

Name: _____ Date: _____

Unit 7 Review

The following quadrilateral is a parallelogram.

1. Verify that both pairs of opposite sides are parallel.

$m_{AB} = \frac{-1}{1} = -1$ $m_{AD} = \frac{7}{8}$ $AB \parallel DC$

$m_{DC} = \frac{-3}{3} = -1$ $m_{CB} = \frac{7}{8}$ $AD \parallel CB$

2. Verify that both pairs of opposite sides are congruent.

$AB = 3^2 + 3^2 = c^2 = 4.24$ $AD = 7^2 + 8^2 = 10.63$

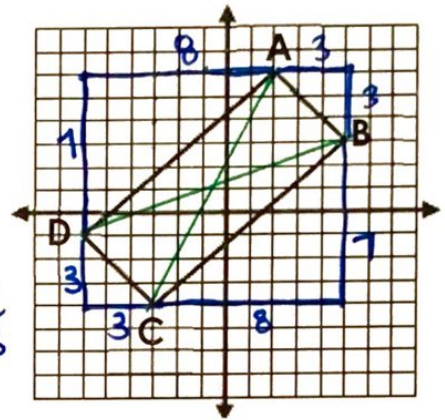
$DC = 4.24$ $CB = 10.63$ $AB \cong DC$
 $AD \cong CB$

3. The diagonals of a rhombus are perpendicular.

Prove that this is not a rhombus.

$m_{AC} = \frac{10}{5} = 2$ $m_{DB} = \frac{4}{11}$

* m_{AC} is NOT opposite reciprocal of m_{DB} , so m_{AC} is not $\perp m_{DB}$.



Prove that the quadrilateral is a parallelogram:

4. By showing both pairs of opposite sides are parallel.

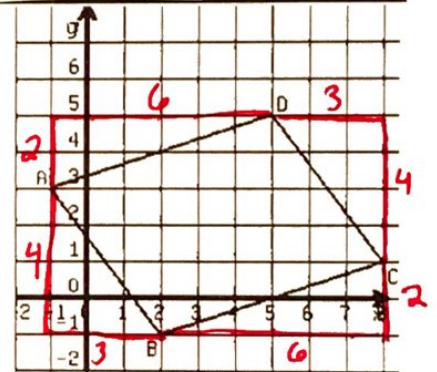
$m_{AD} = \frac{2}{6} = \frac{1}{3}$ $m_{DC} = -\frac{4}{3}$ $AD \parallel BC$

$m_{BC} = \frac{2}{6} = \frac{1}{3}$ $m_{AB} = -\frac{4}{3}$ $DC \parallel AB$

5. By showing both pairs of opposite sides are congruent.

$AD = 2^2 + 6^2 = c^2 = 6.32$ $DC = 4^2 + 3^2 = c^2 = 5$

$BC = 6.32$ $AB = 5$ $AD \cong BC$
 $DC \cong AB$

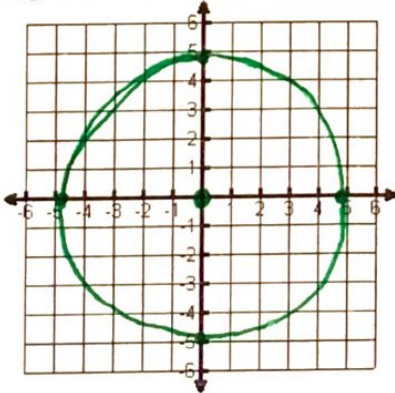


Graph the following circles. State the center and radius.

6. $x^2 + y^2 = 24$

Center: 0, 0

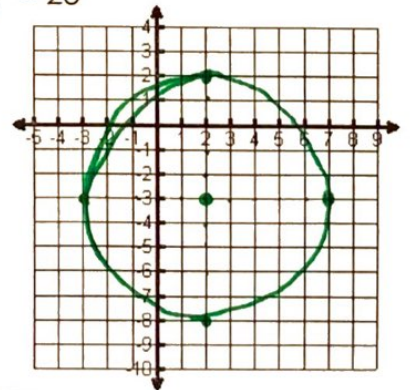
Radius: 4.9



7. $(x - 2)^2 + (y + 3)^2 = 25$

Center: (2, -3)

Radius: 5



Write the standard equation for the circle.

8. $x^2 + y^2 - 10x - 2y = -10$

$x^2 - 10x + \underline{\quad} + y^2 - 2y + \underline{\quad} = -10 + \underline{\quad} + \underline{\quad}$

$(x - 5)^2 + (y - 1)^2 = 16$

Write the general form for circle.

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

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

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

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

11. A circular disk drive has a diameter with endpoints at $(-9, 2)$ and $(15, 12)$. Find the center and radius of the disk drive. Write the equation of the circle in standard form.

Center: $(3, 7)$

$r = 13$

Equation: $(x-3)^2 + (y-7)^2 = 169$

$$\text{midpoint} = \left(\frac{-9+15}{2}, \frac{2+12}{2} \right)$$

$$= (3, 7)$$

$$d = \sqrt{(-9-3)^2 + (2-7)^2}$$

$$= \sqrt{(-12)^2 + (-5)^2} = 13$$

12. Find the **center** of a circle whose diameter has endpoints at: $(-5, 3)$ and $(2, 6)$.

$$\text{midpoint} = \left(\frac{-5+2}{2}, \frac{3+6}{2} \right) = \left(\frac{-3}{2}, \frac{9}{2} \right) = (-1.5, 4.5)$$

13. Find the coordinates of the **other endpoint** of a diameter with an endpoint of $(-1, 5)$ and a **center** at $(2, -3)$.

$$\text{midpoint} = \left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2} \right)$$

$$2 = \frac{-1+x_2}{2} \quad x_2 = 5$$

$$-3 = \frac{5+y_2}{2} \quad y_2 = -11$$

$$(5, -11)$$

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

$$d = \sqrt{(5-8)^2 + (2-7)^2}$$

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

$$= \sqrt{34} \approx 5.83 < 6, \text{ so point is inside}$$

15. Name the quadrilateral(s) that has the following:

a) 4 congruent sides and 4 right angles: square

b) Diagonals are congruent and 4 right angles: rectangle, square

c) Diagonals are perpendicular & consecutive sides are congruent: kite, square

d) 2 pairs of parallel sides and 4 congruent sides: rhombus, square