Geometry H
Unit 1 Test Review

Name : Key
Date : _____ Period : _____

Geometry (H) Unit 1 Assessment Topic List

By the end of unit 1, you should be able to...

Section 1.1

- Name points, lines, planes, segments, rays, and opposite rays.
- Identify intersections of lines and planes.

Section 1.2

- Find length of a segment using the Ruler Postulate and the Segment Addition Postulate.
- Compare segments to identify congruent segments.

Section 1.3

- Use distance formula to find lengths of segments.
- Use the midpoint formula to find the midpoint of a segment in the coordinate plane, or identify a missing endpoint given the midpoint and one endpoint.
- Identify and use segment bisectors to solve problems.

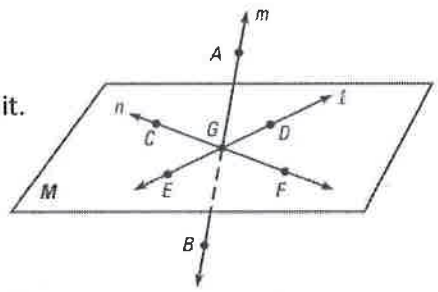
Section 1.4

- Name angles, and identify parts of angles.
- Find measures of angles using the Protractor Postulate, Angle Addition Postulate.
- Classify angles by their measure.
- Identify congruent angles, and use angle bisectors to find measures of angles.

Section 1.5/2.7

- Find measures of complementary and supplementary angles
- Use vertical angle theorem and linear pair postulate to find measures of angles

Use the drawing to the right for #1-7. ***Use proper notation***!



1. Give two other names for $\overleftrightarrow{AB}$. $\overleftrightarrow{BA}, \overleftrightarrow{GA}, \overleftrightarrow{AG}, \overleftrightarrow{BG}, \overleftrightarrow{GB}$

2. Name a line segment found in the sketch. Then state another name for it.
$\overline{CG}, \overline{GC}$ or $\overline{ED}, \overline{DE}$ (many possibilities)

3. Name all rays with endpoint G. $\overrightarrow{GE}, \overrightarrow{GC}, \overrightarrow{GA}, \overrightarrow{GD}, \overrightarrow{GF}, \overrightarrow{GB}$

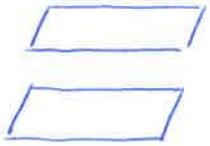
4. Name the intersection of line m and the plane M. Point G

5. Is it possible for two planes that are not the same to intersect in a line? If yes, give a real-world example.
Yes, a floor of a classroom and the wall of the classroom intersect in a line

6. Name three points that are coplanar. C, G, E, D (many possibilities)

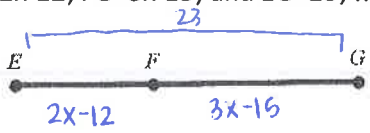
7. Name three points that are collinear. A, G, B or E, G, D or C, G, F

8. Draw a sketch showing a line intersecting two planes which do not intersect.



(think of these as 2 pieces of paper on top of one another but not touching)

9. If $EF=2x-12$, $FG=3x-15$, and $EG=23$, find the values of x, EF and FG. The drawing is not to scale.



$EF + FG = EG$

$2x-12+3x-15=23$

$5x-27=23$

$5x=50$

$\boxed{x=10}$

$EF = 2(10)-12$

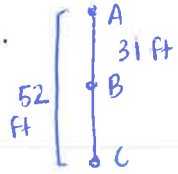
$\boxed{EF=8}$

$FG = 3(10)-15$

$\boxed{FG=15}$

10. A climber uses a rope to descend a vertical cliff. Let A represent the point where the rope is secured at the top of the cliff, let B represent the climber's position and let C represent the point where the rope is secured at the bottom of the cliff.

a. Draw and label a line segment that represents the situation.



b. Write the equation for segment addition.

$AB + BC = AC$

c. If AC is 52 feet and AB is 31 feet, how much farther must the climber descend to reach the bottom of the cliff.

