

Alg. II/Trig.

## Simplifying Radicals

Name:

key

Show your work on a separate sheet of paper

Date:

1.  $\sqrt{24} = 2\sqrt{6}$

2.  $\sqrt[3]{24} = 2\sqrt[3]{3}$

3.  $\sqrt{28x^3} = 2x\sqrt{7x}$

4.  $\sqrt[3]{56} = 2\sqrt[3]{7}$

5.  $\sqrt{48xy^2} = 4|y|\sqrt{3x}$

6.  $\sqrt[3]{64x^3} = 4x\sqrt[3]{x^2}$

7.  $\sqrt[3]{250x^4} = 5x\sqrt[3]{2x}$

8.  $\sqrt[3]{40x^{-4}y^6} = \frac{2y^2\sqrt[3]{5x^2}}{x^2}$

9.  $\sqrt[5]{128} = 2\sqrt[5]{4}$

10.  $\sqrt{\frac{1}{8}} = \frac{\sqrt{2}}{4}$

11.  $\sqrt{\frac{4a^{-1}}{3}} = \frac{2\sqrt{3a}}{3a}$

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

13.  $\sqrt[3]{\frac{2}{3}} = \frac{\sqrt[3]{18}}{3}$

14.  $\sqrt[4]{\frac{2}{3}} = \frac{\sqrt[4]{54}}{3}$

15.  $\sqrt{\frac{1}{a}} = \frac{\sqrt{a}}{a}$

16.  $\sqrt[3]{\frac{1}{a}} = \frac{\sqrt[3]{a^2}}{a}$

17.  $\sqrt[4]{\frac{1}{a}} = \frac{\sqrt[4]{a^3}}{a}$

18.  $\sqrt[2]{\frac{1}{a}} = \frac{\sqrt{a^{n-1}}}{a}$

19.  $\sqrt[4]{\frac{3}{8x^3}} = \frac{\sqrt[4]{6x}}{2x}$

20.  $\sqrt{ab^{-1}} = \frac{\sqrt{ab}}{a}$

21.  $\sqrt{(ab)^{-1}} = \frac{\sqrt{ab}}{ab}$

22.  $\frac{\sqrt{12}}{\sqrt{3}} = 2$

23.  $\sqrt{1 + \frac{1}{12}} = \frac{\sqrt{39}}{6}$

24.  $\frac{1}{2}\sqrt{50}\sqrt{5} = \frac{5\sqrt{10}}{2}$

25.  $\sqrt[4]{\frac{81}{8}} = \frac{3\sqrt[4]{2}}{2}$

26.  $\sqrt[3]{x^{-4}} = \frac{\sqrt[3]{x^2}}{x^2} \rightarrow \frac{\sqrt[4]{a^5}}{a^2}$

27.  $\sqrt[3]{a^{-7}} = \frac{\sqrt[3]{a^2}}{a^2}$

28.  $\sqrt[3]{5x^4y^7}\sqrt[4]{125x^2y} = 5|x|y^2\sqrt[4]{x^2}$

29.  $\frac{\sqrt[3]{a^3b^{15}}}{\sqrt[3]{a^{10}b}} = \frac{b^2}{a}$

30.  $\sqrt{8}\sqrt{18} = 12$

31.  $\sqrt{20} + \sqrt{125} = 7\sqrt{5}$

32.  $\sqrt[3]{6\frac{2}{3}} + 2\sqrt[3]{\frac{5}{6}} = \frac{2\sqrt[3]{180}}{3}$

33.  $\sqrt{\frac{2}{3}} + \sqrt{\frac{9}{8}} = \frac{\sqrt{6}}{3} + \frac{3\sqrt{2}}{4} = \frac{4\sqrt{6} + 9\sqrt{2}}{12}$

34.  $\sqrt{\frac{27a^2b^6c^{-4}}{32}} = \frac{3a^2|b|\sqrt{6a}}{8c^2}$

35.  $-2\sqrt{21}(\sqrt{7} + 2\sqrt{3}) = -14\sqrt{3} - 12\sqrt{7}$

36.  $(\sqrt{2} + \sqrt{5})^2 = 7 + 2\sqrt{10}$

37.  $(\sqrt{a} + \sqrt{b})(\sqrt{a} - \sqrt{b}) = a - b$

38.  $(4 + \sqrt{6})(3 + \sqrt{2}) = 12 + 4\sqrt{2} + 3\sqrt{6} + 2\sqrt{3}$

39.  $(\sqrt{2} + 3)^2 = 11 + 6\sqrt{2}$

40.  $\frac{2}{\sqrt{2} + 3} = \frac{-2\sqrt{2} - 6}{7}$

41.  $\frac{3}{2\sqrt{3} + \sqrt{5}} = \frac{6\sqrt{3} - 3\sqrt{5}}{7}$

42.  $\frac{\sqrt{2}}{1 - \sqrt{2}} = -\sqrt{2} - 2$

43.  $\sqrt[3]{\frac{64t^{-3}}{v^{42}}} = \frac{\sqrt[3]{20t^5}}{1024}$