Symbols Representing Arithmetic Operations Problems

1. If # represents one of the operations +,- and *, is a # (b-c) = (a#b) – (a#c) for all numbers a, b and c.

   (1) a#1 is not equal to 1#a for some numbers a

   (2) # represents subtraction

2. If @ represents one of the operations +, -, and x, is k@(l+m)=(k@l)+(k@m) for all numbers k, l,and m?

   (1) k@1 is not equal to 1@k for some numbers k.
   (2) @ represents subtraction.

3. If the symbol # represents either addition, subtraction, multiplication, or division, what is the value of 6#2?

   (1) 10#5 = 2
   (2) 4#2 = 2

4. The symbol R represents one of the following operations:addition, subtraction, multiplication, or division.

   What is the value of 5R2 ?

   (1) 2R5 = 10
   (2) 5R5 = 25

5. The operation* represents either addition, subtraction, or multiplication of integers, what is the value of 1*0?

   (1) 0*2=2
   (2) 2*0=2

6. If @ denotes one of two arithmetic operations, addition or multiplication, and if k is an integer, what is the value of 3 @ k?

   (1) 2 @ k = 3

   (2) 1 @ 0 = k

7. If the operation # is one of the four arithmetic operations- addition, subtraction, multiplication and division. Is (6#2)#4= 6#(2#4)

   (1) 3#2 > 3

   (2) 3#1 = 3

8. The symbol ∇ represents one of the following operations: addition, subtraction, multiplication, or division. What is the value of 3 ∇ 2?

   (1) 0∇1 = 1
   (2) 1∇0 = 1

9. If # denotes one of the four arithmetic operations addition, subtraction, multiplication and division, what is the value of 1 # 2?

   (1) n # 0 = n for all integers n
   (2) n # n = 0 for all integers n

10. If the operation # is one of the four arithmetic operations addition, subtraction, multiplication and division, is (6#2)#4 = 6#(2#4)

    (1) 3#2 > 3

    (2) 3#1 = 3

11. If x is a positive integer, the symbol * represents which of the following operations: addition, subtraction, multiplication, or division?

    (1) For all x, 5* x = x * 5
    (2) For all x, 2x * 2x = 4x

12. If the symbol @ represents either addition or multiplication, which operation does it represent?

    (1) a@b=b@a for all numbers a and b
    (2) a@(b-c)=(a@b)-(a@c) for all numbers a, b, and c

13. If # denotes one of the four arithmetic operations addition, subtraction, multiplication and division, what is the value of 1 # 2?

    (1) n # 0 = n for all integers n
    (2) n # n = 0 for all integers n

14. If the symbol § represents one of the following operations: addition, subtraction or multiplication, and $x \neq 0$, then what is the value of $(x \S 2) \S x$?

    (1) $x=5$
    (2) $(-1) \S (-2) \neq (-2) \S (-1)$

15. The symbol # represents one of the four arithmetic operations: addition, subtraction, multiplication, and division. Is $(5 \# 6) \# 2 = 5 \# (6 \# 2)$?

    (1) $5 \# 6 = 6 \# 5$
    (2) $2 \# 0 = 2$

16. The symbol Ω represents one of the following operations: addition, subtraction, multiplication or division. What is the value of 1 Ω 1?

    (1) 2 Ω 2 = 4

    (2) 0 Ω 1 = 0

17. If & represents one of the operations +, - and x. Is (a&b) + (a&c) = a&(b + c) for all numbers a, b, and c ?

    (1) & represents subtraction.
    (2) m&2 is not equal to 2&m for some numbers m.