Properties of Real Numbers

Number Properties

- **Recognise that there are number properties and that these describe the behavior of number operations.**
- **Understand that a generalisation of an important idea can be expressed using letters (variables).**
- **Describe the commutative property of addition and the commutative property of multiplication, name and apply these.**
- **Describe the associative property of addition and the associative property of multiplication, name and apply these.**
- **Describe the distributive property of multiplication over addition, and name and apply this property.**
- **Recognise how number properties are ‘useful’ in their own mathematics.**

Commutative Property of Addition and Multiplication

a.b=b.a

Eg: 3x4= 4x3=12 (Commutative Property of Multiplication)

Two numbers are multiplied in either order and you get the same product.

a+b= b+a

Eg: 5+6= 6+5= 11 (Commutative Property of Addition)

Two numbers are added in one order and when you change the order and add the same numbers you still get the same sum.

Associative Property of Addition

You can group numbers together in any way, add them together, and the sum will be the same.

a+(b+c)= (a+b)+c

Eg: 3+(4+2)=(3+4)+2= 9

Associative Property of Multiplication

You can group numbers in any way, multiply them together, and the product is the same product.

$a.(b.c)=(a.b).c$

Eg: $3x(4x5)=(3x4)x5= 60$

Distributive Property

You can multiply a sum, or you can ‘multiply each addend of that sum separately, and the products will be the same.

a(b+c)=a.b+a.c

Eg: 3(4+5)= 3x9= 3x4+3x5= 27

Name the Property and the missing Number

- □ + 235 = 235 + 17
- 25 x □ = 7 x 25
- (125 + 16) + □ = 125 + 16 + 17
- (15 x □) x 10 = 15 x (2 x 10)
- 8 x (19 + 3) = (□ x 19) + (8 x 3)

Questions

- $5a + (2a + 6) = (5a + 2a) + 6$
- **$8x + 4 = 4 + 8x$**

Additive Inverse & Identity

a-a= 0 (Additive Inverse)

Show this Property on a Number line in your books.

a+0= a

Show the above property on a Numberline.