Name: _____ My Semester Exam is: _____

Fall Semester Exam Review

Decide whether each "argument" below is inductive or deductive. Write "inductive" OR "deductive" and a reason for your choice.

1. The American League has won the World Series for the last several years. Therefore, the American League will win the World Series this year.

   inductive - noticed a pattern, historical data

2. Janie has Geometry 6th period, therefore she does not have PreAP Science 6th period.

   deductive ← fact logic →

3. Every time I measure the three angles in a given triangle, they add up to 180 degrees. Therefore, the sum of the three angles of any triangle is 180 degrees.

   inductive - discovered by experiment

4. For square ABCD, side AB has a length of 10 cm. For square WXYZ the perimeter is 40 cm. Therefore, square WXYZ also has a side length of 10 cm.

   deductive - definition of square + logic

5. "Sir, my client has a parking ticket placed on his car on the square in Fayetteville dated 8/06/2015 at 10:15 am. Therefore, my client could not have hit your car with his in the parking lot at the NWA Mall at 10:10 am on 8/06/2015."

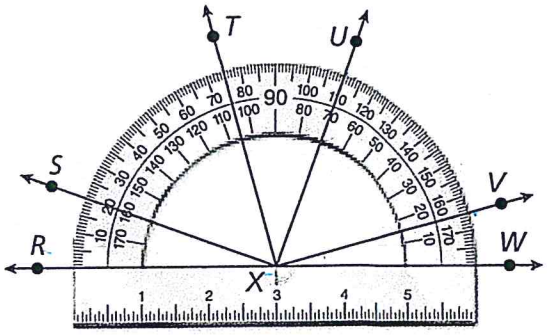
   deductive - evidenced-based facts

6. Every time I check the Chicago River near my office in downtown Chicago, it is running northeast past my building. Therefore, the Chicago River cannot reverse direction and run southwest past my building.

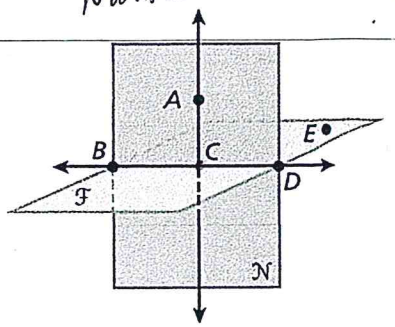
   inductive -

Use the protractor to find the measure of each angle. Then classify each as acute, right or obtuse.

7. $\angle VXW =$ 15° acute
8. $\angle TXW =$ 105° obtuse
9. $\angle RXU =$ 110° obtuse



Use the figure to name each of the following.



10. Five points A, B, C, D, E

11. Two lines $\overleftrightarrow{BD}$ $\overleftrightarrow{AC}$ or $\overleftrightarrow{BC}$ or $\overleftrightarrow{CD}$

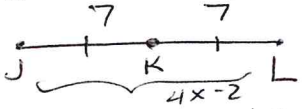
12. Two planes F N

13. A line in Plane F $\overleftrightarrow{BD}$

14. A line that contains A and C $\overleftrightarrow{AC}$

Answer each question below. Hint draw the figure if it is not given.

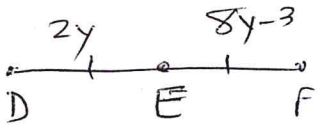
15. K is the midpoint of $\overline{JL}$, $JL = 4x - 2$, and $JK = 7$. Find x, KL, and JL.



$14 = 4x - 2$
$\frac{16}{4} = \frac{4x}{4}$ $x = 4$

$x =$ 4, $KL =$ 7, and $JL =$ 14.

16. E bisects $\overline{DF}$, $DE = 2y$, and $EF = 8y - 3$. Find DE, EF, and DF.

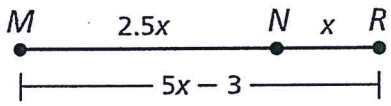


$2y = 8y - 3$
$-8y \quad -8y$
$\frac{-6y}{-6} = \frac{-3}{-6}$ $y = .5$

$DE =$ 1, $EF =$ 1, and $DF =$ 2.

