _____

20) Between points A and B there are two lines. _____

21) Three lines intersect at one point. _____

22) If plane T contains points E and F, then plane T also contains $\overleftrightarrow{EF}$. _____

23) Vertical angles are adjacent. _____

24) Complementary angles add up to 90°_____.

25) Supplementary angles form linear pair. _____

26) Use the following statements to write a compound statement for each conjunction or disjunction. Then find its truth value.

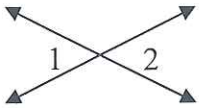
p: -3 > 2 q: 3x = 12 when x = 4 r: An isosceles triangle has two equal sides

a. p and q **b.** p or q **c.** $p \vee (q \wedge r)$

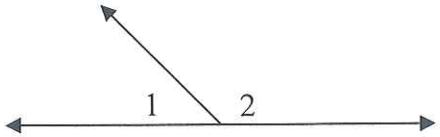
27) Complete the following truth table:

p	q			$p \vee (\sim q \wedge p)$

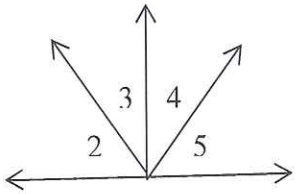
28) $m\angle 1 = x + 24$ and $m\angle 2 = 3x - 10$



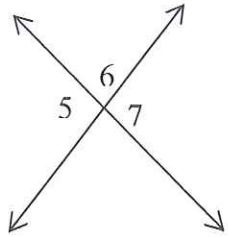
29) $m\angle 1 = 2x + 15$ and $m\angle 2 = 2x + 33$.



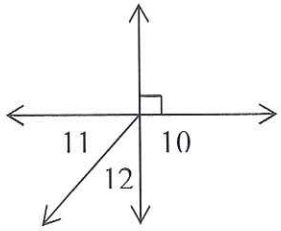
30) $\angle 2$ and $\angle 3$ are complementary, $\angle 2 \cong \angle 5$, $m\angle 4 = 58$.



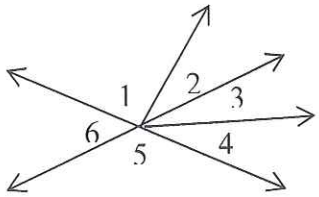
31) $m\angle 6 = 70$



32) $m\angle 11 = 4x - 3$
$m\angle 12 = 3x + 2$



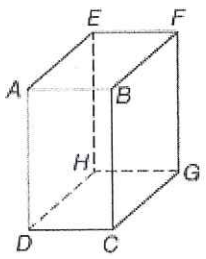
33) $m\angle 1 = 7x + 1$, $m\angle 2 = 5x - 6$
$m\angle 3 = x - 12$, $m\angle 4 = 3x + 5$



NAME:_____ DATE:_____ HOUR:_____

Geometry: Section 3.1-3.3 Quiz Review

1) Use the image to the right to answer questions 1 – 4.



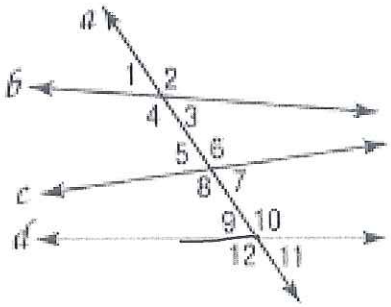
a) name all planes parallel to Plane ABE

b) name all segments that are skew to $\overline{DC}$

c) name all segments that intersect $\overline{EA}$

d) name all segments parallel to $\overline{BC}$

2) Classify the relationship between each pair of angles as *alternate interior*, *alternate exterior*, *corresponding*, or *consecutive interior* angles.



a) < 1 and < 5

b) < 3 and < 5

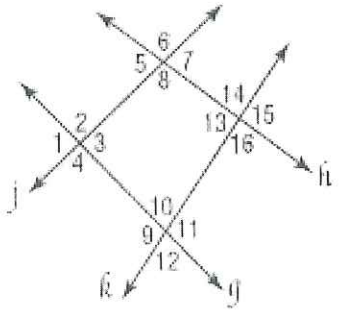
c) < 12 and < 2

d) < 4 and < 9

e) < 8 and < 4

f) < 1 and < 7

3) Identify the transversal connecting each pair of angles. Then classify the relationship between each pair of angles.



a) < 6 and < 16

b) < 10 and < 13

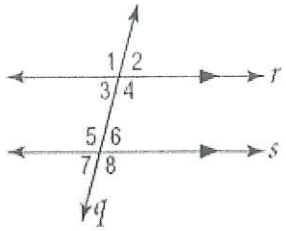
c) < 2 and < 10

d) < 12 and < 14

e) < 5 and < 13

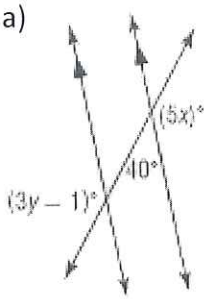
f) < 3 and < 8

4) In the image below the m < 2 = 70. Calculate the measures for each of the other listed angles.

