

On your own paper: Simplify each expression. Remember that radicals may not be in the denominator. Remember that you may also write radicals as the $\frac{1}{2}$ power if that makes it easier.

1) $\sqrt{252} = \frac{\sqrt{36 \cdot 7}}{6\sqrt{7}}$

2) $\sqrt{24} = \frac{\sqrt{6 \cdot 4}}{2\sqrt{6}}$

3) $-8\sqrt{384} = -8 \cdot \sqrt{64 \cdot 6} = -8 \cdot 8\sqrt{6} = -64\sqrt{6}$

4) $7\sqrt{175} = \frac{7\sqrt{25 \cdot 7}}{7 \cdot 5\sqrt{7}} = 35\sqrt{7}$

5) $\sqrt{3} \cdot \sqrt{3} = \sqrt{3 \cdot 3} = \sqrt{9} = 3$

6) $(3\sqrt{7})^2 = (3\sqrt{7})(3\sqrt{7}) = 3 \cdot 3 \sqrt{7 \cdot 7} = 9 \cdot 7 = 63$

7) $(\sqrt{2})(\sqrt{5}) = \sqrt{2 \cdot 5} = \sqrt{10}$

8) $(3\sqrt{2})(\sqrt{6}) = 3 \cdot \sqrt{2 \cdot 6} = 3 \cdot \sqrt{12} = 3 \cdot \sqrt{4 \cdot 3} = 3 \cdot 2\sqrt{3} = 6\sqrt{3}$

9) $(\sqrt{8})(\sqrt{6}) = \sqrt{8 \cdot 6} = \sqrt{48} = \sqrt{16 \cdot 3} = 4\sqrt{3}$

Divide into a whole # so they simplify

10) $\frac{\sqrt{72}}{\sqrt{6}} \Rightarrow \sqrt{\frac{72}{6}} \Rightarrow \sqrt{12} = \sqrt{4 \cdot 3} = 2\sqrt{3}$

11) $\frac{\sqrt{50}}{\sqrt{5}} \Rightarrow \sqrt{\frac{50}{5}} = \sqrt{10}$

12) $\frac{27\sqrt{490}}{9\sqrt{5}} = 3\sqrt{\frac{490}{5}} = 3\sqrt{98} = 3\sqrt{49 \cdot 2} = 3 \cdot 7\sqrt{2} = 21\sqrt{2}$

13) $(\sqrt{8})\left(\sqrt{\frac{1}{2}}\right) = \sqrt{8 \cdot \frac{1}{2}} = \sqrt{4} = 2$

14) $(2\sqrt{15})(3\sqrt{30}) = 2 \cdot 3 \sqrt{15 \cdot 30} = 6\sqrt{450} = 6\sqrt{225 \cdot 2} = 6 \cdot 15\sqrt{2} = 90\sqrt{2}$

15) $(6\sqrt{2})(6\sqrt{18}) = 6 \cdot 6 \cdot \sqrt{2 \cdot 18} = 36\sqrt{36} = 36 \cdot 6 = 216$

16) $\frac{\sqrt{3}}{\sqrt{5}} = \frac{\sqrt{15}}{5}$

22) $\frac{\sqrt{2}}{\sqrt{5}} = \frac{\sqrt{10}}{5}$

18) $\frac{4\sqrt{3}}{5\sqrt{5}} = \frac{4\sqrt{15}}{25}$

19) $\frac{2\sqrt{2}}{4\sqrt{3}} = \frac{\sqrt{6}}{6}$

See work next pages

$$(16) \frac{\sqrt{3}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \boxed{\frac{\sqrt{15}}{5}}$$

$$? (22) \frac{\sqrt{2}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \boxed{\frac{\sqrt{10}}{5}}$$

$$(18) \frac{4\sqrt{3}}{5\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} \Rightarrow \frac{4\sqrt{15}}{5 \cdot 5} \Rightarrow \boxed{\frac{4\sqrt{15}}{25}}$$

$$(19) \frac{2\sqrt{2}}{4\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} \Rightarrow \frac{2\sqrt{6}}{4 \cdot 3} \Rightarrow \frac{2\sqrt{6}}{12} \Rightarrow \boxed{\frac{\sqrt{6}}{6}}$$