Circle: Drawing Circles given its Area or Circumference

1. REVIEW OF SQUARES AND SQUARE ROOTS

Recall that to square a number means to multiply it by _____:

$5^2 = 5 \times 5 =$ _____ $7^2 =$ _____ $= 49$ $5.2^2 = 5.2 \times 5.2 =$ _____

The _____ of squaring a number is finding its _____:

$\sqrt{16} =$ _____ $\sqrt{36} =$ _____ $\sqrt{94.09} =$ _____

2. To draw a circle we need a _____. We need to spread apart our compass to the desired _____ in order to draw a circle. Therefore, the one measurement we need to draw any circle is the _____.

3. FINDING RADIUS

If we are given the **Circumference**, then we use this formula:

$$\text{diameter} = \frac{\rule{3cm}{0.4pt}}{\pi}$$

$$d = \frac{\rule{1cm}{0.4pt}}{\pi}$$

Once we have the diameter, we know that the **radius** is _____ the diameter!

If we are given the **Area**, a new formula can be made.

We know that **Area** = _____ Let's use a bit of Algebra to isolate the variable **r** (radius).

$$A = \pi r^2$$

$$=$$

$$=$$

$$=$$

$$=$$

If we are given the **Area**, then we can use this formula:

$$\text{radius} = \sqrt{\frac{\text{Area}}{\pi}} \qquad \text{or} \qquad r = \sqrt{\frac{A}{\pi}}$$

4. EXAMPLES What radius would you set your compass to draw a circle with
a. a circumference of 21.98 cm
b. an area of 254.34 cm²?

SOLUTION: a. Drawing a circle with a **circumference** of 21.98 cm requires you to set your compass to a certain **radius.** You have to find the **radius.** Use this formula:

$$d = \frac{C}{\pi}$$

$$= \frac{\underline{}}{3.14}$$

$$=$$ If the **diameter** is _____,
then the **radius** is half of that: _____

You would need to set your compass to a radius of _____.

b. Drawing a circle with a **area** of 254.34 cm² requires you to set your compass to a certain **radius.** You have to find the **radius.** Use this formula:

$$r = \sqrt{\frac{A}{\pi}}$$

$$= \sqrt{\frac{}{3.14}}$$

$$= \sqrt{}$$

$$=$$

You would need to set your compass to a radius of _____.

5. EXERCISES Calculate the radius of each circle to two decimal places.

a. circumference 18.84 cm   b. area 530.66 cm²   c. circumference 81.64 cm

d. area 379.94 cm²   e. area 19.625 cm²   f. circumference 36.11 cm