Name Key Date _____ Period _____

Geometry Midterm Review

Vocabulary:

1.	Points that lie on the same line.	1. collinear
2.	Having the same size, same shape	2. congruent
3.	These are non-adjacent angles formed by intersecting lines.	3. vertical
4.	Point that divides a segment into 2 congruent segments	4. midpoint
5.	Two angles whose measures have a sum of 90°.	5. complementary
6.	Two angles whose measures have a sum of 180°.	6. supplementary
7.	Segment in a triangle connecting the vertex to the midpoint of the opposite side	7. median
8.	To divide into two congruent parts.	8. bisect
9.	A triangle with no congruent sides	9. scalene
10.	This is the common endpoint of an angle.	10. vertex
11.	Points do not lie on the same line.	11. noncollinear
12.	Part of a line consisting of two points and all points between them	12. segment
13.	The process of using logic, rules, definitions to draw conclusions	13. deductive reasoning
14.	A triangle with at least 2 congruent sides	14. isosceles
15.	The process of reasoning that a rule or statement is true because specific cases are true (patterns)	15. inductive reasoning
16.	An angle that measures greater than 0° and less than 90°	16. acute
17.	A line that intersects two coplanar lines at two different places	17. transversal

Using the figure at the right:

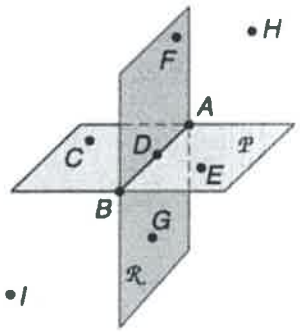
Answers may vary

18. Name 3 coplanar points: ABC

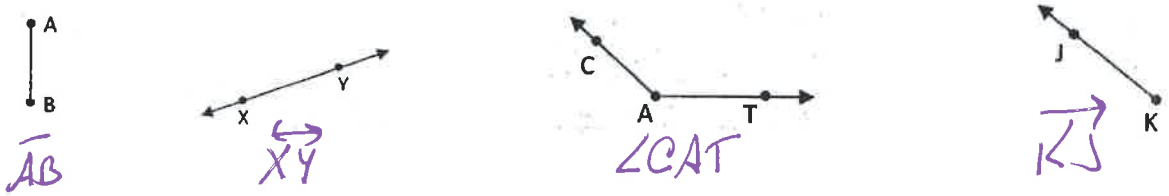
19. Name 3 collinear points: ADB

20. Name the intersection of the planes $\overleftrightarrow{AB}$

1 line →

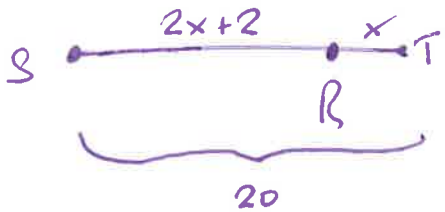


21. Use the figures to determine the correct geometric notation for the following figures:



$\overline{AB}$ $\overleftrightarrow{XY}$ $\angle CAT$ $\overrightarrow{KJ}$

22. R is between S and T. If SR = 2x + 2, RT = x, and ST = 20. Find SR.



$SR + RT = ST$

$2x+2 + x = 20$

$3x+2 = 20$

$3x = 18$

$x = 6$

$SR = 2x+2$

$= 2(6)+2$

$= 14$

23. If DB bisects ∠ADC, m∠ADB= (3x + 6)°, and m∠BDC = (5x –4)°, find 'x'.

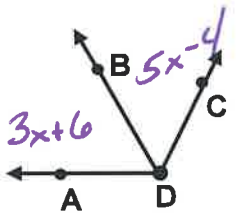
$m\angle ADB + m\angle CDB = m\angle ADC$