$31 + BC = 52$

$\boxed{BC=21}$

11. Given that the endpoints of $\overline{AB}$ are A(7, 8) and B (4, 2), answer the following:

(x_1, y_1) (x_2, y_2)

a) Find the coordinates of the midpoint. ← use midpoint formula

$M = \left(\frac{7+4}{2}, \frac{8+2}{2}\right) = \left(\frac{11}{2}, \frac{10}{2}\right) = \boxed{(5.5, 5)}$ ← write answer as an ordered pair

b) What is the length of $\overline{AB}$? (Leave answers in simplest radical form) ← use distance formula to find length

$D = \sqrt{(4-7)^2+(2-8)^2} = \sqrt{(-3)^2+(-6)^2} = \sqrt{9+36} = \sqrt{45} = \sqrt{9}\sqrt{5} = \boxed{3\sqrt{5}}$

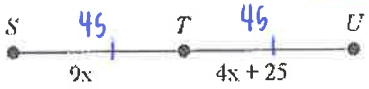
12. The midpoint of $\overline{MN}$ is P(5,5). One of the endpoints is M(-4,2). Find the coordinate of endpoint N.

x-values: $\frac{5}{1} = \frac{-4+x_2}{2} \Rightarrow 10 = -4+x_2 \Rightarrow x_2 = 14$

y-values: $\frac{5}{1} = \frac{2+y_2}{2} \Rightarrow 10 = 2+y_2 \Rightarrow 8 = y_2$

$\boxed{(14,8) \text{ is the other endpoint}}$

13. If T is the midpoint of $\overline{SU}$, find the values of *x* and *SU*.



$9x = 4x + 25$

$5x = 25$

$\boxed{x = 5}$

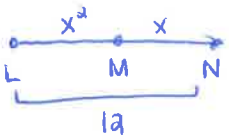
$\boxed{SU = 45 + 45 = 90}$

14. Point *M* is the midpoint of $\overline{CF}$. Given points $C(3,4)$ and $F(9,8)$, please find *MF*.

$CF = \sqrt{(9-3)^2+(8-4)^2} = \sqrt{(6)^2+(4)^2} = \sqrt{36+16} = \sqrt{52} \approx 7.2$

$\boxed{MF = \frac{\sqrt{52}}{2} \approx 3.6}$

15. Point M is between L and N on $\overline{LN}$. Use the given information to write an equation in terms of x. Solve the equation. Then find LM and MN. LM = x^2, MN= *x* and LN = 12.



$x^2 + x = 12$

$x^2 + x - 12 = 0$ ← move the 12 to the other side to get right side equal to zero

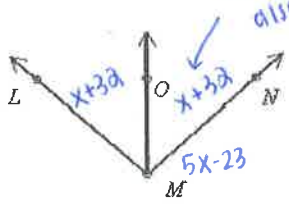
$(x+4)(x-3) = 0$

$x \neq -4, \boxed{x = 3}$

check: $x = -4$: $(-4)^2 = 16$, -4 ← doesn't work, $MN \neq -4$

$x = 3$: $(3)^2 = 9$, $3 \Rightarrow \boxed{LM = 9, MN = 3}$

16 $\overrightarrow{MO}$ bisects ∠LMN, m∠LMN = 5x-23, m∠LMO = x + 32. Find m∠NMO. The diagram is not to scale.



this angle also has to be x+32 since the angle is cut in half

$x + 32 + x + 32 = 5x - 23$

$2x + 64 = 5x - 23$

$64 = 3x - 23$

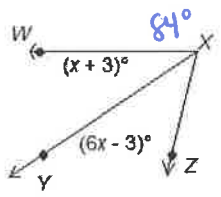
$87 = 3x$

$\boxed{x = 29}$

$m\angle LMO = 29 + 32$

$\boxed{m\angle LMO = 61°}$

17. Given $m\angle WXZ=84°$, find $m\angle YXZ$.



$x+3+6x-3=84$

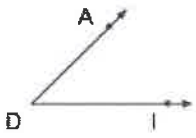
$7x=84$

$x=12$

$m\angle YXZ = 6(12)-3$

$m\angle YXZ = 69°$

18. Write 3 names for the angle shown



$\angle ADI$, $\angle IDA$, $\angle D$

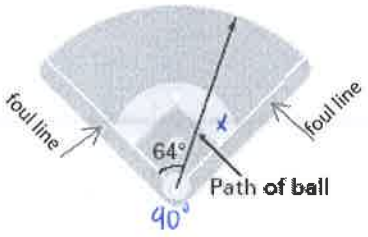
vertex D must be in the middle

19. The foul lines of a baseball field intersect at home plate to form a right angle. You hit a baseball whose path forms an angle of 64° with the third base foul line (see figure below). What is the angle between the first base foul line and the path of the baseball?

