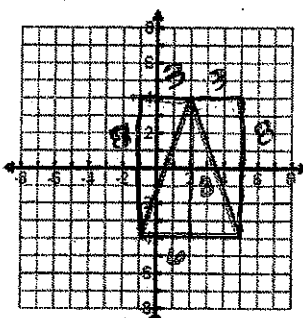
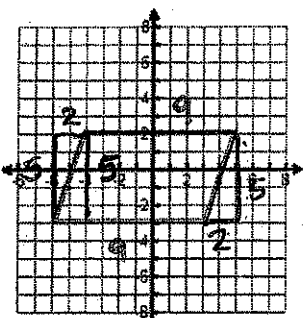
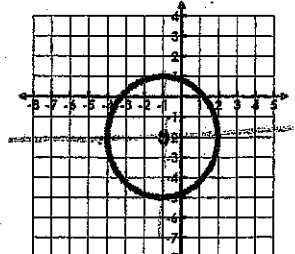


Name: _____

Date: _____

Use the following to review for you test. Work the Practice Problems on a separate sheet of paper.

What you need to know & be able to do	Things to remember	Problem	Problem
<p>Midpoint</p>	$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$	<p>1. Find the midpoint of (5, 1) and (6, 7).</p> $\left(\frac{5+6}{2}, \frac{1+7}{2} \right)$ $\left(\frac{11}{2}, \frac{8}{2} \right)$ <p>(5.5, 4)</p>	<p>2. Find the coordinates of the other endpoint of a segment with an endpoint of (-2, 2) and a midpoint (8, 3).</p> <p>End (-2, 2) Mdpt (8, 3) End (18, 4)</p>
<p>Distance and Applications</p> $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	<ul style="list-style-type: none"> Find the distance between two people. Pay attention to Direction: North and East are positive, South and West are negative Decide if a point lies on a circle: Find the length of the radius and see if the other distance is the same. 	<p>3. Brandy and Mandy are in the pool playing a game of Marco Polo. Brandy swims 10 ft south and 7 ft east of base. Mandy swims 6 ft north and 5 ft west from where they started together in the middle of the pool. How far apart are Brandy and Mandy?</p> <p>$\sqrt{(7+5)^2 + (-10-6)^2}$ $\sqrt{12^2 + 16^2}$ $\sqrt{144+256}$ $\sqrt{400} = 20$</p>	<p>4. Determine whether Point A (-5, 8) lies on the circle whose center is Point C (1, 2) and which contains the Point P (7, -4).</p> <p>CP: $\sqrt{(7-1)^2 + (-4-2)^2}$ $\sqrt{6^2 + (-6)^2}$ $\sqrt{36+36}$ $\sqrt{72}$ ≈ 8.5</p> <p>CA: $\sqrt{(-5-1)^2 + (8-2)^2}$ $\sqrt{(-6)^2 + (6)^2}$ $\sqrt{36+36}$ $\sqrt{72}$ ≈ 8.5</p> <p>ON</p>
	<ul style="list-style-type: none"> Use Slope and Distance to prove that a shape is a specific type of quadrilateral or triangle Parallel and Perpendicular: Use Slope Congruent: Use Distance 	<p>5. Given that a rhombus has 4 congruent sides and opposite sides parallel, prove the following is a rhombus.</p> <p>Lengths</p> <p>AB: 5 BC: $\sqrt{5^2 + 3^2}$ $\sqrt{34}$</p> <p>CD: 5 DA: $\sqrt{34}$</p> <p>Slopes</p> <p>AB: 0 BC: $\frac{5}{3}$</p> <p>CD: 0 DA: $\frac{5}{3}$</p>	