also → $m\angle ADB = m\angle CDB$

$3x+6 = 5x-4$

$10 = 2x$

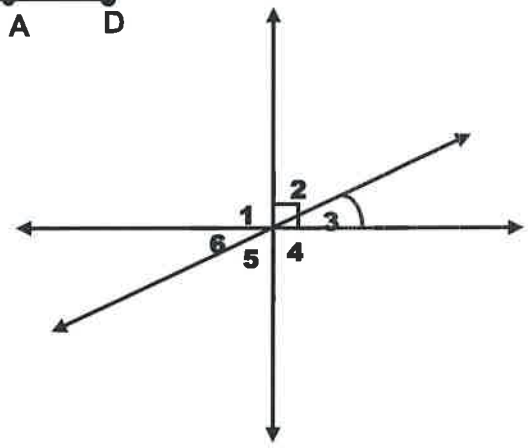
$x = 5$



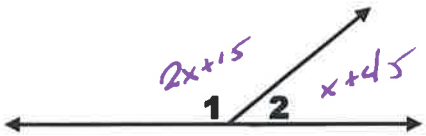
24. In the diagram, name a pair of:

more than 1 correct answer

- supplementary angles: ∠1 + ∠4
- vertical angles: ∠2 + ∠5
- complementary angles: ∠2 + ∠3
- adjacent angles: ∠4 + ∠5



25. In the diagram, m∠1 = (2x + 15)° and m∠2 = (x + 45)°. The value of 'x' is:



$m\angle 1 + m\angle 2 = 180$

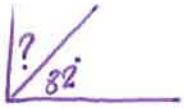
$2x+15 + x+45 = 180$

$3x + 60 = 180$

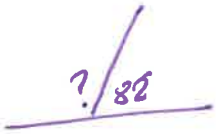
$3x = 120$

$x = 40$

26. Find the complement and supplement of 82°.



$90 - 82 = 8°$



$180 - 82 = 98°$

27. Identify the following statement as an example of inductive or deductive reasoning:

"I have had strep throat every winter for the past 3 years, I will probably have strep throat this winter."

inductive

28. Find the next two terms in each of the sequences.

2, 4, 16, 256, 65,536

100, 81, 64, 49, 36, 25

29. Write the following as a conditional statement: **A dog has fur**

If an animal is a dog, then it has fur.

30. Identify the hypothesis and conclusion of the conditional statement.

If it is snowing than it is cold.

Hypothesis: it is snowing

Conclusion: it is cold

31. Use the following conditional and write: (p→q)

If an angle is acute then it is less than 90°.

p q

Converse (q→ p): If an angle measures less than 90°, then it is acute.

Inverse (~p → ~q): If an angle is NOT acute, then it is NOT less than 90°

Contrapositive (~q→ ~p): If an angle is not less than 90, then it is not acute.

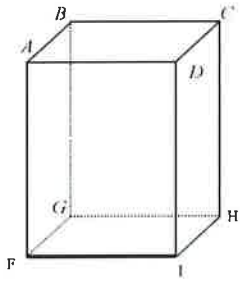
Biconditional (if and only if): An angle is acute if and only if it is less than 90°

32. Give a counterexample to show that the following statement is false: Answers may vary.

"If Alex does all of her homework, then she will pass geometry."

