

THIRD TERM E-LEARNING NOTE

SUBJECT: MATHEMATICS

CLASS: JS1

REFERENCE TEXTBOOKS

- ❖ New General Mathematics, Junior Secondary School Book 1
- ❖ Essential Mathematics for Junior Secondary School Book 1

WEEK ONE

WEEK	TOPIC
1.	Revision
2.	Simple Equation
3.	Geometry- Plane Shapes: (a) Types of plane shapes and their properties (b) similarities and differences between the following: Square, rectangle, triangle, trapezium, parallelogram and circle
4.	(a) Perimeter of regular polygon, square, rectangle, triangle, trapezium, parallelogram and circle. (b) Area of regular plane shapes such as squares, rectangles, parallelograms, etc
5.	Three Dimensional Shapes: (a) Identification of three dimensional or 3 D-Shapes (b) Basic properties of cubes and cuboids (c) Basic properties of cylinders and spheres (d) volume of cubes and cuboids.
6.	Angles: Identification and properties of angles (a) vertically opposite angles (b) adjacent angles (c) alternate angles (d) corresponding angles
7.	Angles (Cont'd): Theorems: (a) sum of angles on a straight line (b) supplementary angles (c) complementary angles (d) sum of angles in a triangle
8.	Construction: (a) construction of parallel and perpendicular lines (b) bisection of a given line segment (c) construction of angles 90° and 60° .
9.	Statistics I: (a) Meaning, purpose and usefulness of data (b) data collection, sources and importance (c) presentation and analysis of data frequency distribution
10.	Graphical presentation of data: the use of pictogram, bar-chart, pie chart and histogram
11.	Statistics II: Measure of Average (a) the arithmetic mean (b) the median (c) the mode
12.	Revision and Examination

Revision

1. Change 321_{four} to base eight (a) 57 (b) 71 (c) 62 (d) 175
2. Simplify in base two $(1101)^2$ (a) 1011011 (b) 10101001 (c) 1101101 (d) 1110111
3. Round off 0.00057891 to 2 s.f (a) 0.0006 (b) 0.00058 (c) 0.58 (d) 0.000579
4. What is MDLXXVII in Arabic numerals? (a) 1677 (b) 1607 (c) 1577 (d) 1527
5. What is the value of 5 in number 12 752 109? (a) 50 hundreds (b) 50 thousands (c) 52 thousands (d) 5 hundredth

6. The product of 25 and 170 is (a) 425 (b) 4250 (c) 4050 (d) 4005
7. There are 805 students in a school. If 409 are boys, how many girls are in this school?
(a) 396 (b) 386 (c) 286 (d) 496
8. Express 240 as a product as a product of its prime factors. (a) $2^3 \times 3 \times 5$ (b) $2^4 \times 3 \times 5$
(c) $3 \times 4^2 \times 5$ (d) $4^2 \times 5 \times 6$
9. The L. C. M of 4, 6 and 8 is (a) 8 (b) 12 (c) 18 (d) 24
10. The H. C. F of 5, 10 and 15 is (a) 10 (b) 15 (c) 5 (d) 30
11. Angle 272° is (a) an acute angle (b) an obtuse angle (c) a right angle (d) a reflex angle
12. Which of these fractions is the largest? (a) $\frac{3}{5}$ (b) $\frac{5}{6}$ (c) $\frac{5}{8}$ (d) $\frac{2}{3}$
13. Which of the following is **notequivalent** to $\frac{2}{5}$? (a) $\frac{6}{15}$ (b) $\frac{10}{50}$ (c) $\frac{26}{65}$ (d) $\frac{8}{20}$
14. If $5\frac{3}{8}$ is expressed as an improper fraction its numerator is (a) 43 (b) 53 (c) 40 (d) 14
15. Simplify: $\frac{9}{14} \times \frac{7}{15}$ (a) $\frac{16}{29}$ (b) $\frac{3}{5}$ (c) $\frac{3}{10}$ (d) $\frac{5}{12}$
16. Work out the answer to $\frac{2}{7} \div 1\frac{1}{2}$ (a) $\frac{3}{7}$ (b) $\frac{4}{21}$ (c) $\frac{1}{7}$ (d) $5\frac{1}{4}$
17. A man's debt of #35 000 is reduced by $\frac{1}{4}$. How much is the debt now? (a) #8 750 (b) #26 050 (c) #26 250 (d) #16 250
18. Simplify $4\frac{1}{2} + 2\frac{3}{4}$ (a) $6\frac{1}{4}$ (b) $7\frac{1}{4}$ (c) $5\frac{1}{4}$ (d) $2\frac{1}{4}$
19. Write 15% as a fraction and a decimal. (a) $\frac{1}{20}$; 0.05 (b) $\frac{3}{20}$; 1.5 (c) $\frac{3}{20}$; 0.15 (d) $\frac{5}{20}$; 0.25
20. Calculate 0.07×0.9 (a) 0.630 (b) 0.063 (c) 6.300 (d) 0.0063
21. Find the cost of 54 exercise books, if 3 exercise books cost #200. (a) #3600 (b) #2600 (c) #1800 (d) #4600
22. If $x + 5 = 25$ is true, what does x stand for? (a) 40 (b) 35 (c) -7 (d) 7
23. Simplify $15k - 10k + k$ (a) 6k (b) 5k (c) -6k (d) 4k
24. Simplify $\frac{2}{9}$ of $36ab$ (a) 4ab (b) 72ab (c) 8ab (d) 6ab
25. If $x = -2$, $y = -3$, evaluate $9x^2 \div 2y$ (a) -6 (b) -3 (c) 6 (d) 12
26. What is the coefficient of x in the expression $7 - 9x$? (a) 9 (b) 7 (c) -9 (d) -2
27. Simplify $x - 6y - (7y - 3x)$ (a) $12x - 13y$ (b) $4x - 13y$ (c) $2x + 13y$ (d) $4x - y$
28. If $x = 3$, $y = 2$ and $z = -1$, evaluate $z(5x - y)$ (a) -13 (b) -10 (c) 15 (d) 14
29. Solve the equation $\frac{x-5}{4} = 3$ (a) 12 (b) 17 (c) 7 (d) -7
30. A man weighs 8kg more than his son. If the sum of their weight is 138kg. What is the weight of the man? (a) 57kg (b) 73 kg (c) 77kg (d) 82kg

