3.1 FORMULAS

PERIMETER FORMULAS:

- Rectangle $P = 2l + 2w$
- Square $P = 4s$

AREA FORMULAS:

Rectangle	$A = l \cdot w$
Square	$A = s^2$
Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Trapezoid	$A = \frac{1}{2}h(b_1 + b_2)$

CIRCLES:

- Circumference $C = 2\pi r$ or $C = \pi d$
- Area $A = \pi r^2$

FIND PERIMETER, AREA, OR VOLUME

STEPS:

- 1. Write the entire formula.
- 2. Substitute the given values into the formula.
- 3. Solve, showing all work.
- 4. Label your answer.
  - Perimeter: cm, m, ft., etc.
  - Area: cm^2, m^2, $ft.^2$, etc.
  - Volume: cm^3, m^3, $ft.^3$, etc.

EXAMPLES:

- 1. The perimeter of a square is 56 cm. Find the area of the square.
- 2. A rectangle has a length of 17 cm and an area of 68 cm^2. Find its perimeter.
- 3. A trapezoid with bases measuring 13 cm and 7 cm has an area of 180 cm^2. Find the height.

EXAMPLES:

- 4. A dog tied to a stake in Emma's backyard. If the dog can cover a circular area of 78.5 ft^2, find the length of the cord that ties the dog to the stake.
- 5. The width and length of a rectangular garden are in a ratio of 2:3. Find the dimensions if the perimeter is 80 cm.
- 6. The length and width of a rectangle are in a ratio of 4:3. Find the dimensions of the rectangle if the area is 48 cm^2.

MORE EXAMPLES:

- 1. A rectangle has an area of 288 m^2 and a width of 16 m. What is the perimeter of this rectangle?
- 2. The area of a square is 169 m^2. The height of a rhombus is equal to the side of this square. Find the ared of the rhombus if its base is 15 m.

EXAMPLES:

- 3. The width of a rectangle is the same as the height of a triangle. The triangle has an area of 108 m^2 and a base of 24 m. Find the area of the rectangle if its length is three times its width.
- 4. A triangle has a base of 15 m and an area of 90 m^2. Find the area of a parallelogram whose height is the same as that of the triangle and whose base is 14 m.