

Name : \_\_\_\_\_

Teacher : \_\_\_\_\_

Due Date : \_\_\_\_\_

## Identify the Properties of Mathematics

1 ) When three or more numbers are added, the sum is the same regardless of the grouping of the addends. For example  $(a + b) + c = a + (b + c)$

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2 ) When two numbers are added, the sum is the same regardless of the order of the addends. For example  $a + b = b + a$

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3 ) When three or more numbers are added, the sum is the same regardless of the grouping of the addends. For example  $(a + b) + c = a + (b + c)$

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4 ) Multiplying any number by 0 yields 0. For example  $a \times 0 = 0$ .

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5 ) The sum of two numbers times a third number is equal to the sum of each addend times the third number. For example  $a \times (b + c) = a \times b + a \times c$

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6 ) The additive inverse of a number,  $a$  is  $-a$  so that  $a + -a = 0$ .

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7 ) Adding 0 to any number leaves it unchanged. For example  $a + 0 = a$ .

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8 ) The product of any number and one is that number. For example  $a \times 1 = a$ .

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9 ) When two numbers are multiplied together, the product is the same regardless of the order of the multiplicands. For example  $a \times b = b \times a$

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10 ) Multiplying any number by 0 yields 0. For example  $a \times 0 = 0$ .

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11 ) When two numbers are added, the sum is the same regardless of the order of the addends. For example  $a + b = b + a$

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12 ) When two numbers are multiplied together, the product is the same regardless of the order of the multiplicands. For example  $a \times b = b \times a$

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13 ) When three or more numbers are multiplied, the product is the same regardless of the order of the multiplicands. For example  $(a \times b) \times c = a \times (b \times c)$

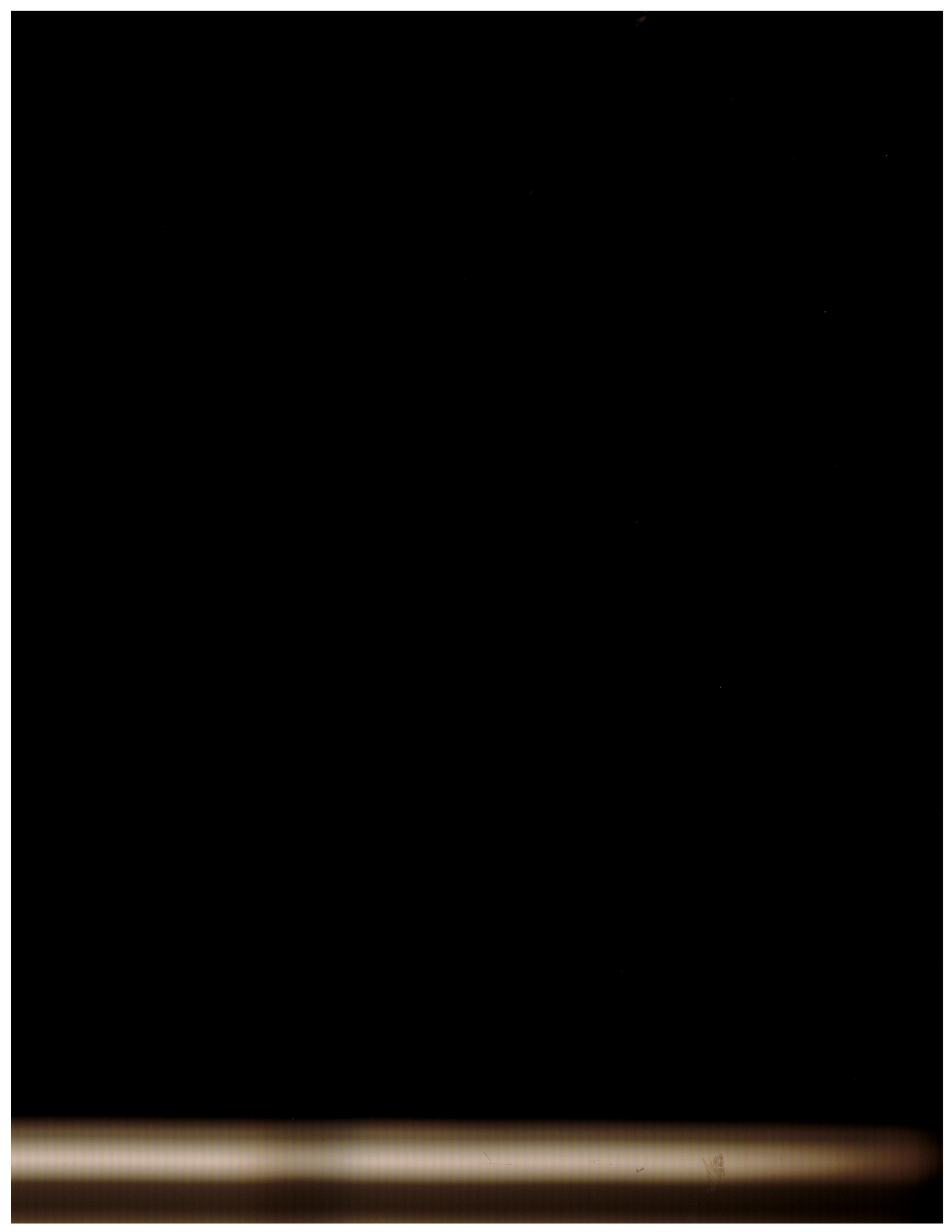
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14 ) The sum of two numbers times a third number is equal to the sum of each addend times the third number. For example  $a \times (b + c) = a \times b + a \times c$

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15 ) The product of any number and one is that number. For example  $a \times 1 = a$ .

