Second term Mathematics E-Lesson Note

SUBJECT: MATHEMATICS **CLASS: JSS 2**

WEEK TOPIC

1. Solving algebraic equations
2. Word problems on algebraic fraction
3. Linear inequalities
4. Linear inequalities in one variable/graphical representation
5. Graph of linear equation in two variables
6. Linear graphs in two variable
7. Plane figures and shapes
8. Scale drawing of lengths and distances
9. Quantitative aptitude
10. Revision

WEEK ONE **Date: _____**

TOPIC: SOLVING EQUATIONS

CONTENT

- Using directed number
- Unknown on both sides
- Equations with brackets
- Equations with fractions

Using Directed Numbers

Example

1. Solve $25 – 9x = 2$ and $12 = 9 – 3a$

$25 – 9x = 2$

Subtract 25 from both sides

$25 – 25 – 9x = 2 – 25$

$-9x = -23.$

Divide both sides by – 9

$$\frac{-9x}{-9} = \frac{-23}{-9}$$

$X = {}^{23}/_{9} = 2\,{}^{5}/_{9}$

Check
when x = 23/9
LHS = 25 – 9x 23/9 = 25 – 23 = 2 RHS
2. 12 = 9 – 31
12 = 9 – 31
Subtract 9 – from both sides
12 – 9 = -9 – 9 – 3a
3 = -31
Divide both sides by -3
$^{3}/_{-3}$ = -31/-3
-1 = a
:. A = -1
Check when x = -1
LHS = 12 = 9 – 3 (-1) = RHS
LHS = 12 = 9 + 3 + RHS
LHS = 12 = 12 = RHS

EVALUATION
Solve the following equations and check the **Solutions**.
1. 5 – 5n = 8
2. 12 + 5a = 23
3. 20 – 5t = 5
Unknown on both sides. If an equation has unknown terms on both sides of the equal sign, collect the unknown terms on one side and the number terms on the other side.

Worked Examples
Solve the equations.
1. 5x – 4 = 2x + 11
Solution
5x – 4 = 2x + 11
Subtract 2x from both sides of (1)
5x – 2x – 4 = 2x – 2x + 11
3x – 4 = 11 ……. (2)
Add 4 to both sides of ……..(2)
3x – 4 + 4 = 11 + 4
3x = 15 …… (3)
3x/3 = 15/3
X = 5.
Check: when x = 5
LHS = 5 x 5 – 4 = 25 – 4 = 21
RHS = 2 x 5 + 11 = 10 + 11 = 21 = LHS

EVALUATION

Solve the following equations and check the **Solution** .

1. 18 – 5f = 2f + 4
2. 5a + 6 = 2a + 20

Equations with brackets

Always remove brackets before collecting terms.

Examples.

Solve 3 (3x – 1) = 4 (x + 3) and

5 (x +11) + 2 (2x – 5) = 0

Solution

3 (3x -1) = 4 (x + 3) ……..(1)

Remove brackets

9x – 3 = 4x + 12 …….. (2)

Subtracts 4x from both sides and add 3 to both sides.

9x – 4x – 3 + 3 = 4x – 4x + 12 + 3

5x = 15 ……..(3)

Divide both sides by 5

X = 3

Check : When x = 3

LHS = 3 (3 x 3 – 1) = 3 (9-1) = 3 x 8 = 24

LHS = 4 (3 + 3) = 4 x 6 =24 = LHS

(2) .5 (x + 11) + 2 (2x – 5) = 0

Remove brackets

5x + 55 + 4x – 10 = 0

Collect like terms

9x + 45 = 0

Subtract 45 from both sides

9x = -45

Divide both sides by 9

X = -5

Check : when x = -5

LHS = 5(-5 + 11) + 2 (2x (-5) – 5)

= 5 x 6 + 2 (-10 -5)

=30 + 2x (-15) = 30 – 30 = 0 = RHS

Evaluation

Solve the following equations and check the Solutions

1. 2 (x + 5) = 18 2. 5(a + 2) = 4 (a -1) 3. 2(y – 2) + 3 (y – 7) = 0

Equation with fractions

Always clear fractions before collecting terms. To clear fractions, multiply both sides of the equation by the LCM of the denomination of the fractions.

Example

Solve the equations

1. $\frac{4m}{5} - \frac{2m}{3} = 4$

2. $\frac{3x - 2}{6} - \frac{2x + 7}{9} = 0$

Solutions

$\frac{4m}{5} - \frac{2m}{3} = 4$

The LCM of 5 and 3 is 15. Multiply every term by 15.

$15 \times \frac{4m}{5} - 15 \times \frac{2m}{3} = 15 \times 4$

$3 \times 4m - 5 \times 2m = 15 \times 4$

$12m - 10m = 60$

$2m = 60$

Divide both sides by 2.