<p>Perimeter and Area</p>	<ul style="list-style-type: none"> Perimeter: Distance Around an Object Area of a Parallelogram: Length * Height Area of a Triangle: $\frac{1}{2}$ (base) (height) Area of a Trapezoid: $\frac{1}{2}(b_1 + b_2)h$ 	<p>6. Find the area and perimeter of the figure.</p> <p>$A = \frac{1}{2}(6 \times 4)$ $P = 2\sqrt{13} + 6$ $A = 24u^2$ $\approx 23.1u$</p> 	<p>7. Find the area and perimeter of the figure.</p> <p>$A = 5(4)$ $P = 2\sqrt{29} + 18$ $= 45u^2$ $\approx 28.8u$</p> 
<p>Writing the Equation of a Line</p>	<ul style="list-style-type: none"> Two Points: Find the slope, plug in slope and one point into $y=mx+b$ and solve for b, then sub m and b into slope intercept form Parallel: Use the slope and solve for b Perpendicular: Use the opposite reciprocal slope and solve for b 	<p>8. Write the equation of line that passes through the points (-5, -1) and (-3, 1)</p> <p>$m = \frac{-1 - (-3)}{-5 - (-3)} = \frac{2}{-2} = -1$</p> <p>$y - 1 = -1(x - (-3))$ $y - 1 = -x - 3$ $y = -x - 2$</p>	<p>9. Write the equation of line that passes through the points (2, 5) and (0, -1).</p> <p>$m = \frac{5 - (-1)}{2 - 0} = \frac{6}{2} = 3$</p> <p>$y - 5 = 3(x - 2)$ $y - 5 = 3x - 6$ $y = 3x - 1$</p>
<p>Partitions</p> <p>$x_1 + (x_2 - x_1)\left(\frac{a}{a+b}\right)$ $y_1 + (y_2 - y_1)\left(\frac{a}{a+b}\right)$</p>	<ul style="list-style-type: none"> Use the formula 	<p>10. Write an equation of the line that passes through (-3, 4) and is parallel to $Y = -3x - 1$.</p> <p>$y - 4 = -3(x - (-3))$ $y - 4 = -3x - 9$ $y = -3x - 5$</p>	<p>11. Write an equation of the line that passes through (5, -3) and is perpendicular to $y = -5/2x + 1$.</p> <p>$m \perp = \frac{2}{5}$</p> <p>$y - (-3) = \frac{2}{5}(x - 5)$ $y + 3 = \frac{2}{5}x - 2$ $y = \frac{2}{5}x - 5$</p>
<p>Circles</p> <p>Standard Form $(x-h)^2 + (y-k)^2 = r^2$</p> <p>General Form $Ax^2 + By^2 + Cx + Dy + E = 0$</p>	<p>Converting standard to general form</p> <ul style="list-style-type: none"> Multiply the binomials out by separating the terms that are square Combine like terms Set equal to 0 	<p>12. Find a point P on the segment with endpoints A(-1, -3) and B(7, 1) that partitions it in a 3:1 ratio.</p> <p>$-1 + \frac{3}{4}(7 - (-1)) = -1 + \frac{3}{4}(8) = -1 + 6 = 5$ $-3 + \frac{3}{4}(1 - (-3)) = -3 + \frac{3}{4}(4) = -3 + 3 = 0$</p> <p>P(5, 0)</p> 	<p>13. Find a point T on the segment with endpoints C(-4, -6) and D(2, 3) that partitions it in a 2:1 ratio.</p> <p>$-4 + \frac{2}{3}(2 - (-4)) = -4 + \frac{2}{3}(6) = -4 + 4 = 0$ $-6 + \frac{2}{3}(3 - (-6)) = -6 + \frac{2}{3}(9) = -6 + 6 = 0$</p> <p>T(0, 0)</p> <p>14. Write the equation of the circle in standard form.</p> <p>15. Convert your answer from #14 to the General Form.</p> <p>$x^2 + 2x + 1 + y^2 + 4y + 4 = 9$ $x^2 + 2x + y^2 + 4y - 4 = 0$</p> <p>16. Convert to Standard: $x^2 + y^2 + 8x - 14y + 13 = 0$ $x^2 + 8x + y^2 - 14y = -13$ $(x+4)^2 + (y-7)^2 = -13 + 16 + 49 = 52$ $(x+4)^2 + (y-7)^2 = 52$</p>

