Math 8 Unit 1 quiz 1: Multiplying and dividing powers with the same base, Powers of powers, products and quotients, Zero and negative exponents

Name _____ Date _____ Period _____

8 questions, 19 points

1. Simplify to a single power. The letters stand for nonzero numbers. (3 points)

(a) $a \cdot a^5 \cdot a \cdot a^3$ (b) $\dfrac{m^9 \cdot m^9}{m^9}$ (c) $\dfrac{t^{15}}{t^4 \cdot t^3 \cdot t}$

2. Isaac simplifies $\dfrac{5^6 \cdot 5^6}{5^{10}}$ and gets 5^{26}. Find the mistake. Then write the expression as the correct single power and find its value. (2 points)

3. Find the monomial, with a positive coefficient, that makes this true for every x and y:

$$9x^4y^8 = (_____)^2$$

(2 points)

4. Simplify $\left(\dfrac{3}{x^2}\right)^2 \cdot (x^3)^2$, where $x \neq 0$. (2 points)

5. Find the value of each.

(a) $\dfrac{2^{-3}}{4^{-1}}$ (b) $(3^{-1} \cdot 6)^{-2}$ (2 points)

6. Find the missing factor, written with positive exponents, that makes this true for all nonzero x and y:

$$3x^2y^4 \cdot _____ = 18x^{-1}y^4$$

(2 points)

7. Which is larger, $\dfrac{3^{12}}{27 \cdot 3^2}$ or $9 \cdot 3^4 \cdot 3^2$? Decide by writing each as a single power of 3, then say how many times as large it is. (3 points)

8. Find each value without working out any power larger than 3^5. (3 points)

(a) $\dfrac{6^5}{2^5}$

(b) $\left(\dfrac{2}{3}\right)^4 \cdot 3^4$

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