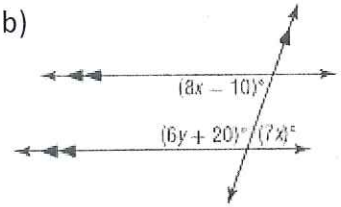


5) For each for the following, calculate the measure of all variables.

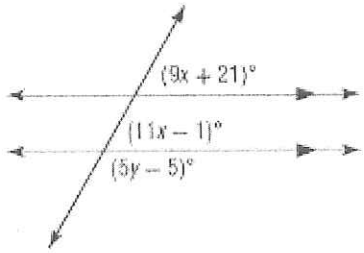
a)



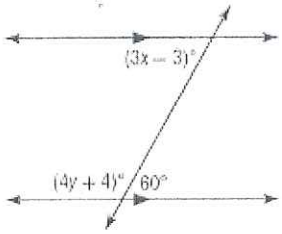
b)



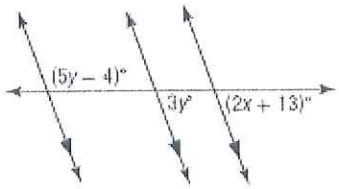
c)



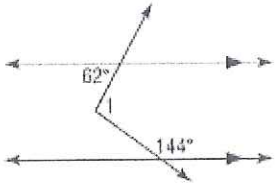
d)



e)



f)



6) For each pair of order pairs, calculate the slope of the line passing through them.

a) (2,3) and (-1,8)

b) (10,8) and (7,15)

c) (-1,-3) and (4,2)

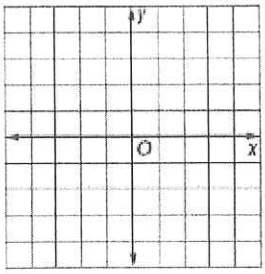
7) Determine whether $\overleftrightarrow{AB}$ *and* $\overleftrightarrow{MN}$ are parallel, perpendicular, or neither.

a) *A*(0, 3), *B*(5, -7), *M*(-6, 7), *N*(-2, -1)

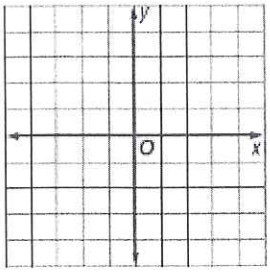
b) *A*(-1, 4), *B*(2, -5), *M*(-3, 2), *N*(3, 0)

8) Graph the line that satisfies each of the following conditions.

a) slope = 3, passes through $A(0, 1)$



b) passes through $Y(3, 0)$, parallel to $\overline{DJ}$ with $D(-3, 1)$ and $J(3, 3)$



9) After Take Two began renting DVDs at their video store, business soared. Between 2005 and 2010, profits increased at an average rate of $9000 per year. Total profits in 2010 were $45,000. If profits continue to increase at the same rate, what will the total profit be in 2014?

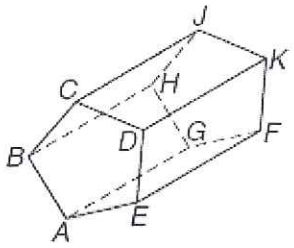
10) The *pitch* of a roof is the number of feet the roof rises for each 12 feet horizontally. If a roof has a pitch of 8, what is its slope expressed as a positive number?

11) A daily newspaper had 12,125 subscribers when it began publication. Five years later it had 10,100 subscribers. What is the average yearly rate of change in the number of subscribers for the five-year period?

