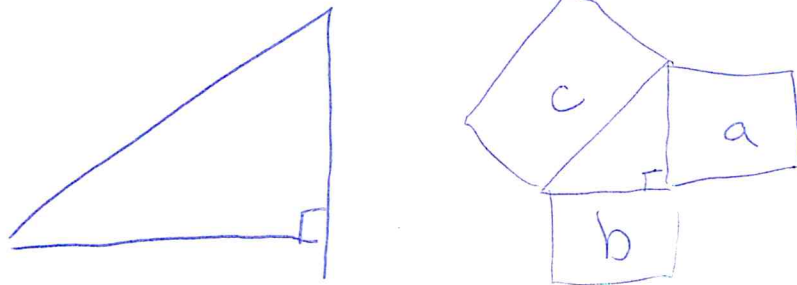


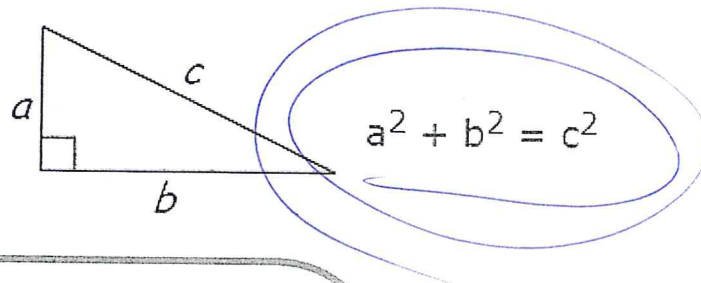
U2:L8 Pythagorean Theorem

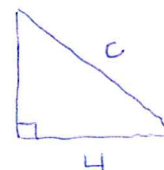
When a triangle has a right angle (90°), and squares are made on each of the three sides...



... then the biggest square has the same AREA as the other two squares put together!

- c is the **longest side** of the triangle, aka: hypotenuse
 - a and b are the other two sides



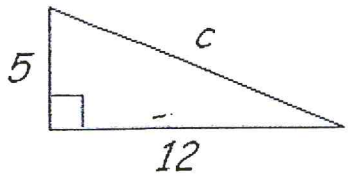


$a^2 + b^2 = c^2$
 $3^2 + 4^2 = c^2$
 $(3 \times 3) + (4 \times 4) = c^2$
 $9 + 16 = c^2$
 $25 = c^2$
 $\sqrt{25} = \sqrt{c^2}$
 $5 = c$

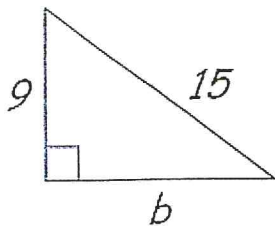
c is always the **LONGEST** side 😊

*If we know the lengths of **two sides** of a right angled triangle, we can find the length of the **third side***

EXAMPLES:

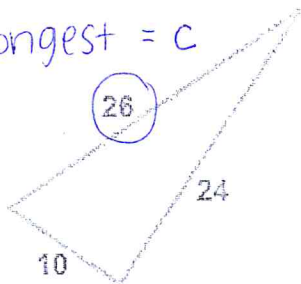


$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 5^2 + 12^2 &= c^2 \\
 (5 \times 5) + (12 \times 12) &= c^2 \\
 25 + 144 &= c^2 \\
 169 &= c^2 \\
 \sqrt{169} &= \sqrt{c^2} \\
 \boxed{13 = c}
 \end{aligned}$$



$$\begin{aligned}
 a^2 - a^2 + b^2 &= c^2 - a^2 \\
 b^2 &= c^2 - a^2 \\
 b^2 &= 15^2 - 9^2 \\
 b^2 &= 225 - 81 \\
 b^2 &= 144 \\
 \sqrt{b^2} &= \sqrt{144} \\
 \boxed{b = 12}
 \end{aligned}$$

longest = c



Does this triangle have a right angle?

$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 10^2 + 24^2 &= 26^2 \\
 100 + 576 &= 676 \\
 676 &= 676
 \end{aligned}$$

✓ YES