

RADICAL CONNECTIONS (SAMPLE RESPONSES)

Equivalent Expressions: Highlight

Highlight expressions equivalent to each other in the same color. Use a different color for each set of equivalent expressions.

$$\frac{10\sqrt{6}}{\sqrt{3}}$$

$$\sqrt{10} + 3\sqrt{10}$$

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

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

$$\sqrt{224} + \sqrt{56}$$

$$4\sqrt{10}$$

$$\frac{42\sqrt{2}}{\sqrt{7}}$$

$$6\sqrt{14}$$

$$11\sqrt{6} - \sqrt{24}$$

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

$$13\sqrt{2} - 3\sqrt{2}$$

$$9\sqrt{10} - 5\sqrt{10}$$

$$4\sqrt{6} + 5\sqrt{6}$$

$$10\sqrt{2}$$

$$\frac{8\sqrt{5}}{\sqrt{2}}$$

$$10\sqrt{14} - 4\sqrt{14}$$

$$\frac{9\sqrt{30}}{\sqrt{5}}$$

$$2\sqrt{7} \cdot 3\sqrt{2}$$

$$6\sqrt{2} + 4\sqrt{2}$$

$$9\sqrt{6}$$

Equivalent Expressions: Complete the Table

Complete the table using the expressions you highlighted previously. Each row should be completed with equivalent expressions.

Expression	Addition	Subtraction	Multiplication	Division
$10\sqrt{2}$	$6\sqrt{2} + 4\sqrt{2}$	$13\sqrt{2} - 3\sqrt{2}$	$5 \cdot 2\sqrt{2}$	$\frac{10\sqrt{6}}{\sqrt{3}}$
$9\sqrt{6}$	$4\sqrt{6} + 5\sqrt{6}$	$11\sqrt{6} - \sqrt{24}$	$3\sqrt{3} \cdot 3\sqrt{2}$	$\frac{9\sqrt{30}}{\sqrt{5}}$
$4\sqrt{10}$	$\sqrt{10} + 3\sqrt{10}$	$9\sqrt{10} - 5\sqrt{10}$	$2\sqrt{2} \cdot 2\sqrt{5}$	$\frac{8\sqrt{5}}{\sqrt{2}}$
$6\sqrt{14}$	$\sqrt{224} + \sqrt{56}$	$10\sqrt{14} - 4\sqrt{14}$	$2\sqrt{7} \cdot 3\sqrt{2}$	$\frac{42\sqrt{2}}{\sqrt{7}}$

Observations

I notice...

...that in the addition column, three of the expressions have the same number under the square root.

I notice that multiplication has you multiply the outsides and insides.

In two of the division problems, $\frac{6}{3} = 2$ and $\frac{30}{5} = 6$, those are in the square root of the simplified expressions.

I wonder...

... if the square roots must be the same to do anything.

I wonder why it looks like we're multiplying on two of the division problems.

Does this work with cube roots too?