Alex might do all her homework but makes failing grades on her tests & quizzes

33. Using the figure to the right, list the segments that are:

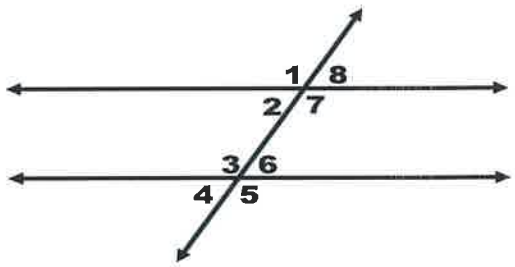


skew to $\overline{AB}$ $\overline{CH}$

parallel to $\overline{AB}$ $\overline{CD}$

perpendicular to $\overline{AB}$ $\overline{AF}$

34. In the figure, identify a pair of:



alternate interior angles: ∠2 & ∠6

vertical angles: ∠2 & ∠8

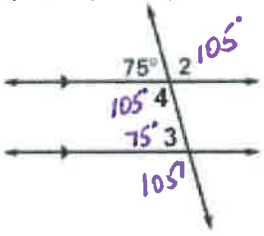
corresponding angles: ∠2 & ∠4

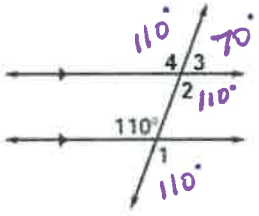
alternate exterior angles: ∠1 & ∠5

same side interior angles: ∠2 & ∠3

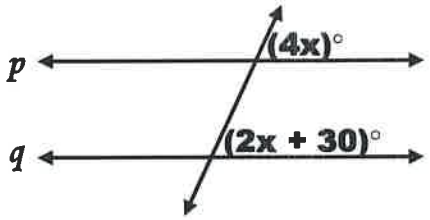
linear pair: ∠2 & ∠7

35. Find the m∠1, m∠2, m∠3, & m∠4 on each of the following





36. Given the diagram, if lines p and q are parallel, solve for x.

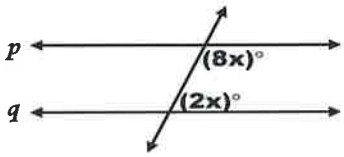


$4x = 2x + 30$

$2x = 30$

$x = 15$

37. Find the value of 'x' so that lines p and q are parallel.



$8x + 2x = 180$

$10x = 180$

$x = 18$

38. Use the distance formula to find the distance between A (5, -2) and W (-1, 7).

$x_1\ y_1$ $x_2\ y_2$

$d = \sqrt{(-1-5)^2 + (7-2)^2}$

$= \sqrt{(-6)^2 + (9)^2} = \sqrt{36+81} = \sqrt{117}$

~ 10.82

39. Find the midpoint of (8, -2) and (4, -6).

$x_1\ y_1$ $x_2\ y_2$

$M\left(\frac{8+4}{2}, \frac{-2-6}{2}\right) \rightarrow (6, -4)$

40. Find the slope of the given points. (-6, -8) and (-4, -2)

$x_1\ y_1$ $x_2\ y_2$

$\text{slope} = m = \frac{-2-(-8)}{-4-(-6)} = \frac{6}{2} = 3$

41. What is the slope of the line that is perpendicular to the line whose equation is 3x- 2y = -8?

$m = \frac{3}{2}$ → negative reciprocal

$m_\perp = -\frac{2}{3}$

$-2y = -3x - 8$

$y = \frac{3}{2}x + 4$

$m = \frac{3}{2}$

42. What is the slope of a line parallel to the line 8x - 2y = 10?

$m = 4$

$-2y = -8x + 10$

$y = 4x - 5$

43. What is the relationship between the lines: $y = 3x - 2$ and $-6x + 2y = -4$?
(parallel, perpendicular, or coinciding lines)

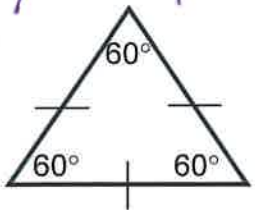
$2y = 6x - 4$

$y = 3x - 2$

→ same slopes

→ same slopes + y-intercepts

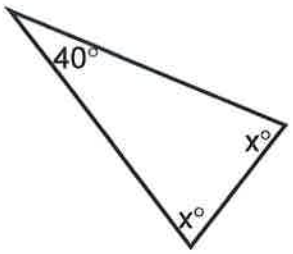
44. How should Annette classify this triangle?



By sides: equilateral

By angles: equiangular

45. Solve for x:



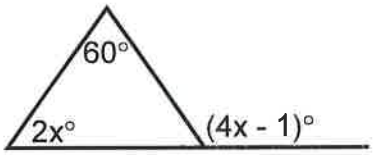
$x + x + 40 = 180$

$2x + 40 = 180$

$2x = 140$

$x = 70$

46. Solve for x:

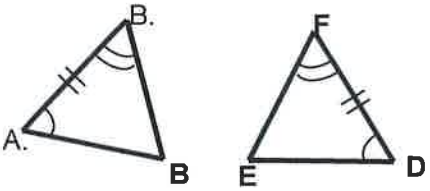


$2x + 60 = 4x - 1$

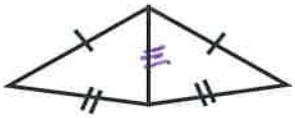
$61 = 2x$

$x = 30.5$

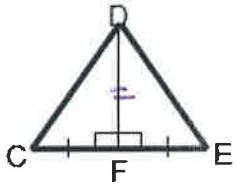
47. Which postulate or theorem can be used to prove the following triangles are congruent?



