

Name: Key

Date: _____

Period: _____

5.2 Properties of Rational Exponents & Radicals CYU Use when you get it right all by yourself**S** Use when you did it all by yourself, but made a silly mistake**H** Use when you could do it alone with a little help from teacher or peer**G** Use when you completed the problem in a group**X** Use when a question was attempted but wrong (get help)**N** Use when a question was not even attempted

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Simplify rational exponents using properties		1 - 5	
Simplify radical expressions using properties		6 - 9	
Simplifying radicals to simplest form	10 - 13	18 - 21	22 - 30
Rationalizing the denominator		14 - 17	
Combining like terms		18 - 21	

Use the properties of rational exponents to simplify the expression.

1. $(9^2)^{\frac{1}{3}}$

$9^{\frac{2}{3}}$

2. $\frac{6}{6^{\frac{1}{4}}}$

$6^{\frac{3}{4}}$

3. $\left(\frac{8^4}{10^4}\right)^{-\frac{1}{4}}$

$\frac{5}{4}$

4. $\left(3^{-\frac{2}{3}} \cdot 3^{\frac{1}{3}}\right)^{-1}$

$3^{\frac{1}{3}}$

5. $\frac{2^{\frac{2}{3}} \cdot 16^{\frac{2}{3}}}{4^{\frac{2}{3}}}$

4

Use the properties of radicals to simplify the expression.

6. $\sqrt{2} \cdot \sqrt{72}$

12

7. $\sqrt[4]{6} \cdot \sqrt[4]{8}$

$2\sqrt[4]{3}$

8. $\frac{\sqrt[5]{486}}{\sqrt[5]{2}}$

3

9. $\frac{\sqrt[3]{6} \cdot \sqrt[3]{72}}{\sqrt[3]{2}}$

6

Write the expression in simplest form.

10. $\sqrt[4]{567}$

$3\sqrt[4]{7}$

11. $\frac{\sqrt[3]{5}}{\sqrt[3]{4}}$

$\frac{\sqrt[3]{10}}{2}$

12. $\sqrt{\frac{3}{8}}$

$\frac{\sqrt{6}}{4}$

13. $\sqrt[3]{\frac{64}{49}}$

$\frac{4\sqrt[3]{7}}{7}$

Write the expression in simplest form.

14. $\frac{1}{1+\sqrt{3}}$

$$\frac{1-\sqrt{3}}{-2}$$

15. $\frac{5}{3-\sqrt{2}}$

$$\frac{15+5\sqrt{2}}{7}$$

16. $\frac{9}{\sqrt{3}+\sqrt{7}}$

$$\frac{9\sqrt{3}-9\sqrt{7}}{-4}$$

17. $\frac{\sqrt{7}}{\sqrt{10}-\sqrt{2}}$

$$\frac{\sqrt{70} + \sqrt{14}}{8}$$

Simplify the expression.

18. $9\sqrt[3]{11} + 3\sqrt[3]{11}$

$$12\sqrt[3]{11}$$

19. $3(11^{\frac{1}{4}}) + 9(11^{\frac{1}{4}})$

$$12(11^{\frac{1}{4}})$$

20. $5\sqrt{12} - 19\sqrt{3}$

$$-9\sqrt{3}$$

21. $\sqrt[5]{224} + 3\sqrt[5]{7}$

$$5\sqrt[5]{7}$$

22. $\sqrt[4]{81y^8}$

$$3y^2$$

23. $\sqrt[3]{64r^3t^6}$

$$4rt^2$$

24. $\sqrt[5]{\frac{m^{10}}{n^5}}$

$$\frac{m^2}{n}$$

25. $\sqrt[6]{\frac{g^6h}{h^7}}$

$$\frac{|g|}{|h|}$$

26. $12\sqrt[3]{y} + 9\sqrt[3]{y}$

$$21\sqrt[3]{y}$$

27. $3x^{\frac{7}{2}} - 5x^{\frac{7}{2}}$

$$-2x^{\frac{7}{2}}$$

28. $7\sqrt[3]{m^7} + 3m^{\frac{7}{3}}$

$$10m^{\frac{7}{3}}$$

29. $(p^{\frac{1}{2}} \cdot p^{\frac{1}{4}}) - \sqrt[4]{16p^3}$

$$-p^{\frac{3}{4}}$$

30. $\sqrt[4]{16w^{10}} + 2w^{\frac{5}{2}}\sqrt{16p^3}$

$$4w^2\sqrt{w}$$

CYU Reflection: How far can you go: basic, intermediate, or advanced?

Rate your mastery level!

How confident are you with the skills this CYU covered? Circle the score you would give yourself.

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1	2	3	4	5	6	7	8
Basic		Intermediate			Advanced		Solved ALL!

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