

Chapter 8 Review

8.1 - Construct Circles

- The **diameter** of a circle is *twice the radius*.
 $d = 2 \times r$
- The **radius** of a circle is *half the diameter*.
 $r = d \div 2$
- To draw a circle, you can use two different methods:
 - A string and pencil, and paperclip
 - A compass

8.2 - Circumference of a Circle:

- **Circumference** is the distance around the circle (it is like the perimeter of a circle).
- Circumference is a linear measurement.
- The ratio of the circumference of a circle to its diameter is represented by the value called pi, often written as π .
- The value for π is approximately **3.14**.
- **Circumference** can be calculated using two different formulas, that both give the same solution:
 $C = \pi \times d$ (this formula uses diameter to calculate circumference)
 $C = 2 \times \pi \times r$ (this formula uses radius to calculate circumference)

Note: When substituting a number into the formula, know which formula you are using and whether you are using diameter or radius. One formula uses diameter, whereas the other formula uses radius.

Examples:

What is the circumference of the circle with a diameter of 8 cm

$$C = \pi \times d$$

$$C = 3.14 \times 8 \text{ cm}$$

$$C = 25.12 \text{ cm}$$

What is the circumference of the circle with a radius of 4 cm?

$$C = 2 \times \pi \times r$$

$$C = 2 \times 3.14 \times 4 \text{ cm}$$

$$C = 25.12 \text{ cm}$$

8.3 - Area of a Circle:

- When estimating, the area of a circle is approximately three times the square of its radius.

Formula for area of a circle:

$$A = \pi \times r^2$$

- To square a number means to multiply it by itself. (example: $r^2 = r \times r$)
- Area is measured in squared units, such as mm^2 , cm^2 , m^2 , and km^2 .

Example:

What is the area of a circle with a radius of 10.7cm?

$$A = \pi \times r^2$$

$$A = 3.14 \times (10.7\text{cm})^2$$

$$A = 3.14 \times 10.7 \text{ cm} \times 10.7 \text{ cm}$$

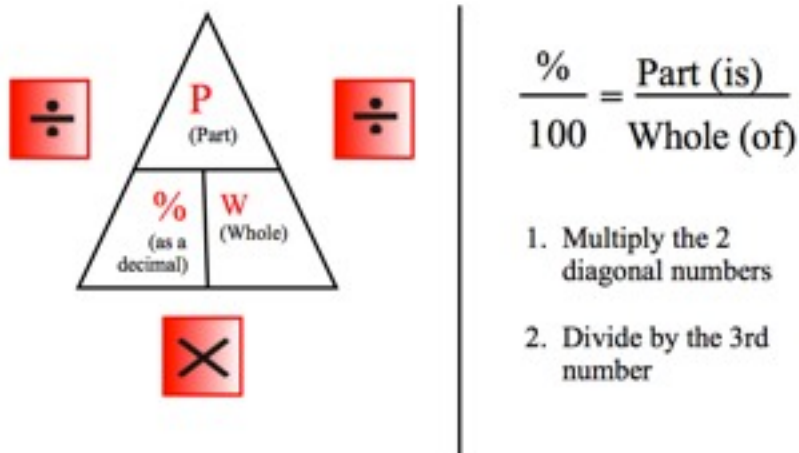
$$A = 359.50 \text{ cm}^2$$

8.4 - Interpret Circle Graphs:

- **sector** - section of a circle formed by two radii and the arc of a circle connecting the radii (makes up a part of the circle graph)
- A **circle graph** shows how each category of data compares to the whole using percents
- The **sum** of all the percents in a circle graph is **100%**
- Circle graphs are easier to interpret when there are a small number of categories and when the percent values are not too close together

To calculate percents:

Percent Formulas



8.5 - Create Circle Graphs:

- **central angle** - an angle formed by two radii of a circle; the vertex of the angle is at the center of the circle
- You can draw circle graphs using protractors, or on a computer software program (Microsoft Excel)
- Remember: There are 360° in a circle.
- The **sum of the central angles** of a circle is **360°**.

- To create a circle graph using a protractor:
 - Express each category as a percent of the total
 - Use the decimal value equivalent of the percent to calculate the measure of the central angle
Central angle = decimal value equivalent x 360°
 - Use a protractor to measure and draw each central angle
 - Add sector labels and a title to the circle graph

Example:

Cell Phone Calls Per Day	Number of People	Percent of Total	Decimal Value Equivalent	Central Angle
0	3	10%	0.10	36°
1-2	9	30%	0.30	108°
3-5	12	40%	0.40	144°
More than 5	6	20%	0.20	72°
Totals	30	100%	1.00	360°

Central angle = decimal value equivalent x 360°

**With your protractor, use the central angles to measure out the sectors on your circle graph. For this example, you will have 4 sectors (which their central angle sum adds up to 360°).*