

U1L4 wkst answers

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U1L4 WKST

Name _____

1.11 Zero and Negative Exponents

MATHPOWER™ Nine, pp. 36-39

Any integral base with the exponent 0, except 0, has a value of 1, that is, $x^0 = 1$, $x \neq 0$.

Any integral base with a negative exponent can be rewritten as a fraction with a numerator of 1, and a denominator with the integral base and a positive exponent, that is, $x^{-m} = \frac{1}{x^m}$, $x \neq 0$.

Complete the table. The first one is done for you.

Exponential Form	Expanded Fraction	Standard Fraction
1. $3^{-2} = \frac{1}{3^2}$	$\frac{1}{3 \times 3}$	$\frac{1}{9}$
2. $(-7)^{-3} = \frac{1}{(-7)^3}$	$\frac{1}{(-7)(-7)(-7)}$	$-\frac{1}{343}$
3. $(-5)^{-3}$	$\frac{1}{(-5)(-5)(-5)}$	$-\frac{1}{125}$
4. $(-m)^{-4}$	$\frac{1}{(-m)(-m)(-m)(-m)}$	$\frac{1}{(-m)^4}$
5. 2^{-6}	$\frac{1}{2 \times 2 \times 2 \times 2 \times 2 \times 2}$	$\frac{1}{64}$

Find the value of y.

6. $6^y = 1$ $y = 0$
7. $y^3 = 64$ $y = 4$
8. $y^{-2} = \frac{1}{9}$ $y = 3$
9. $y^{-3} = -\frac{1}{8}$ $y = (-2)$
10. $(-y)^{-3} = -\frac{1}{1000}$ $y = 10$ *bec already neg...*
11. $\frac{(-6)}{(-6)} = y$ $y = 1$
12. $2^3 \times 2^0 \times 2^0 = 2^3$ *WORK: $3 + y + 2 = 3$* $y = -2$
13. $5^0 \times 5^{-3} \div 5^3 = 1$ $y + (-3) - 3 = 0$ $y = 12$
14. $\frac{3^0}{3^0} = 3^{\square}$ $y - 12 = 0$ $y = 12$
15. $((-7)^{-2})^y = 1$ $y - 2 = 1$ $y = 3$
16. $\frac{(-5)^y}{(-2)^y} = \frac{1}{4}$ $2 \cdot y = 0$ $y = 0$
17. $-3^3 = y$ $y = 0$
18. $-5^2 \times 5^{-2} = y$ *if $(-3)^3$ but if -3^3*
 $(-3)(-3)(-3)$ vs $-(3)(3)(3)$
 $(-5)^2 \Rightarrow y = -1$ $y = -27$

DIFF BASES
 exponent no same
 3 or 3?

Simplify. (Add/Sub/Mult Exp)

19. $t^3 \times t^{-5}$ t^{-2}
20. $y^3 \times y^2$ y^5
21. $m^{-3} \times m^{-2}$ m^{-5}
22. $(-b)^3$ $(-b)^9$
23. $(c)^{-2}$ c^{-4}
24. $t^3 \div t^2$ t^1
25. $a^4 + a^{-2}$ $a^4 + a^{-2}$
26. $y^{-3} \div y^{-2}$ $y^{-4+2} = y^{-2}$
27. $c^{-4} \times c^2 \div c^{-3}$ $c^{-4+2+3} = c^1$ or c

Evaluate for $q = 3$ and $r = 2$.

28. r^q $2^3 = 8$
29. $r^3 \times r^{-4}$ $2^3 \times 2^{-4} = 2^{-1} = \frac{1}{2}$
30. $6q^0 \div r$ $6(3)^0 \div 2 = 6(1) \div 2 = 3$
31. $r^{-3} \times r^{-3} \div r$ $(2^{-3})^2 \div (2^0)^3 = 2^{-6} \div 2^0 = 2^{-6} = \frac{1}{64}$
32. $(r^q)^r \div (r^q)^q$ $(2^3)^2 \div (2^3)^3 = 2^6 \div 2^9 = 2^{-3} = \frac{1}{8}$
33. Decide whether each of the following statements is always true, sometimes true, or never true, and under what conditions.
- a) Two powers in which the exponents are both -2 have equal values.
- b) $(-x)^2 = (+x)^2$ for any x
- c) $(y)^{-x} = (-y)^x$