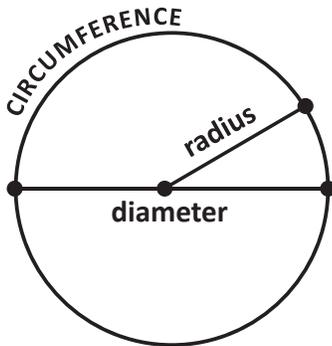


# FORMULAS

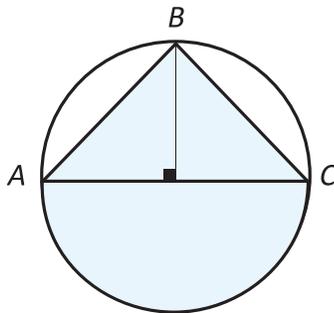
$$D = R \cdot T$$



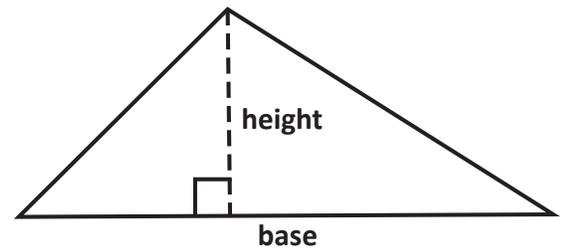
**Example 1:** Mateo started his bike ride earlier than Amelia. During the first 30 minutes of Amelia's ride, Mateo was traveling at a constant speed equal to  $\frac{1}{2}$  of Amelia's maximum speed of 20 miles per hour during that same time period. How far, in miles, did Mateo travel during the first half-hour of Amelia's ride?



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



**Example 2:** In the circle shown above,  $\overline{AC}$  is the diameter. The radius of the circle is 3 inches. What is the area, in square inches, of the shaded region (the combined area of the semicircle and  $\triangle ABC$ )?



$$A = \frac{1}{2} b \cdot h$$

**mean =**  $\frac{\text{sum of values}}{\text{number of values}}$   
**median = middle value**  
**mode = most frequent value**

**Example 3:** The average weight of 8 cats is 9.3 pounds. If the smallest cat is excluded, the average weight of the 7 remaining cats is 9.5 pounds. What is the weight, in pounds, of the smallest cat?

Order Does Not Matter

$${}_n C_r$$

**Example 4:** A starting lineup of 5 players will be selected from a team of 15 players. How many different starting lineups could be created?

$n$  = number of options

$r$  = how many chosen

$C$  = combination

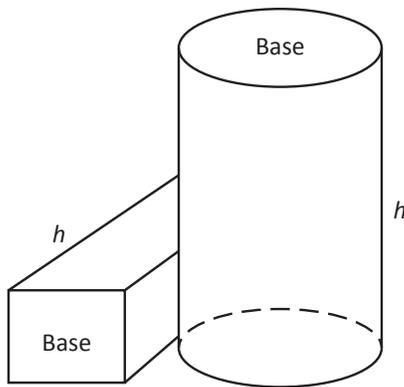
$P$  = permutation

Order Does Matter

$${}_n P_r$$

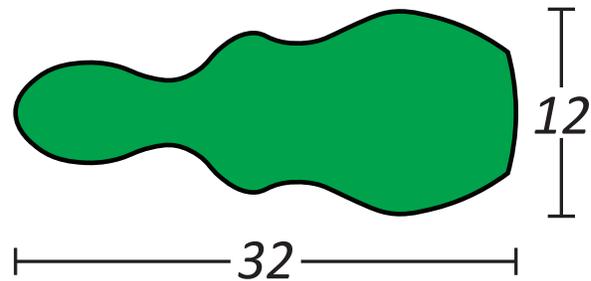
**Example 5:** The names of the 5 players on the starting lineup will be read aloud. If there are 15 players to select from, how many different ways can the starting lineup be introduced to the crowd?

“ $n$  things taken  $r$  at a time”



**Example 6:** The bottom of a violin case has an area of 240 square inches and a perimeter of 80 inches. The case has a uniform depth of 7 inches. If it can be determined, what is the volume of the violin case, in cubic inches?

$$V = B \cdot h$$



Other Formulas: