Operations Properties

**Addition**

+ **Associative property**
  \[(a + b) + c = a + (b + c)\]  \[(4 + 2) + 1 = 4 + (2 + 1)\]

+ **Commutative property**
  \[a + b = b + a\]  \[4 + 2 = 2 + 4 = 6\]

+ **Additive identity property of 0**
  \[a + 0 = 0 + a = a\]  \[4 + 0 = 0 + 4 = 4\]

**Multiplication**

× **Associative property**
  \[(a \times b) \times c = a \times (b \times c)\]  \[(4 \times 2) \times 1 = 4 \times (2 \times 1)\]

× **Commutative property**
  \[a \times b = b \times a\]  \[4 \times 2 = 2 \times 4 = 8\]

× **Multiplicative identity property of 1**
  \[a \times 1 = 1 \times a = a\]  \[4 \times 1 = 1 \times 4 = 4\]

**Distributive property of multiplication over addition**
\[a \times (b + c) = a \times b + a \times c\]  \[4 \times (2 + 1) = 4 \times 2 + 4 \times 1\]

**Inverses**

+ **Additive inverses**
  \[a + (-a) = (-a) + a = 0\]  \[4 + (-4) = (-4) + 4 = 0\]

× **Multiplicative inverses**
  \[a \times 1/a = 1/a \times a = 1\]  \[4 \times 1/4 = 1/4 \times 4 = 1\]

  **if** \[a \neq 0\]