

Name: REV
GSE Algebra I

Date: _____

Period: _____
Day 25 - Multiplying Radicals

To multiply radicals that have an index of 2, or all square roots, multiply the radicands together and then simplify.

For example:

$$1. \sqrt{10} \cdot \sqrt{3} = \sqrt{10 \cdot 3} = \sqrt{30}$$

$$2. \sqrt{6} \cdot \sqrt{2} = \sqrt{6 \cdot 2} = \sqrt{12} = \sqrt{2 \cdot 2 \cdot 3} = 2\sqrt{3}$$

$$3. \sqrt{7} \cdot \sqrt{7} = \sqrt{49} = 7$$

$$4. 2\sqrt{5} \cdot 4\sqrt{11} = 8\sqrt{55}$$

$$5. -2\sqrt{15} \cdot 3\sqrt{6} = -6\sqrt{15 \cdot 6} = -6\sqrt{5 \cdot 3 \cdot 3 \cdot 2} \\ = -18\sqrt{10}$$

$$6. (8\sqrt{5})^2 = (8\sqrt{5})(8\sqrt{5}) \\ = 64(5) = 320$$

You try!

$$1. \sqrt{2} \cdot \sqrt{3} = \sqrt{6}$$

$$6. \sqrt{10} \cdot \sqrt{8} = \sqrt{10} \cdot 2\sqrt{2} \\ = 2\sqrt{20} = 4\sqrt{5}$$

$$11. (\sqrt{11})^2 = 11$$

$$2. \sqrt{5} \cdot \sqrt{11} = \sqrt{55}$$

$$7. \sqrt{20} \cdot \sqrt{2} = 2\sqrt{5} \cdot \sqrt{2} = 2\sqrt{10}$$

$$12. (3\sqrt{8})^2 = 9(8) = 72$$

$$3. \sqrt{6} \cdot \sqrt{2} = \sqrt{12} = 2\sqrt{3}$$

$$8. 4\sqrt{3} \cdot 3\sqrt{5} = 12\sqrt{15}$$

$$13. (-2\sqrt{2})^2 = 4(2) = 8$$

$$4. \sqrt{14} \cdot \sqrt{7} = \sqrt{14 \cdot 7} = \sqrt{2 \cdot 7 \cdot 7} \\ = 7\sqrt{2}$$

$$9. 3\sqrt{6} \cdot 7 = 21\sqrt{6}$$

$$14. (4\sqrt{3})^2 = 16(3) = 48$$

$$5. \sqrt{8} \cdot \sqrt{2} \\ = \sqrt{16} = 4$$

$$10. 5\sqrt{6} \cdot \sqrt{7} = 5\sqrt{42}$$

$$15. (2\sqrt{5})^2 = 4(5) = 20$$

Using the distributive property and FOIL:

$$16. \sqrt{5}(10 + \sqrt{3}) = 10\sqrt{5} + \sqrt{15}$$

$$18. \sqrt{7}(8 + \sqrt{12}) = 8\sqrt{7} + \sqrt{84} \\ = 8\sqrt{7} + 2\sqrt{21}$$

$$20. (\overbrace{9 - \sqrt{7}})(\overbrace{9 + \sqrt{7}}) \\ 81 + 9\sqrt{7} - 9\sqrt{7} - 7 \\ 81 - 7 = 74$$

$$17. \sqrt{6}(\sqrt{10} + 4) = \sqrt{60} + 4\sqrt{6} \\ = 2\sqrt{15} + 4\sqrt{6}$$

$$19. \sqrt{2}(\sqrt{14} - \sqrt{6}) \\ \sqrt{14 \cdot 2} - \sqrt{6 \cdot 2} = \sqrt{7 \cdot 2 \cdot 2} - \sqrt{3 \cdot 2 \cdot 2} \\ = 2\sqrt{7} - 2\sqrt{3}$$

$$21. (\overbrace{\sqrt{3} + 8})(\overbrace{\sqrt{3} - 8}) \\ 3 - 8\sqrt{3} + 8\sqrt{3} - 64 \\ 3 - 64 = -61$$