SECTION B

Instruction: Answer all the questions in this part

1. Find the estimate and the exact cost of the following:
(a) 54 pens at #6.82 each (b) 214 mangoes at #1.95
2. A woman decides to buy a bed costing #6 950 and a table costing #2 680. (a) By using approximations, estimate the total sum she decides to spend. (b) Calculate the accurate cost
3. Evaluate the following binary numbers: (a) $111 \times (110 + 101)$ (b) $101 \times (1000 - 111)$
(c) $(1100 - 111)^2$
4. Convert the following to base ten (a) 451_{eight} (b) 3032_{four}
5. Remove the brackets and simplify the following: (a) $(8x + 5) + (4x - 3)$ (b) $(7x + 5y) + (3x - 2y)$
6. Solve the following equations: (a) $6m + 2 = 20 + 4m$ (b) $9x - 20 = 8 - 5x$

WEEK TWO

SIMPLE EQUATIONS:

An algebraic equation is two algebraic expressions separated by an equal sign. The left hand side is equal to the right hand side (LHS = RHS)

e.g $7 + 3 = 10$, $20 - 6 = 14$, $4 \times 5 = 20$, $35/7 = 5$

Translation of algebraic equations into words: Any letter of the alphabet can be used to represent the unknown number.

Translate the following equations into words:

1. $X + 9 = 12$; means 'a certain number plus nine is equal to twelve'
2. $15 = 7 - 2x$; means 'fifteen is equal to seven minus twice a certain number'
3. $\frac{4x}{5} = 6$; means 'four-fifth of a number equal to six'
4. $3k + 8 = 20$; 'three times a certain number plus eight is equal to twenty'

Evaluation

Translate the following equations into words:

1. $16 = 9 - 2x$
2. $9 + 5x = 23$
3. $X + 5 = \text{seventy}$
4. $\frac{3x}{4} = 9$

Translation of algebraic sentences into equations:

Example: Translate the following into equations:

1. Three times a certain number plus 20 is equal to the number plus 12.
2. A woman is p years old. In seven years' time, she will be 45 years old.
3. The result of taking 10 from the product of a certain number and 7 is the same as taking 4 from twice the number.

Solution:

1. Let the number be m
 $3 \times m + 20 = m + 12$
i.e $3m + 20 = m + 12$
2. Woman is p years old;
7 years' time, she will be $(p + 7)$ years
i.e $p + 7 = 45$
3. Let the number be a ,
Product of a and 7 = $7a$
Taking 10 from $7a = 7a - 10$
Taking 4 from twice the number = $2a - 4$
Then, $7a - 10 = 2a - 4$

Evaluation: Translate to algebraic equations:

1. A certain number is added to 15, the result is six minus the same number.
2. Ayo is y years old, 7 years ago, she was 15 years old.

Use of Balancing or See saw Method

This is very easy and convenient way of solving linear equations. An equation can be compared to a balance. To maintain balance, whatever is...