$(x+1)^2 + (y+2)^2 = 9$

Honors Geometry

Coordinate Geometry EOC Review

1. Find the intersection of the line and circle algebraically $(x+2)^2 + (y-1)^2 = 50$

$$(x+2)^2 + (-x-1-1)^2 = 50 \quad 2x^2 + 8x - 42 = 0 \quad (-7, 6)$$

$$(x+2)^2 + (-x-2)^2 = 50 \quad 2(x^2 + 4x - 2) = 0 \quad x + y = -1 \quad (3, -4)$$

$$x^2 + 4x + 4 + x^2 + 4x + 4 = 50$$

$$2x^2 + 8x + 8 = 50$$

$$2(6x + 7)(x - 3) = 0$$

$$x = -7 \quad x = 3$$

$$y = -x - 1$$

2. State the center and radius:

$$x^2 + y^2 - 10x - 20y + 44 = 0$$

$$x^2 - 10x + y^2 - 20y = -44$$

$$(x-5)^2 + (y-10)^2 = -44 + 25 + 100$$

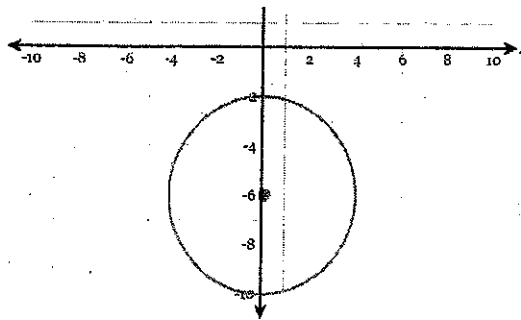
$$(x-5)^2 + (y-10)^2 = 81$$

$$C: (5, 10) \quad r: 9$$

3. Determine the equation of the circle:

$$(x-0)^2 + (y+6)^2 = 4$$

$$x^2 + (y+6)^2 = 4$$



4. What is the location of the point (5, 2.7) with respect to a circle centered at (3, 6) passing through the point (6, 8).

$$(x-3)^2 + (y-6)^2 = r^2 \quad r \approx 3.61$$

$$(5-3)^2 + (2.7-6)^2 = r^2$$

$$(6-3)^2 + (8-6)^2 = r^2$$

$$4 + 10.89 = r^2$$

$$9 + 4 = r^2 \quad \sqrt{13} = r^2$$

$$14.89 = r^2 \quad r \approx 3.86 \text{ (OUT)}$$

5. Determine the equation of a circle centered at (-3, 5) that passes through the point (1, 5)?

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

$$(x+3)^2 + (y-5)^2 = 16$$

$$(1+3)^2 + (5-5)^2 = r^2$$

$$4^2 + 0^2 = r^2$$

$$16 = r^2$$

6. A circle has the equation $x^2 + y^2 + 16x - 24y = -87$. What is the length of the diameter of the circle?

$$x^2 + 16x + y^2 - 24y = -87$$

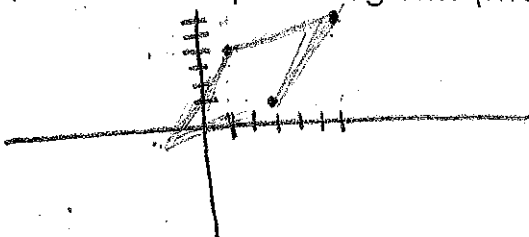
$$(x+4)^2 + (y-12)^2 = -87 + 16 + 144$$

$$(x+4)^2 + (y-12)^2 = 73$$

$$r = \sqrt{73} \approx 8.54$$

$$d = 17.1$$

7. Three of the four vertices of a quadrilateral located in the coordinate plane are (1, 4), (6, 6), and (3, 1). What coordinates of a fourth point would make this quadrilateral a parallelogram? (two correct answers)



① D (8, 3)

② D (-2, -1)

