

Crash Course in Exponents

$$\sqrt{5} \cdot \sqrt{3} = 5^{1/2} \cdot 3^{1/2}$$

different bases
so multiply bases

* Switch like we did in unit 3 to fractional exp.

~~5~~ $15^{1/2}$ ← keep same exponent

$\sqrt{15}$ ← put back in ~~exp.~~ radical form

$$\sqrt{3} \cdot \sqrt{3} = 3^{1/2} \cdot 3^{1/2}$$

* Switch to exp (fractional)

Same base,
so add exponents

$$3^{1/2 + 1/2} = 3^1$$

base stays the same

$$\sqrt{3} \cdot \sqrt{3} = \textcircled{3}$$

Without looking! The Side-Length Ratio for 45-45-90 is X, X, X√2.

Special Right Triangles: 45-45-90

1)

$b = 2\sqrt{a}$
 $a = 4$

2)

$x = 2\sqrt{2}$
 $y = 2\sqrt{2}$

$y = x\sqrt{2}$
 $\frac{4}{\sqrt{2}} = x$
 $\frac{4}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{4\sqrt{2}}{2}$

3)

$y = \frac{3\sqrt{2}}{2}$
 $x = 3$

4)

$y = 3\sqrt{2}$
 $x = 6$

5)

$y = 3\sqrt{2}$
 $x = 6$

6)

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

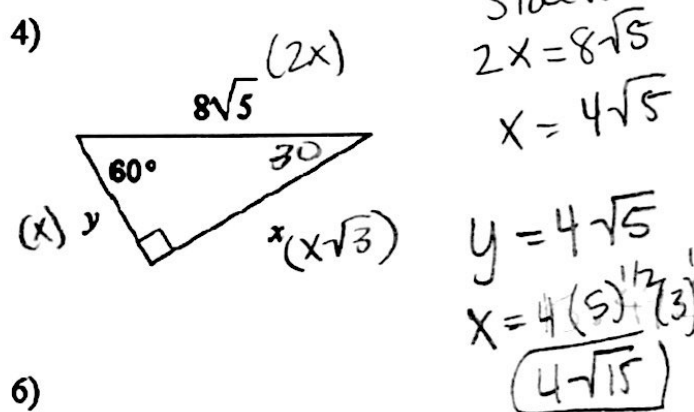
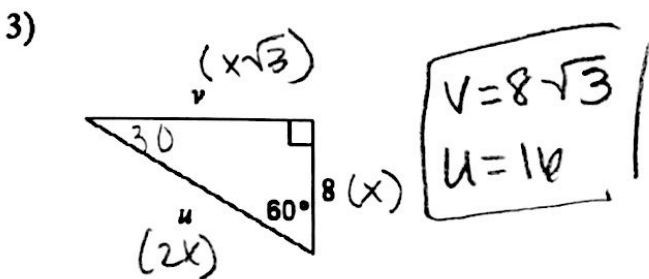
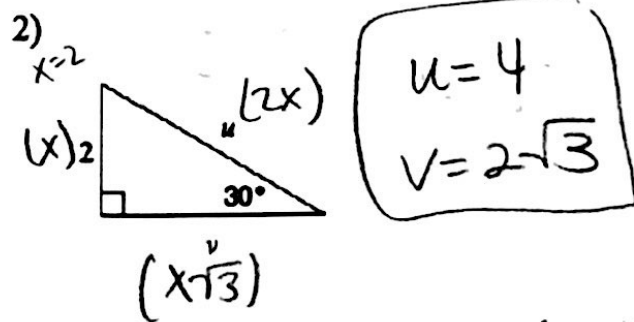
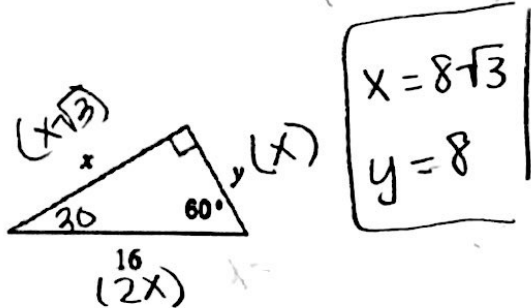
$\frac{2\sqrt{6}}{\sqrt{2}} = \frac{x\sqrt{2}}{\sqrt{2}}$
 $x = \frac{2\sqrt{6}\sqrt{2}}{\sqrt{2}\sqrt{2}}$
 $x = \frac{2\sqrt{12}}{2}$
 $x = \sqrt{12}$
 $x = 2\sqrt{3}$
 $x = 6^{1/2} \cdot 2^{1/2}$
 $x = 12^{1/2}$
 $x = \sqrt{12}$

$x = 2\sqrt{3}$

Without looking! The Side Length Ratio for 30-60-90 is x , $x\sqrt{3}$, $2x$.

Special Right Triangles: 30-60-90

Side work
 $2x = 16$
 $x = 8$



Side work
 $5\sqrt{3} = x\sqrt{3}$
 $x = 5$