$64 + x = 90$

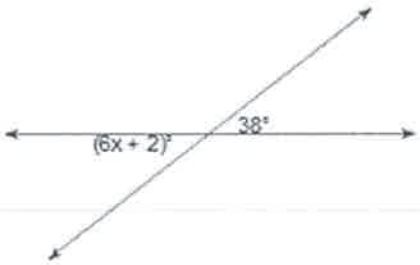
$x = 26$

$26°$



20. Solve for x.

a.

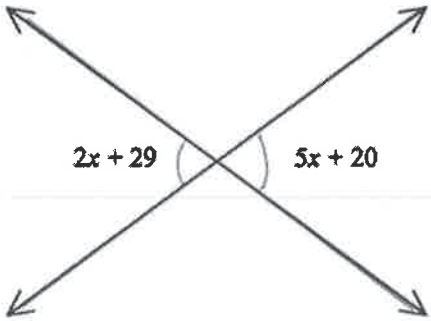


$6x+2=38$ ← vertical angles are equal

$6x=36$

$x=6$

b.



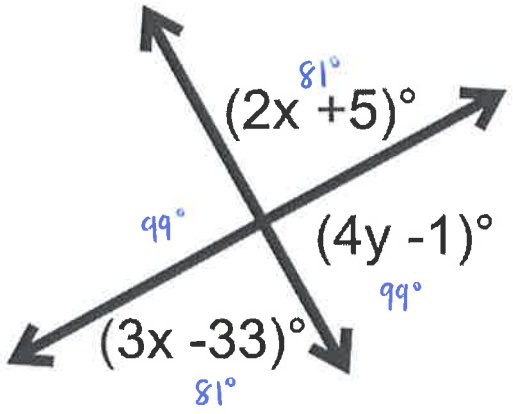
$2x+29=5x+20$ ← vertical angles

$29=3x+20$

$9=3x$

$x=3$

21. Solve for x and y.



$2x+5=3x-33$ (vertical angles)

$5=x-33$

$\boxed{x=38}$

$81+4y-1=180$ (Linear Pair)

$80+4y=180$

$4y=100$

$\boxed{y=25}$

22. $\angle 1$ and $\angle 2$ are complementary. If $m\angle 1 = 36°$, what is $m\angle 2$?

$36+m\angle 2=90 \Rightarrow \boxed{m\angle 2=54°}$

23. $\angle 1$ and $\angle 2$ are supplementary. If $m\angle 1 = 36°$, what is $m\angle 2$?

$36+m\angle 2=180 \Rightarrow \boxed{m\angle 2=144°}$

24. The measure of one angle is 2 times the measure of its complement. What are the measures of each of the two angles? $x = 2(90-x)$

$x=2(90-x)$

$x=180-2x$

$3x=180 \Rightarrow \boxed{x=60}$

$\boxed{\text{one angle} = 60°}$

$\boxed{\text{other angle} = 90-60=30°}$

25. The measure of one angle is 5 time the measure of its supplement. What are the measures of each of the two angles? $x = 5(180-x)$

$x=5(180-x)$

$x=900-5x$

$6x=900 \Rightarrow \boxed{x=150}$

$\boxed{\text{one angle} = 150°}$

$\boxed{\text{other angle} = 180-150=30°}$

26. $m\angle 1$ is 114°. If $\angle 1$ and $\angle 2$ are supplementary and $\angle 2$ and $\angle 3$ are complementary, what is the measure of $\angle 3$?

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

$114+m\angle 2=180$

$\boxed{m\angle 2=66°}$

$m\angle 2+m\angle 3=90$

$66+m\angle 3=90$

$\boxed{m\angle 3=24°}$

27. $m\angle 1$ is 14°. If $\angle 1$ and $\angle 2$ are complementary and $\angle 2$ and $\angle 3$ are complementary, what is the measure of $\angle 3$?

