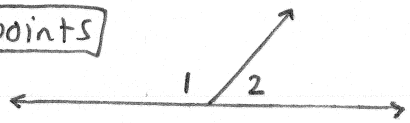
Chapter 1 Review Worksheet **Name:** Key

VOCABULARY EXERCISES

1. Copy and complete: Points A and B are the ? of $\overline{AB}$. Endpoints

2. Draw an example of a *linear pair.* ∠1 and ∠2 are a linear pair.



3. If Q is between points P and R on $\overleftrightarrow{PR}$, and $PQ = QR$, then Q is the ? of $\overline{PR}$. midpoint

EXERCISES

4. Give another name for line g. Ex: $\overleftrightarrow{XZ}$; $\overleftrightarrow{YX}$; $\overleftrightarrow{ZY}$ ...

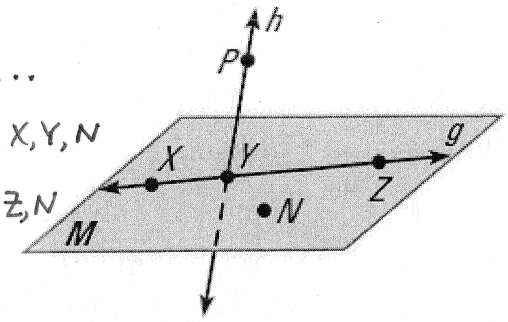
5. Name three points that are *not* collinear. Ex: Points X, Y, N

6. Name four points that are coplanar. Ex: Points X, Y, Z, N

7. Name a pair of opposite rays. $\overrightarrow{YX}$ and $\overrightarrow{YZ}$

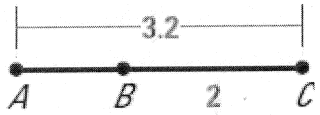
8. Name the intersection of line h and plane M.

Point Y



Find the indicated length.

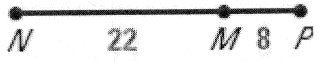
9. Find AB.



$AB + 2 = 3.2$

$AB = 1.2$

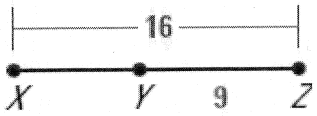
10. Find NP.



$22 + 8 = NP$

$NP = 30$

11. Find XY.



$XY + 9 = 16$

$XY = 7$

12. The endpoints of $\overline{DE}$ are $D(-4, 11)$ and $E(-4, -13)$. The endpoints of $\overline{GH}$ are $G(-14, 5)$ and $H(-9, 5)$. Are $\overline{DE}$ and $\overline{GH}$ congruent? *Explain.*

$DE = \sqrt{(-4--4)^2 + (-13-11)^2}$

$= \sqrt{0^2 + (-24)^2}$

$DE = 24$

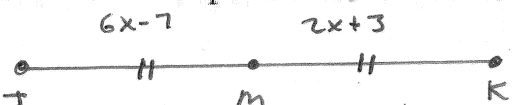
$GH = \sqrt{(-9--14)^2 + (5-5)^2}$

$= \sqrt{5^2 + 0^2}$

$GH = 5$

The segments are not $\cong$, as their lengths are not equal.

13. Point M is the midpoint of $\overline{JK}$. Find JK when $JM = 6x - 7$ and $MK = 2x + 3$.



$6x - 7 = 2x + 3$

$4x = 10$

$x = 2.5$

$JK = 16$

In Exercises 14-17, the endpoints of a segment are given. Find the length of the segment rounded to the nearest tenth. Then find the coordinates of the midpoint of the segment.

