

GEOMETRY IN-CLASS REVIEW:

NAME: Key

1. Graph triangle EAR on the graph provided: E(-4, -8), A(0, -5), and R(-8, -5).

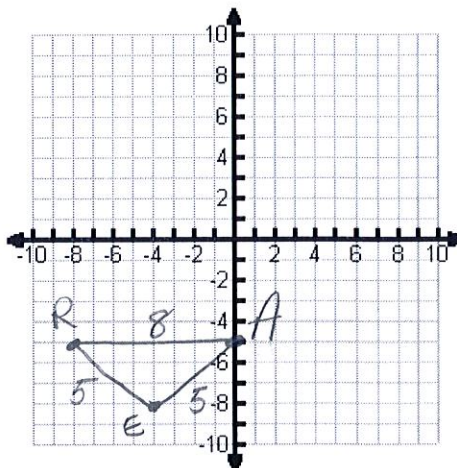
A. Classify the following triangle by sides (scalene, isosceles, equilateral). *use distance formula*

$$EA: \sqrt{(0-(-4))^2 + (-5-(-8))^2} = \sqrt{16+9} = \sqrt{25} = 5$$

$$AR: \sqrt{(-8-0)^2 + (-5-(-5))^2} = \sqrt{64} = 8$$

$$ER: \sqrt{(-8-(-4))^2 + (-5-(-8))^2} = \sqrt{16+9} = \sqrt{25} = 5$$

EAR is an isosceles triangle because  
 $\overline{EA} \cong \overline{ER}$



B. Is EAR a right triangle? EAR is not a right triangle because slopes are not perpendicular.

$$m_{EA} = \frac{-5-(-8)}{0-(-4)} = \frac{3}{4}$$

$$m_{AR} = \frac{-5-(-5)}{-8-0} = \frac{0}{-8} = 0$$

$$m_{ER} = \frac{-5-(-8)}{-8-(-4)} = \frac{3}{-4}$$

2. Is the point (10, 14) inside, outside, or on the circle  $(x-6)^2 + (y-15)^2 = 16$ ?

$$(10-6)^2 + (14-15)^2 = 16$$

$$16 + 1 = 17$$

$17 > 16$  outside

3. Convert  $(x+4)^2 + (y-2)^2 = 10$  from standard form to general form.

$$(x+4)(x+4) + (y-2)(y-2) = 10$$

$$x^2 + 4x + 4x + 16 + y^2 - 2y - 2y + 4 - 10 = 0$$

$$\boxed{x^2 + y^2 + 8x - 4y + 10 = 0}$$

4. Convert  $x^2 + y^2 - 26x - 2y + 166 = 0$  from general form to standard form.

$$x^2 - 26x + \underline{169} + y^2 - 2y + \underline{1} = -166 + \underline{169} + \underline{1}$$

$$\boxed{(x-13)^2 + (y-1)^2 = 4}$$

5. Here are two points on a line:  $(-2, 8)$  and  $(-6, -2)$ .  $m = \frac{-2-8}{-6-2} = \frac{-10}{-4} = \frac{5}{2}$

A. Find the slopes of a line parallel to this line.

$$\frac{5}{2}$$

B. Find the slopes of a line perpendicular to this line.

$$-\frac{2}{5}$$

6. Find the equation of a line that is parallel to  $y = -2x + 8$  and goes through the point  $(5, -12)$ .

$m_{\parallel} = -2$      $(5, -12)$      $y = mx + b$   
 $-12 = (-2)(5) + b$   
 $-12 = -10 + b$   
 $\frac{+10}{+10}$   
 $-2 = b$

$$y = -2x - 2$$

7. Find the equation of a line that is perpendicular to  $y = -3x - 8$  and goes through the point  $(12, 1)$ .

$m = -3$      $m_{\perp} = \frac{1}{3}$      $(12, 1)$      $y = mx + b$   
 $1 = \frac{1}{3}(12) + b$   
 $1 = 4 + b$   
 $\frac{-4}{-4}$   
 $-3 = b$

$$y = \frac{1}{3}x - 3$$

8. Write the equation of a circle that has a center at  $(-5, 12)$  and has an area of  $5\pi$ .

$(x-h)^2 + (y-k)^2 = r^2$   
 $(x+5)^2 + (y-12)^2 = 5$

$\pi r^2 = 5\pi$   
 $\frac{\pi r^2}{\pi} = \frac{5\pi}{\pi}$   
 $r^2 = 5$

9. Write the equation of a circle that has a diameter with endpoints of  $(12, -1)$  and  $(-2, -5)$ .

① Find Center using midpoint

$$\left(\frac{12+(-2)}{2}, \frac{-1+(-5)}{2}\right)$$

$$(5, -3)$$

② Find radius using distance formula

$$d = \sqrt{(5-12)^2 + (-3-(-1))^2}$$

$$d = \sqrt{49+4} = \sqrt{53}$$

③ Write Equation

$$(x-h)^2 + (y-k)^2 = r^2$$

$$(x-5)^2 + (y+3)^2 = 53$$

10. Given:  $x = 11$  Passes through the point:  $(3, -7)$

A. Write the equation of a parallel line.

$$x = 3$$

B. Write the equation of a perpendicular line.

$$y = -7$$

