Section 8.5

Algebra II: Adding and Subtracting Square Roots

Essential Question: Add and Subtract square roots.
- The same way you + and — variables.
i.e. $2X + 3X = 5X$

Vocabulary—<u>Like</u> and <u>Unlike Terms</u>

Examples

$2\sqrt{6} + 3\sqrt{6} =$

$= 5\sqrt{6}$

$2\sqrt{7} - 4\sqrt{7}$

$= -2\sqrt{7}$

Non Examples

$\sqrt{3} + \sqrt{2} =$

$= \sqrt{3} + \sqrt{2}$

$x + y$

$= x + y$

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

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

$2x + 3y$

$= 2x + 3y$

1)
$3\sqrt{2} + 10\sqrt{2}$

$= 13\sqrt{2}$

2)
$7\sqrt{3} - 1\sqrt{3}$

$= 6\sqrt{3}$

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

$3\sqrt{3} + 1\sqrt{3}$

$4\sqrt{3}$

$3x + x$

$= 4x$

$\sqrt{27}$

$\sqrt{9 \cdot 3}$

$\sqrt{3(3 \cdot 3)}$

$3\sqrt{3}$

4)
$\sqrt{18} + \sqrt{2}$

Name_____

Simplify.

1) $2\sqrt{2} + 6\sqrt{2}$

2) $6\sqrt{2} - 4\sqrt{2}$

3) $8\sqrt{5} + 5\sqrt{5}$

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

5) $-\sqrt{5} + \sqrt{5}$

0

6) $10\sqrt{7} - \sqrt{7}$

7) $6\sqrt{3} - 5\sqrt{3}$

8) $\sqrt{2} - \sqrt{2}$

9) $\sqrt{18} + \sqrt{2}$

$\sqrt{2 \cdot 9}$

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

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

$= 4\sqrt{2}$

10) $4\sqrt{12} - 2\sqrt{3}$

$4\sqrt{2 \cdot 6}$

$4\sqrt{2 \cdot 2 \cdot 3}$

$4 \cdot 2\sqrt{3}$

$8\sqrt{3} - 2\sqrt{3}$

$= 6\sqrt{3}$

11) $2\sqrt{8} - \sqrt{2}$

12) $2\sqrt{3} + 3\sqrt{12}$

13) $6\sqrt{3} - 4\sqrt{27}$

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

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

15) $\sqrt{5} - \sqrt{3} + 3\sqrt{5}$

$4\sqrt{5} - \sqrt{3}$

16) $\sqrt{12} - 4\sqrt{3} + \sqrt{6}$

17) $\sqrt{24} + 5\sqrt{6} - \sqrt{2}$

18) $\sqrt{45} + 2\sqrt{5} - 4\sqrt{7}$

$\sqrt{5 \cdot 9}$

$\sqrt{5 \cdot 3 \cdot 3}$

$3\sqrt{5} + 2\sqrt{5} - 4\sqrt{7}$

$5\sqrt{5} - 4\sqrt{7}$