14. $A(2, 5)$ and $B(4, 3)$

$d = \sqrt{(4-2)^2 + (3-5)^2}$

$= \sqrt{(2)^2 + (-2)^2}$

$= \sqrt{8}$

AB = $2\sqrt{2} \approx 2.83$

$\left(\frac{2+4}{2}, \frac{5+3}{2}\right)$

$\left(\frac{6}{2}, \frac{8}{2}\right)$

Midpoint Coordinate: $(3, 4)$

15. $F(1, 7)$ and $G(6, 0)$

$d = \sqrt{(6-1)^2 + (0-7)^2}$

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

$= \sqrt{74}$

FG = $\sqrt{74} \approx 8.60$

$\left(\frac{1+6}{2}, \frac{7+0}{2}\right)$

Midpoint Coordinate: $(3.5, 3.5)$

16. $H(-3, 9)$ and $J(5, 4)$

$d = \sqrt{(5--3)^2 + (4-9)^2}$

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

$= \sqrt{89}$

HJ = $\sqrt{89} \approx 9.43$

$\left(\frac{-3+5}{2}, \frac{9+4}{2}\right)$

$\left(\frac{2}{2}, \frac{13}{2}\right)$

Midpoint Coordinate: $(1, 6.5)$

17. $K(10, 6)$ and $L(0, -7)$

$d = \sqrt{(0-10)^2 + (-7-6)^2}$

$= \sqrt{(-10)^2 + (-13)^2}$

$= \sqrt{269}$

KL = $\sqrt{269} \approx 16.40$

$\left(\frac{10+0}{2}, \frac{6+-7}{2}\right)$

Midpoint Coordinate: $(5, -.5)$

18. Point $C(3, 8)$ is the midpoint of $\overline{AB}$. One endpoint is $A(-1, 5)$. Find the coordinates of endpoint B. $B(x_1, y_1)$

$\frac{-1 + x_1}{2} = 3$

$-1 + x_1 = 6$

$x_1 = 7$

$\frac{5 + y_1}{2} = 8$

$5 + y_1 = 16$

$y_1 = 11$

$B(7, 11)$

19. The endpoints of $\overline{EF}$ are $E(2, 3)$ and $F(8, 11)$. The midpoint of $\overline{EF}$ is M. Find the length of $\overline{EM}$.

$E(2,3)$ $M(5,7)$ $F(8,11)$

$\left(\frac{8+2}{2}, \frac{11+3}{2}\right)$

$(5, 7)$

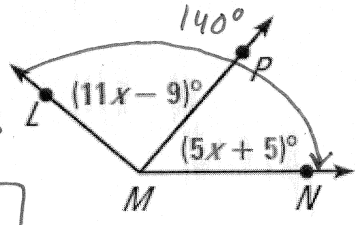
$d = \sqrt{(5-2)^2 + (7-3)^2}$

$= \sqrt{(3)^2 + (4)^2}$

$= \sqrt{25}$

$EM = 5$

20. In the diagram shown at the right, $m\angle LMN = 140°$. Find $m\angle PMN$.



$11x - 9 + 5x + 5 = 140$

$16x - 4 = 140$

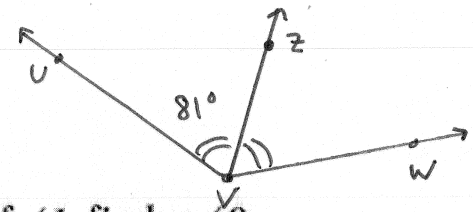
$16x = 144$

$x = 9$

$m\angle PMN = 5(9) + 5$

$m\angle PMN = 50°$

21. $\overrightarrow{VZ}$ bisects $\angle UVW$, and $m\angle UVZ = 81°$. Find $m\angle UVW$. Then classify $\angle UVW$ by its angle measure.



$m\angle UVW = 162°$ Obtuse

$\angle 1$ and $\angle 2$ are complementary angles. Given the measure of $\angle 1$, find $m\angle 2$.

22. $m\angle 1 = 12°$ $12 + m\angle 2 = 90$ $m\angle 2 = 78°$

23. $m\angle 1 = 83°$ $83 + m\angle 2 = 90$ $m\angle 2 = 7°$

24. $m\angle 1 = 46°$ $46 + m\angle 2 = 90$ $m\angle 2 = 44°$

25. $m\angle 1 = 2°$ $2 + m\angle 2 = 90$ $m\angle 2 = 88°$

$\angle 3$ and $\angle 4$ are supplementary angles. Given the measure of $\angle 3$, find $m\angle 4$.