$m = 30$

Check; When m = 30

LHS $= \frac{4 \times 30}{5} - \frac{3 \times 30}{3} = 120/3 - 60/3$

$= 24 - 20 = 4 =$ RHS

2. $\frac{3x - 2}{6} - \frac{2x + 7}{9} = 0$

The LCM of 6 and 9 is 18

$\frac{18(3x - 2)}{6} - \frac{18(2x + 7)}{9} = 18 \times 0$

$3(3x - 2) - 2(2x + 7) = 0$

Clear bracket

$9x - 6 - 4x - 14 = 0$

Collect terms

$5x - 20 = 0$

Add 20 to both sides

$5x = 20$

Divide both sides by 5

$X = 4$

Check : when x =4

LHS : $\frac{3 \times 4 - 2}{6} - \frac{2 \times 4 + 7}{9}$

$\frac{12 - 2}{6} - \frac{8 + 7}{9}$

$= \frac{10}{6} - \frac{15}{9} = \frac{5}{3} - \frac{5}{3} = 0$ (R.H.S)

EVALUATION

Solve the following equations.

1. $\frac{x-5}{2} = \frac{x-4}{3}$
2. $\frac{3(2a+1)}{4} = \frac{5(a+5)}{6}$

GENERAL EVALUATION

1. solve $7a + 2 = 5(a - 4)$
2. Solve the equation $\frac{3(2x+1)}{4} = \frac{4(x-3)}{6}$
3. Solve the equation $\frac{x+1}{3} - \frac{2-x}{s} = 0$

REVISION QUESTION

Solve the following equations

1. $3(x + 5) - 35 = -4(2x - 6)$
2. $4(2x + 5) - 2(x - 3) = 8(2x + 4)$
3. $\frac{2(3x-2)}{5} = \frac{4(x-2)}{3}$

READING ASSIGNMENT

New General Mathematics, UBE Edition chapter 13 pgs 110-113.

Essential Mathematics by AJS Oluwasanmi, chapter 19pgs 200-205

WEEKEND ASSIGNMENT

1.	Solve the equation $4b + 24 = 0$	A. -3	B. -4	C. -5	D. -6
2.	Solve $7c - 6 = c$	A. 1	B. 2	C. 3	D. 4
3.	Solve $15 = 3(x - 3)$	A. 6	B. 7	C. 8	D. 4
4.	Solve $0 = 7(x - 3)$	A. 1	B. 2	C. 3	D. 4
5.	Solve $3m + 8 = m$	A. -1	B. -2	C. -3	D. -4

THEORY

Solve the following equations.

1. $3(2x-1) = 39 - 2(y + 1)$
2. $\frac{2a-1}{3} - \frac{a+5}{4} = \frac{1}{2}$

WEEK TWO **Date: _____**

TOPIC: WORD PROBLEMS ON ALGEBRAIC FRACTIONS

CONTENTS

- From words to algebra
- Word problems with brackets
- Word problems with fraction.
- From words to Algebra

When solving word problems:

1. Choose a letter for the unknown

2. Write the information of the equation in algebraic form
3. Make an equation
4. Solve the equation
5. Give the answer in written form.
6. check the results against the information given in the question.

Example :

1. I think of a number. Multiply it by 5 and add 15. The result is 100. What is the number I thought of?

Let the number be n

I multiply n by 5:5n

I add 15: 5n + 15

The result is 100:5n + 15 = 100 ……. (i)

Subtract 15 from both sides

5n + 15 -15 = 100 – 15

5n = 85 …….. 2

Divide both sides by 5

$\frac{5n}{5} = \frac{85}{5}$

n = 17

Check: 17 x 5 = 85 + 15 = 100

EVALUATION

1. John thinks of a number, he doubles it. His result is 58. What number does he think of?
2. A number is multiplied by 6 and then 4 is added. The result is 34. Find the number .

Example

A rectangle is 8m long and its perimeter is 30m. find the breadth of the rectangle .

Solution

Let the breadth of the rectangle be ‘b’ meters.

Perimeter = 8 + b + 8 + b meters

= 16 + 2b = 30

Subtract 16 from both sides

2b = 30 -16 = 14

Divide both sides by 2

$B = \frac{14}{2} = 7$

The breadth of the rectangle is 7 meters

Check : 8m + 7m + 8 + 7m = 30m

EVALUATION

1. A rectangle is 10m long and its perimeter is 26m. Find the breadth of the rectangle.
2. A square has a perimeter of 32m. Find the length of one side of the square.

Word problems with brackets.

Example

I subtract 3 from a certain number, multiply the result by 5 and then add 9. If the final result is 54, find the original number.

Solution

Let the original number be x.

1 subtract 3 , this gives x – 3.

I multiply by 5 this gives 5(x- 3)

I add 9 this gives 5 (x – 3)` + 9

The result is 54.

