

## 5.2 Properties of Rational Exponents &amp; Radicals DAY ONE 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		8 - 27	34 - 39
Simplify radical expressions using properties			48
Law of exponents	1 - 9	28 - 33	40 - 48
Simplifying negative exponents	4 - 9	14 - 17, 20, 21, 24, 25	28 - 39

**Simplify the expression, leaving no negative exponents or radicals in the denominator.**

**Show all work or thought process for full credit.**

1.  $(-3x^2)^2$

$$9x^4$$

2.  $\frac{-12xy}{7x^4} \cdot \frac{21x^5y^2}{4y}$

$$-9x^2y^2$$

3.  $3y^2 \cdot y^2$

$$3y^4$$

4.  $-2x^{-2}y^0$

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

5.  $(25x^5y^{-7})^{36} (25x^5y^7)^{-36}$

$$\frac{1}{y^{504}}$$

6.  $(2xy^3)^{-2}$

$$\frac{1}{4x^2y^6}$$

7.  $xy^{-2}x$

$$\frac{x^2}{y^2}$$

8.  $(3x^2y^{-2})^{-2} (3x^4y^6)^2$

$$x^4y^{16}$$

9.  $\frac{2x^2y^7}{6xy^{-1}}$

$$\frac{xy^8}{3}$$

8.  $64^{\frac{2}{3}}$

$$16$$

11.  $64^{\frac{3}{2}}$

$$512$$

12.  $64^{\frac{5}{6}}$

$$32$$

13.  $64^{\frac{7}{6}}$

$$128$$

14.  $64^{\frac{3}{2}}$

$$\frac{1}{512}$$

15.  $64^{\frac{2}{3}}$

$$16$$

16.  $(-64)^{\frac{-2}{3}}$

$$\frac{1}{16}$$

17.  $(-64)^{\frac{3}{2}}$

$$-\frac{1}{512i}$$

18.  $-64^{\frac{2}{3}}$

$$-16$$

19.  $-64^{\frac{3}{2}}$

$$-512$$

20.  $32^{\frac{6}{5}}$

$$\frac{1}{64}$$

21.  $-32^{\frac{6}{5}}$

$$-\frac{1}{64}$$

22.  $128^{\frac{2}{7}}$

$$4$$

23.  $256^{\frac{3}{4}}$

$$64$$

24.  $81^{\frac{3}{2}}$

$$\frac{1}{729}$$



$$25. 243^{\frac{4}{5}}$$

$$\frac{1}{81}$$

$$26. 343^{\frac{2}{3}}$$

$$49$$

$$27. 36^{\frac{3}{2}}$$

$$216$$

$$28. 6x^5 \cdot 3x^{-2}$$

$$18x^3$$

$$29. 7x^{-3} \cdot 8x^9$$

$$56x^6$$

$$30. 5x^{-4} \cdot 2x^{-3}$$

$$\frac{10}{x^7}$$

$$31. 9x^{-2} \cdot 6x^{-5}$$

$$\frac{54}{x^7}$$

$$32. 3a^{-11} \cdot 17a^5$$

$$\frac{51}{a^6}$$

$$33. 11p^7 \cdot 4p^{-12}$$

$$\frac{44}{p^5}$$

$$34. 3x^{\frac{1}{2}} \cdot 4x^{\frac{2}{3}}$$

$$12x^{\frac{7}{6}}$$

$$35. 5x^{\frac{1}{2}} \cdot 6x^{\frac{1}{8}}$$

$$\frac{30}{x^{\frac{5}{8}}}$$

$$36. x^{\frac{2}{3}} \cdot 4x^{\frac{3}{2}}$$

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

$$37. 3x^{\frac{2}{5}} \cdot 4x^{\frac{2}{3}}$$

$$12x^{\frac{16}{15}}$$

$$38. 3x^{\frac{1}{2}}y \cdot 4x^{\frac{2}{3}}y^{\frac{1}{2}}$$

$$12x^{\frac{7}{6}}y^{\frac{3}{2}}$$

$$39. x^{\frac{7}{5}} \cdot x^{\frac{5}{8}}$$

$$x^2(x^{\frac{1}{40}})$$

$$40. (-2x^2)^3(3x^{-1}y^2)^4$$

$$-648x^2y^8$$

$$41. (4x^3)^{\frac{1}{2}}(-2x^{-3}y^{-1})^3$$

$$\frac{-16}{x^{\frac{13}{2}}y^3}$$

$$42. (3x^2y^{-3})^4(2x^{\frac{1}{2}}y^3)^4$$

$$1296x^{10}$$

$$43. \left(5a^{\frac{2}{3}}b^{\frac{4}{3}}\right)^3$$

$$125a^2b^4$$

$$44. \frac{x^{-1}y^{-4}z}{x^{-2}yz^{-3}}$$

$$\frac{xz^4}{y^5}$$

$$45. \frac{13x^{\frac{1}{5}}y^{-2}z^0}{39xy^{\frac{1}{2}}z^2}$$

$$\frac{1}{3x^{\frac{4}{5}}y^{\frac{3}{2}}z^2}$$

$$46. \frac{3^4a^{-7}b^3d^{-4}}{43^0a^{-4}b^{-5}c^6}$$

$$\frac{81b^8}{a^3c^6d^4}$$

$$47. (490x^{17}y^{23})^0$$

$$1$$

$$48. \sqrt[4]{16x^{12}y^8}$$

$$2x^3y^2$$

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!

