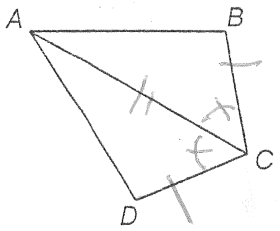
Semester 1 Honors Geometry Name: Answer Key
Review Worksheet #3

Chapter 4 (part 2)

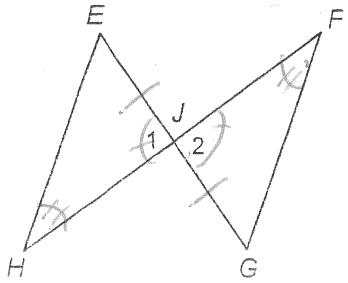
Part E: In problems 1-3, write complete proofs.

1. Given: $\angle BCA \cong \angle DCA$
$\overline{BC} \cong \overline{DC}$
Prove: $\angle B \cong \angle D$



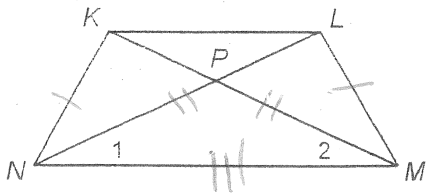
Conclusions	Justifications
0. $\angle BCA \cong \angle DCA$; $\overline{BC} \cong \overline{DC}$	0. Given
1. $\overline{AC} \cong \overline{AC}$	1. Reflexive
2. $\triangle ABC \cong \triangle ADC$	2. SAS $\cong$
3. $\angle B \cong \angle D$	3. CPCTC

2. Given: $\angle H \cong \angle F$
J is the midpoint of $\overline{EG}$
Prove: $\angle E \cong \angle G$



Conclusions	Justifications
0. $\angle H \cong \angle F$ J is mdpt of $\overline{EG}$	0. Given
1. $\angle 1 \cong \angle 2$	1. Vertical $\angle$ thm.
2. $\overline{EJ} \cong \overline{JG}$	2. Defn. of mdpt
3. $\triangle EJH \cong \triangle GJF$	3. SAA $\cong$
4. $\angle E \cong \angle G$	4. CPCTC

3. Given: $\overline{KM} \cong \overline{LN}$
$\overline{KN} \cong \overline{LM}$
Prove: $\angle 1 \cong \angle 2$



Conclusions	Justifications
0. $\overline{KM} \cong \overline{LN}$ $\overline{KN} \cong \overline{LM}$	0. Given
1. $\overline{MN} \cong \overline{MN}$	1. Reflexive
2. $\triangle KNM \cong \triangle LMN$	2. SSS $\cong$
3. $\angle 1 \cong \angle 2$	3. CPCTC

Chapter 5

Part A

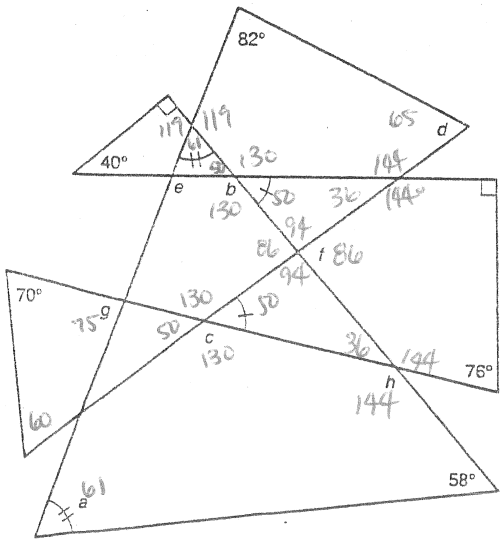
Complete each statement. *Give an answer besides *square*.

1. *The diagonals of a —?— are equal in length. rectangle/isosceles trap.
2. The three midsegments of a triangle divide the triangle into —?—. 4 congruent Δ's
3. An equiangular quadrilateral is usually called a —?—. rectangle
4. In an isosceles triangle, the base angles are —?—. congruent
5. The diagonals of a parallelogram —?— each other. bisect
6. Each angle of a regular octagon measures —?—. 135°
7. The length of a midsegment of a trapezoid is the —?— of the lengths of the bases. average
8. The vertex angles of a kite are —?— by the diagonal. bisected
9. The consecutive angles of a parallelogram are —?—. supplementary
10. *The diagonals of a —?— are perpendicular bisectors of each other. rhombus
11. The length of a midsegment between two sides of a triangle is —?— the length of the third side. 1/2
12. The sum of the measures of the angles of a decagon is —?—. 1440°
13. The midsegment of a trapezoid is —?— to the two bases. parallel
14. The diagonals of a kite are —?—. perpendicular
15. The opposite angles of a parallelogram are —?—. congruent

Part B

Determine the measure of each lettered angle in the figure below.