So, 5 (x – 3) + 9 = 54 ……..1

Clear brackets

5x – 15 + 9 = 54 ……..2

Collect like terms

5x = 54 + 15 – 9 =60

x = 60 ÷ 5 = 12

The original number is 12

Evaluation

1. I subtract 8 from a certain number. I then multiply the result by 3. The final answer is 21. Find the original number.
3. I thought of a number, I multiplied it by 5. I then subtracted 19. Finally, I doubled the result, the result was 22. What number did I think of?

Worked Examples

Find two consecutive even number such that seven times the smaller number subtracted from nine times the greater number makes 46.

Solution

Note : 1, 2, 3, 4,5 ……are consecutive whole numbers

2,4,6,8,10 ……are consecutive even numbers

1,3,4,7,9 ……are consecutive odd numbers.

Let the number be x and (x + 2)

Multiply x by 7, gives 7x

Multiply (x + 2) by 9 gives 9 (x + 2)

The result is 46.

9(x+2) – 7x = 46 ……1

9x + 18 – 7x = 46 ……..2

9x – 7x = 46 – 18 …….3

2x = 28 ……4

X = 28/2 = 14

If x = 14

(x+ 2) = 14 + 2 = 16

The numbers are 14 and 16.

EVALUATION

1. Find the consecutive whole numbers such that five times the smaller number added to three times greater number makes 59. (hint let the numbers be x and (x +1).
2. Find two consecutive odd numbers such that six times the smaller added to four times the greater comes to 138. (hint: let the number is x and x + 2)

Word problems with Fractions

Examples: I add 55 to a certain number and then divide the sum by 3. The result is four times the first number, find the number.

Let the number be n

I add 55 to n this gives n + 55

I divide the sum by 3 : this gives $\frac{n + 55}{3}$

The result is 4n

So, $\frac{n + 55}{3} = 4n$ ……1

Multiply both sides by 3

$\frac{3(n + 55)}{3} = 3 \times 4n$ ……2

n + 55 = 12 n ……..3

Collect terms

55 = 12n – n

55 = 11n

So, n = 5

EVALUATION

I think of a number . I double it. I divide the result by 5. My answer is 6. What number did I think of?

New General Mathematics, UBE Edition chapter 13 pgs 114-118

Essential Mathematics by AJS Oluwasanmi, chapter 19pgs 205-207

GENERAL EVALUATION

1. A woman is 7 times as old as her daughter in 2 years time, she will be 5 times as old as her daughter. How old are they now?
2. If 60 is added to a number, and the sum is divided by 3, the result is 7 times the same number. Find the number.

REVISION QUESTION

1. I think of a number. I add 7 to it and then divide the sum by 4.The result is 5.What is the number?
2. A man spent two third of his monthly wages on his car and one quarter on food. If he spent #5500 altogether,how much does earn in a month?
3. If 18 is added to a number to a number, and the sum is divided by 2,the result is 5 times the number. Find the number.

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READING ASSIGNMENT

New General Mathematics pg 209-211

WEEKEND ASSIGNMENT

1. What is the perimeter of an equilateral triangles of side 2b meters.? A. 4b B. 5b C. 6b D. 8b
2. How many altogether if a number is 3 less than a? A. a -3 B. – a + 3 C. 3 – a D. 3 + a
3. How many altogether if a number is doubled and then 5 is taken away? A. 5 – 2y B. 2y – 5 C. 5y – 2 D. 2 – 5y
4. What is the perimeter of a rectangle of breadth b meters and length three times as long?
   A. 4b meters B. 5bmeters C. 8b meters D. 10bmeters
5. What is the perimeter of a rectangle of length y meters and breath 4m less than the length?
   A. 4(y -2)meters B. 2 (y – 4)meters C. 4 (2-y) D. 2 (4- y)meter

THEORY

1. A rectangle is such that its breadth is 2m less than its length. Find the length of the rectangle if the perimeter is 8m.
2. I am thinking of a number. I take away 5, the result is 14. What number did it think of?

WEEK THREE

TOPIC: BASIC SIGNS AND PROPERTIES OF LINEAR INEQUALITIES.

CONTENT

- Greater than and less than
- Properties of linear inequalities
- Not greater than and not less than
- Graphs of inequalities .

Greater than and less than

5 + 3 = 8 means equal to

X ≠ 0 means x is not equal to 0

But 5 + 5 > 8, where 7 means greater than

Similarly, 3 x 2 < 8 where < means less than, > and < are inequality symbols.

Worked Examples

1. Write the inequality symbols for the following
   a. b is greater than 15
   b. 9 x 3 ☐ 20
2. -2^2 ☐ $(-5)^2$ indicate < or > in the box

Solution

1a. b > 15

b. 9 x 3 [>] 20.