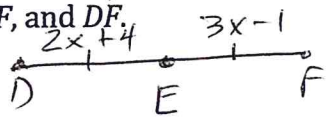
2.5=1

17. Find MN. 2.5·2=5



$2.5x + x = 5x - 3$
$3.5x = 5x - 3$
$-5x \quad -5x$
$\frac{-1.5x}{-1.5} = \frac{-3}{-1.5}$
$x = 2$

18. E is the midpoint of DF, $DE = 2x + 4$, and $EF = 3x - 1$. Find DE, EF, and DF.

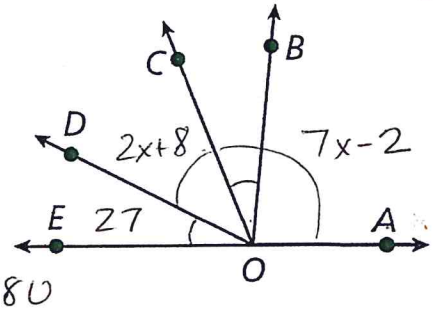


$2x + 4 = 3x - 1$
$-2x \quad -2x$
$4 = x - 1$
$+1 \quad +1$
$x = 5$

$DE =$ $\frac{2(5)+4}{14}$, $EF =$ $\frac{3(5)-1}{14}$, and $DF =$ 28.

Use the diagram to find the value of x.

19. $m\angle AOC = (7x-2)°$, $m\angle DOC = (2x+8)°$, $m\angle EOD = 27°$



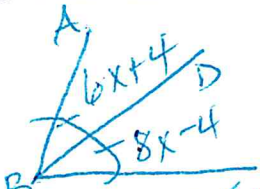
$x =$ 16.3

$27 + 2x + 8 + 7x - 2 = 180$
$9x + 33 = 180$
$-33 \quad -33$
$9x = 147$
$x = 16\frac{1}{3}$ or $16.\overline{3}$

Draw and label each situation. Find the indicated parts.

20. $\overline{BD}$ bisects $\angle ABC$.

1. Find $m\angle ABD$ if $m\angle ABD = (6x+4)°$ and $m\angle DBC = (8x-4)°$. $m\angle ABD =$ 28°



$6x+4 = 8x-4$
$-6x \quad -6x$
$4 = 2x+4$
$+4 \quad +4$
$2x = 8$
$x = 4$
$6(4)+4 = 28$

2. Find $m\angle ABC$ if $m\angle ABD = (5y-3)°$ and $m\angle DBC = (3y+15)°$. $m\angle ABD =$ 42°

$5y-3 = 3y+15$
$-3y \quad -3y$
$2y-3 = 15$
$2y = 18$
$y = 9$
$5 \cdot 9 - 3 = 42$

21. $\angle ABD$ and $\angle BDE$ are supplementary angles. Find the measures of both angles if $m\angle ABD = (3x+12)°$ and $m\angle BDE = (7x-32)°$.

$m\angle ABD =$ 72° and $m\angle BDE =$ 108°

$3(20)+12$
$7 \cdot 20 - 32$

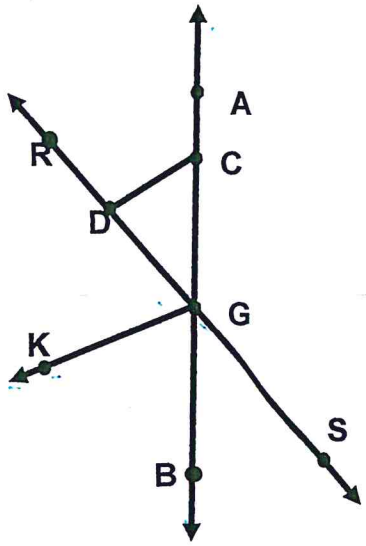
$3x+12+7x-32 = 180$
$10x - 20 = 180$
$10x = 200$
$x = 20$

22. $\angle ABD$ and $\angle BDE$ are complementary angles. Find the measures of both angles if $m\angle ABD = (5y+1)°$ and $m\angle BDE = (3y-7)°$. $m\angle ABD =$ $5 \cdot 12 + 1 = 61°$ and $m\angle BDE =$ $3(12) - 7 = 29°$

$5y+1+3y-7 = 90$
$8y - 6 = 90$
$8y = 96$
$y = 12$

$\angle RGK \cong \angle KGB$

For #23-28, if G is the midpoint of $\overline{RS}$ and $\triangle RGK \cong \triangle KGB$, answer the following using the figure on the right.



