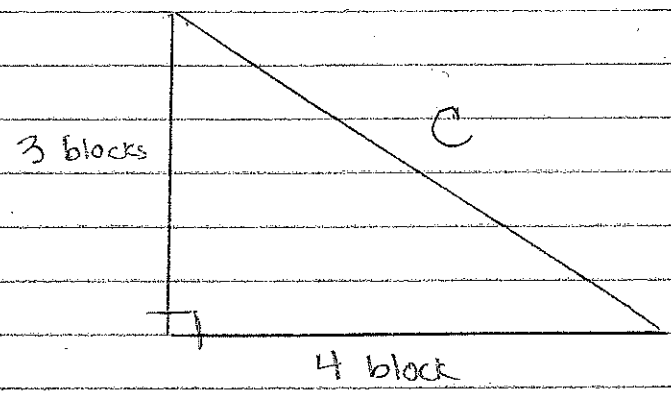


5.5 Pythagorean Theorem

$$a^2 + b^2 = c^2$$



- * a = shortest side (doesn't have to be)
- * c = longest side
- * b = middle length

$$a^2 + b^2 = c^2$$

$$3^2 + 4^2 = c^2$$

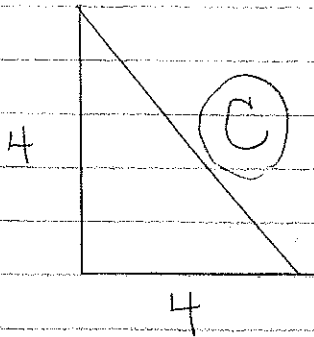
$$9 + 16 = c^2$$

$$25 = c^2$$

$$\sqrt{25} = c$$

$$5 = c$$

cont'd



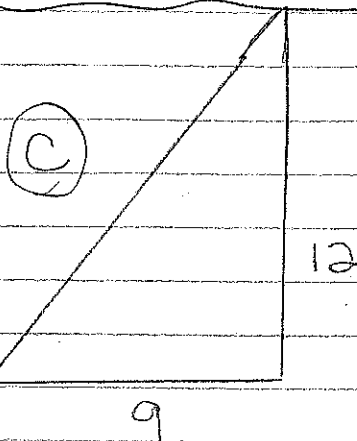
$$4^2 + 4^2 = C^2$$

$$16 + 16 = C^2$$

$$32 = C^2$$

$$\sqrt{32} = C$$

$$5.7 = C$$



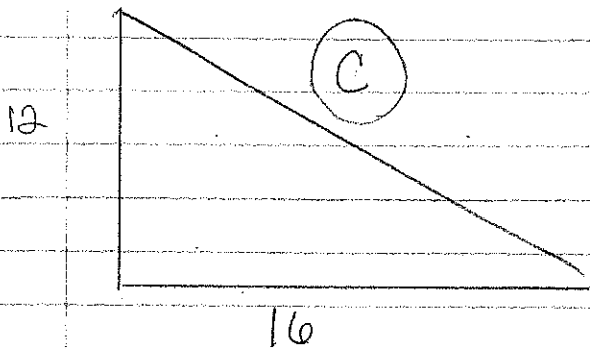
$$9^2 + 12^2 = C^2$$

$$81 + 144 = C^2$$

$$225 = C^2$$

$$\sqrt{225} = C$$

$$15 = C$$



$$12^2 + 16^2 = C^2$$

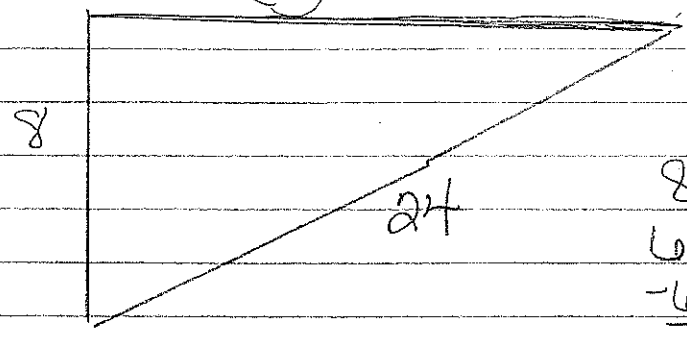
$$144 + 256 = C^2$$

$$400 = C^2$$

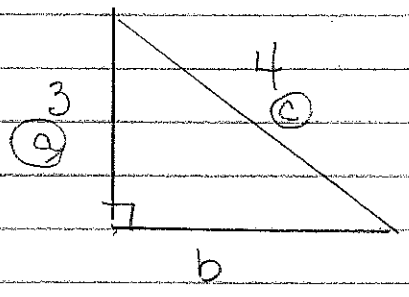
$$\sqrt{400} = C$$

$$20 = C$$

(b)



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 8^2 + b^2 &= 24^2 \\
 64 + b^2 &= 576 \\
 -64 &= -64 \\
 \hline
 b^2 &= 512 \\
 b &= \sqrt{512} \\
 b &= 22.6
 \end{aligned}$$



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 3^2 + b^2 &= 4^2 \\
 9 + b^2 &= 16 \\
 -9 &= -9 \\
 \hline
 b^2 &= 7 \\
 b &= \sqrt{7} \\
 b &= 2.6
 \end{aligned}$$

IS IT A RIGHT TRIANGLE?

$$\begin{aligned}
 a &\downarrow & b &\downarrow & c &\downarrow \\
 28, & 195, & 197 & \\
 28^2 + 195^2 &= 197^2 \\
 784 + 38,025 &= 38,809 \\
 38,809 &= 38,809 \\
 \text{YES!}
 \end{aligned}$$

does $a^2 + b^2 = c^2$
 * IF YES, it is a right triangle