2. $(-2)^2 = -2 \times 2 = 4$

$(-5)^2 = -5 \times -5 = 25$

$(-2)^2$ < $(-5)^2$

Evaluation

Write the inequality symbol for each of the following :

a. -3 less than + 3

b. y is less than – 2

c. 4 is greater than a

d. $(-5)^2$ ☐ $(22)^2$

e. 13 ☐ 3 x 49

READING ASSIGNMENT

New General Mathematics UBE Edition, Chapter 22, pgs 209-211

Essential Mathematics by A. JS. oLuwasanmi Chapter 23 pgs 237-239

Properties of linear inequality. The symbol > and < can be used to change word statements into algebraic statements.

Worked Examples

1. The distance between two villages is over 18km . write this as an inequality statement .
2. I have x naira, I spend N20, the amount I have left is less than N5. Write inequality in x.
3. The area of a square is less than 25cm2. What can be said about
   a. the length of its sides b. its perimeters

Solution

1. $x > 18$
2. I spent N20 out of x naira

Amount left = N(x – 20)

Less than N5 N(x – 20) < N5 i.e

X – 20 < 5

3. let the length be a , then $a^2 < 25$

$a < \sqrt{25}$, $a < 5$

b. perimeter = 4a since a = 4

then 4a < 4 x 5

4a < 20

a < 5cm

EVALUATION

1. Write the inequality symbols places of the statements below:

a. The car use more than 28 liters of petrol.

b. The cost of the stamp was less than N25.

c. The students got over 60% in the exam.

2. A boy saved over N500. His father gave him N200, the boy now had altogether. Write an inequality in y .

3. The perimeter of a square is less than 28cm what can be said about :
   a. its length b. its area

READING ASSIGNMENT

New General Mathematics UBE Edition, Chapter 22, pgs 213-215
Essential Mathematics by A. JS. Oluwasanmi Chapter 23 pgs 237-239

NOT GREATER THAN AND NOT LESS THAN

When a particular variable say x does not exceeds a particular value, it means x is not greater than the given value.
For **Example** x $\leq$ 50, it means x < 50 or x = 50; where $\leq$ means less than or equal to. But when the variable x exceeds a given value for **Example** x > 50 or x = 50m it means means less than or equal to. But when the variable x exceeds a given value for **Example** x > 50 or x = 50m it means x $\geq$ 50 where $\geq$ means greater than or equal to .

Worked Examples

1. Note books cost N60 each Deborah has d naira it is not enough to buy a note book. Taiwo has t naira. He is able to buy a note book. What can be said about the value of d and it?

Solution

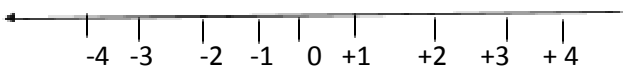
Deborah = d naira
Deborah amounts is less than N60 d < 60
Taiwo = t naira
In conclusion, t > d and d < t.

EVALUATION

1. Write an inequality in terms of the unknown.
   a. The number of goals n was five or more.
   b. the temperature tc, was not greater than 38^{o}C.
   c. the number of students n was less than 36
2. The pass mark in a test was 27, one person got x marks and failed. Another got y marks and passed, what can be said about x and y?

GRAPH OF INEQUALITIES

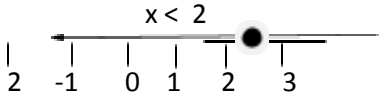
Consider the number line below:



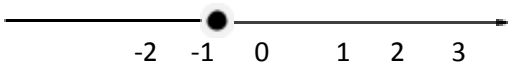
The inequality graph indicates an arrow head on a number line which show whether the values of x are greater than or less than a given value .

For **Example**:

(a) if x < 2, the inequality graph should show this



(b) if x ≥, -1, the inequality graph should show this



Note: included value (,or ≥) makes use of a close circle, (*) while not included value (< or >) makes use of an open circle (o)

EVALUATION

1. Write down the inequality shown in the following graphs.

a).

b).

c).

GENERAL EVALUATION

1. Say whether each of the following statement is true or false?
   a. -20 is greater than – 5.
   b. -3 x (-2) > - 3 – 6
   c. -18 <3 – 20
2. Illustrate the following on a number line
   a. x > 0 b. x ≤ - 1 c. x ≥ -2

REVISION QUESTION

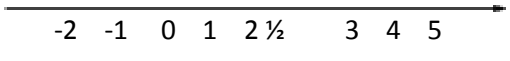
1. If x is a positive integer positive integer,for what range of values of x is 8 + 2x < 14.Draw number line to show your answer.
2. If x is an integer,find the first three possible values of x in the inequality 6x - 5(x-2) ≤ 4 (2x-1)
3. If x is a positive integer and 2x + 3 > -30 + 6p (a) solve for x (b) Find all the possible values of x and show them on a number line.