1. $a =$ 61°
2. $b =$ 130°
3. $c =$ 130°
4. $d =$ 65°
5. $e =$ 111°
6. $f =$ 86°
7. $g =$ 83°
8. $h =$ 144°



Part C

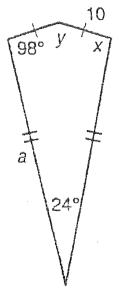
1-3. Give the value for each variable indicated.

1. Perimeter = 64

$a =$ 22

$x =$ 98°

$y =$ 140°

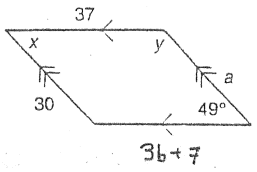


2. $a =$ 30

$b =$ 10

$x =$ 49°

$y =$ 131°



36+7

36+7=37

36=30

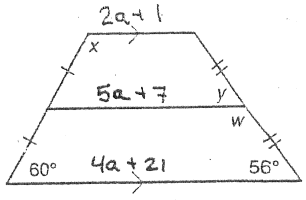
b=10

3. $a =$ 2

$w =$ 124°

$x =$ 120°

$y =$ 56°



$\frac{2a+1+4a+21}{2} = 5a+7$

$\frac{6a+22}{2} = 5a+7$

$3a+11 = 5a+7$

$a = 2$

Part D: Use coordinates to prove the following.

1. Given: $X = (2, -1)$, $Y = (1, 6)$, and $Z = (-4, 1)$

Prove: ΔXYZ is an isosceles triangle

Conclusions	Justifications
0. $X = (2, -1)$, $Y = (1, 6)$, and $Z = (-4, 1)$	0. Given
1. $\overline{XY} = \sqrt{(2-1)^2+(-1-6)^2} = \sqrt{1+49} = \sqrt{50}$ $\overline{YZ} = \sqrt{(1+4)^2+(6-1)^2} = \sqrt{50}$	1. Distance Formula
2. $XY = YZ$	2. substitution
3. $\overline{XY} \cong \overline{YZ}$	3. Defn. of $\cong$ seg.
4. $\triangle XYZ$ is isosceles $\triangle$	4. Defn. of isos. $\triangle$

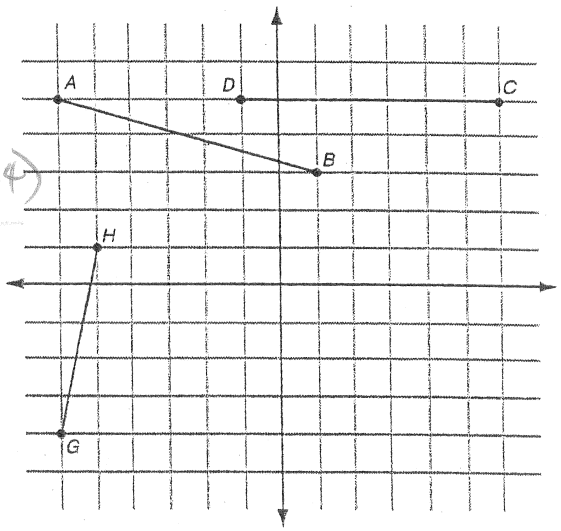
Chapter 5 ½

Part A: Identify each statement as *true* or *false*.

1. You can determine the slope of a segment if you are given the coordinates of its endpoints. True
2. The slope of a line depends on which points on the line you choose to calculate it. False
3. If two distinct lines on a graph have the same slope then they are perpendicular. False
4. If a graph has slope q and y-intercept $(0, r)$ then the equation for the line is $y = rx + q$. False
5. If m is the slope of $\overline{AB}$, then the slope of a line parallel to $\overline{AB}$ has slope $-m$. False

Part B: Find the slope, midpoint, and length of each of the segments below.

