Algebra Lesson 10-1B Simplifying Radicals

Objective: Today we will apply multiplication an division properties to simplify radicals expressions.

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

Due Today: 10-1A p.489 #1-11 odd

1) $10\sqrt{2}$

3) $5\sqrt{3}$

5) $-6\sqrt{30}$

7) $2n\sqrt{7}$

9) $6x\sqrt{3}$

11) $2a^2\sqrt{5a}$

"radical"

$$\sqrt{28n^2}$$

$\sqrt{4} \cdot \sqrt{7} \cdot \sqrt{n^2}$

$2\sqrt{7}$ n

$2n\sqrt{7}$

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

$\sqrt{x^2} = x$

$x \cdot x$

$\sqrt{x^6} = x^3$

$x^3 \cdot x^3$

$\sqrt{x^{11}} = \sqrt{x^{10}} \cdot \sqrt{x^1}$

$x^5\sqrt{x}$

$3\sqrt{12x^2}$

$3 \cdot \sqrt{4} \cdot \sqrt{3} \quad \sqrt{x^2}$

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

$6x\sqrt{3}$

1. $\sqrt{200}$ 2. $\sqrt{98}$ 3. $\sqrt{75}$ 4. $-\sqrt{80}$

5. $-3\sqrt{120}$ 6. $5\sqrt{320}$ 7. $\sqrt{28n^2}$ 8. $\sqrt{108b^4}$

9. $3\sqrt{12x^2}$ 10. $\sqrt{4n^3}$ 11. $\sqrt{20a^5}$ 12. $-\sqrt{48b^4}$

13. $\sqrt{10} \cdot \sqrt{40} = \sqrt{400}$ 14. $3\sqrt{6} \cdot \sqrt{6}$ 15. $\sqrt{22} \cdot \sqrt{11}$ 16. $2\sqrt{18} \cdot 7\sqrt{}$

17. $\sqrt{7} \cdot \sqrt{21}$ 20 18. $-3\sqrt{20} \cdot \sqrt{15}$ 19. $\sqrt{3n} \cdot \sqrt{24n}$ 20. $2\sqrt{7t} \cdot \sqrt{}$

21. $\sqrt{3x} \cdot \sqrt{51x^3}$ 22. $5\sqrt{8t} \cdot \sqrt{32t^5}$ 23. $\sqrt{2a^2} \cdot \sqrt{9a^4}$ 24. $-2\sqrt{6a^3} \cdot$

Simplify each radical expression.

28. $\sqrt{\frac{21}{49}}$ 29. $3\sqrt{\frac{3}{4}}$ 30. $\sqrt{\frac{625}{100}}$ 31. $\sqrt{\frac{120}{121}}$

32. $\sqrt{\frac{5}{9a^2}}$ 33. $\sqrt{\frac{7}{16c^2}}$ 34. $\sqrt{\frac{75a}{49}}$ 35. $\sqrt{\frac{8n^3}{81}}$

Simplify each radical expression by rationalizing the denominator.

44. $\frac{3}{\sqrt{2}}$ 45. $\frac{5}{\sqrt{5}}$ 46. $\frac{\sqrt{3}}{\sqrt{7x}}$ 47. $\frac{2\sqrt{2}}{\sqrt{5n}}$

$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 1$
$5^2 = 2$
$6^2 = 3$
$7^2 = 4$
$8^2 = 6$
$9^2 = 8$
$10^2 = 1$
$11^2 = 1$
$12^2 = 1$

Simplify each radical expression.

1) $\sqrt{50} = \sqrt{25}\sqrt{2}$

$5\sqrt{2}$

2) $\sqrt{8x^2}$

$\sqrt{4} \cdot \sqrt{2} \cdot \sqrt{x^2}$

$2 \times \sqrt{2}$

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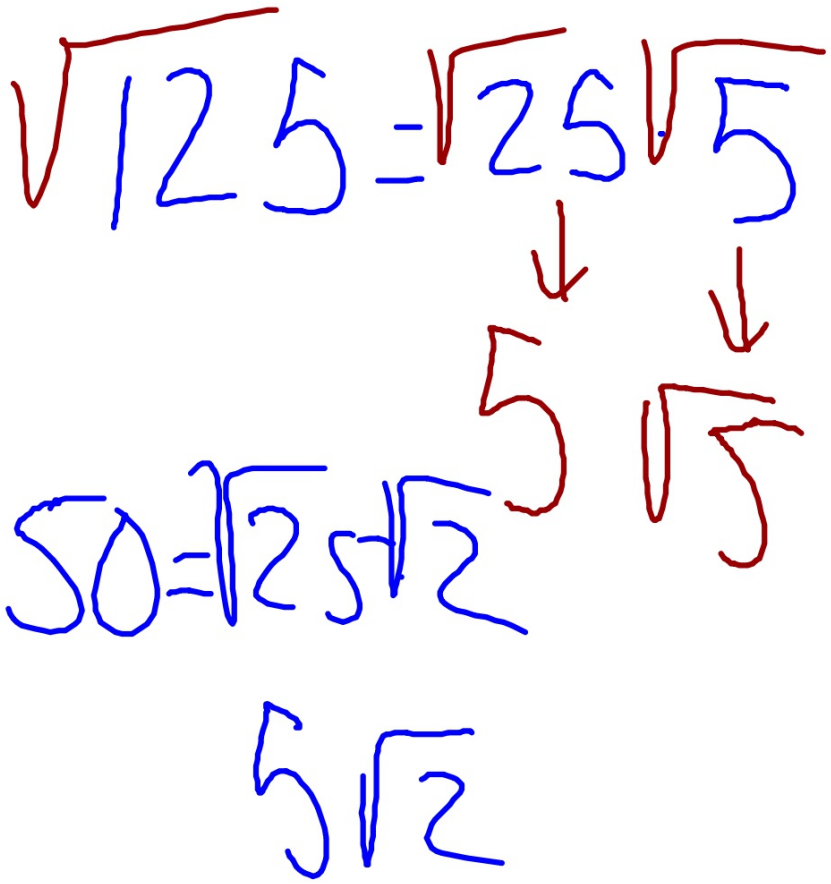
$7^2 = 49$
$8^2 = 64$
$9^2 = 81$
$10^2 = 100$
$11^2 = 121$
$12^2 = 144$



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$11^2 = 121$

$12^2 = 144$

Simplify Radicals using Division

Rule: $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$

$\sqrt{\frac{25p^3}{q^2}}$ $\frac{\sqrt{25}\cdot\sqrt{p^2}\cdot\sqrt{p}}{\sqrt{q^2}} = \frac{5p\sqrt{p}}{q}$

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Simplify Radicals using Division

Rule: $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$

$\sqrt{\frac{9}{5}} = \frac{\sqrt{9}}{\sqrt{5}} = \frac{3}{\sqrt{5}}$

$\frac{3}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{3\sqrt{5}}{\sqrt{25}} = \boxed{\frac{3\sqrt{5}}{5}}$

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$$\frac{2}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{2\sqrt{7}}{\sqrt{49}} = \boxed{\frac{2\sqrt{7}}{7}}$$