26. $m\angle 3 = 116°$ $116 + m\angle 4 = 180$ $m\angle 4 = 64°$

27. $m\angle 3 = 56°$ $56 + m\angle 4 = 180$ $m\angle 4 = 124°$

28. $m\angle 3 = 89°$ $89 + m\angle 4 = 180$ $m\angle 4 = 91°$

29. $m\angle 3 = 12°$ $12 + m\angle 4 = 180$ $m\angle 4 = 168°$

30. $\angle 1$ and $\angle 2$ are complementary angles. Find the measures of the angles when $m\angle 1 = (x - 10)°$ and $m\angle 2 = (2x + 40)°$.

$x - 10 + 2x + 40 = 90$
$3x + 30 = 90$
$3x = 60$
$x = 20$

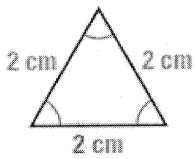
$m\angle 1 = 10°$
$m\angle 2 = 80°$

31. $\angle 1$ and $\angle 2$ are supplementary angles. Find the measures of the angles when $m\angle 1 = (3x + 50)°$ and $m\angle 2 = (4x + 32)°$. Then classify $\angle 1$ by its angle measure.

$3x + 50 + 4x + 32 = 180$
$7x + 82 = 180$
$7x = 98$
$x = 14$

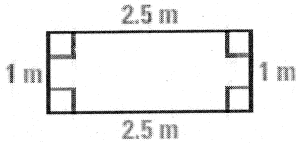
$m\angle 1 = 92°$
$m\angle 2 = 88°$

32.



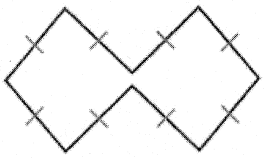
Triangle; regular b/c it is equiangular and equilateral

33.



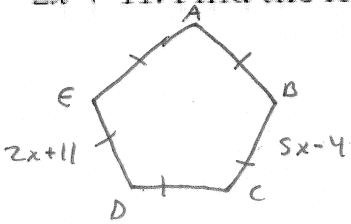
Quadrilateral; Equiangular b/c it has 4 $\cong$ $\angle$'s, but not all sides are $\cong$

34.



Octagon; Equilateral b/c all 8 sides are $\cong$, but not all $\angle$'s are $\cong$.

35. Pentagon $ABCDE$ is a regular polygon. The length of $\overline{BC}$ is represented by the expression $5x - 4$. The length of $\overline{DE}$ is represented by the expression $2x + 11$. Find the length of $\overline{AB}$.

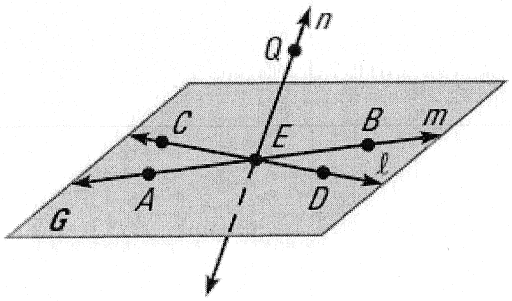


$5x - 4 = 2x + 11$
$3x = 15$
$x = 5$

$AB = 21$

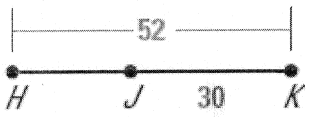
Use the diagram to decide whether the statement is *true* or *false*.

1. Point A lies on line m. true
2. Point D lies on line n. false
3. Points B, C, E, and Q are coplanar. false
4. Points C, E, and B are collinear. false
5. Another name for plane G is plane QEC. false



Find the indicated length.

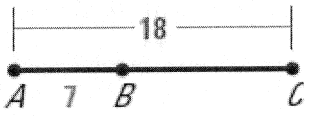
6. Find HJ.



$HJ + 30 = 52$

$HJ = 22$

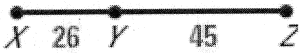
7. Find BC.



$7 + BC = 18$

$BC = 11$

8. Find XZ.



$26 + 45 = XZ$

$XZ = 71$

In Exercises 9–11, find the distance between the two points.

