

1-11-18 5th Geo

Simplifying Radicals

$$\sqrt{20}$$

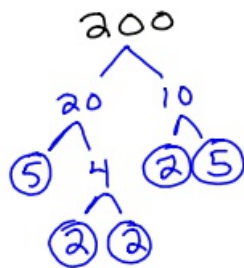
Prime factorization

- all numbers can be written as the multiplication of prime #s.

$$12 = 2 \cdot 2 \cdot 3$$

$$50 = 2 \cdot 5 \cdot 5$$

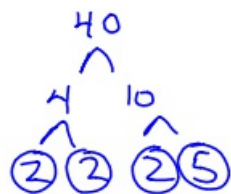
Factor Trees



$$200 = 2 \cdot 2 \cdot 2 \cdot 5 \cdot 5$$

$$\begin{aligned} \sqrt{200} &= \\ 5 \cdot 2 \sqrt{2 \cdot 2 \cdot 2 \cdot 5 \cdot 5} \\ 10 \sqrt{2} \end{aligned}$$

① $\sqrt{40}$



$$\begin{aligned} 2 \sqrt{2 \cdot 2 \cdot 2 \cdot 5} \\ 2 \sqrt{10} \end{aligned}$$

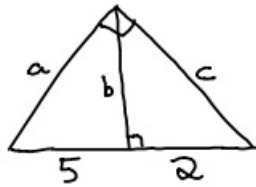
$$\textcircled{2} \sqrt{18}$$

$$\sqrt{2 \cdot 3 \cdot 3}$$

$$3\sqrt{2}$$

$$\textcircled{3} \sqrt{600}$$

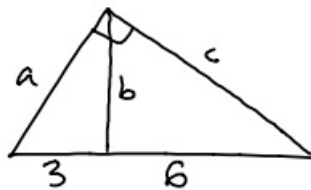
$$600 \begin{array}{l} \swarrow \searrow \\ 6 \quad 100 \\ \swarrow \searrow \quad \swarrow \searrow \\ 2 \quad 3 \quad 10 \quad 10 \\ \swarrow \searrow \quad \swarrow \searrow \\ 2 \quad 5 \quad 2 \quad 5 \end{array} \quad 5 \cdot 2 \sqrt{2 \cdot 2 \cdot 2 \cdot 3 \cdot 5 \cdot 5}$$
$$10\sqrt{6}$$



$$b = \sqrt{5 \cdot 2} = \sqrt{10}$$

$$a = \sqrt{5 \cdot 7} = \sqrt{35}$$

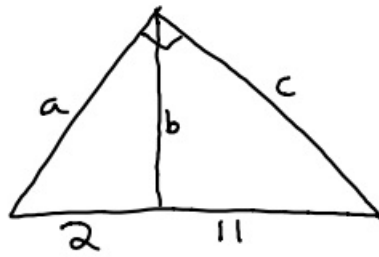
$$c = \sqrt{2 \cdot 7} = \sqrt{14}$$



$$a = \sqrt{3 \cdot 9} = \sqrt{27} = 3\sqrt{3}$$

$$b = \sqrt{3 \cdot 6} = \sqrt{18} = 3\sqrt{2}$$

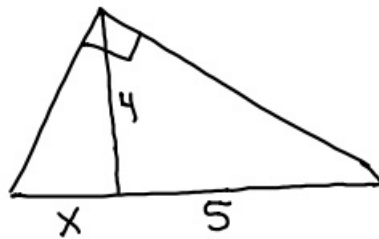
$$c = \sqrt{6 \cdot 9} = \sqrt{54} = 3\sqrt{6}$$



$$a = \sqrt{2 \cdot 13} = \sqrt{26}$$

$$b = \sqrt{2 \cdot 11} = \sqrt{22}$$

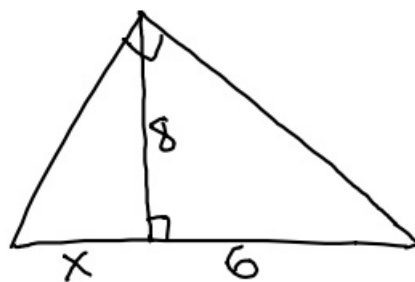
$$c = \sqrt{11 \cdot 13} = \sqrt{143}$$



$$4^2 = \sqrt{x \cdot 5}^2$$

$$\frac{16}{5} = \frac{x \cdot 5}{5}$$

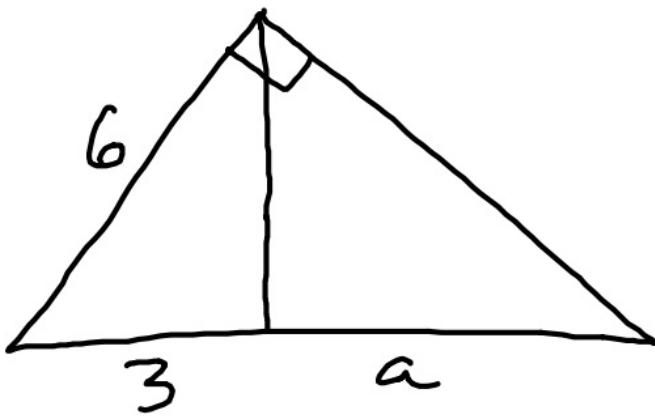
$$3.2 = x$$



$$8^2 = \sqrt{x \cdot 6}^2$$

$$\frac{64}{6} = \frac{x \cdot 6}{6}$$

$$x = 10.\bar{6}$$



$$6^2 = \sqrt{3 \cdot (3+a)}^2$$

$$36 = 3(3+a)$$

$$36 = 9 + 3a$$

$$\begin{array}{r} -9 \quad -9 \\ \hline 27 = 3a \\ \frac{27}{3} = \frac{3a}{3} \end{array}$$