$$\textcircled{1} \begin{cases} (x+2)^2 + (y-1)^2 = 50 \\ x+y = -1 \end{cases}$$

$$x = -y-1$$

$$(-y+1)^2 + (y-1)^2 = 50$$

$$y^2 - 2y + 1 + (y^2 - 2y + 1) = 50$$

$$2y^2 - 4y + 2 = 50$$

$$2(y^2 - 2y + 1) = 50$$

$$(y^2 - 2y + 1) = 25$$

$$(y^2 - 2y - 24) = 0$$

$$(y-6)(y+4) = 0$$

$$y=6 \quad y=-4$$

$$x+6 = -1 \quad x+4 = -1$$

$$x = -7 \quad x = 3$$

$$\boxed{(-7, 6) \quad (3, -4)}$$

$$\textcircled{2} x^2 + y^2 - 10x - 20y = -44$$

$$(x-5)^2 + (y-10)^2 = -44 + 25 + 100$$

$$(x-5)^2 + (y-10)^2 = 81$$

$$C: (5, 10) \quad r = 9$$

$\frac{3}{19}$
 $\frac{44}{25}$
 $\frac{100}{19}$

$$\textcircled{3} x^2 + (y+6)^2 = 16$$

$$\textcircled{4} d = \sqrt{(6-3)^2 + (8-6)^2}$$

$$d = \sqrt{9+4}$$

$$d = \sqrt{13}$$

$$(x-3)^2 + (y-6)^2 = 13$$

$$(5-3)^2 + (2.7-6)^2 \stackrel{?}{=} 13$$

$$2^2 + (-3.3)^2 \stackrel{?}{=} 13$$

$$4 + 10.89 \stackrel{?}{=} 13$$

~~10.89~~
14.89 > 13
outside

$$\textcircled{5} r = \sqrt{(-3-1)^2 + (5-5)^2}$$

$$\boxed{(x+3)^2 + (y-5)^2 = 16}$$

$$r = \sqrt{16}$$

$$r = 4$$

$$\textcircled{6} x^2 + y^2 + 16x - 24y = -87$$

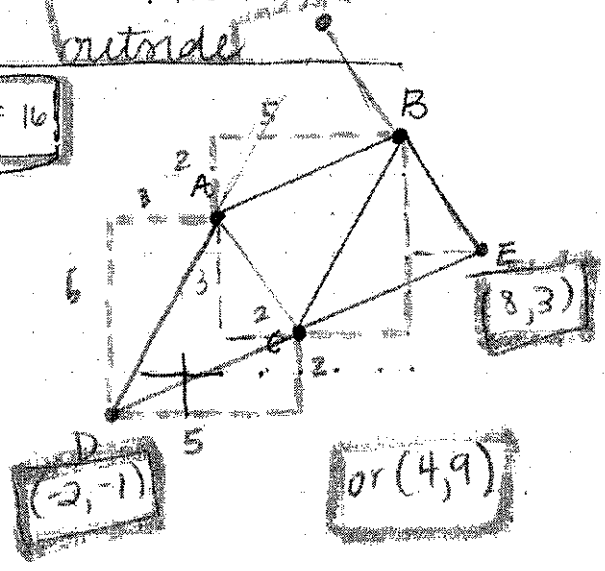
$$(x+8)^2 + (y-12)^2 = -87 + 64 + 144$$

$$(x+8)^2 + (y-12)^2 = 121$$

$$r = 11$$

$$\boxed{d = 22}$$

$\textcircled{7}$



$$\boxed{(-2, -1)}$$

$$\boxed{\text{or } (4, 9)}$$

8. Two vertices of a parallelogram are A(2, 3) and B(8, 11), and the intersection of the diagonals is X(7, 6). Find the coordinates of the other two vertices.

$$\begin{matrix} (2, 3) & (8, 11) \\ (7, 6) & (7, 6) \end{matrix}$$

① (12, 9) ② (6, 1)

9. Determine what type of triangle this is using distances and slopes: A(1, 1), B(4, 4), C(6, 2).

AB → Slope 1
Dist $\sqrt{18}$

BC → Slope -1
Dist $\sqrt{10}$

AC → Slope $\frac{1}{5}$
Distance $\sqrt{40}$

Right Scalene

10. Points A(-8, 12) and B(-10, 18) are endpoints of directed line segment AB. What are the coordinates of point P that partitions AB in the ratio 2:3?