9. $T(3, 4)$ and $W(2, 7)$

$d = \sqrt{(2-3)^2 + (7-4)^2}$

$= \sqrt{(-1)^2 + (3)^2}$

$= \sqrt{10}$

$TW = \sqrt{10} \approx 3.16$

10. $C(5, 10)$ and $D(6, -1)$

$d = \sqrt{(6-5)^2 + (-1-10)^2}$

$= \sqrt{(1)^2 + (-11)^2}$

$= \sqrt{122}$

$CD = \sqrt{122} \approx 11.05$

11. $M(-8, 0)$ and $N(-1, 3)$

$d = \sqrt{(-1-(-8))^2 + (3-0)^2}$

$= \sqrt{(7)^2 + (3)^2}$

$= \sqrt{58}$

$MN = \sqrt{58} \approx 7.62$

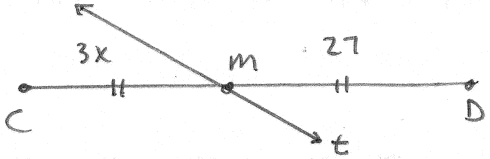
12. The midpoint of $\overline{AB}$ is $M(9, 7)$. One endpoint is $A(3, 9)$. Find the coordinates of endpoint B. $B(x_1, y_1)$

$\frac{3 + x_1}{2} = 9$ $\quad$ $\frac{9 + y_1}{2} = 7$

$x_1 = 15$ $\quad$ $y_1 = 5$

$B(15, 5)$

13. Line t bisects $\overline{CD}$ at point M, $CM = 3x$, and $MD = 27$. Find CD.



$CD = 54$

In Exercises 15, use the diagram.

15. Given $m\angle KHJ = 90°$, find $m\angle LHJ$.

$m\angle LHJ = 4(7) + 7$

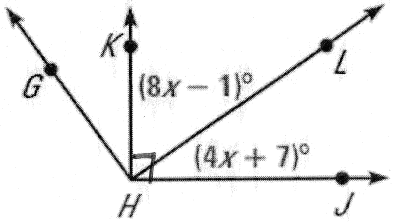
$m\angle LHJ = 35°$

$8x - 1 + 4x + 7 = 90$

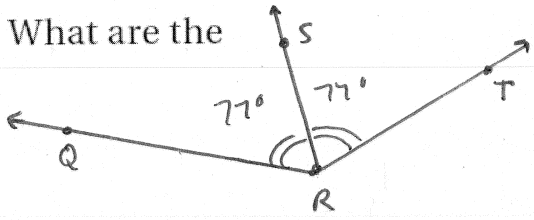
$12x + 6 = 90$

$12x = 84$

$x = 7$



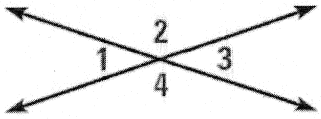
16. The measure of $\angle QRT$ is 154°, and $\overline{RS}$ bisects $\angle QRT$. What are the measures of $\angle QRS$ and $\angle SRT$?



$m\angle QRS = 77°$

$m\angle SRT = 77°$

In Exercises 17 and 18, use the diagram at the right.



17. Name four linear pairs.

$\angle 1 + \angle 2$; $\angle 2 + \angle 3$; $\angle 3 + \angle 4$; $\angle 4 + \angle 1$

18. Name two pairs of vertical angles.

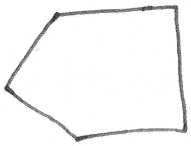
$\angle 1 + \angle 3$; $\angle 2 + \angle 4$

19. The measure of an angle is 64°. What is the measure of its complement? What is the measure of its supplement?

Complement = 26°

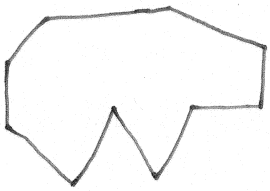
Supplement = 116°

20. A convex polygon has half as many sides as a concave 10-gon. Draw the concave polygon and the convex polygon. Classify the convex polygon by the number of sides it has.



Convex

Pentagon (5 sides)



Concave

Decagon (10-sides)