New General Mathematics UBE Edition, Chapter 22, pgs 213-215

Essential Mathematics by A. JS. Oluwasanmi Chapter 23 pgs 237-239

WEEKEND ASSIGNMENT

1. The inequality symbol for -1 is greater than -5 is (i) – 1 < 5 (b) -5 > -1 (c) -1 > -5
2. The time for a journey t mins was over 2hrs the inequality statement is ……
   A. t > 2hts B. 2hts > t C. t ≥ 2hrs
3. The graph below represents thus



A. n > 2 ½ B. x < 2 ½ C x < -2 ½

4. $(-3)^2$ 2^2

The inequality symbol in the box is

A. < B. > C. ≥

5. The cost of a stamp #x was not more than N20

A. x ≥ N20 B. x = N20 C. x ≤ N20

THEORY

1. A square has an area of more than $36cm^2$. What can be said about the length of one of its sides.
   b. the perimeter.
2. Sketch the following inequality on a graph.
   a. $x \leq -b$ b. $x \geq 3$.

WEEK FOUR
TOPIC: SOLUTION OF INEQUALITIES IN ONE VARIABLE
CONTENT

- Solution of inequalities
- Multiplication and division of negative numbers
- Word problem involving inequalities

Solution of inequalities

Inequalities are solved in the same way as simple equation

For Example x = 23 is equation
While x < 3 is an inequalities .

Worked Examples

1. Solve the inequality and show the **Solution** on a graph.

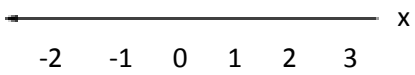
a. $x + 4 < 6$

b. $6 \leq 2x - 1$

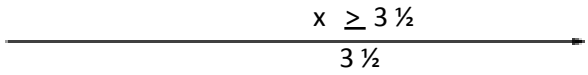
c. $3x - 3 > 7$

Solution

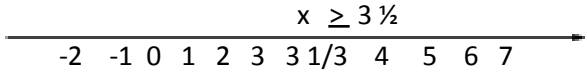
a. $x + 4 < 6$
$x < 6 - 4$
$x < 2$



b. $6 \leq 2x - 14$
$7 \leq 2x$
$3\frac{1}{2} < x$
$X \geq 3\frac{1}{2}$



c. $3x - 3 > 7$
$3x > 7 + 3$
$3x > 10$
$x > 10/3$
$x > 3$



EVALUATION

1. Solve the following inequalities and show the **Solution** on a graph:
   a. $5x - 2 \geq 8$
   b. $4x - 2 > 19$
   c. $3 \leq 3x$ X 5

d. $x + 4 \geq 10$

MULTIPLICATION AND DIVISION BY NEGATIVE NUMBER

When solving an inequality involving negative numbers, the inequality sign must be reversed. For Example if $-2x > 10$ is true then on division throughout by -2.

$X < -5$ will be true

Worked Examples

1. Solve $5 – x > 3$
2. Solve $19 \geq 4 - 5x$
3. Solve $3 – 2x < 8$

Solution

$5 – x > 3$

$-x > 3 – 5$

$-x > -2$

Dividing through by (-1)

$\frac{-x}{-1} < \frac{-2}{-1}$

$X < 2$

2. $19 \geq 4 – 5x$

$19 – 4 \geq -5x$

$15 \geq -5x$

Dividing through by -5

$\frac{15}{-5} \leq \frac{-5x}{-5}$

$-3 \leq -5x$

$x \geq -3$

3. $3 – 2x < 8$

$-2x < 8 – 3$

$\frac{-2x}{-2} \times \frac{5}{-2}$

$X > -5/2$

$X > -2\frac{1}{2}$

Evaluation

Solve the following inequalities

a. $-2x + 5 \geq 16$

b. $10 – 3x \leq -11$

c. $2r \geq 6r + 6$

d. $9 \leq 3 – 4t$

Show your Solution on a number line

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READING ASSIGNMENT

New General Mathematics UBE Edition, Chapter 22, Nos 1- 2pgs 213-215

Essential Mathematics by A. JS. Oluwasanmi Chapter 23 pgs 40 - 243

WORD PROBLEMS INVOLVING INEQUALITIES

Worked Example

1. A triangle has sides xcm, (x + 4) cm and 11cm, where x is a whole number of cm, if the perimeter of the triangle is less than 32cm. find the possible values of x.

Solution

Perimeter of triangle = x + (x + 4) + 11

But perimeter < 32cm

x+ 4 +11< 32

2x < 32 – 15

2x < 17

x< 17/2

x < 8 ½

Also in any triangle, the sum of the length of any two sides must be greater than the length of the third side.

Thus,

X + (x + 4) > 11

2x + 4 > 11

2x > 7

x > 7/2

x > 3 ½

Thus

x< 8 ½ and x > 3 ½ . but x is a whole number of cm therefore, the possible values of x are 4,5,6,7 or 8.