ASA



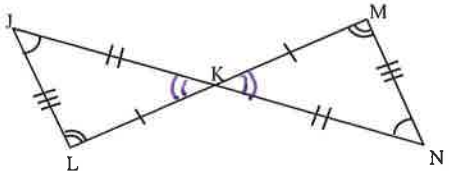
SSS



SAS

48. Complete the congruent statement and state which postulate or theorem can be used to prove the 2 triangles congruent.

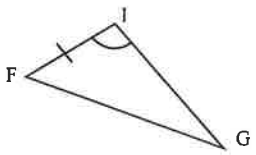
$\Delta JKL \cong \Delta$ NKM

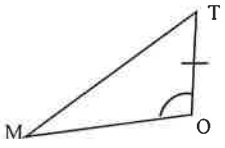


by SSS
SAS
ASA
AAS

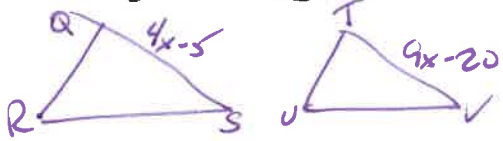
49. Name one additional pair of corresponding parts that need to be congruent in order to prove that $\Delta FIG \cong \Delta TOM$

by AAS: $\angle G \cong \angle M$ by ASA: $\angle F \cong \angle T$ by SAS: $\overline{GI} \cong \overline{MO}$





50. Given $\Delta QRS \cong \Delta TUV$, $QS = 4x - 5$ and $TV = 9x - 20$, find the length of QS and TV.



$4x - 5 = 9x - 20$

$15 = 5x$

$x = 3$

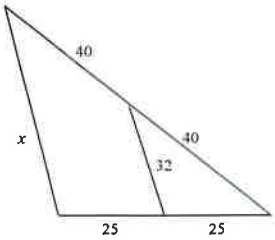
$QS = 4x - 5$

$= 4(3) - 5 = 7$

$TV = 9x - 20$

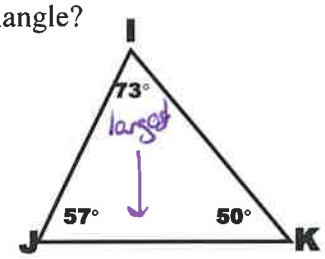
$= 9(3) - 20 = 7$

51. Find the value of x. The diagram is not to scale.



$x = 2(32) = 64$

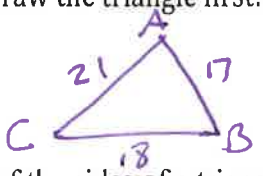
52. Which side is the longest side in this triangle?



$\overline{JK}$

53. In △ ABC, which is the smallest angle? Draw the triangle first!!

AB = 17, BC = 21, AC = 18



∠C

54. Which three lengths could be the lengths of the sides of a triangle?

a. 10m, 5m, 12m $5+12 > 10$

b. 10m, 16m, 26m $10+16 \neq 26$

c. 8m, 12m, 21m $8+12 \neq 21$

d. 20m, 7m, 6m $6+7 \neq 20$

55. The measure of two sides of a triangle are 11 and 20. Using an inequality, what is the range of the third side?

$20 - 11 = 9$ $20 + 11 = 31$

$9 < x < 31$

56. The measure of two sides of a triangle are 8 and 23. Using an inequality, what is the range of the third side?

$23 - 8 = 15$ $23 + 8 = 31$

$15 < x < 31$

Solve the following equations.

57. $-257 = 8(1 + 7x) - 3x$

$-257 = 8 + 56x - 3x$

$-257 = 8 + 53x$

$-265 = 53x$

$x = -5$

58. $5k - 5(1 + 5k) = -33 - 6k$

$5k - 5 - 25k = -33 - 6k$

$-5 - 20k = -33 - 6k$

$28 = 14k$

$k = 2$

59. $-8(1 + 3x) = -2 + 36$

$-8 - 24x = -2 + 36$

$-8 - 24x = 34$

$-24x = 42$

$x = -1.75$

60. **Given: 2(p + 15) = 4p + 6**
Prove: p = 12

Solve for p

Statements	**Reasons**
2(p + 15) = 4p + 6	Given
$2p + 30 = 4p + 6$	Distributive Property
$-2p \quad -2p$: $30 = 2p + 6$	Subtraction POE
$-6 \quad -6$: $24 = 2p$	Subtraction POE
$12 = p$	Division POE
$p = 12$	Symmetric POE