Geometry
Chapter 3 Test Review

Best Wishes To:

Use the figure at the right to answer #1-4. (1pt each)

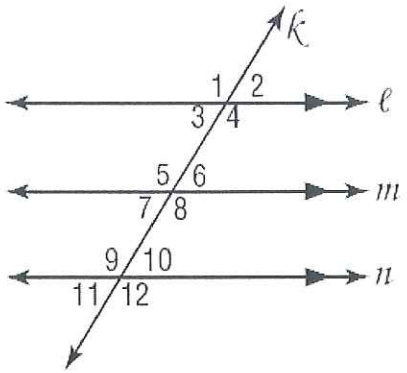


1. Name a segment skew to $\overline{JK}$. _____

2. Which plane is parallel to plane ACE? _____

3. Name a plane that intersects plane DKF. _____

4. How many lines are parallel to $\overline{EF}$? _____



Use the lines at the left to answer questions 5-10. Determine whether the angles are corresponding, alternate interior, alternate exterior, vertical or consecutive interior angles. (1pt each)

5. ∠6 and ∠4 _____

6. ∠8 and ∠9 _____

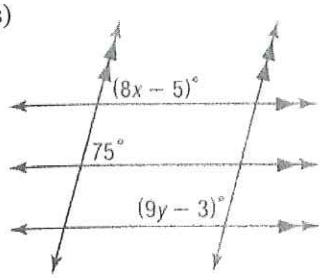
7. ∠1 and ∠12 _____

8. ∠2 and ∠6 _____

9. ∠3 and ∠10 _____

10. ∠2 and ∠11 _____

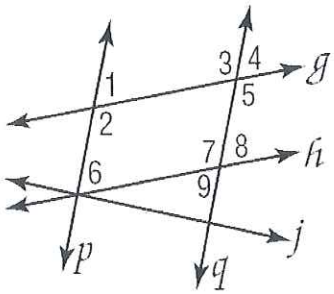
11. Find x and y using the picture to the right. Show your work. (4pts)



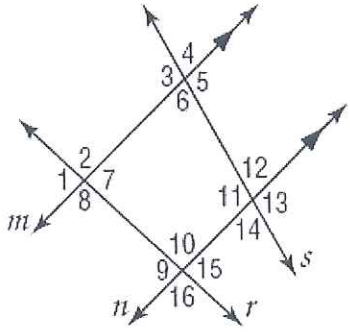
x = _____ y = _____

Looking at the angle pairs below, determine which lines are parallel and what angle relationship proves it. (2pts each)

	Which lines are parallel?	What is the ∠ Relationship?
12. $m\angle 4 \cong m\angle 9$	_____	_____
13. $m\angle 7 + m\angle 6 = 180$	_____	_____
14. $m\angle 2 \cong m\angle 3$	_____	_____
15. $m\angle 1 \cong m\angle 6$	_____	_____



Using the picture to the right to find the following angle measures given that $m\angle 1 = 62$ and $m\angle 11 = 121$. (1pt each)



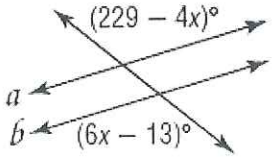
16. Find $m\angle 13$ _____

17. Find $m\angle 6$ _____

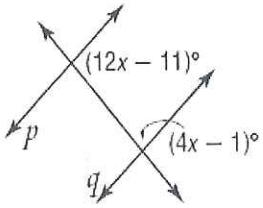
18. Find $m\angle 9$ _____

19. Find $m\angle 4$ _____

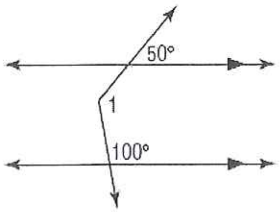
20. If $a \| b$, find x. Show all your work. (2pts)



21. If $p \| q$, find x. Show all your work. (2pts)



22. Find m∠1. Show your work. (2pts)

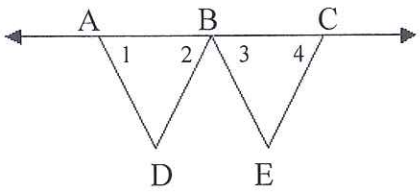


23. Prove the following by writing a two-column. (4pts)

Given: $\overline{AD} \parallel \overline{BE}$

$\angle 1 \cong \angle 2, \angle 3 \cong \angle 4$

Prove: $\overline{BD} \parallel \overline{CE}$



Statements	Reasons

For 24 and 25, determine whether $\overleftrightarrow{BT}$ and $\overleftrightarrow{MV}$ are *parallel, perpendicular,* or *neither.* (3pts each)

24. B(3, -5), T(5, -1), M(-2, 6), V(4, 3)

25. B(-5, 6), T(-3, 2), M(-2, 10), V(1, 4)

For #26-28 make sure to leave all of your slopes as reduced fractions!

26. Write an equation for a line in point-slope form with a slope of 4 that contains the point at (2, 8). (2pts)

27. Write an equation in slope-intercept form of the line that contains (-1, 7) and (3, -9). (3pts)

28. Write an equation in slope-intercept form of the line with slope $\frac{5}{3}$ and y-intercept of -2. (2pts)

Extra Credit: Find the distance between A(-2, 5) and B(10, 7). (+1pt)