

11-30-18

Aim: SWBAT add and subtract radical expressions.

HW: Packet Page 19

Review due Tuesday

Test Wednesday

Do Now: Puzzle due, then Packet Page 17

Homework:

1) $(\sqrt{3})(\sqrt{8})$

$$\begin{aligned} & \sqrt{24} \\ & \sqrt{4} \cdot \sqrt{6} \\ & 2\sqrt{6} \end{aligned}$$

2) $(-3\sqrt{5})(2\sqrt{4})$

$$\begin{aligned} & -6\sqrt{20} \\ & -6 \cdot \sqrt{4} \cdot \sqrt{5} \\ & -6 \cdot 2 \cdot \sqrt{5} \\ & -12\sqrt{5} \end{aligned}$$

3) $(2\sqrt{9})(2\sqrt{4})$

$$\begin{aligned} & 4 \cdot \sqrt{36} \\ & 4 \cdot 6 \\ & 24 \end{aligned}$$

4) $\frac{-\sqrt{54}}{\sqrt{6}}$

$$\begin{aligned} & -\sqrt{\frac{54}{6}} \\ & -\sqrt{9} \\ & -3 \end{aligned}$$

5) $\frac{20\sqrt{80}}{-5\sqrt{5}}$

$$\begin{aligned} & -4 \cdot \sqrt{\frac{80}{5}} \\ & -4 \cdot \sqrt{16} \\ & -4 \cdot 4 \\ & -16 \end{aligned}$$

6) $\frac{\sqrt{180}}{\sqrt{5}}$

$$\begin{aligned} & \sqrt{\frac{180}{5}} \\ & \sqrt{36} \\ & 6 \end{aligned}$$

7) $\frac{8\sqrt{36}}{2\sqrt{9}}$

$$\begin{aligned} & 4 \cdot \sqrt{\frac{36}{9}} \\ & 4 \cdot \sqrt{4} \\ & 4 \cdot 2 \\ & 8 \end{aligned}$$

8) $\frac{6\sqrt{24}}{9\sqrt{8}}$

$$\begin{aligned} & \frac{6}{9} \cdot \sqrt{\frac{24}{8}} \\ & \frac{2}{3} \sqrt{3} \\ & \frac{2\sqrt{3}}{3} \end{aligned}$$

9) $\sqrt{3}(3+\sqrt{3})$

$$\begin{aligned} & 3\sqrt{3} + \sqrt{3^2} \\ & 3\sqrt{3} + 3 \end{aligned}$$

10) Find the product of $3\sqrt{14}$ and $-2\sqrt{21}$

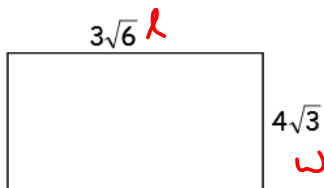
$$\begin{aligned} & 3\sqrt{14} \cdot -2\sqrt{21} \\ & 3 \cdot \sqrt{7} \cdot \sqrt{2} \cdot -2 \cdot \sqrt{7} \cdot \sqrt{3} \\ & (3 \cdot -2) \cdot \sqrt{7^2} \cdot \sqrt{2} \cdot \sqrt{3} \\ & -6 \cdot 7 \cdot \sqrt{6} \\ & -42\sqrt{6} \end{aligned}$$

Adding and Subtracting with Square Roots

Aim: SWBAT add and subtract radical expressions.

Do Now:

Find the area:



$$\begin{aligned}
 A &= lw \\
 A &= (3\sqrt{6})(4\sqrt{3}) \\
 A &= 12\sqrt{18} \\
 A &= 12\sqrt{9 \cdot 2} \\
 A &= 12 \cdot 3\sqrt{2} \\
 A &= 36\sqrt{2} \text{ units}^2
 \end{aligned}$$

When we are adding and subtracting radicals, we need the radicals to be like radicals.

- Like radicals are radical expressions with the SAME radicand
- Ex. $2\sqrt{7}$ and $5\sqrt{7}$ are LIKE RADICALS
- When simplifying sums and differences you can combine the coefficients of the LIKE radical expressions.

$$1) \underline{9}\sqrt{5} + \underline{7}\sqrt{5} = \underline{16}\sqrt{5}$$

$$\begin{aligned}
 2) 2\sqrt{5} - 3\sqrt{5} &= -1\sqrt{5} \\
 &\Rightarrow -\sqrt{5}
 \end{aligned}$$

$$3) 3\sqrt{2} + 4\sqrt{2} + 5\sqrt{2} = 12\sqrt{2}$$

$$4) \sqrt{5} - 6\sqrt{5} = -5\sqrt{5}$$

If the radicals are UNLIKE then try to simplify, first to see if there are like radicals.

$$\begin{aligned} 5) \quad 5\sqrt{3} + \sqrt{27} &= \\ 5\sqrt{3} + 3\sqrt{3} & \\ 8\sqrt{3} & \end{aligned}$$

$$\begin{aligned} 6) \quad \sqrt{18} - \sqrt{8} &= \\ 3\sqrt{2} - 2\sqrt{2} & \\ \sqrt{2} & \end{aligned}$$

If a radical expression with sums or differences contains UNLIKE radicals it is in simplest form.

$$\begin{aligned} 7) \quad 5\sqrt{32} - 4\sqrt{18} + \sqrt{12} &= \\ 5 \cdot \sqrt{16 \cdot 2} - 4 \cdot \sqrt{9 \cdot 2} + \sqrt{4 \cdot 3} & \\ 5 \cdot 4 \cdot \sqrt{2} - 4 \cdot 3 \cdot \sqrt{2} + 2\sqrt{3} & \\ 20\sqrt{2} - 12\sqrt{2} + 2\sqrt{3} & \\ 8\sqrt{2} + 2\sqrt{3} & \end{aligned}$$

Let's try some with mixed operations:

$$\begin{aligned} 8) \quad \sqrt{10}(\sqrt{6} + 3) & \\ \sqrt{60} + 3\sqrt{10} & \\ \sqrt{4 \cdot 15} + 3\sqrt{10} & \\ 2\sqrt{15} + 3\sqrt{10} & \end{aligned}$$

$$\begin{aligned} 9) \quad 3\sqrt{3}(2\sqrt{5} - 4\sqrt{20} - 2\sqrt{45}) & \\ 6\sqrt{15} - 12\sqrt{60} - 6\sqrt{135} & \\ 6\sqrt{15} - 12\sqrt{4 \cdot 15} - 6\sqrt{9 \cdot 15} & \\ 6\sqrt{15} - 12 \cdot 2\sqrt{15} - 6 \cdot 3\sqrt{15} & \\ 6\sqrt{15} - 24\sqrt{15} - 18\sqrt{15} & \\ -36\sqrt{15} & \end{aligned}$$

Homework:

1) $8\sqrt{3} - 5\sqrt{3} + 2\sqrt{3}$

2) $2\sqrt{3} + \sqrt{5}$

3) $5\sqrt{3} + \sqrt{27}$

4) $\sqrt{18} - \sqrt{8} + 2\sqrt{3}$

5) $3\sqrt{2}(\sqrt{2} - 1)$

6) If $3\sqrt{18}$ is subtracted from $\sqrt{8}$?

7) $8\sqrt{x} + \sqrt{x}$

8) Find the perimeter:

