Algebra 1 Unit 1 quiz 2: Commutative, associative and distributive properties, Identity and inverse elements, Closure

Name _____ Date _____ Period _____

8 questions, 21 points

1. Find the numbers h and k that make $-5(hx - 1) = -15x + k$ true for every real number x. (2 points)

2. Hannah simplified $3 + 6(x - 6)$ by writing

$$3 + 6(x - 6) = 9(x - 6) = 9x - 54$$

Explain the mistake, and give the correct simplified expression. (2 points)

3. Let $x = 0.75$. (2 points)

(a) Find the multiplicative inverse of the additive inverse of x.

(b) Find the additive inverse of the multiplicative inverse of x.

Give both answers as fractions, and say whether the two orders give the same number.

4. Mei argues: "Subtraction is commutative after all. We can write $a - b$ as $a + (-b)$, and addition is commutative."

Carry out her swap on $a + (-b)$. Is the result $b - a$? Explain where her argument goes wrong, and give numbers showing that $a - b$ and $b - a$ can differ. (2 points)

5. Ethan thinks of a number, multiplies it by $-\frac{2}{9}$, then adds 11, and ends with 9. (3 points)

(a) Write an equation for Ethan's number n.

(b) Solve it, naming the inverse you use at each step.

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6. Let $a = 4\sqrt{7}$ and $b = 3\sqrt{7}$, two irrational numbers. Find ab, $a \div b$ and $a - b$ in simplest form, and say whether each is rational or irrational. (3 points)

7. Kofi multiplies both sides of $2x + 5 = 11$ by x and gets $x(2x + 5) = 11x$. (3 points)

(a) Solve $2x + 5 = 11$.

(b) Show that $x = 0$ makes $x(2x + 5) = 11x$ true but $2x + 5 = 11$ false.

(c) Explain, using reciprocals, why Kofi's step cannot be undone for every x.

8. Show that $(a + b) + (c + d) = (a + c) + (b + d)$ for all real numbers a, b, c and d, naming the property used at each step. Change only one thing (an order or a grouping) at each step. (4 points)

Statements	Reasons

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