

Name: key

Date: _____

#4

The Real Number Properties Algebra 1 Homework

Skills

1. Which of the following equations illustrates the commutative property of multiplication?

- (1) $5 \cdot (3 \cdot 2) = (5 \cdot 3) \cdot 2$
- (2) $xy = yx$
- (3) $7 + x = x + 7$
- (4) $3(2x - 4) = 6x - 12$

2

2. Which of the following equations illustrates the distributive property?

- (1) $4(5x - 2) = 20x - 8$
- (2) $4x \cdot 3x = 4 \cdot 3 \cdot x \cdot x$
- (3) $3 + (2 + 7) = (3 + 2) + 7$
- (4) $5(x - 7) = (x - 7)5$

1

3. Which of the following properties is illustrated by the statement $7 + (-3) = (-3) + 7$?

- (1) Distributive Property
- (2) Associative Property
- (3) Commutative Property of Addition
- (4) Commutative Property of Multiplication

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4. Which of the following equations illustrates the identity property of multiplication?

- (1) $x = x + 0$
- (2) $2x + y = y + 2x$
- (3) $x = 1x$
- (4) $4(3x - 2) = 12x - 8$

mult by 1

3

5. For each of the following mathematical equations, fill in the blank and then state the property used to justify your answer.

(a) $2(x + 7) = 2x + \underline{14}$

Distributive Property

(b) $5x + (2x + 3y) = (5x + \underline{2x}) + 3y$

Assoc. Prop. of +

(c) $2x + 7 + 5x - 3 = 2x + \underline{5x} + 7 - 3$

Comm. Prop. of +

(d) $y = \underline{2x} = 2x + \underline{0}$

Add. identity Property

(e) $\underline{1} \cdot (6x + 2) = 6x + 2$

Mult. identity Property

or
Dist. Prop.

6. Place parentheses in each statement to make it true. There may be more than one correct answer.

(a) $(5+3) \div 2 = 4$
 $8 \div 2 = 4$ ✓

(b) $10 - (3 - (4 - 2)) = 5$
 $10 - 3 - 2 = 5$ ✓

(c) $3 \times (4 + 5) + 3 = 9$
 $3 \cdot 9 + 3 = 7$ ✓

(d) $2 \times 8 \div (2 + 2) = 4$
 $2 \cdot 8 = 16$
 $16 \div 4 = 4$

Reasoning

7. Justine and Clara are having an argument. Justine claims that division is commutative just like multiplication. Clara claims it is not. Who is correct? Justify. → Explain & example

Clara is correct. Division is not commutative.
 ex. $\frac{1}{3} = \frac{1}{3}$ where $\frac{3}{1} = 3$. You will not get the same answer.
 or $\frac{1}{3} \neq \frac{3}{1}$
 $\frac{1}{3} \neq 3$

8. The following mathematical sentence illustrates adding two fractions with unlike denominators.

★ What property can be used to justify multiplying the second fraction by $\frac{2}{2}$? Explain.

$$\frac{5}{6} + \frac{2}{3} = \frac{5}{6} + \frac{2 \cdot 2}{3 \cdot 2}$$

$$= \frac{5}{6} + \frac{4}{6}$$

$$= \frac{9}{6}$$

Multiplicative Identity Prop $\frac{2}{2} = 1$
 multiplying by 1 doesn't change its value so the equation is still equivalent.

*9. Justify each statement shown below with a real number property.

Don't DU #9

(1) $(x+4)(x-3) = x(x+4) - 3(x+4)$

(1) Dist. Prop

(2) $x(x+4) - 3(x+4) = x^2 + 4x - 3x - 12$

(2) Dist. Prop

(3) $x^2 + 4x - 3x - 12 = x^2 + (4-3)x - 12$
 $= x^2 + 1x - 12$

(3) Dist. Prop

(4) $x^2 + 1x - 12 = x^2 + x - 12$

(4) Mult Identity

★ go over