Name _____ Date _____ Class _____

LESSON 3-2

Simplifying Expressions with Rational Exponents and Radicals

Practice and Problem Solving: A/B

Simplify each expression.

1. $\sqrt[5]{y^5}$

2. $\sqrt{x^4y^{12}}$

3. $\sqrt[3]{a^6b^3}$

4. $\sqrt{25y^4}$

5. $\sqrt[3]{x^6y^9}$

6. $\sqrt{(9y^2)^2}\ \sqrt{(9y^2)^2}$

7. $\sqrt[5]{(32y^5)^3}$

8. $(x^{\frac{1}{3}}y)^3\sqrt{x^2y^2}$

9. $\sqrt[3]{(27y^3)^4}\ \sqrt[6]{(27y^3)^4}$

10. $\sqrt[4]{(xy)^8}$

11. $(x^{\frac{1}{2}})^4\sqrt{x^6}$

12. $\dfrac{(x^{\frac{1}{4}})^8}{\sqrt[3]{x^3}}$

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Solve.

13. Given a cube with volume V, you can use the formula $P = 4V^{\frac{1}{3}}$ to find the perimeter of one of the cube's square faces. Find the perimeter of a face of a cube that has volume 125 m^3.

_____

14. The Beaufort Scale measures the intensity of tornadoes. For a tornado with Beaufort number B, the formula $v = 1.9B^{\frac{3}{2}}$ may be used to estimate the tornado's wind speed in miles per hour. Estimate the wind speed of a tornado with Beaufort number 9.

_____

15. At a factory that makes cylindrical cans, the formula $r = \left(\frac{V}{12}\right)^{\frac{1}{2}}$ is used to find the radius of a can with volume V. What is the radius of a can with a volume of 192 cm^3?

_____

15. 8
16. 125
17. 16
18. 2.5 seconds
19. 6 inches
20. $81^{\frac{9}{4}}$

Reading Strategies

1. 3rd or cube
2. 5th
3. 5th; 4th
4. 2
5. 9
6. 2
7. 20
8. 4
9. 27
10. 8
11. 1024
12. 64

Success for English Learners

1. 3
2. 1
3. The exponent in the exponential expression is the quotient of the exponent in the radical expression and the root index.

LESSON 3-2

Practice and Problem Solving: A/B

1. y
2. x^2y^6
3. a^2b
4. $5y^2$
5. x^2y^3
6. $81y^4$
7. $8y^3$
8. x^2y^4
9. $729y^6$
10. $(xy)^2$
11. x^5

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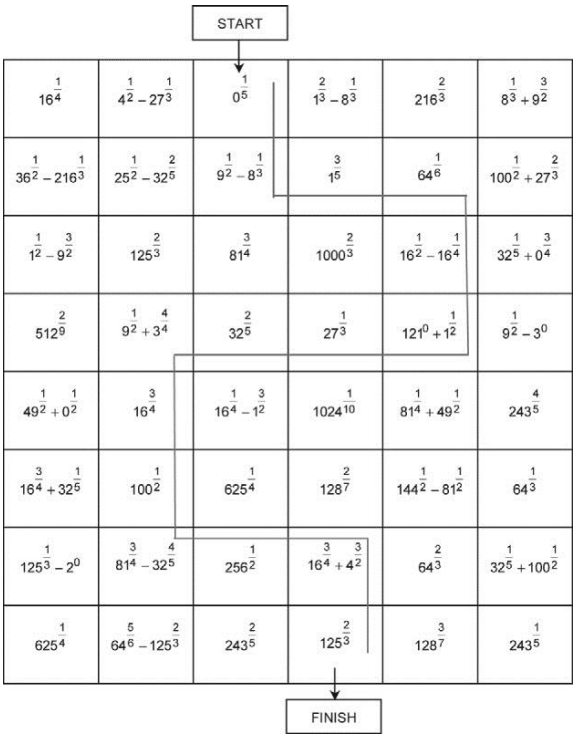
12. x
13. 20 m
14. 51.3 mph
15. 4 cm

Practice and Problem Solving: C



Practice and Problem Solving: Modified

1. B
2. D
3. C
4. A
5. $x^{\frac{1}{5}}$
6. $x^{\frac{5}{4}}$
7. $18^{\frac{2}{3}}$
8. $10^{\frac{6}{2}}$
9. 7
10. 3
11. 1
12. 12
13. 32

14. x^8

15. 14 cm

16. 6 s