GENERAL EVALUATION

1. If 9 is added to a number x, the result is greater than 17. Find the values of x
2. Three times a certain number is not greater than 54. Find the range of values of the number .

REVISION QUESTION

1. If 8 is subtracted from a number, the result is at most 15. Find the range of values of the number
2. If x is subtracted from 5, and the result is greater than 15.Find the range of values of x.

WEEKEND ASSIGNMENT

1. Find which symbol > or < goes in the box to make the statement 9 + 8 ☐ 10 true.
   A. < B. > C. none of the above
2. Write the inequality of the statement 'The cost of meal Nx was over N5" A. x≥ N5 B. x≥ N5 C. x .< N 5
3. Solve 5x – 7 > 9 A. x > 32.5 B. x > 3 1/5 C. x , 5 2/3
4. Solve x -2 < 3 A. x < 5 B. x > 5 C. x ≥ 5
5. If 7.3 is subtracted from y, the result is less than 3.4. find the value of y. A. y < 10.7 B. y > 10.7 C. y ≤ 10.7

THEORY

1. A rectangle is 8cm long and bcm branch find the value of b if the perimeter of the rectangle is not greater than 50cm and not less than 18cm
2. The sides of a rectangle are xcm (x+ 3cm) and 10cm . if xcm is a whole number , if the perimeter is less than 30cm, find the possible value of x.

Hint: The sum of the length of any two sides of a triangle must be greater than the length of the third side.

WEEK FIVE

TOPIC: THE CARTESIAN PLANE AND COORDINATES

CONTENT

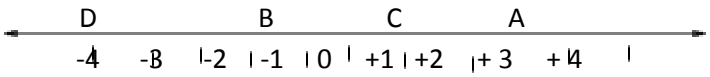
- The position of points on aline
- Cartesian plane/coordinates
- Plotting points

The position of points on a line

The number line is a picture or graph of relative position of positive and negative numbers.

Worked Examples

1. Find the values of the following variables in the number line below:



Solution

i. A is 3 units to right of zero = A (3)

ii. B is 1 unit to left of zero = B (-1)

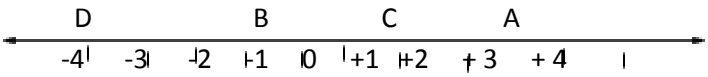
iii. C is 1 ½ units to the right of zero = 1 ½

iv. D is 2 units to the left of zero = (-2)

2. Draw a number line from -5 to 5 in the number line mark.

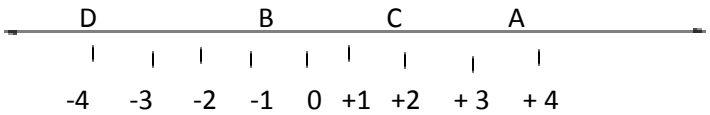
A. 2 B. (-4) C. (-2 ½) and D. (1)

Solution



Evaluation

1. Give the position of 1A ii. B iii C iv. D v. E in the number line below:
2. Find the values of the following variables in the number line below:



3. Draw a line from -8 to 5 and indicate the following points x (-2) , y(3) W(4) M (5) x (-6) and T(-8)

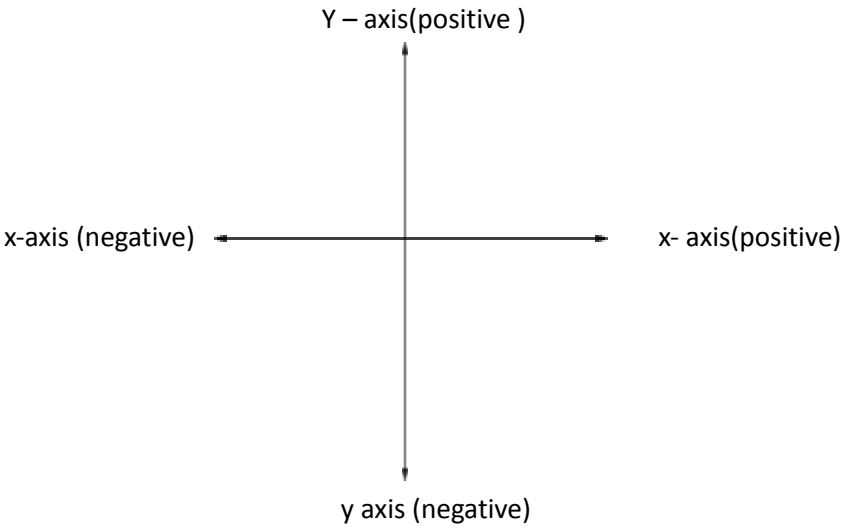
READING ASSIGNMENT

New General Mathematics UBE Edition, Chapter 12, Nos 1- 2pgs102-107

Essential Mathematics by A. JS. Oluwasanmi Chapter15 pgs 152 -155

Cartesian Plane/Coordinate

Cartesian graphs give a picture of the relative position of point on a plane. The Cartesian plane is a plane surface with two axes drawn on it. The axes are at right angle to each other . they are the horizontal (x –axis) and the vertical (y-axis) crossing at the origin (the zero point for both axes).

