Unit 37 Other Interesting Formulas

1. **Celsius (C) to Fahrenheit (F) and Fahrenheit to Celsius**
   A. Fahrenheit = $\frac{9}{5}$C + 32 and Celsius = $\frac{5}{9}$(F − 32)
   B. Example:
   Find the Fahrenheit boiling point of water which boils at 100° Celsius.

Given: C = 100 degrees **Unknown:** boiling point in Fahrenheit

$F = \frac{9}{5}C + 32$ → Substitute 100 for C

$= \frac{9}{5}(100) + 32$ → Do the math in the parentheses first (divide by 5)

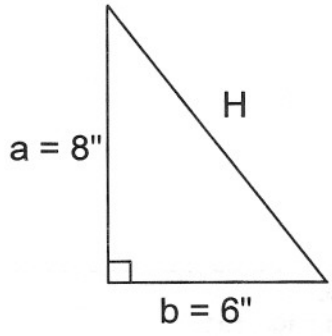
$= 9(20) + 32$ → Multiply by 9

$= 180 + 32$ → Add

$= 212°$ degrees

2. **Pythagorean Theorem: $H = a^2 + b^2$**
   A. In a right triangle
      1. The sides forming the right angle are called the **legs** of the triangle.
      2. The side opposite the right angle (the longest side) is called the **hypotenuse**.
   B. Pythagorus, a Greek mathematician, found that the square of the hypotenuse of a right triangle is equal to the sum of the squares of its two legs.
   C. Example:
   Calculate the hypotenuse of a right triangle with a base of 6 inches and a height of 8 inches.

Unknown: hypotenuse



$H^2 = a^2 + b^2$

$= 8^2 + 6^2$

$= 64 + 36$

$H^2 = 100$

$H = 10$ inches

Note: The opposite operation of squaring is taking the square root.

Check your answer

$H^2 = a^2 + b^2$

$10^2 = 8^2 + 6^2$

$100 = 64 + 36$

$100 = 100$