

Name Key Date \_\_\_\_\_ PD \_\_\_\_\_

### Chapter 1 Geometry Basics Concept Rubric Evaluation

Use the test review problems to help you know where you are prior to the quiz and test. Use the notation below to help you truly understand where you need to focus to increase your learning and understanding. **THIS IS DUE BEFORE THE TEST, filled in.** The numbers to the problems correspond from the chart to the review.

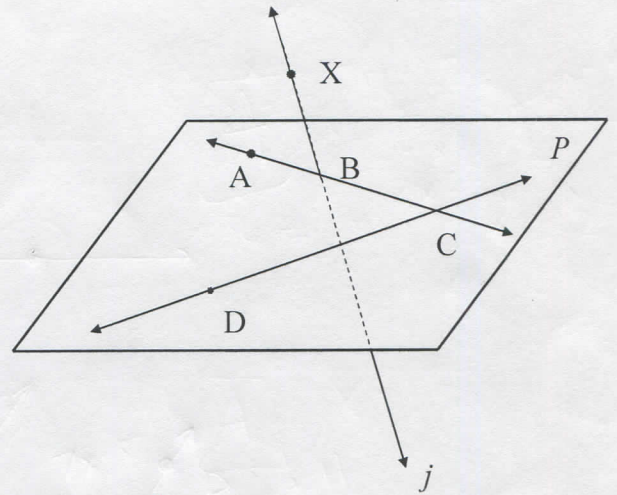
- Use when you get it right all by yourself
- S** Use when you did it all by yourself, but made a silly mistake
- H** Use when you could do it alone with a little help from teacher or peer
- G** Use when you completed the problem in a group
- X** Use when a question was attempted but wrong (get help)
- N** Use when a question was not even attempted

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Name points, lines, & planes.	1, 2, 3, 15	12, 23	
Name segments & rays.	4, 33	44	41, 43
Collinear & Coplanar	5 - 9, 17, 18	10, 11	20, 21
Vocab: between, space	16, 19		
Sketch intersections of lines & planes.	13, 14	22	42
Compute distance on a number line.	16		
Segment addition postulate.	Adding to the small segment to get bigger.	48, 49, 50, 51	Subtracting the big segments to get smaller segments when variables are involved.
Find segment length using midpoints.	27b		

<b>CONCEPTS</b>	<b>BASIC</b>	<b>INTERMEDIATE</b>	<b>ADVANCED</b>
Find segment bisectors.	27b		
Midpoint formula.	27a		28
Distance formula	30		
Find perimeters of polygons.	29, 30		
Find areas of polygons.	30		
Name angles.	31	44	
Measure angles.	Reading an already labeled diagram.	43	Using a protractor to measure an angle.
Identify congruent angles.	Reading an already labeled diagram.	43	Using a protractor to measure an angle.
Angle Addition Postulate	46	43	41
Bisect angles.	33	Identify one and use that definition to solve for a missing variable.	Through construction with protractor, ruler, & compass.
Identify complementary angles.	35, 36	32, 37	38, 40
Identify supplementary angles.	35, 36	24, 37	38, 39, 40
Identify linear pairs.	31		42
Identify vertical angles.	34	25, 47	42
Identify adjacent angles.	True or false a diagram contains adjacent angles.	26	Creating adjacent angles and using knowledge to help solve for missing information.

Test Review Ch 1 - Basics of Geometry

True/False: Write out the entire word.



False 1. Plane P contains  $\overleftrightarrow{XJ}$ .

False 2. Plane P contains J.

True 3.  $\overleftrightarrow{DC}$  lies in plane P.

True 4. Another name for  $\overleftrightarrow{AC}$  is  $\overleftrightarrow{CB}$ .

False 5. A, B, and C are noncollinear.

True 6. A, B, C and D are coplanar.

True 7. D and A are collinear. *2 pts R always collinear*

True 8. C and X are collinear. *2 pts R always collinear*

False 9. A, B, and D are collinear.

False 10. A, D, and X are noncoplanar. *3 pts R always coplanar*

True 11. X, A, B, and C are coplanar. *1 pt &  $\Leftrightarrow$  R always coplanar*

True 12. Every plane which contains A and B must contain C. *collinear*

False 13. Line j intersects  $\overleftrightarrow{DC}$ . *--- shows depth/3D*

True 14. The plane ABX intersects P in  $\overleftrightarrow{AC}$ .