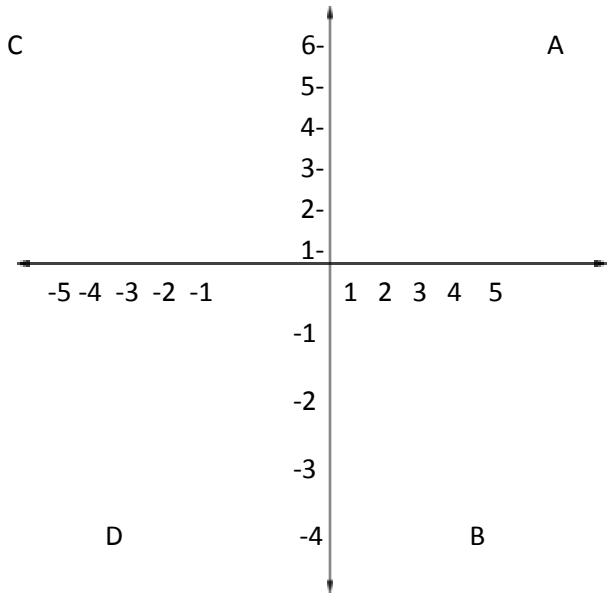


COORDINATES

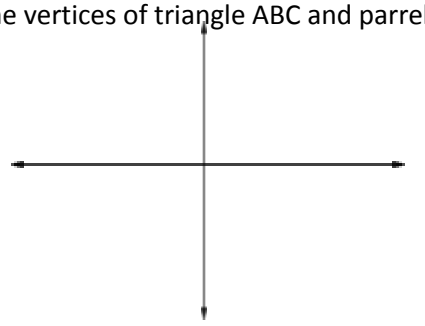
Every points on the Cartesian plane has a unique ordered pair of coordinates in the form (a,b) where a is x – coordinates (distance of the point along the x – axis) and b is the y-coordinates (the distance of the point along the y-axis).

Worked Examples

1. Write down the coordinates of the point A,B,C,D,E and F in the figure below:



2. Write down the coordinates of the vertices of triangle ABC and parrellogram PQRS in the figure below

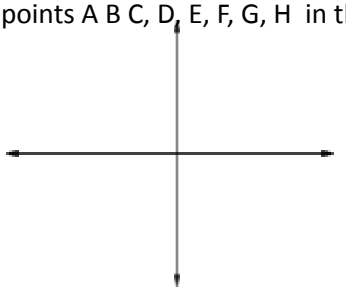


Solution

1. The coordinates of the points are
   i. A (3, 5)
   ii. B 9 2, -4)
   iii. C (2, -3)
   iv. D (-3,-4)
   v. E (4,0)
   vi. F (1, -1)
2. The vertices of triangle ABC are A. (-2,3) B. (2,1) C (0, -1)
   The vertices of parallelogram PQRS are P (1,2) Q (1,2) R(-2,-2) S (-3,0)

EVALUATION

1. What are the coordinates of the points A B C, D, E, F, G, H in the figure below



2. In the figure below name the points which have the following coordinates
   a. (9,5) b. (5, - 8) c. (-15,10) d (-5, 8) e (12, 0)

GENERAL EVALUATION

Show the position of the following points on the graph sheet . using 1cm to 1 unit on both axes.

1. P (2, 4) Q (-3, -4) R (2, -4) S (-12,9) T (8, -15)

READING ASSIGNMENT

New General Mathematics UBE Edition, Chapter 12, Nos 1- 2pgs105-107

Essential Mathematics by A. JS. Oluwasanmi Chapter15 pgs 237-239

Plotting Point

Plotting points means to draw its positions on Cartesian plane. The easiest way to plot a graph is as follows :

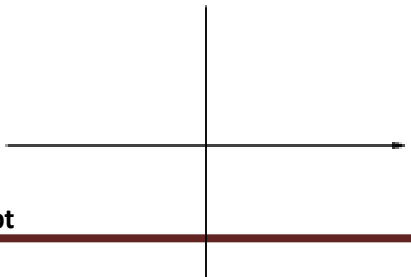
Start at the origin

ii. move along the x axis by amount and in a direction given by the x-coordinates of the point .

iii. move up or down parallel to the y-axis by an amount in a direction given by the y- coordinates.

