

Algebra 2 – Topics
Simplifying Radical Expressions

I. Simplify each expression:

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|-----------------|------------------|------------------|------------------|
| 1. $\sqrt{64}$ | 2. $\sqrt{196}$ | 3. $\sqrt{289}$ | 4. $\sqrt{16}$ |
| 5. $\sqrt{112}$ | 6. $\sqrt{180}$ | 7. $\sqrt{507}$ | 8. $\sqrt{135}$ |
| 9. $\sqrt{68}$ | 10. $\sqrt{275}$ | 11. $\sqrt{294}$ | 12. $\sqrt{171}$ |

II. Multiply or Divide:

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|-----------------------------------|------------------------------------|------------------------------------|--------------------------------------|
| 13. $\sqrt{8} \cdot \sqrt{12}$ | 14. $\sqrt{48} \cdot \sqrt{3}$ | 15. $\sqrt{6} \cdot \sqrt{54}$ | 16. $\sqrt{5} \cdot \sqrt{15}$ |
| 17. $2\sqrt{8} \cdot -3\sqrt{18}$ | 18. $5\sqrt{11} \cdot -2\sqrt{11}$ | 19. $5\sqrt{8} \cdot 2\sqrt{12}$ | 20. $4\sqrt{24} \cdot 3\sqrt{3}$ |
| 21. $\frac{\sqrt{96}}{\sqrt{16}}$ | 22. $\frac{\sqrt{72}}{\sqrt{36}}$ | 23. $\sqrt{\frac{150}{49}}$ | 24. $\sqrt{\frac{192}{4}}$ |
| 25. $\sqrt{\frac{52}{63}}$ | 26. $\sqrt{\frac{180}{80}}$ | 27. $\frac{4\sqrt{45}}{\sqrt{72}}$ | 28. $\frac{7\sqrt{48}}{3\sqrt{320}}$ |

III. Add or subtract when possible:

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|-------------------------------|--------------------------------|--------------------------------|-----------------------------------|
| 29. $3\sqrt{5} + 7\sqrt{5}$ | 30. $-4\sqrt{2} + 8\sqrt{2}$ | 31. $5\sqrt{8} - 6\sqrt{2}$ | 32. $-\sqrt{12} - 3\sqrt{75}$ |
| 33. $3\sqrt{18} + 4\sqrt{12}$ | 34. $7\sqrt{80} + 2\sqrt{108}$ | 35. $-5\sqrt{11} + 7\sqrt{44}$ | 36. $10\sqrt{338} - 13\sqrt{288}$ |

IV. Simplify:

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|------------------------------------|------------------------------------|-------------------------------|-------------------------------|
| 37. $(2\sqrt{5})^2$ | 38. $(-4\sqrt{12})^2$ | 39. $\sqrt{6}(6 + \sqrt{18})$ | 40. $\sqrt{5}(7 - \sqrt{60})$ |
| 41. $(\sqrt{5} + 7)(\sqrt{2} - 8)$ | 42. $(\sqrt{5} - 2)(\sqrt{5} + 2)$ | 43. $(\sqrt{6} + 2)^2$ | 44. $(\sqrt{8} - 3)^2$ |

V. Solve each equation:

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|---------------------------------|-----------------------------------|------------------------------|
| 45. $\sqrt{x-5} = 2$ | 46. $\sqrt{x+7} = 5$ | 47. $2\sqrt{x-5} + 3 = 17$ |
| 48. $-3\sqrt{x-5} + 11 = 26$ | 49. $\sqrt{x+2} = x$ | 50. $\sqrt{5x-6} = x$ |
| 51. $\sqrt{x+11} = \sqrt{2x-9}$ | 52. $\sqrt{-3x-5} = \sqrt{6x+22}$ | 53. $\sqrt{x-1} = x-7$ |
| 54. $\sqrt{x+3} = x+1$ | 55. $\sqrt{x^2+3x-6} = x$ | 56. $\sqrt{x^2+5x+11} = x+3$ |