False 15.  $\overleftrightarrow{AB}$  contains D.

False 16. X is between D and C.

True 17. D, B, and X are coplanar. *3 pts R always coplanar*

True 18.  $\overleftrightarrow{AB}$  and X are coplanar. *1 pt &  $\Leftrightarrow$  R always coplanar*

Sometimes(S)/Always(A)/Never(N) *Draw diagrams!*

Always 19. Space is the set of all points. *Definition*

Never 20. If three points are collinear, then they lie in exactly one plane.

Always 21. If three points are collinear, then they are coplanar.

Always 22. If two planes intersect, then their intersection is a line.

Always 23. Opposite rays make a line.

Sometimes 24. Supplementary angles are linear.

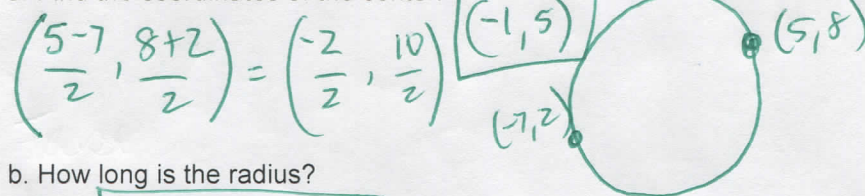
Never 25. Vertical angles are adjacent.

Sometimes 26. Adjacent angles are congruent.

Free Response: Show all work for full credit and to show comprehension of the concept.

23. The coordinates of the endpoints of a diameter of a circle are  $(5, 8)$  and  $(-7, 2)$ .

a. Find the coordinates of the center.



$$\sqrt{(5+7)^2 + (8-2)^2}$$
  

$$\sqrt{(12)^2 + (6)^2}$$
  

$$\sqrt{144 + 36}$$
  

$$\sqrt{180}$$

b. How long is the radius?

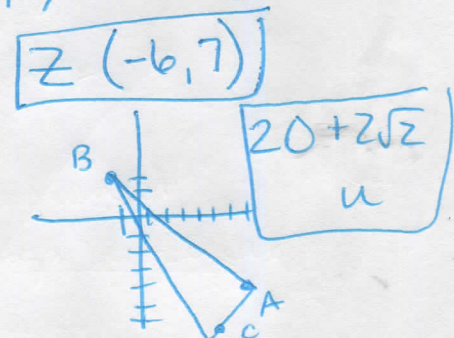
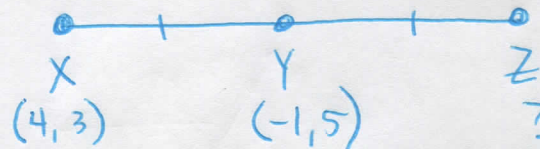
$$\frac{\sqrt{180}}{2} \text{ u}$$

24. Given the three points X, Y, and Z, and Y is the midpoint of XZ. Find the coordinates of the third point.  $X(4, 3)$ ,  $Y(-1, 5)$ ,  $Z(?, ?)$  (DRAW IT OUT)

$$-1 = \frac{4+x}{2} \quad 5 = \frac{3+y}{2}$$
  

$$-2 = 4+x \quad 10 = 3+y$$
  

$$-6 = x \quad 7 = y$$



26. Find the perimeter of  $\Delta ABC$  if  $A(7, -4)$ ,  $B(-1, 2)$ ,  $C(5, -6)$ .

$$AB = \sqrt{(7+1)^2 + (-4-2)^2} = \sqrt{64+36} = \sqrt{100} = 10 \text{ u}$$
  

$$BC = \sqrt{(-1-5)^2 + (2+6)^2} = \sqrt{36+64} = \sqrt{100} = 10 \text{ u}$$
  

$$AC = \sqrt{(7-5)^2 + (-4+6)^2} = \sqrt{4+4} = \sqrt{8} = 2\sqrt{2}$$

27. Use the distance formula to find the perimeter and area of the triangle with vertices at  $A(3, -2)$ ,  $B(-3, 7)$ , and  $C(-9, 3)$ .

$$AB = \sqrt{(3+3)^2 + (-2-7)^2} = \sqrt{36+81} = \sqrt{117} \text{ u}$$
  

$$BC = \sqrt{(-3+9)^2 + (7-3)^2} = \sqrt{36+16} = \sqrt{52} \text{ u}$$
  

$$AC = \sqrt{(3+9)^2 + (-2-3)^2} = \sqrt{144+25} = \sqrt{169} = 13 \text{ u}$$
  

$$P = \sqrt{117} + \sqrt{52} + 13 \text{ u} \quad A = \frac{1}{2}(\sqrt{52})(\sqrt{117}) = 39 \text{ u}^2$$

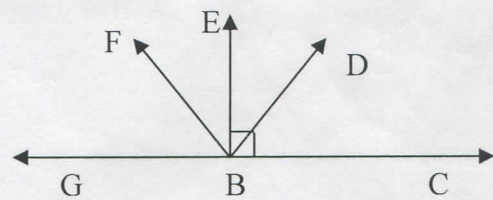
Use the diagram to the right to answer the following.

28. Name two angles that form a linear pair.

$$\angle GBF \text{ \& } \angle FBC$$

29. Name the complement to  $\angle EBD$ .

$$\angle DBC$$



30. If  $m\angle FBE = m\angle DBE$  then what is ray EB?

$$\angle \text{bisector}$$

31. Name two vertical angles.

$$\text{none exist}$$

Give the measure of the complement and supplement of each angle, if possible.

32.  $m\angle A = 40$

C =  $90 - 40 = 50^\circ$

S =  $180 - 40 = 140^\circ$

33.  $m\angle C = 102$

C =  $\text{---}$

S =  $180 - 102 = 78^\circ$

34.  $m\angle T = 30 - 2x$

C =  $90 - (30 - 2x) = 60 + 2x^\circ$

S =  $180 - (30 - 2x) = 150 + 2x^\circ$

Set up an equation and solve the following.

35. The supplement of an angle is  $36^\circ$  less than twice the supplement of the complement of the angle. Find the measure of the supplement.

$$180 - 12 = \boxed{168^\circ}$$

$$\begin{aligned} 180 - x &= 2(180 - (90 - x)) - 36 \\ 180 - x &= 2(180 - 90 + x) - 36 \\ 180 - x &= 2(90 + x) - 36 \\ 180 - x &= 180 + 2x - 36 \\ 36 &= 3x && x = 12 \end{aligned}$$

36. The measure of the supplement of an angle is 30 more than twice the measure of the angle. Find the measure of the angles.

$$\begin{aligned} 180 - 50 &= 130^\circ \\ 180 - x &= 2(x) + 30 \\ 180 - x &= 2x + 30 \\ 150 &= 3x && x = 50 \end{aligned}$$

$$\boxed{50^\circ, 130^\circ}$$

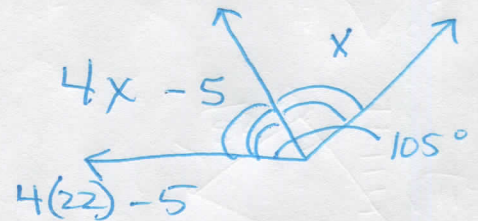
37. The complement of an angle is 280 less than three times the angle's supplement. Find the measure of the supplement.

$$\begin{aligned} 90 - x &= 3(180 - x) - 280 \\ 180 - 85 &= 95^\circ && 90 - x = 540 - 3x - 280 && x = 85 \\ \boxed{95^\circ} &&& 90 - x &= 260 - 3x \\ &&& 2x &= 170 \end{aligned}$$

38. Suppose a ray divides 105 degree angle into two angles where one is 5 degrees less than four times the other. What are the measures of the two angles? DRAW

$$\begin{aligned} 4x - 5 + x &= 105 \\ 5x &= 110 \\ x &= 22 \end{aligned}$$

$$\boxed{22^\circ; 83^\circ}$$



39. Two lines intersect so that  $\angle 1$  &  $\angle 3$  are vertical angles,  $\angle 2$  &  $\angle 4$  are vertical angles, and  $\angle 1$  &  $\angle 2$  are a linear pair. If  $m\angle 2 = \frac{125}{5} - 4x$ ;  $m\angle 4 = 2.5x + 12$ , then solve for  $x$  and find the measure of all the angles. (DRAW DIAGRAM FIRST) DRAW

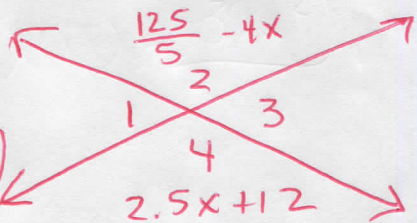
$$\frac{125}{5} - 4x = 2.5x + 12 \quad m\angle 2 = 17^\circ$$

$$25 - 4x = 2.5x + 12 \quad m\angle 4 = 17^\circ$$

$$\begin{aligned} 13 - 4x &= 2.5x \\ 13 &= 6.5x \end{aligned}$$

$$\boxed{x = 2}$$

$$\begin{aligned} m\angle 1 &= 169^\circ \\ m\angle 3 &= 169^\circ \end{aligned}$$