Worked Example

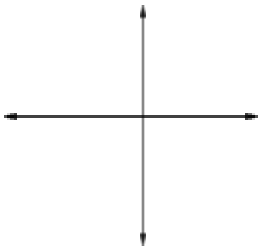
1. Plot the point (-1,2) and (2,6-1.8) on a Cartesian plane .



1. The vertices of quadrilateral PQRS have coordinates P (-3,18) Q (15,14) R (11,-4) and S (-7,0) A and B are the points A(-3,-7) and B (3,0).
   a. using a scale 2cm, represent 10 units on both axes plot points P.Q, R .S.A and B.
   b. join the vertices of quadrilateral PQRS. What kind of quadrilateral is it?
   c. Find the coordinates of the points where diagonal of PQRS cross.

Solution

a



b. PQRS is a square

c. the diagonals of PQRS cross at x(4,7)

d. B. A and Q lie on the same straight line

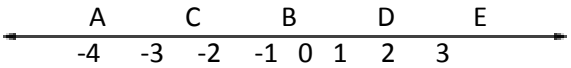
REVISION QUESTION

1. Draw the origin O, near the middle of a sheet of graph paper use a scale of 2cm represent 5 units on both sides. Plot the following points. Join each points to the next in order they are given start (-10,-5) (-5,10) (0,15) (5,17) (3,14) (3,12) (15,6) (14,3) (11,3),1 (13,2) (5,3) (6,-6) ≥

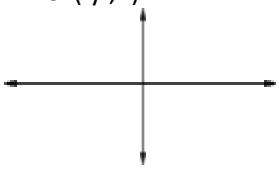
What pictures does your graph shows.

WEEKEND ASSIGNMENT

1. Use the diagram below to answer questions 1-3



2. The value of a is A. 3 ½ B. -4 C. 3 D. 1 ½
3. The value of D is A. -4 B. 1 ½ C. -3 ½ D. 3
4. The value of C is A. -4 B. 1 ½ C. 3 ½ D. 3
5. if the value of a point in the x axes are 2 and -4 respectively, it can be written in a
   A. (2,-4) B. (-4,2) C. (y ,2) D. (x, 2)



5. Point A in the diagram is A. (-5, 5) B.(5,5) C(-5,-5) D. (0,5)

THEORY

1. Draw the graph of the following coordinates and join all the points.
   T(-2,1) U (-3,1) V(0,4) W(3,1) X (2,1) Y(2,-1) Z(-2,-1)
2. Draw the origin () near the middle of a sheet of graph paper use scale of 2cm represents 1 unit on both axes. Plot the following point, and then join each point to the next in alphabetical order.

A(0,1) B(1,2)C (1,1) D(2,1) E(1,0)F (2,-1)G (1,-1)H (1,-2) I(0,-1) J(-1,-2) K(-1,-1)L (-2,-1) M(-1,01) N(-2,1) P (-1,1) Q(-1,2) finally join Q to A.

WEEK SIX
TOPIC: LINEAR GRAPHS IN TWO VARIABLES, USING GRAPH TO SOLVE REAL LIFE SITUATIONS
CONTENT

- Continuous graphs
- Graph of real life situations
- Choosing scales.

Continuous Graph: Graphs are used to show the relationship between two quantities. A continuous graph is in the form of a continuous line and shows the relationship between the two quantities .

Worked Examples

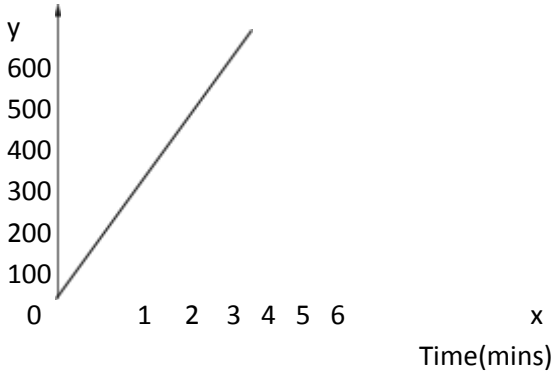
1. A student walked along a road at a speed of 120m per minute.
   Make a table of values showing how far the students has walked after 0,1,2,3,4,5, minutes

b. using the scale of 1cm to 1min on the horizontal axis and 1cm to 100m on the vertical axis, draw a graph of the information .

2. x. use the graph to find:
   i. how far the students has walked after 2.6min.
   ii. how long it takes the students to walk 500m

Solution

Time(min)	0	1	2	3	4	5
Distance(m)	0	120	240	360	480	600



c. i. The student has walked 310cm after 2.6min.
   ii. the student takes about 4.5 in walk 500m

EVALUATION

1. A girl walks along a road at a speed of 100m per minute
   A. Copy and complete the table

Time(min)	0	1	2	3	4	5	6
Distance(m)	0	100	200				

   B. Using a scale of 2cm to 1min on the horizontal axis and

New GeneralMathematics Bk. 2 chapt.4,pg 119-123