Basic Geometrical Ideas

If a, b, c, etc are whole numbers, then

1. $a + b$ is a whole number. [Closure property of addition]

2. $a \times b$ is a whole number. [Closure property of multiplication]

3. $(a - b)$ may or may not be a whole number.

4. $a + b$ may or may not be a whole number

5. $a + b = b + a$

6. $a \times b = b \times a$

7. $a - b$ is not equal to $b - a$ if a and b are unequal.

8. $a + b$ is not equal to $b + a$ if a and b are unequal.

9. $a + b = b + a$ if and only if $a = b$.

10. $(a + b) + c = a + (b + c)$ [Associativity of addition].

11. $a \times (b \times c) = (a \times b) \times c$ [Associativity of Multiplication].

12. $a \times (b + c) = a \times b + a \times c$ [Distributive of multiplication over addition].

13. $a \times (b - c) = a \times b - a \times c$, if $b > c$ [Distributive of multiplication over Subtraction].

14. $a + 0 = a = 0 + a$ [Existence of multiplicative identity].

15. $a \times 0 = 0 = 0 \times a$]Existence of multiplication identity]

16. $a \times 1 = a = 1 \times a$

17. $a + 1 = a$.

18. In general $(a - b) - c \neq a - (b - c)$.

19. In general $(a + b) + c \neq a + (b + c)$.

20. If a is dividend, $b(\neq 0)$ divisor, q quotient and r remainder, then $a = bq + r$.

[Division algorithm]