40. Ray FC bisects  $\angle AFE$  and  $\angle BFD$  (see diagram to right)

$$\begin{aligned} \text{If } m\angle 1 &= 3x + 11, \quad m\angle 2 = 5 - 2x \\ m\angle CFE &= 9x + 24 \end{aligned}$$

a. Find  $x$

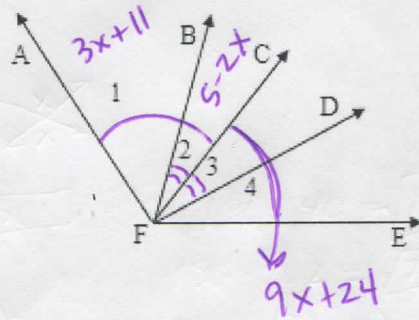
$$\begin{aligned} 3x + 11 + 5 - 2x &= 9x + 24 \\ x + 16 &= 9x + 24 \\ -8 &= 8x && \boxed{x = -1} \end{aligned}$$

b. Find the  $m\angle 1$ ,  $m\angle 2$ ,  $m\angle CFE$

$$m\angle 1 = 3(-1) + 11 = -3 + 11 = \boxed{8^\circ}$$

$$m\angle 2 = 5 - 2(-1) = 5 + 2 = \boxed{7^\circ}$$

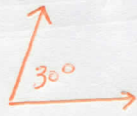
$$m\angle CFE = 9(-1) + 24 = -9 + 24 = \boxed{15^\circ}$$



S A N

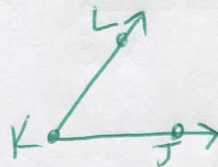
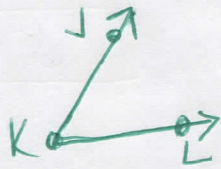
Sometimes, Always, Never: Draw a diagram justifying your answer.

41. Any figure made up of two rays is an angle.



A

42.  $\angle JKL$  is the same as  $\angle LKJ$ .



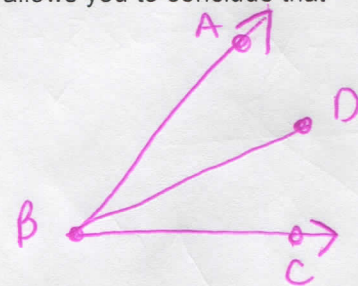
A

43. When D is in the interior of  $\angle ABC$ , the Angle Addition Postulate allows you to conclude that

$$m\angle ABC + m\angle DBC = m\angle ABD$$

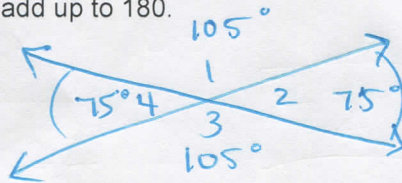
N

$$m\angle ABD + m\angle DBC = m\angle ABC$$



44. Vertical angles add up to 180.

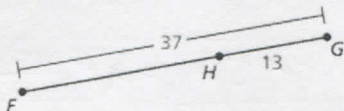
S



$$75 + 75 \neq 180$$

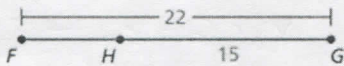
Find the length of the missing segment using Segment Addition Postulate.

45.



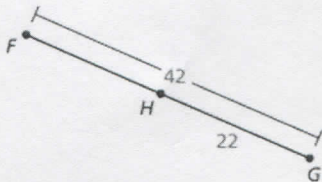
$$37 - 13 = \boxed{24} \quad FH + HG = FG$$

46.



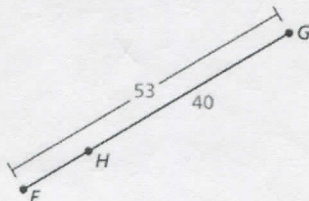
$$22 - 15 = \boxed{7} \quad FH + HG = FG$$

47.



$$42 - 22 = \boxed{20} \quad FH + HG = FG$$

48.



$$53 - 40 = \boxed{13} \quad FH + HG = FG$$