$$-8 + \frac{2}{5}(-10 - (-8))$$

$$12 + \frac{2}{5}(18 - 12)$$

$$\left(-\frac{44}{5}, \frac{72}{5}\right)$$

$$-8 + \frac{3}{5}(-10 + 8)$$

$$12 + \frac{3}{5}(6)$$

$$(-8.8, 14.4)$$

$$-8 + \frac{2}{5}(-8)$$

$$\frac{72}{5} + \frac{12}{5}$$

$$\frac{-44}{5} + \frac{72}{5}$$

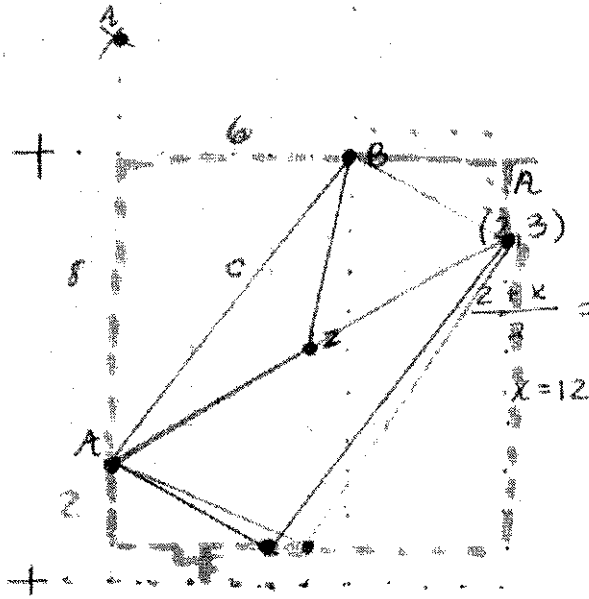
$$\frac{72}{5}$$

$$-\frac{44}{5}$$

8

$$\frac{6}{4} = \frac{4}{3}$$

8 (12, 9)
(6, 1)



Z (7, 6) D (2, 9)

$$\frac{3+y}{2} = 6$$

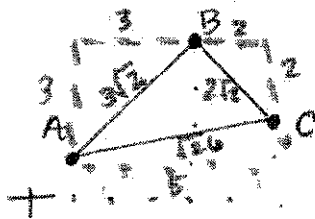
$$y = 9$$

B (8, 11) Z (7, 6) C (6, 1)

