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Cambria Math 12 A A Aa

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Name key Date _____ Period _____
 Honors Geometry Unit 8: Circles In-Class Activity

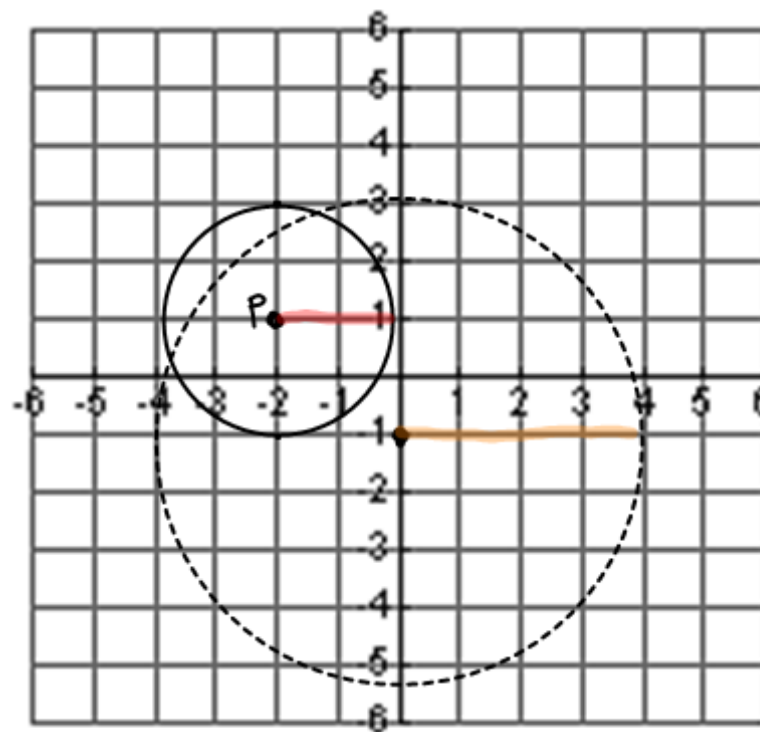
Target 8A: Prove that all circles are similar using transformations.

Target 8E: Identify the center and radius of a circle given its equation in standard form

- Construct Circle P with center at $(-2, 1)$ and radius 2.
- Construct Circle Q with center at $(0, -1)$ and radius 4.
- In order to get from Circle P to Circle Q, explain specifically which **transformations** must be done.

- ① Translation of
2 right and 2 down.
- ② Dilation (enlargement)
 $2 \times 2 = 4$
 ↓
 scale factor

- Are Circles P & Q congruent, similar or neither? Explain



Unit 8 Target A & E Activity - Microsoft Word

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4. Are Circles P & Q congruent, similar, or neither? **Explain!**

Similar. Why? Because a translation and dilation will transform 1 ⊙ onto the other, thus making them ≅.

And all ≅ ⊙s are similar.

5. **Standard Equation of a Circle**

a. The standard equation of Circle P is written as $(x+2)^2 + (y-1)^2 = 4$.

b. The standard equation of Circle Q is written as $x^2 + (y+1)^2 = 16$.

c. What would the standard equation be for a circle with center at (4, -7) and radius of 5?

$(x-4)^2 + (y+7)^2 = 25$

d. What would the general standard equation of a circle be with center (h, k) and radius r?

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

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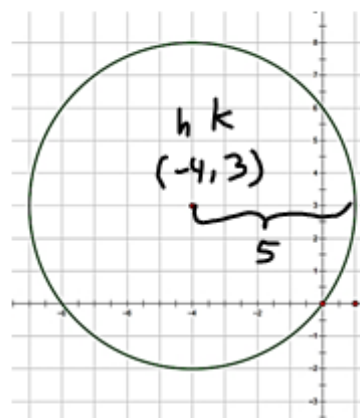
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6. What is the standard equation of a circle with center $(-10, 4)$ and radius 7?

$$(x+10)^2 + (y-4)^2 = 49$$

7. Write the equation of the circle to the right.

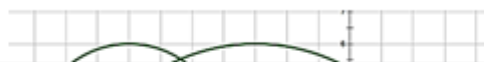


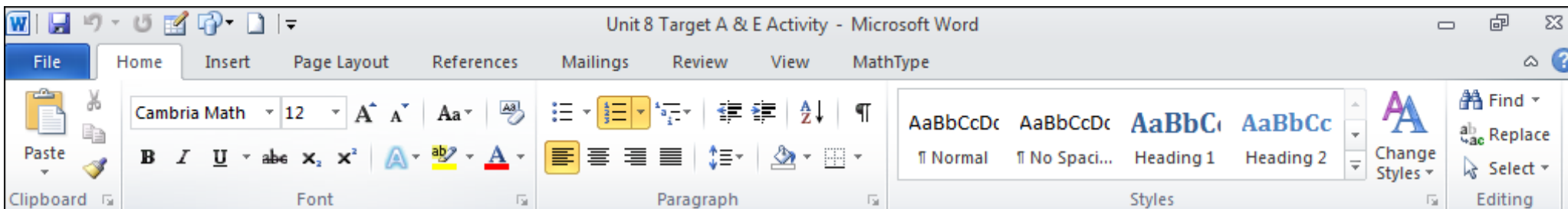
$$(x+4)^2 + (y-3)^2 = 25$$

8. Given that the standard equation of a circle is $(x-3)^2 + (y+7)^2 = 100$, what is the **center** of the circle & what is the **radius**?

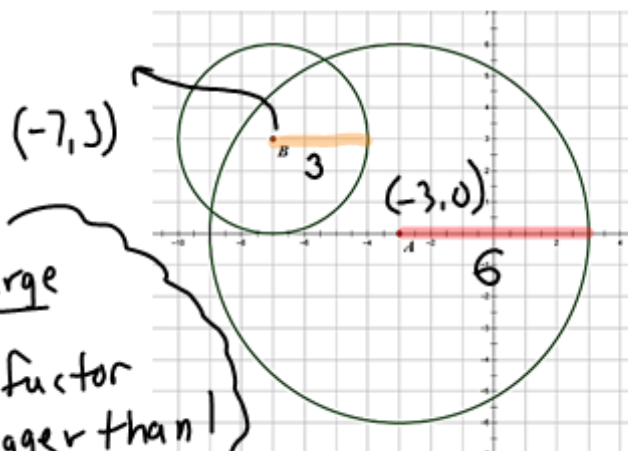
Center: $(3, -7)$ Radius: $\sqrt{100} = 10$

9. Explain why the circles are similar using transformations.





9. Explain why the circles are similar using transformations.



① Translate : 4 left , 3 up
 ② Dilate: (Reduction)
 Scale factor: $\frac{3}{6} = \boxed{\frac{1}{2}}$
 $6 \cdot \frac{1}{2} = 3$
 ↓
 scale factor

Enlarge
 Scale factor
 is bigger than 1

Reduce
 Scale factor
 is less than 1

10. Explain why circle F with equation: $(x + 5)^2 + (y - 2)^2 = 36$ is similar to circle G with equation: $(x - 1)^2 + y^2 = 144$.

$(-5, 2) \quad r = 6 \quad \odot F$
 $(1, 0) \quad r = 12 \quad \odot G$

Translate : $|-5 - 1| = |-6| = 6$ to right
 $|2 - 0| = |2| = 2$ down

Dilate: Enlarge ; scale factor 2

