Name _____ Class _____ Date _____

Practice 7-2

Multiplying and Dividing Radical Expressions

Multiply and simplify. Assume that all variables are positive.

1. $\sqrt{4} \cdot \sqrt{6}$
2. $\sqrt{9x^2} \cdot \sqrt{9y^5}$
3. $\sqrt[3]{50x^2z^5} \cdot \sqrt[3]{15y^3z}$
4. $4\sqrt{2x} \cdot 3\sqrt{8x}$
5. $\sqrt{xy} \cdot \sqrt{4xy}$
6. $9\sqrt{2} \cdot 3\sqrt{y}$

Rationalize the denominator of each expression. Assume that all variables are positive.

7. $\sqrt{\frac{9x}{2}}$
8. $\frac{\sqrt{xy}}{\sqrt{3x}}$
9. $\sqrt{\frac{1}{3y}}$
10. $\frac{\sqrt[4]{2x}}{\sqrt[4]{3x^2}}$
11. $\sqrt{\frac{x}{8y}}$
12. $\sqrt[6]{\frac{3z}{4c}}$

Multiply. Simplify if possible. Assume that all variables are positive.

13. $\sqrt{4} \cdot \sqrt{25}$
14. $\sqrt{81} \cdot \sqrt{36}$
15. $\sqrt{3} \cdot \sqrt{27}$
16. $\sqrt[3]{-3} \cdot \sqrt[3]{9}$
17. $\sqrt{3x} \cdot \sqrt{6x^3}$
18. $\sqrt[3]{2xy^2} \cdot \sqrt[3]{4x^2y^7}$

Simplify. Assume that all variables are positive.

19. $\sqrt{36x^3}$
20. $\sqrt[3]{125y^2z^4}$
21. $\sqrt{18k^6}$
22. $\sqrt[3]{-16a^{12}}$
23. $\sqrt{x^2y^{10}z}$
24. $\sqrt[4]{256s^7t^{12}}$
25. $\sqrt[3]{216x^4y^3}$
26. $\sqrt{75r^3}$
27. $\sqrt[4]{625u^5v^8}$

Divide and simplify. Assume that all variables are positive.

28. $\frac{\sqrt{6x}}{\sqrt{3x}}$
29. $\frac{\sqrt[3]{4x^2}}{\sqrt[3]{x}}$
30. $\sqrt{\frac{243k^3}{3k^7}}$
31. $\frac{\sqrt{(2x)^2}}{\sqrt{(5y)^4}}$
32. $\frac{\sqrt[3]{18y^2}}{\sqrt[3]{12y}}$
33. $\sqrt{\frac{162a}{6a^3}}$

Factor completely.

34. $x^2 + 6x + 8$
35. $x^2 - 4x + 3$
36. $3x^2 + 2x - 8$
37. $2x^2 - 5x - 3$
38. $4x^2 + 16x + 15$
39. $9x^2 - 6x + 1$

Divide.

40. $(x^2 + 5x + 6) \div (x + 3)$
41. $(x^3 + 7x^2 + 8x - 16) \div (x - 2)$

Name _____ Class _____ Date _____

Practice 7-2

Multiplying and Dividing Radical Expressions

Multiply and simplify. Assume that all variables are positive.

1. $\sqrt{4} \cdot \sqrt{6}$ $2\sqrt{6}$
2. $\sqrt{9x^2} \cdot \sqrt{9y^5}$ $9xy^2\sqrt{y}$
3. $\sqrt[3]{50x^2z^5} \cdot \sqrt[3]{15y^3z}$ $5yz^2\sqrt[3]{6x^2}$
4. $4\sqrt{2x} \cdot 3\sqrt{8x}$ $48x$
5. $\sqrt{xy} \cdot \sqrt{4xy}$ $2xy$
6. $9\sqrt{2} \cdot 3\sqrt{y}$ $27\sqrt{2y}$

Rationalize the denominator of each expression. Assume that all variables are positive.

7. $\sqrt{\frac{9x}{2}}$ $\frac{3\sqrt{2x}}{2}$
8. $\frac{\sqrt{xy}}{\sqrt{3x}}$ $\frac{\sqrt{3y}}{3}$
9. $\frac{\sqrt[3]{4}}{\sqrt[3]{3y}}$
10. $\frac{\sqrt[4]{2x}}{\sqrt[4]{3x^2}}$
11. $\sqrt{\frac{x}{8y}}$ $\frac{\sqrt{8xy}}{8y}$
12. $\frac{\sqrt[3]{3a}}{\sqrt[3]{4b^2c}}$

Multiply. Simplify if possible. Assume that all variables are positive.

13. $\sqrt{4} \cdot \sqrt{25}$ 10
14. $\sqrt{81} \cdot \sqrt{36}$ 54
15. $\sqrt{3} \cdot \sqrt{27}$ 9
16. $\sqrt[3]{-3} \cdot \sqrt[3]{9}$ -3
17. $\sqrt{3x} \cdot \sqrt{6x^3}$ $3x^2\sqrt{2}$
18. $\sqrt[3]{2xy^2} \cdot \sqrt[3]{4x^2y^7}$ $2xy^3$

Simplify. Assume that all variables are positive.

19. $\sqrt{36x^3}$ $6x\sqrt{x}$
20. $\sqrt[3]{125y^2z^4}$ $5z\sqrt[3]{y^2z}$
21. $\sqrt{18k^6}$ $3k^3\sqrt{2}$
22. $\sqrt[3]{-16a^{12}}$ $-8a^4\sqrt[3]{2}$
23. $\sqrt{x^2y^{10}z}$ $xy^5\sqrt{z}$
24. $\sqrt[4]{256s^7t^{12}}$ $4st^3\sqrt{s^3}$
25. $\sqrt[3]{216x^4y^3}$ $6xy\sqrt[3]{x}$
26. $\sqrt{75r^3}$ $5r\sqrt{3r}$
27. $\sqrt[4]{625u^5v^8}$ $5uv^2\sqrt[4]{u}$

Divide and simplify. Assume that all variables are positive.

28. $\frac{\sqrt{6x}}{\sqrt{3x}}$ $\sqrt{2}$
29. $\frac{\sqrt[3]{4x^2}}{\sqrt[3]{x}}$ $\sqrt[3]{4x}$
30. $\sqrt{\frac{243k^3}{3k^7}}$ $\frac{3}{k}$
31. $\frac{\sqrt{(2x)^2}}{\sqrt{(5y)^4}}$ $\frac{2x}{25y^2}$
32. $\frac{\sqrt[3]{18y^2}}{\sqrt[3]{12y}}$
33. $\sqrt{\frac{162a}{6a^3}}$ $\frac{3\sqrt{3}}{a}$

Factor completely.

34. $x^2 + 6x + 8$ $(x+2)(x+4)$
35. $x^2 - 4x + 3$ $(x-1)(x-3)$
36. $3x^2 + 2x - 8$ $(3x-4)(x+2)$
37. $2x^2 - 5x - 3$ $(2x+1)(x-3)$
38. $4x^2 + 16x + 15$ $(2x+3)(2x+5)$
39. $9x^2 - 6x + 1$ $(3x-1)^2$

Divide.

40. $(x^2 + 5x + 6) \div (x + 3)$ $x+2$
41. $(x^3 + 7x^2 + 8x - 16) \div (x - 2)$ $x^2 + 9x + 26 + \frac{36}{x-2}$