

Equations -

Linear Equation in one variable

(Eq)

Solutions -

**Method** To check the truth of an equation

1.

2.

3.

(Eq) Is  $x=3$  a solution to the equation  
 $3x-7=2$ ?

Solving an equation

~~(Eq)  $x-12=-3$~~

(Eq)  $x-12=-3$

Note -

$$\textcircled{\text{Eg}} \quad 3|x| - 7 = 2$$

Equivalent Equations -

-  
-  
-

Algebra -

-

Addition Property of Equality

$$\textcircled{\text{Eg}} \quad m - 4.1 = -6.3$$

Additive Inverses -

$\textcircled{\text{Eg}}$  3 is the additive inverse of         

$\textcircled{\text{Eg}}$  -3 is the additive inverse of         

Subtraction Property of Equality

-

$$\textcircled{\text{Eg}} \quad -22 = x + 16$$

$$\textcircled{1} \quad \frac{7}{2}m + 1 = \frac{9}{2}m$$

$$\textcircled{2} \quad 9r + 4r + 6 - 2 = 9r + 4 + 3r$$

$$\textcircled{3} \quad x + \frac{4}{7} = \frac{3}{5}$$

$$\textcircled{1} \quad 4(r+1) - (3r+5) = 1$$

$$\textcircled{2} \quad \frac{6}{7}r - \frac{3}{4} = \frac{4}{5} - \frac{1}{7}r + \frac{1}{6}$$

---

## Chapter 2.2

## The Multiplication Property of Equality

### Reciprocals -

-

(Eg) Are 5 and  $\frac{1}{5}$  reciprocals?

(Eg) What is the reciprocal of  $\frac{7}{4}$ ?

(Eg) What is the reciprocal of 6?

(Eg) What is the reciprocal of -1?

## Multiplicative Property of Equality

$$\textcircled{\text{Eg}} \frac{4}{7}x = 12$$

## Division Property of Equality

$$\textcircled{\text{Eg}} 9x = 12$$

## Problem Types

-

-

$$\textcircled{1} 3x = 21$$

$$\textcircled{2} 2.3x = 42$$

$$\textcircled{3} \frac{4}{7}x = 21$$

$$\textcircled{4} \frac{p}{4} = -6$$

## Summary -

-

$$\textcircled{1} 10y - 6y + 3y = -4$$

$$\textcircled{2} -5x + 4x - 8x = 0$$

## Appendix C - Sets

Set -

Elements -

Set Braces -

(Eg) Set of states I've lived in

(Eg) Set of even natural numbers less than 10.

Note

Empty Set

(Eg)  $6 \in \{1, 2, 3, 4, 5\}$

(Eg)  $7 \notin \{1, 3, 5, 7\}$

(Eg)  $\{7, 20, 4\} = \{7, 0, 20, 4\}$

Infinite

Finite

(Ex) List the elements of each set, if possible.  
Determine if each is finite or infinite.

(a) the set of whole numbers

(b) the set of odd natural #'s between 10 & 20

List the elements of each set & determine if the set is finite or infinite

(1) The set of seasons

(2) The set of all living humans who are more than 200 years old.

(3) The set of all multiples of 5.

### Subset

(Ex) Let  $A = \{2, 4, 6, 8, 10, 12\}$   
 $B = \{2, 4, 8, 10\}$   
 $C = \{4, 10, 12\}$

True or false

(a)  $B \subseteq A$

(b)  $C \subseteq B$

## Venn Diagram

(Eg)  $B \subseteq A$

(Eg) Let  $U = \{0, 1, 2, 3, 4, 5, 6, 7, 8\}$   
 $M = \{0, 2, 4, 6, 8\}$   
then  $M' = \{1, 3, 5, 7\}$

## Intersection

## Union

(Eg) if  $M = \{0, 2, 4, 6, 8\}$   
 $N = \{1, 3, 5, 7\}$   
then  $M \cup N =$   
 $M \cap N =$

(Eg) if  $N = \{1, 3, 5, 7\}$   
 $Q = \{0, 1, 2, 3, 4\}$   
then  $N \cup Q =$   
 $N \cap Q =$

(Eg) Let  $U = \{1, 2, 3, 4, 6, 8, 10\}$  then  $B \cup C =$   
 $A = \{1, 3, 4, 6\}$   $A \cap C =$   
 $B = \{2, 4, 6, 8, 10\}$   $A' =$   
 $C = \{2, 8\}$