$$\frac{8+x}{2} = 7 \quad \frac{11+x}{2} = 6$$

$$8+x=14$$

9



Right A

$$\overline{AB} \quad m = \frac{2}{3} \perp$$

$$\overline{BC} \quad m = -1$$

$$(3\sqrt{2})^2 + (4\sqrt{2})^2 = \sqrt{26}^2$$

$$18 + 8 = 26$$

$$26 = 26$$

10 (8, 12) (-10, 18) 2:3

new x

$$(-10 - 8) \left(\frac{2}{5}\right) + -8$$

$$-2 \cdot \frac{2}{5} - 8$$

$$\frac{-4}{5} - \frac{40}{5} = \frac{-44}{5}$$

$$\left(\frac{-44}{5}, \frac{72}{5}\right)$$

new y

$$18 - 12 \left(\frac{2}{5}\right) + 12$$

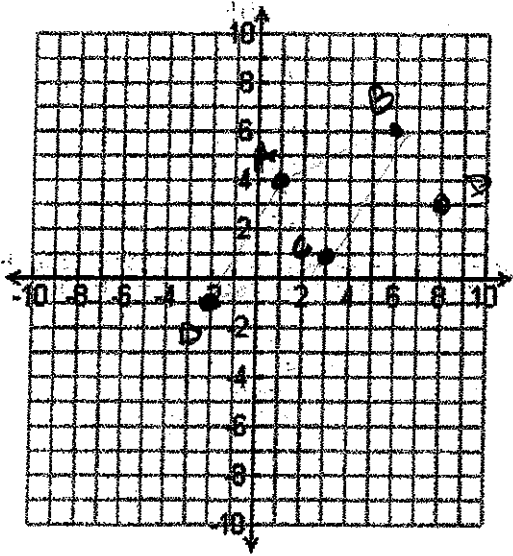
$$6 + \frac{2}{5} + 12$$

$$\frac{18}{5} + 12$$

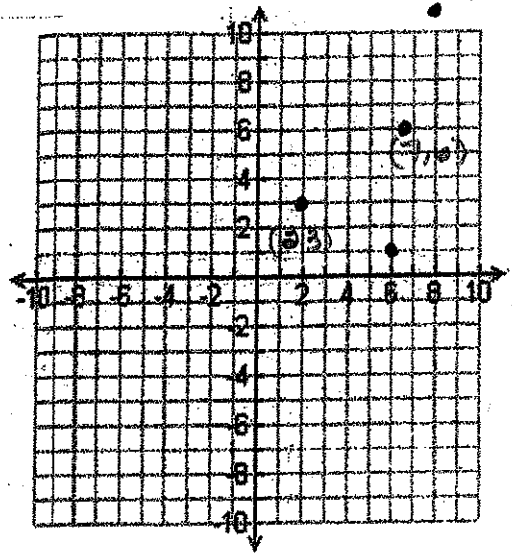
$$\frac{12}{5} + \frac{60}{5}$$

$$\frac{72}{5}$$

7

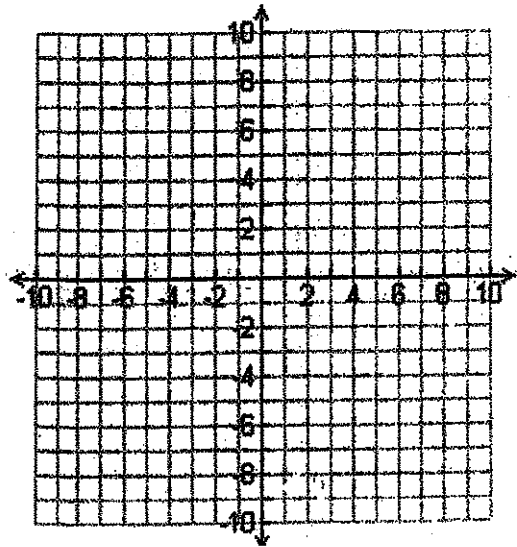
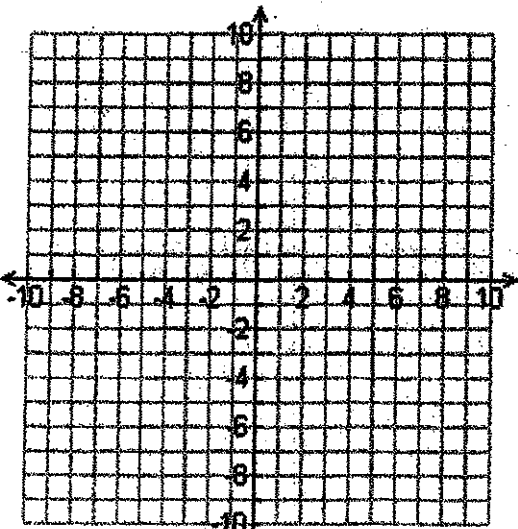
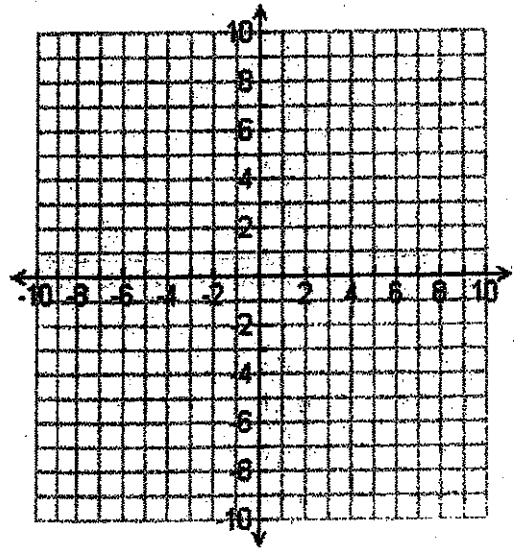
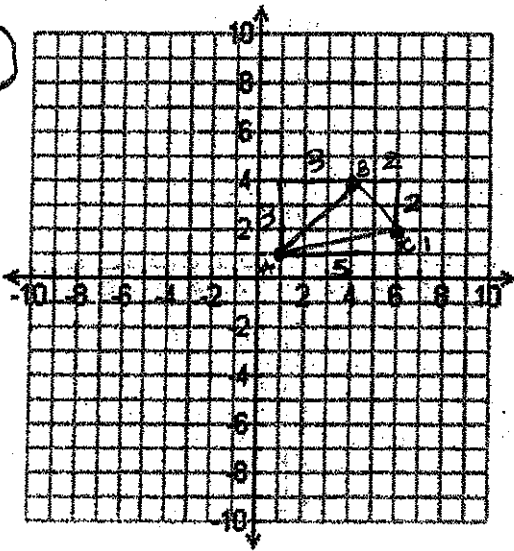


8



(8, 11)

