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8.EE.A.1 Solve or Simplify Expressions Involving Powers of Powers

8.EE.A.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions.

1 If the expression $(2y^a)^4$ is equivalent to $16y^8$, what is the value of a?

2 Which expression is equivalent to $(3x^2)^3$?

3 Expressed in simplest form, $(3x^3)(2y)^2(4x^4)$ is equivalent to

4 The expression $(6x^3y^6)^2$ is equivalent to

5 The expression $(-4a^3b)^2$ is equivalent to

6 The product of $(5ab)$ and $(-2a^2b)^3$ is

7 If $x \neq 0$, then $\frac{(x^2)^3}{x^5} \cdot 1000$ is equivalent to

8 The expression $\frac{\left(4x^3\right)^2}{2x}$ is equivalent to

9 The expression $\frac{(10w^3)^2}{5w}$ is equivalent to

10 The expression $\frac{\left(b^{2n+1}\right)^3}{b^n \cdot b^{4n+3}}$ is equivalent to

11 Which equation is true?

1) $\frac{c^5}{d^7} \div \frac{d^3}{c} = \frac{c^4}{d^4}$

2) $(-2m^2p)^3 = -8m^6p^3$

3) $\left(\frac{s^3t^8}{s^4t^5}\right)^2 = \frac{t^5}{s^2}$

4) $(-2a^2b^3)(3ab^2) = a^3b^5$

12 Which statement is correct?

1) $(2b^3c^5)(-3b^2c) = -6b^5c^5$

2) $\frac{6m^3t^8}{-2m^5t^3} = \frac{-3t^5}{m^2}$

3) $(-5n^4q)^2 = 25n^6q^2$

4) $\frac{t^3}{v^5} \div \frac{v}{t} = \frac{t^2}{v^2}$

13 If $10^k = x$, then 10^{3k} is equal to

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Answer Key

8.EE.A.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions.

1 ANS:
2

2 ANS:
$27x^6$

3 ANS:
$48x^7y^2$
$(3x^3)(2y)^2(4x^4) = (3x^3)(4y^2)(4x^4) = 48x^7y^2$

4 ANS:
$36x^6y^{12}$

5 ANS:
$16a^6b^2$

6 ANS:
$-40a^7b^4$
$(5ab)(-2a^2b)^3 = (5ab)(-8a^6b^3) = -40a^7b^4$

7 ANS:
$1000x$
$\frac{(x^2)^3}{x^5} \cdot 1000 = \frac{x^6}{x^5} \cdot 1000 = 1000x$

8 ANS:
$8x^5$
$\frac{\left(4x^3\right)^2}{2x} = \frac{16x^6}{2x} = 8x^5$

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Answer Key

8.EE.A.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions.

9 ANS:

$20w^5$

$$\frac{(10w^3)^2}{5w} = \frac{100w^6}{5w} = 20w^5$$

10 ANS:

b^n

$$\frac{(b^{2n+1})^3}{b^n \cdot b^{4n+3}} = \frac{b^{6n+3}}{b^{5n+3}} = b^n$$

11 ANS: 2

12 ANS: 2

13 ANS:

x^3