$m\angle 1+m\angle 2=90$

$14+m\angle 2=90$

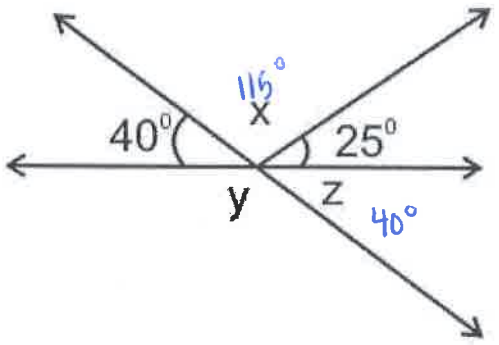
$\boxed{m\angle 2=76°}$

$m\angle 2+m\angle 3=90$

$76+m\angle 3=90$

$\boxed{m\angle 3=14°}$

28. Find the value of x, y, and z.



$40 + x + 25 = 180$ (the angles are all on a line)

$65 + x = 180$

$\boxed{x = 115^\circ}$

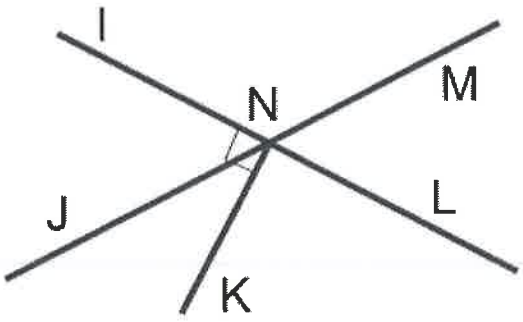
$\boxed{m\angle z = 40^\circ}$ ← vertical angles

$m\angle y + m\angle z = 180$ ← linear pair

$m\angle y + 40 = 180$

$\boxed{m\angle y = 140^\circ}$

29. Use the picture below to identify the following angle pairs.



a.) List all linear pairs.

∠INM and ∠MNL

∠MNL and ∠LNK

b.) List all vertical angles.

∠INM and ∠JNL

∠INJ and ∠MNL

c.) List all complementary angle pairs.

∠INJ and ∠JNK

d.) List all supplementary angle pairs.

∠INM and ∠MNL

∠MNL and ∠LNK

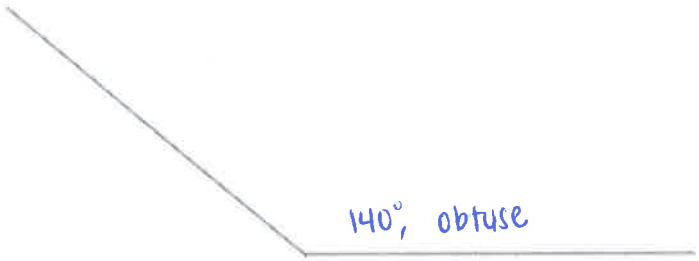
e.) Write congruency statements for all congruent angles.

$\angle INJ \cong \angle MNL$

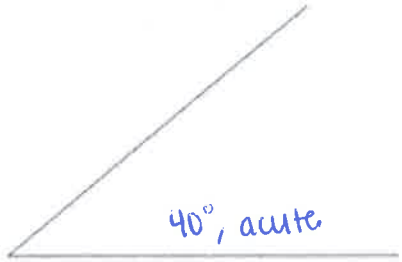
$\angle INM \cong \angle JNL$

Use a protractor to measure the following angles.

30)

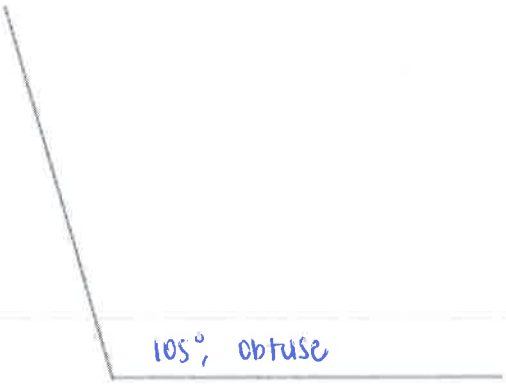


31)

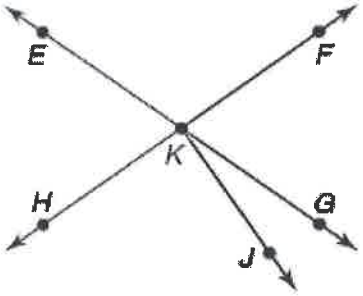


32)

33)



For questions #34-38, use drawing below.



34. Name two acute vertical angles.

∠EKH and ∠FKG

35. Name two obtuse vertical angles.

∠EKF and ∠HKG

36. Name a linear pair.

∠EKF and ∠FKG or ∠HKE and ∠EKF

37. Name two acute adjacent angles.

∠HKJ and ∠JKG or ∠JKG and ∠GKF

38. Name an angle supplementary to ∠FKG.

∠EKF or ∠HKG