$$9 = a$$

1-11-18 6th Geo

Simplifying radicals

$$\sqrt{20}$$

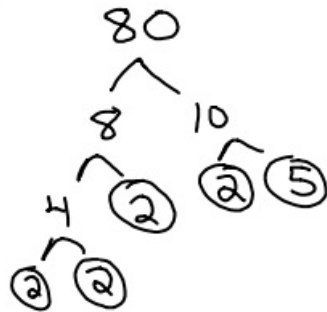
Prime factorization

$$20 = 2 \cdot 2 \cdot 5$$

$$27 = 3 \cdot 3 \cdot 3$$

$$60 = 2 \cdot 2 \cdot 3 \cdot 5$$

Factor Tree

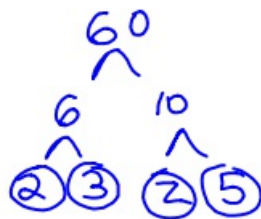


$$80 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 5$$

① Simplify $\sqrt{80}$

$$\begin{aligned} & \sqrt{80} \\ & 2 \cdot 2 \sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 5} \\ & 4\sqrt{5} \end{aligned}$$

② $\sqrt{60}$

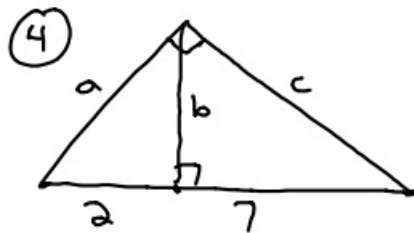


$$\begin{aligned} & \sqrt{60} \\ & \sqrt{2 \cdot 2 \cdot 3 \cdot 5} \\ & 2\sqrt{15} \end{aligned}$$

$$\textcircled{3} \sqrt{800}$$

$$\begin{array}{c}
 800 \\
 \wedge \quad \wedge \\
 40 \quad 20 \\
 \wedge \quad \wedge \quad \wedge \quad \wedge \\
 4 \quad 10 \quad 2 \quad 10 \\
 \wedge \quad \wedge \quad \wedge \quad \wedge \\
 2 \quad 2 \quad 2 \quad 5 \quad 2 \quad 5
 \end{array}$$

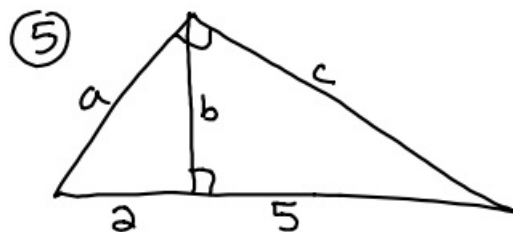
$5 \cdot 2 \cdot 2 \sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 5 \cdot 5}$
 $20\sqrt{2}$



$$a = \sqrt{2 \cdot 9} = \sqrt{18} = 3\sqrt{2}$$

$$b = \sqrt{2 \cdot 7} = \sqrt{14}$$

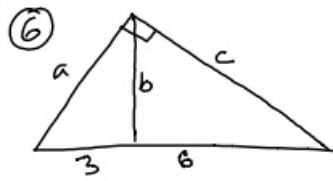
$$c = \sqrt{7 \cdot 9} = \sqrt{63} = 3\sqrt{7}$$



$$a = \sqrt{2 \cdot 7} = \sqrt{14}$$

$$b = \sqrt{2 \cdot 5} = \sqrt{10}$$

$$c = \sqrt{5 \cdot 7} = \sqrt{35}$$

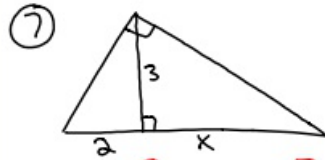


$$a = \sqrt{3 \cdot 9} = \sqrt{27} = 3\sqrt{3}$$

$$b = \sqrt{3 \cdot 6} = \sqrt{18} = 3\sqrt{2}$$

$$c = \sqrt{6 \cdot 9} = \sqrt{54} = 3\sqrt{6}$$

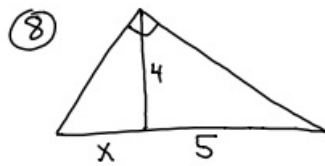
2 · 3 · 3 · 3



$$3 = \sqrt{2 \cdot x}$$

$$\frac{9}{2} = \frac{2x}{2}$$

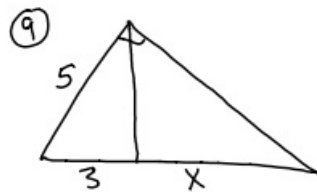
$$4.5 = x$$



$$4 = \sqrt{x \cdot 5}$$

$$\frac{16}{5} = \frac{x \cdot 5}{5}$$

$$3.2 = x$$



$$5 = \sqrt{3 \cdot (3+x)}$$

$$25 = 3(3+x)$$

$$25 = 9 + 3x$$

$$\begin{array}{r} -9 \\ -9 \end{array}$$

$$\frac{16}{3} = \frac{3x}{3}$$

$$5\frac{1}{3} = x$$