

A.N.1: Identify and apply the properties of real numbers.

1. 060424a, P.I. A.N.1

Which expression is an example of the associative property?

[A] $(x + y) + z = x + (y + z)$

[B] $x(y + z) = xy + xz$

[C] $x \cdot 1 = x$

[D] $x + y + z = z + y + x$

2. 010428a, P.I. A.N.1

Which equation illustrates the associative property of addition?

[A] $(3 + x) + y = 3 + (x + y)$

[B] $3(x + 2) = 3x + 6$

[C] $x + y = y + x$

[D] $3 + x = 0$

3. 080725a, P.I. A.N.1

Which equation illustrates the associative property?

[A] $a(b + c) = (ab) + (ac)$

[B] $a + b = b + a$

[C] $(a + b) + c = a + (b + c)$

[D] $a(1) = a$

4. 060315a, P.I. A.N.1

What is the additive inverse of $\frac{2}{3}$?

[A] $-\frac{3}{2}$ [B] $-\frac{2}{3}$ [C] $\frac{1}{3}$ [D] $\frac{3}{2}$

5. 010821a, P.I. A.N.1

The additive inverse of $\frac{1}{a}$ is

[A] a [B] 0 [C] $-a$ [D] $-\frac{1}{a}$

6. 060926ia, P.I. A.N.1

What is the additive inverse of the expression $a - b$?

[A] $a + b$

[B] $a - b$

[C] $-a + b$

[D] $-a - b$

7. 010207a, P.I. A.N.1

Which expression must be added to $3x - 7$ to equal 0?

[A] $-3x + 7$

[B] 0

[C] $-3x - 7$

[D] $3x + 7$

8. 060011a, P.I. A.N.1

If $a \neq 0$ and the sum of x and $\frac{1}{a}$ is 0, then

[A] $x = 1 - a$

[B] $x = -\frac{1}{a}$

[C] $x = a$

[D] $x = -a$

9. 010516a, P.I. A.N.1

What is the multiplicative inverse of $\frac{3}{4}$?

[A] $-\frac{3}{4}$

[B] $-\frac{4}{3}$

[C] -1

[D] $\frac{4}{3}$

10. 010730a, P.I. A.N.1

The multiplicative inverse of $-\frac{1}{3}$ is

[A] $-\frac{1}{3}$

[B] $\frac{1}{3}$

[C] -3

[D] 3

11. 060815a, P.I. A.N.1

The reciprocal of 5 is

[A] $\frac{1}{5}$

[B] -5

[C] 1

[D] $-\frac{1}{5}$

12. 010630a, P.I. A.N.1

Which equation illustrates the multiplicative inverse property?

[A] $1 \cdot 0 = 0$

[B] $-1 \cdot x = -x$

[C] $x \cdot \frac{1}{x} = 1$

[D] $1 \cdot x = x$

13. 089907a, P.I. A.N.1

Which equation is an illustration of the additive identity property?

[A] $x \cdot 1 = x$

[B] $x \cdot \frac{1}{x} = 1$

[C] $x + 0 = x$

[D] $x - x = 0$

14. 060624a, P.I. A.N.1
Which statement best illustrates the additive identity property?
[A] $6(2) = 2(6)$ [B] $6 + (-6) = 0$
[C] $6 + 0 = 6$ [D] $6 + 2 = 2 + 6$
15. 010314a, P.I. A.N.1
Which equation illustrates the multiplicative identity element?
[A] $x + 0 = x$ [B] $x \cdot \frac{1}{x} = 1$
[C] $x - x = 0$ [D] $x \cdot 1 = x$
16. 060108a, P.I. A.N.1
Which equation illustrates the distributive property for real numbers?
[A] $\frac{1}{3} + \frac{1}{2} = \frac{1}{2} + \frac{1}{3}$ [B] $\sqrt{3} + 0 = \sqrt{3}$
[C] $-3(5 + 7) = (-3)(5) + (-3)(7)$
[D] $(1.3 \times 0.07) \times 0.63 = 1.3 \times (0.07 \times 0.63)$
17. 060503a, P.I. A.N.1
Which equation illustrates the distributive property?
[A] $5(a + b) = 5a + 5b$
[B] $a + b = b + a$ [C] $a + 0 = a$
[D] $a + (b + c) = (a + b) + c$
18. 080413a, P.I. A.N.1
Which equation illustrates the distributive property of multiplication over addition?
[A] $6(3a + 4b) = (3a + 4b)6$
[B] $6(3a + 4b) = 18a + 24b$
[C] $6(3a + 4b) = 6(4b + 3a)$
[D] $6(3a + 4b) = 18a + 4b$
19. 010107a, P.I. A.N.1
If a and b are integers, which equation is always true?
[A] $a - b = b - a$ [B] $\frac{a}{b} = \frac{b}{a}$
[C] $a + b = b + a$ [D] $a + 2b = b + 2a$
20. 060828a, P.I. A.N.1
Under which operation is the set $\{-1, 0, 1\}$ closed?
[A] multiplication [B] subtraction
[C] addition [D] division
21. 010928a, P.I. A.N.1
Under which operation is the set of odd numbers closed?
[A] subtraction [B] addition
[C] division [D] multiplication
22. 010217a, P.I. A.N.1
Which set is closed under division?
[A] $\{1\}$ [B] integers
[C] whole numbers [D] counting numbers
23. 080129a, P.I. A.N.1
Ramón said that the set of integers is *not* closed for one of the basic operations (addition, subtraction, multiplication, or division). You want to show Ramón that his statement is correct. For the operation for which the set of integers is *not* closed, write an example using:
o a positive even integer and a zero
o a positive and a negative even integer
o two negative even integers
Be sure to explain why *each* of your examples illustrates that the set of integers is *not* closed for that operation.

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[1] A

[2] A

[3] C

[4] B

[5] D

[6] C

[7] A

[8] B

[9] D

[10] C

[11] A

[12] C

[13] C

[14] C

[15] D

[16] C

[17] A

[18] B

[19] C

[20] A

[21] D

[22] A

[3] All three examples are illustrated under division correctly, such as $2 \div 0$, $-2 \div 4$, $-2 \div -4$, and correct explanations are given.

[2] Only two of the three examples are illustrated and explained correctly.

or [2] All three examples are illustrated correctly, but only one explanation is given or is correct.

or [2] The division examples and explanations are correct, but at most two incorrect examples are also shown, such as examples for addition, subtraction, or multiplication.

[1] The division examples and explanations are correct, but more than two incorrect examples are shown, such as examples for addition, subtraction, or multiplication.

or [1] All three examples are illustrated correctly, but no correct explanation is given.

or [1] Only one correct example with a correct explanation is given.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[23] incorrect procedure.