9



Name: _____ Date: _____

Review All

1. Write the equation of the circle centered at
- $(-4, 6)$
- with a diameter of 16.
- $r = 8$

$$(x+4)^2 + (y-6)^2 = 64$$

2. Write an equation of the line that passes through
- $(5, -3)$
- and is
- perpendicular
- to
- $y = -5/2x + 1$
- .

$$m \perp = \frac{2}{5}$$

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

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

$$\boxed{y = \frac{2}{5}x - 5}$$

3. Write an equation of the line that passes through
- $(2, 4)$
- and is
- parallel
- to
- $4x + 2y = 8$
- .

$$4x + 2y = 8$$

$$2y = -4x + 8$$

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

$$y - 4 = -\frac{1}{2}(x - 2)$$

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

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

4. Reed and Skylar are playing Hide-and-Seek. Reed runs and hides 30 ft south and 24 ft east of base. Skylar runs and hides 43 ft north and 12 ft west of base. How far apart are Skylar and Reed?

$$R(24, -30)$$

$$S(-12, 43)$$

$$\sqrt{(-12-24)^2 + (43+30)^2}$$

$$\sqrt{(-36)^2 + (73)^2}$$

$$\sqrt{1296 + 5329}$$

$$\sqrt{6625} \approx 81.39 \text{ ft}$$

5. A circular skylight has a diameter with endpoints at
- $(-6, 32)$
- and
- $(2, 26)$
- . Find the
- center
- and
- radius
- of the skylight.

Midpoint

$$\left(\frac{-6+2}{2}, \frac{32+26}{2} \right)$$

$$\left(-\frac{4}{2}, \frac{58}{2} \right)$$

$$C: (-2, 29)$$

Radius

$$\sqrt{(-2-2)^2 + (29-26)^2}$$

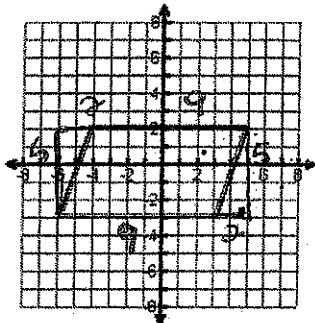
$$\sqrt{(-4)^2 + (3)^2}$$

$$\sqrt{16+9}$$

$$\sqrt{25}$$

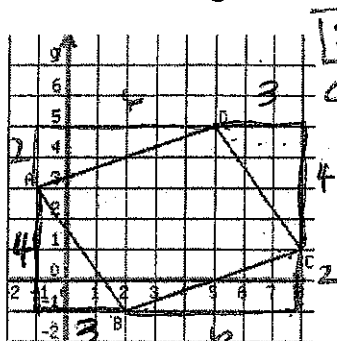
$$r = 5$$

6. Find the perimeter of the figure.



$$2\sqrt{29} + 18 \approx 28.8u$$

7. Prove using distance or the slope to prove that the figure is a parallelogram.



DISTANCES
 Opposite sides \cong
 $AB = DC$
 5
 $AD = BC$
 $\sqrt{40}$

SLOPES
 Opposite sides \parallel
 $AB = -\frac{4}{3}$ $DC = -\frac{4}{3}$
 $AD = \frac{2}{6}$ $BC = \frac{2}{6}$

Parallelogram

8. Find a point T on the segment with endpoints C(-4, -6) and D(2, 3) that partitions it in a 2:1 ratio. **(0, 0)**

$$\begin{aligned} -4 + \frac{2}{3}(2 - (-4)) &= -4 + \frac{2}{3}(6) \\ -4 + \frac{2}{3}(6) &= -4 + 2(2) \\ -4 + 2(2) &= -4 + 4 \\ -4 + 4 &= 0 \end{aligned}$$

$$\begin{aligned} -6 + \frac{2}{3}(3 - (-6)) &= -6 + \frac{2}{3}(9) \\ -6 + \frac{2}{3}(9) &= -6 + 2(3) \\ -6 + 2(3) &= -6 + 6 \\ -6 + 6 &= 0 \end{aligned}$$

9. Put the equation of the circle in general form. $(x-2)^2 + (y+3)^2 = 16$

$$x^2 - 4x + 4 + y^2 + 6y + 9 = 16$$

$$x^2 - 4x + y^2 + 6y - 3 = 0$$

10. Circle C has a center of (5, 2) and a radius of 6. Does the point (8, 7) lie on circle C?

$$(x-5)^2 + (y-2)^2 = 36$$

$$(8-5)^2 + (7-2)^2 = 36$$

$$3^2 + 5^2 = 36$$

$$9 + 25 = 36$$

$34 \neq 36$ NO, INSIDE