Algebra Lesson 10-3A Operations with Radicals

Objective: Today we will simplify sums and differences of radicals.

Due Next Class: **10-3A p.503 #1-15, #38 odds**

Due Today: **10-1B p.489 #13-21 odds; 31-35 odds; 44, 45**

13) 20

15) $11\sqrt{2}$

17) $7\sqrt{3}$

19) $6n\sqrt{2}$

21) $3x^2\sqrt{17}$

31) $\frac{2\sqrt{30}}{11}$

33) $\frac{\sqrt{7}}{4c}$

35) $\frac{2n\sqrt{2n}}{9}$

44) $\frac{3\sqrt{2}}{2}$

45) $\sqrt{5}$

$$\sqrt{3x} \cdot \sqrt{51x^3}$$

$\sqrt{153}\ \sqrt{x^4}$

$\sqrt{9}\ \sqrt{17}\ x^2$

$3x^2\sqrt{17}$

$\sqrt{3x}\ \ \sqrt{17}\ \sqrt{3}\ \sqrt{x^3}$

$\sqrt{9}\ \sqrt{x^4}\ \sqrt{17}$

$3x^2\sqrt{17}$

$$\frac{5}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{5\sqrt{5}}{5} = \sqrt{5}$$

$$\frac{3\sqrt{2}}{\sqrt{2}\sqrt{2}} = \frac{3\sqrt{2}}{\sqrt{4}} = \frac{3\sqrt{2}}{2}$$

$$\frac{\sqrt{120}}{\sqrt{121}} = \frac{\sqrt{4}\sqrt{30}}{11}$$

$$\frac{2\sqrt{30}}{11}$$

$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 16$
$5^2 = 25$
$6^2 = 36$
$7^2 = 49$
$8^2 = 64$
$9^2 = 81$
$10^2 = 100$
$11^2 = 121$
$12^2 = 144$

Simplify each radical expression.

1) $1\sqrt{2} \cdot 1\sqrt{8} = \sqrt{16} = 4$

2) $\frac{3}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{3\sqrt{6}}{\sqrt{36}} = \frac{3\sqrt{6}}{6} = \frac{\sqrt{6}}{2}$

$1^2 = 1$
$2^2 = 4$
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Combining Like Radicals

Simplify

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

$7\sqrt{2}$

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

$-4\sqrt{10}$

$\sqrt{2}$

$\sqrt{2}$ $\sqrt{2}$

$\sqrt{2}$ $\sqrt{2}$

$\sqrt{2}$ $\sqrt{2}$

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

$3x + 2y$

Simplify

$$2\sqrt{50} - 3\sqrt{2}$$

$$2 \cdot \sqrt{25} \cdot \sqrt{2} - 3\sqrt{2}$$

$$2 \cdot 5\sqrt{2} - 3\sqrt{2}$$

$$10\sqrt{2} - 3\sqrt{2}$$

$$7\sqrt{2}$$

Simplify each expression.

1. $-3\sqrt{6} + 8\sqrt{6}$

2. $16\sqrt{10} + 2\sqrt{10}$

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

4. $6\sqrt{7} - 4\sqrt{7}$

5. $15\sqrt{2} - \sqrt{2}$

6. $-5\sqrt{3} - 3\sqrt{3}$

Tell whether each pair of expressions can be simplified to like radicals.

7. $\sqrt{2}, \sqrt{32}$

8. $\sqrt{3}, \sqrt{75}$ $= \sqrt{25 \cdot 3}$ $5\sqrt{3}$

9. $\sqrt{5}, \sqrt{50}$

Simplify each expression.

10. $\sqrt{18} + \sqrt{2}$

11. $2\sqrt{12} - 7\sqrt{3}$

12. $\sqrt{8} + 2\sqrt{2}$

13. $4\sqrt{5} - 2\sqrt{45}$

14. $3\sqrt{7} - \sqrt{28}$

15. $-4\sqrt{10} + 6\sqrt{40}$