23. AG + GB = AB

24. $m\angle RGA$ = $m\angle BGS$

25. $m\angle BGK + m\angle$ KGA $= 180°$

26. If RG = 4, then RS = 8 $\quad \overline{RG} \cong \overline{GS}$

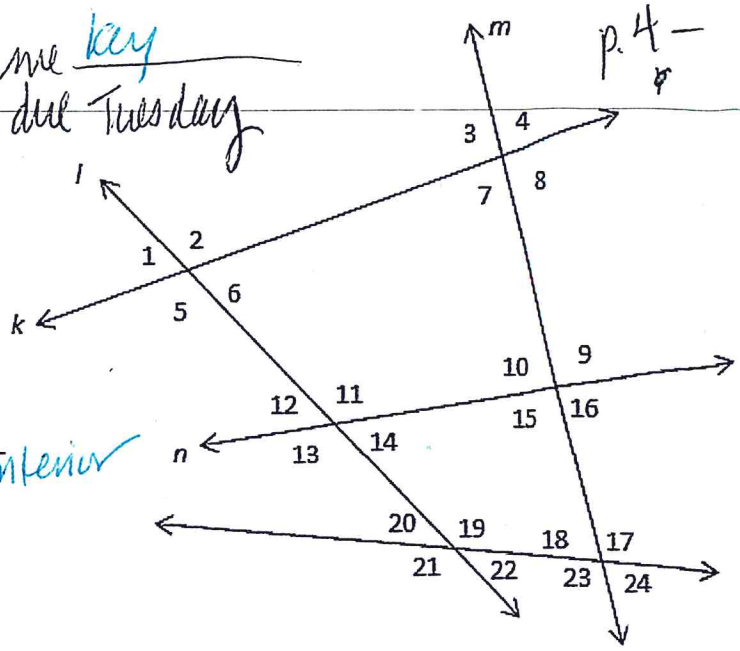
27. Name two congruent segments. _____

28. Name an angle bisector. $\overrightarrow{GK}$

Name key p. 4 – 6

HW – due Tuesday

Identify each special angle pair.



