Math 8 Unit 1 quiz 2: Monomials and the exponent rules, Writing and reading scientific notation, Comparing numbers in scientific notation

Name _____ Date _____ Period _____

7 questions, 22 points

1. A scientist records how the mass of ice in five glaciers changed over one year, in kilograms. A negative change is ice lost; a positive change is ice gained. (2 points)

Glacier	A	B	C	D	E
Change (kg)	-2.5×10^9	-7×10^8	-2.05×10^9	1×10^6	-0.3×10^{10}

(a) List the five changes from least to greatest.

(b) Which glacier lost the most ice?

2. Simplify. Every variable is nonzero; write answers with positive exponents. (4 points)

(a) $(-7a^3b)(-2ab^5)$ (b) $\left(\frac{2}{3}t^5\right)\left(-\frac{9}{4}t\right)$ (c) $\frac{-24x^2y^7}{16x^5y^3}$ (d) $(-xy^2)^3(4x^2)$

3. A triangular garden plot has a base of $6m^3n$ meters and a height of $5mn^2$ meters, where m and n are positive. (3 points)

(a) Write the area of the plot as a monomial.

(b) A second triangular plot has the same area, and its height is $3m^2n$ meters. Find its base.

4. Every variable is nonzero. (3 points)

(a) Simplify $\frac{(-2m^3n^{-2})^3}{4m^{-1}n^{-7}}$. Write the answer with positive exponents only.

(b) The expression is full of negative exponents. Is your simplified answer a monomial? Give the reason.

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5. Which of these are in scientific notation? For each one that is not, say why not. (3 points)

(a) 0.9×10^3 (b) 7.25×10^{-11} (c) 10×10^{-2}

(d) 4×2^{10} (e) $3.1 \times 10^{1.5}$ (f) 1×10^0

6. A beekeeper's hive holds about 4×10^4 honeybees. A survey estimates that a whole country has about 2×10^{10} honeybees. Omar says that since the exponents differ by 6, the country must have at least 10^6 times as many honeybees as one hive. (3 points)

(a) Without dividing, explain whether Omar is right.

(b) How many times as many honeybees as one hive does the country have? Give your answer in scientific notation.

7. Each row of the table names one number in two ways. Fill in every empty cell.

Row	Ordinary number	Scientific notation
(a)	30,040,000,000	_____
(b)	_____	4.44×10^{-5}
(c)	0.0000000106	_____
(d)	_____	1.006×10^9

(4 points)

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