

STD-VI
Mathematics

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Properties of Whole Numbers

Like natural numbers whole numbers also follow the mathematical properties.

1. Closure Property: - Whole numbers are closed under addition and multiplication.

Example: -

① $2 + 3 = 5$	=	Sum and product of two whole numbers is also whole number.
② $2 \times 3 = 6$	=	
③ $a + b = c$	=	
④ $ab = c$	=	

2. Commutative Property: - Addition and Multiplication are commutative for whole numbers.

Example -

- ① $2 + 3 = 5 = 3 + 2$
- ② $2 \times 3 = 6 = 3 \times 2$
- ③ $a + b = b + a$
- ④ $ab = ba$

3. Associative Property: - Sum and product of whole numbers are associative.

Example: -

- ① $(2 + 3) + 4 = 9 = 2 + (3 + 4)$
 $\Rightarrow 5 + 4 = 9 = 2 + 7$
- ② $(2 \times 3) \times 4 = 24 = 2 \times (3 \times 4)$
 $\Rightarrow 6 \times 4 = 24 = 2 \times 12$

Teacher's Signature

$$(3) (a+b) + c = a + (b+c)$$

$$(4) (a \times b) \times c = a \times (b \times c)$$

4. Distributive Property of multiplication over addition :-

If a, b, c are three whole numbers

$$(1) a \times (b+c) = (a \times b) + (a \times c)$$

$$(2) 2 \times (3+4) = 14 = (2 \times 3) + (2 \times 4) = 6 + 8 = 14$$

$$(3) 5 \times (2+1) = (5 \times 2) + (5 \times 1) = 15$$

$$(4) 3 \times (0+6) = (3 \times 0) + (3 \times 6) = 18$$

5. Distributive property of multiplication over subtraction.

If a, b, c are whole numbers and $b > c$

then $(1) a \times (b-c) = (a \times b) - (a \times c)$

$$(2) 5 \times (10-1) = (5 \times 10) - (5 \times 1) = 50 - 5 = 45$$

6. Property of Zero: - zero is the additive identity.

If we add zero to a whole number, it remains unchanged.

$$\text{Ex- } 5 + 0 = 5$$

7. Property of One: - One is called the multiplicative identity of whole numbers. If

we multiply a number by one, it remains unchanged.

$$\text{Ex- } 5 \times 1 = 5$$

8. Multiplicative property of zero :-

Any number multiplied by zero gives zero. So $5 \times 0 = 0$

9) Properties of Division :-

a) Any whole number divided by one gives the same whole number as quotient.

$$6 \div 1 = 6$$

b) If zero is divided by any whole number, the quotient is always zero.

$$0 \div 6 = 0$$

c) Division of a whole number by zero is not defined.

$$6 \div 0 = \text{undefined.}$$

d) Any whole number divided by the same number, the quotient is one.

$$6 \div 6 = 1$$