29. ∠1 and ∠14 alternate exterior

30. ∠7 and ∠9 alternate interior

31. ∠13 and ∠16 no name

32. ∠1 and ∠6 Vertical

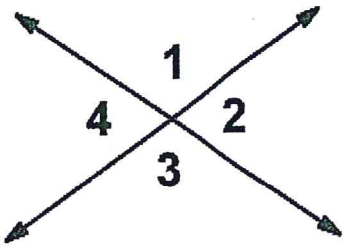
33. ∠10 and ∠15 linear pair

34. ∠2 and ∠3 Consecutive (Same-sided) interior

35. ∠3 and ∠10 Corresponding

36. ∠12 and ∠9 no name

Given $m\angle 1 = 4x + 36$ and $m\angle 3 = 3x + 46$, find each value below



37. x= 10

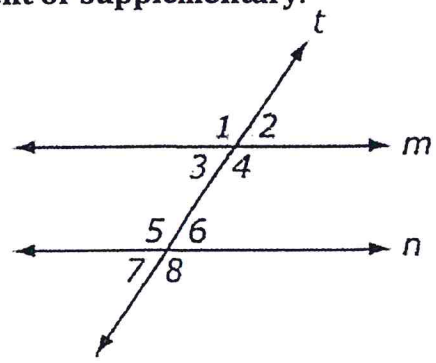
$4x + 36 = 3x + 46$

$x = 10$

$m\angle 1 =$ $4(10) + 36 = 76°$ $m\angle 2 =$ $180 - 76 = 104°$

$m\angle 3 =$ $76°$ $m\angle 4 =$ $104°$

38. Transversal *t* cuts parallel lines *m* and *n*. Fill in each blank with **congruent or supplementary.**



∠1 and∠8 are Congruent

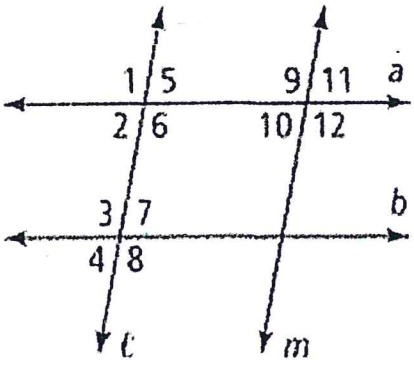
∠1 and∠7 are Supplementary

∠1 and∠5 are Congruent

∠3 and∠6 are congruent

∠3 and∠5 are Supplementary

39. Use the figure at the right and the given information to determine which lines are parallel.



∠6 is supplementary to ∠7 $a \parallel b$

$\angle 5 \cong \angle 7$ $a \parallel b$

 Name _____

Use the figure at the right to answer questions 40-43.

40. Which angle must be congruent to ∠2 in order for lines *m* and *n* to be parallel? Explain.

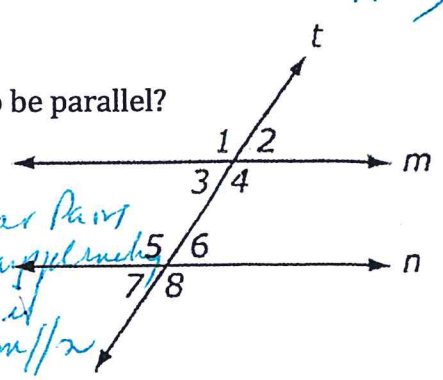
∠2 ≅ ∠6 (Corresponding angles are = when lines are ∥)

41. Which angle must be supplementary to ∠2 in order for lines *m* and *n* to be parallel? Explain.

∠2 + ∠8 = 180°

∠8

∠2 = ∠6 Corresp.
∠6 + ∠8 = 180 Linear Pair
so ∠2 & ∠8 are supplements



42. What must be known about ∠1 and ∠8 in order for the lines *m* and *n* to be parallel?

m ∥ n

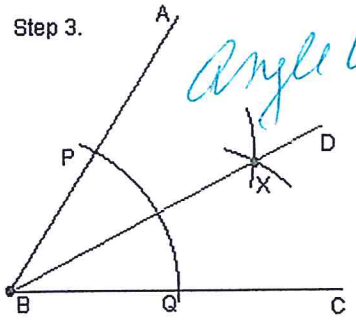
Congruent

43. What must be known about ∠3 and ∠5 in order for lines *m* and *n* to be parallel?

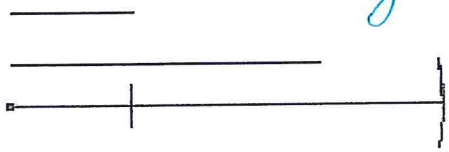
Supplementary

Identify each construction.

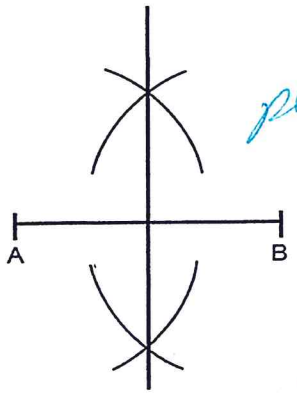
44.



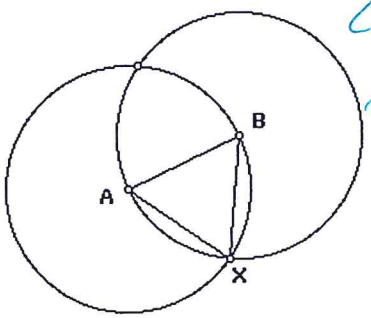
Angle bisector



segments added



perpendicular bisector



Construct equilateral △

45. ~~Right~~ Reflection _____ is an isometry in which a figure and its image have opposite orientations.