1. $\overline{AB}$: (-6,5)(1,3)
   slope = $-2/7$ $\frac{3-5}{1+6} = \frac{-2}{7}$
   midpoint = (-2.5, 4) $\left(\frac{-6+1}{2}, \frac{5+3}{2}\right)(-2.5, 4)$
   length = 7.28 $\sqrt{(-6-1)^2+(5-3)^2}$ $\sqrt{49+4}$



2. $\overline{GH}$: (-6,-4)(-5,1)
   slope = 5 $\frac{1+4}{-5+6} = \frac{5}{1}$
   midpoint = (-5.5, -1.5)
   length = 5.1 $\sqrt{(-6+5)^2+(-4+1)^2} = \sqrt{26}$

3. $\overline{CD}$: (-1,5)(6,5)
   slope = 0 $\frac{5-5}{6+1} = \frac{0}{7}$
   midpoint = (2.5, 5) $\left(\frac{-1+6}{2}, \frac{5+5}{2}\right)$
   length = 7 $\sqrt{(-1-6)^2+(5-5)^2}$ $\sqrt{49}$

Part C: Determine whether the lines are parallel, perpendicular, or neither. State the reason for your conclusion. The coordinates of the points are given below.

$W(1, 0)$ $X(3, 2)$ $Y(5, 1)$ $Z(8, 4)$

1. $\overleftrightarrow{WX}$ and $\overleftrightarrow{YZ}$

$\overline{WX} = \frac{2-0}{3-1} = \frac{2}{2} = 1$ $\overline{YZ} = \frac{4-1}{8-5} = \frac{3}{3} = 1$

parallel

2. $\overleftrightarrow{WX}$ and $\overleftrightarrow{XY}$

$\overline{WX} = 1$ $XY = \frac{1-2}{5-3} = \frac{-1}{2}$

Nether

Part D

1. Write the equation of a line through the points with coordinates (4, 2) and (5, 1).

$m = \frac{2-1}{4-5} = \frac{1}{-1} = -1$

$y = -x + b$
$1 = -5 + b$
$b = 6$

$y - 1 = -1(x - 5)$
$y - 1 = -x + 5$
$y = -x + 6$

$y = -x + 6$

2. Write the equation of a line that is perpendicular to $y = 3x - 2$ and passes through the point with coordinates (6, 0).

$m = -\frac{1}{3}$

$y - 0 = -\frac{1}{3}(x - 6)$
$y = -\frac{1}{3}x + 2$

3. Write the equation of the perpendicular bisector of the segment with endpoints (-2, -1) and (8, 5).

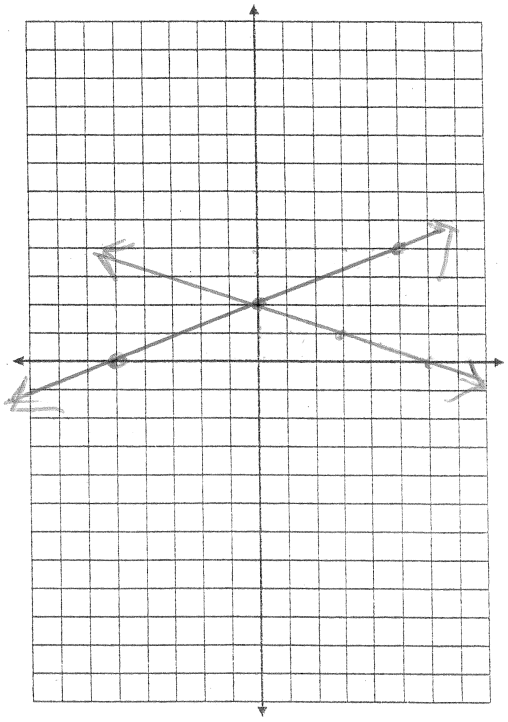
$m = \frac{-1-5}{-2-8} = \frac{-6}{-10} = \frac{3}{5}$

$\perp m = -\frac{5}{3}$

midpoint (3, 2)

$y - 2 = -\frac{5}{3}(x - 3)$
$y - 2 = -\frac{5}{3}x + 5$
$y = -\frac{5}{3}x + 7$

Part E: Graph the lines on the coordinate graph at the right.



1. $y = \frac{2}{5}x + 2$

2. $x + 3y = 6$

$3y = -x + 6$
$y = -\frac{1}{3}x + 2$

Part F: Solve the systems of equations.

1. $x = y + 10$
$2y = x - 6$

$2y = y + 10 - 6$
$y = 4$
$x = 14$

(14, 4)

2. $(2x + 3y = -1)3 \rightarrow -6x - 9y = 3$
$(3x + 5y = -2)2 \rightarrow 6x + 10y = -4$
$y = -1$

$2x + 3(-1) = -1$
$2x - 3 = -1$
$2x = 2$
$x = 1$

(1, -1)