

Name: _____ Date: _____

UNIT 7 TEST REVIEW

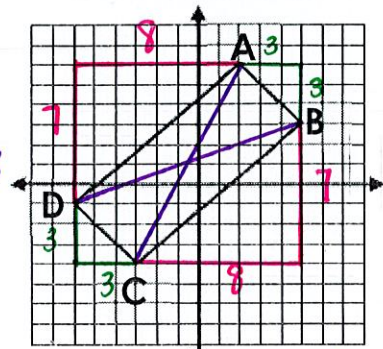
1. Prove that it's a parallelogram using the distances

$7^2 + 8^2 = C^2$
 $113 = C^2$
 $C = \sqrt{113} \approx 10.63$

$3^2 + 3^2 = C^2$
 $18 = C^2$
 $C = 3\sqrt{2} \approx 4.24$

$DA = 10.63$ $BC = 10.63$
 $CD = 4.24$ $AB = 4.24$

slope of DA & BC = $7/8$
 slope of CD & AB = -1



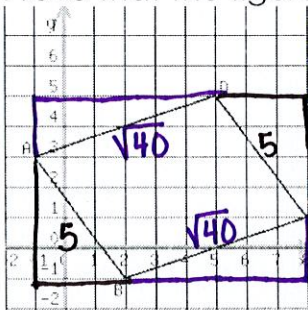
Its a parallelogram because opposite sides are congruent and parallel.

2. The diagonals of a rhombus are perpendicular. Find the slopes of the diagonals to prove that it's not a rhombus.

slope of AC = 2
 slope of BD = $4/11$

not opposite reciprocals.

3. Prove that the figure is a parallelogram using distance, Pythagorean Theorem or slope.



$2^2 + 6^2 = C^2$
 $40 = C^2$
 $C = \sqrt{40}$ or $2\sqrt{10}$

$3^2 + 4^2 = C^2$
 $25 = C^2$
 $C = 5$

AD & BC: $\sqrt{40}$
 AB & DC: 5

slope: $-4/3$

Its a parallelogram because opposite sides are congruent and parallel.

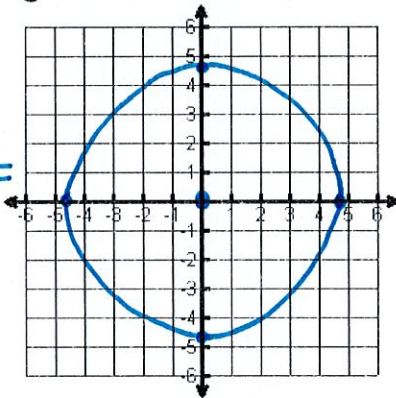
slope: $2/6 = 1/3$ Parallel.

Graph the following circles. State the center and radius.

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

Center: $(0, 0)$

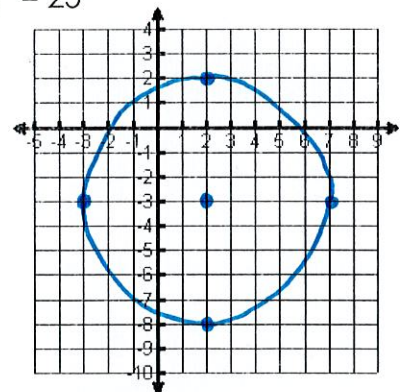
Radius: $\sqrt{24} = 2\sqrt{6} = 4.90$



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

Center: $(2, -3)$

Radius: 5



Write the standard equation for the circle.

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

$x^2 - 10x + 25 + y^2 - 2y + 1 = -10 + 25 + 1$

$x^2 - 10x + 25 + y^2 - 2y + 1 = 16$

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

$(\frac{10}{2})^2 = (5)^2 = 25$
 $(\frac{-2}{2})^2 = (-1)^2 = 1$

Write the general form for circle.

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

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

$x^2 - 2x - 2x + 4 + y^2 + y + y + 1 = 9$

$x^2 - 4x + 4 + y^2 + 2y + 1 = 9$

$x^2 - 4x + 4 + y^2 + 2y + 1 - 9 = 0$

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

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

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

9. 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: $(3, 7)$

$$\text{center} = \text{midpoint} = \left(\frac{-9+15}{2}, \frac{2+12}{2} \right) = (3, 7)$$

$r = 13$

Equation: $(x-3)^2 + (y-7)^2 = 169$ radius = distance = $\sqrt{(15-3)^2 + (12-7)^2} = 13$

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

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

$$C = (-1.5, 4.5)$$

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

$$2 = \frac{-1+x_2}{2} \quad -3 = \frac{5+y_2}{2}$$

$$4 = -1+x_2 \quad -6 = 5+y_2$$

$$x_2 = 5 \quad y_2 = -11$$

$$(5, -11)$$

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

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

$$= \sqrt{3^2 + 5^2}$$

$$= \sqrt{34}$$

$$\sqrt{34} \neq 6$$

NO

13. Name the polygon(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 and consecutive sides are congruent: Rhombus (& square)

d) 2 pairs of parallel sides and 4 congruent sides: Rhombus (& square)