46. Which figure has the most lines of symmetry?

Rectangle 2	Isosceles trapezoid 1	parallelogram 0	Equilateral triangle 3

p4

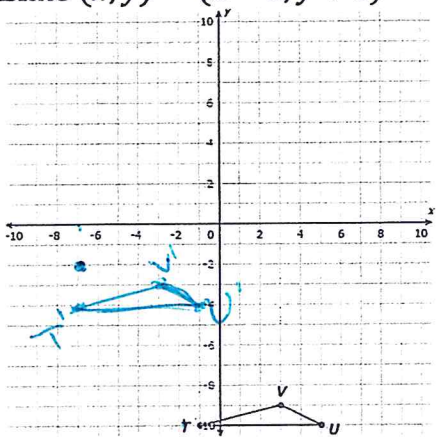
47. List the rules for reflections.

1. Reflection across the x-axis: $(x, y) \rightarrow (\ x\ ,\ -y\ )$
2. Reflection across the y-axis: $(x, y) \rightarrow (\ -x\ ,\ y\ )$
3. Reflection across $y = x$: $(x, y) \rightarrow (\ y\ ,\ x\ )$
4. Reflection across $y = -x$: $(x, y) \rightarrow (\quad ,\quad)$

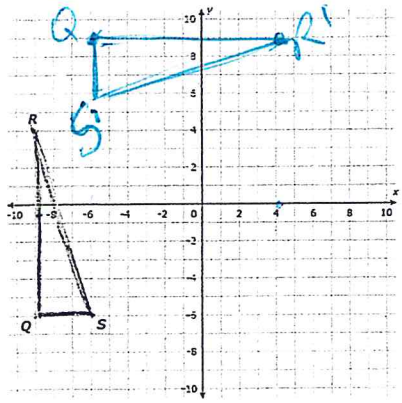
48. List the rules for rotations.

1. Rotation 90° counterclockwise around the origin: $(x, y) \rightarrow (\quad ,\quad)$
2. Rotation 180° around the origin: $(x, y) \rightarrow (\ -x\ ,\ -y\ )$
3. Rotation 270° counterclockwise around the origin: $(x, y) \rightarrow (\quad ,\quad)$

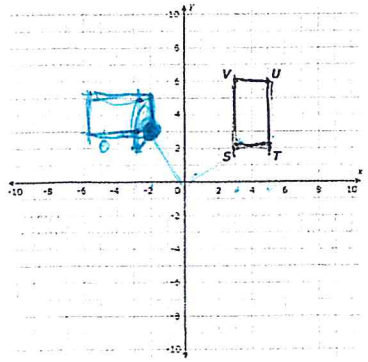
49. translate $(x, y) \rightarrow (x - 6, y + 6)$



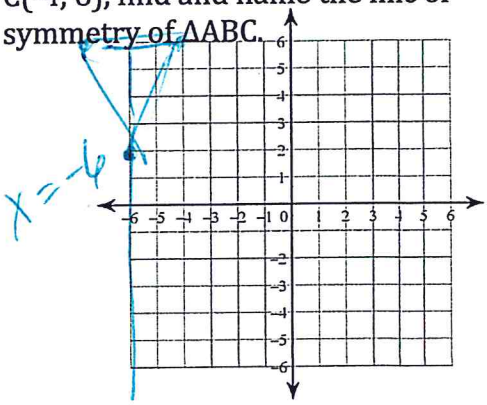
50. rotate 270° counterclockwise about (0, 0)



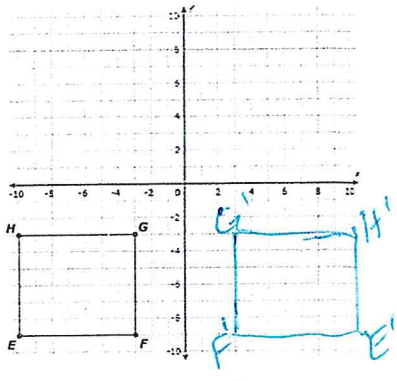
51. rotate 90° counterclockwise about (0, 0)



52. Given the vertices A(-6, 2), B(-8, 6), and C(-4, 6), find and name the line of symmetry of $\triangle ABC$.



53. reflect across the y-axis



54. reflect across the line $x = -2$