

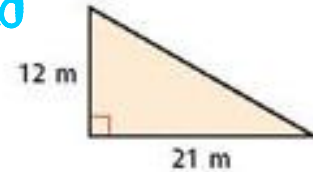
Answer Key

Section 10.5 Homework

Page 713: 1, 2, 3, 4, 5, 6, 7, 11, 15, 16, 17, 30, 31

1. The height of the triangle is doubled. *area is doubled*
2. The height of a trapezoid with base lengths 12 cm and 18 cm and height 5 cm is multiplied by $\frac{1}{3}$.

area is multiplied by $\frac{1}{3}$

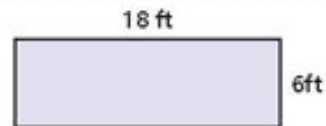


Describe the effect of each change on the perimeter or circumference and the area of the given figure.

3. The base and height of a triangle with base 12 in. and height 6 in. are both tripled.

Area = changed by a factor of $3^2 = 9$
Perimeter = changed by a factor of 3.

4. The base and height of the rectangle are both multiplied by $\frac{1}{2}$.



Area: Changed by a factor of $(\frac{1}{2})^2$
Perimeter: Changed by a factor of $(\frac{1}{2})$

5. A square has an area of 36 m^2 . If the area is doubled, what happens to the side length?

$$A = 36 \text{ m}^2$$

$$s = 6$$

$$A = 72 \text{ m}^2$$

$$\sqrt{72} = \sqrt{s^2}$$

$$6\sqrt{2} = s$$

When the area was doubled, the side length was multiplied by $\sqrt{2}$.

6. A circle has a diameter of 14 ft. If the area is tripled, what happens to the circumference?

$$14 = d$$

$$7 = r$$

$$A = 49\pi$$

$$C = 14\pi$$

$$49\pi \times 3 = 147\pi$$

$$147\pi = \pi r^2$$

$$\sqrt{147} = \sqrt{r^2}$$

$$7\sqrt{3} = r$$

$$C = 14\sqrt{3}$$

When the area is tripled, the radius is multiplied by $\sqrt{3}$, thus the circumference is also multiplied by $\sqrt{3}$.

7. **Business** A restaurant has a weekly ad in a local newspaper that is 2 inches wide and 4 inches high and costs \$36.75 per week. The cost of each ad is based on its area. If the owner of the restaurant decides to double the width and height of the ad, how much will the new ad cost?



$$\text{Area} = 8 \text{ in}^2$$

$$\text{Cost} = \$36.75$$

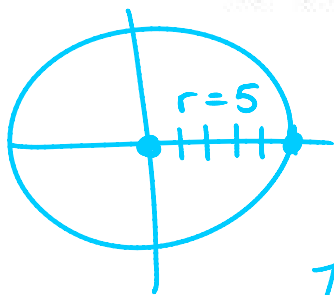
Double

$$\text{Area} = 8(2^2) = 32 \text{ in}^2$$

$$\frac{32}{8} = 4$$

$$4 \times \$36.75 = \text{\$147}$$

11. The radius of the circle with center $(0, 0)$ that passes through $(5, 0)$ is multiplied by $\frac{3}{5}$.



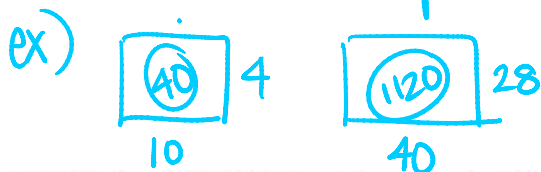
$$\begin{array}{l} r=5 \\ A=25\pi \\ C=10\pi \end{array} \left\{ \begin{array}{l} r=5 \times \frac{3}{5} = 3 \\ A=9\pi \\ C=6\pi \end{array} \right.$$

The area changed by a factor of $\left(\frac{3}{5}\right)^2$ and the circumference changed by a factor of $\left(\frac{3}{5}\right)$.

Describe the effect of each change on the area of the given figure.

15. The diagonals of a rhombus are both multiplied by 8. *area changed by 8^2*
 16. The circumference of a circle is multiplied by 2.4. *area changed by 2.4^2*
 17. The base of a rectangle is multiplied by 4, and the height is multiplied by 7.

area is multiplied by 28



30. Which of the following describes the effect on the area of a square when the side length is doubled?
- A The area remains constant.
 - B The area is reduced by a factor of $\frac{1}{2}$.
 - C The area is doubled.
 - D The area is increased by a factor of 4.
31. If the area of a circle is increased by a factor of 4, what is the change in the diameter of the circle?
- F The diameter is $\frac{1}{2}$ of the original diameter.
 - G The diameter is 2 times the original diameter.
 - H The diameter is 4 times the original diameter.
 - J The diameter is 16 times the original diameter.

$$\begin{array}{l} 16\pi = 64\pi \\ r=4 \quad r=8 \\ d=8 \quad d=16 \end{array}$$