

11-1 Skills Practice

Simplifying Radical Expressions

Simplify.

1. $\sqrt{28} = 2\sqrt{7}$

2. $\sqrt{40} = 2\sqrt{10}$

3. $\sqrt{72} = 6\sqrt{2}$

4. $\sqrt{99} = 3\sqrt{11}$

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

6. $\sqrt{5} \cdot \sqrt{60} = \sqrt{300} = 10\sqrt{3}$

7. $3\sqrt{5} \cdot \sqrt{5} = 3\sqrt{25} = 15$

8. $\sqrt{6} \cdot 4\sqrt{24} = 4\sqrt{144} = 48$

9. $2\sqrt{3} \cdot 3\sqrt{15} = 6\sqrt{45} = 18\sqrt{5}$

10. $\sqrt{16b^4} = 4b^2$

11. $\sqrt{81c^2d^4} = 9|c|d^2$

12. $\sqrt{40x^4y^6} = 2x^2y^3\sqrt{10}$

13. $\sqrt{75m^5n^2} = 5m^2n\sqrt{3m}$

14. $\sqrt{\frac{5}{3}} = \frac{\sqrt{5}}{\sqrt{3}} \left(\frac{\sqrt{3}}{\sqrt{3}} \right) = \frac{\sqrt{15}}{3}$

15. $\sqrt{\frac{1}{6}} = \frac{\sqrt{1}}{\sqrt{6}} = \frac{1}{\sqrt{6}} \left(\frac{\sqrt{6}}{\sqrt{6}} \right) = \frac{\sqrt{6}}{6}$

16. $\sqrt{\frac{6}{7}} \cdot \sqrt{\frac{1}{3}} = \frac{\sqrt{6}}{\sqrt{7}} \cdot \frac{\sqrt{1}}{\sqrt{3}} = \frac{\sqrt{6}}{\sqrt{21}} = \frac{\sqrt{6} \cdot \sqrt{21}}{\sqrt{21} \cdot \sqrt{21}} = \frac{\sqrt{126}}{21} = \frac{3\sqrt{14}}{21} = \frac{\sqrt{14}}{7}$

17. $\sqrt{\frac{9}{12}} = \frac{\sqrt{9}}{\sqrt{12}} = \frac{3}{2\sqrt{3}} \left(\frac{\sqrt{3}}{\sqrt{3}} \right) = \frac{3\sqrt{3}}{6}$

18. $\sqrt{\frac{4h}{5}} = \frac{\sqrt{4h}}{\sqrt{5}} = \frac{2\sqrt{h}}{\sqrt{5}} \left(\frac{\sqrt{5}}{\sqrt{5}} \right) = \frac{2\sqrt{5h}}{5}$

19. $\sqrt{\frac{12}{b^2}} = \frac{\sqrt{12}}{\sqrt{b^2}} = \frac{2\sqrt{3}}{|b|}$

20. $\sqrt{\frac{45}{4m^4}} = \frac{\sqrt{45}}{\sqrt{4m^4}} = \frac{3\sqrt{5}}{2m^2}$

21. $\frac{2}{4+\sqrt{5}} \left(\frac{4-\sqrt{5}}{4-\sqrt{5}} \right) = \frac{8-2\sqrt{5}}{16-5} = \frac{8-2\sqrt{5}}{11}$

22. $\frac{3}{2-\sqrt{3}} \left(\frac{2+\sqrt{3}}{2+\sqrt{3}} \right) = \frac{6+3\sqrt{3}}{4-3} = \frac{6+3\sqrt{3}}{1} = 6+3\sqrt{3}$

23. $\frac{5}{7+\sqrt{7}} \left(\frac{7-\sqrt{7}}{7-\sqrt{7}} \right) = \frac{35-5\sqrt{7}}{49-7} = \frac{35-5\sqrt{7}}{42}$

24. $\frac{4}{3-\sqrt{2}} \left(\frac{3+\sqrt{2}}{3+\sqrt{2}} \right) = \frac{12+4\sqrt{2}}{9-2} = \frac{12+4\sqrt{2}}{7}$

$$\frac{5}{6} - \frac{5\sqrt{7}}{42}$$