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Score : \_\_\_\_\_

Date : \_\_\_\_\_

## Working with the Properties of Mathematics

- 1) Which operation will not change the value of any nonzero number ?
- A. Adding Zero  
B. Adding One  
C. Multiplying by Zero  
D. Dividing by Zero
- 2) Which property is used in the following expression ?  $2(5 + 8) = 10 + 16$
- A. Distributive Property  
B. Associative Property of Multiplication  
C. Associative Property of Addition  
D. Commutative Property of Addition
- 3) The value of any nonzero number will be changed by \_\_\_\_\_.
- A. multiplying by zero  
B. multiplying by one  
C. adding zero  
D. dividing by one
- 4) Which equation shows the Identity Property of Multiplication ?
- A.  $a \times 1$   
B.  $a(b + c) = ab + ac$   
C.  $(a + b) + 7 = a + (7 + b)$   
D.  $a + a + a = 3 \times a$
- 5) Which is an example of Identity Property of Addition ?
- A.  $2 + 0 = 2$   
B.  $5 \times 1 = 5$   
C.  $(9 + 8) + 7 = 9 + (8 + 7)$   
D.  $3 + 9 = 9 + 3$
- 6) Which of the following does not show the Commutative Property of Addition ?
- A.  $a + b = b + a$   
B.  $ab = ba$   
C.  $2 + x = x + 2$   
D.  $3x + 4y = 4y + 3x$
- 7) Which equation shows the Zero Property of Multiplication ?
- A.  $9 \times 6 = 6 \times 9$   
B.  $2 + 2 + 2 = 3 \times 2$   
C.  $3 \times 0 = 0$   
D.  $7 \times 1 = 7$
- 8) Which equation shows the Addition Property of Zero ?
- A.  $a(b + c) = ab + ac$   
B.  $a + 0 = a$   
C.  $a \times 0 = 0$   
D.  $(a + b) + 7 = a + (7 + b)$
- 9) Which operation will not change the value of any nonzero number ?
- A. Multiplying by One  
B. Dividing by Zero  
C. Multiplying by Zero  
D. Adding One
- 10) Which is an example of Associative Property of Addition ?
- A.  $(8 + 5) + 6 = 8 + (5 + 6)$   
B.  $4 + 0 = 4$   
C.  $9 + 8 = 8 + 9$   
D.  $7 + (-7) = 0$

Score : \_\_\_\_\_

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# Working with the Properties of Mathematics

1) Simplify this expression :  $9(y + z)$

A.  $9yz$

C.  $9y + z$

B.  $9z + y$

D.  $9y + 9z$

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2) Which equation shows the Commutative Property of Multiplication ?

A.  $8 \times 3 = 8 + 8 + 8$

C.  $5 \times 3 = 3 \times 5$

B.  $4 \times 6 - 2 \times 6 = (4 - 2) \times 8$

D.  $7 \times 1 = 7$

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3) Which equation shows the Additive Inverse of a Number ?

A.  $a \times 0 = 0$

C.  $a + a = 2a$

B.  $a + -a = 0$

D.  $a + 0 = a$

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4) Which property is used in the following expression ?  $(7 \times 4) \times 9 = 4 \times (9 \times 7)$

A. Commutative Property of Addition

C. Distributive Property of Multiplication

B. Associative Property of Multiplication

D. Associative Property of Addition

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5) Which equation shows the Multiplicative Inverse of a Number ?

A.  $a \times 1 = a$

C.  $a + -a = 0$

B.  $a \times 0 = 0$

D.  $a \times (1/a) = 1$

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6) Which of the following is an example of Commutative Property of Addition ?

A.  $5 + 2 = 2 + 5$

C.  $(2 + 9) + 8 = 2 + (9 + 8)$

B.  $7 + 3 = 4 + 7$

D.  $6 \times 1 = 6$

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7) Which property is used in the following ?  $4 \times (2 + 8) = 4 \times 2 + 4 \times 8$

A. Distributive Property

C. Commutative Property

B. None of the above

D. Associative Property

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8) Which property of addition is used in the following ?  $(7 + 5) + 6 = 7 + (5 + 6)$

A. Commutative Property

C. Identity Property

B. Distributive Property

D. Associative Property

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9) Which Property of Addition does  $3 + 0 = 3$  illustrate ?

A. Zero Property

C. Distributive Property

B. Commutative Property

D. Identity Property

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10) Which property is used in the following expression ?  $(a \times b) \times c = a \times (b \times c)$

A. Commutative Property of Addition

B. Distributive Property

D. Associative Property of Addition

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## Working with the Properties of Mathematics

- 1 ) Which of the following does not show the Commutative Property ?
- A.  $yx = xy$
  - B.  $xy - 5 = xy$
  - C.  $4 + y = y + 4$
  - D.  $x + y = y + x$
- 2 ) Which property would you use to simplify the following expression ?  $9(y + 8)$
- A. Multiplication Property of Zero
  - B. Associative Property
  - C. Distributive Property
  - D. Commutative Property
- 3 ) Which Property of Multiplication is shown ?  $(3 + 6) \times 2 = 3 \times 2 + 6 \times 2$
- A. Commutative Property
  - B. Identity Property
  - C. Distributive Property
  - D. Associative Property