**P.O. BOX 704 MUKONO**

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**FOR P.7**

**MATHEMATICS**

**TERM I - III**

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**LESSONS 1.**

**SET CONCEPTS**

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|  |  | **DATE** | **CLASS** | **TIME** | **SUBJECT** | **N0. OF PUPILS** |
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| **1.** | **TOPIC**  **SUB-TOPIC** | **SET CONCEPTS**  **REVISION EXERCISE ON DESCRIPTION OF SETS AND LISTING ELEMENTS**   1. Describe the following sets: 2. Q = {0, 2, 4, 6, 8, …} 3. N = {4, 8, 12, 16, 20, …} 4. M = {10, 20, 30, 40, 50, …} 5. K = {Jan, Feb, Mar, April, May, June, ….. } 6. L = {0, 1, 2, 3, 4, 5, ……………} 7. R = {5, 10, 15, 20, 25, ….} 8. O = {2, 3, 5, 7, 11, ……..} 9. A = {1, 3, 5, 7, 9, 11, ………..} 10. B = {a, e, I, o, u, ……………….} 11. List the elements of the following sets. 12. A = {Multiples of 2 between 10 and 20} 13. B = {Factors of 24} 14. C = {Prime numbers between 90 and 100} 15. D = {Counting numbers between 10 and 20} 16. E = {Composite numbers less than 15} 17. F = {Square number less than 30}   Answers   1. a) Q = {A set of even numbers less than 10}   N = {Multiples of 4 less than 24}  M = {First 5 multiples of 10}  K = {First 6 months of the year}  L = {A set of whole number less than 6}  R = {Multiples of 5 from 5 to 25}  O = {First 5 prime numbers}  A = {Odd numbers from 1 to 11}  B = {All vowel numbers} OR {English alphabet}   1. A = {12, 14, 16, 18}   B = {1, 2, 3, 4, 6, 8, 12, 24}  C = {97}  D = {11, 12, 13, 14, 15, 16, 17, 18, 19}  E = {4, 6, 8, 9, 10, 12, 14}  F = {1, 4, 9, 16, 25} | | | | |
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| **2.** | **TOPIC**  **SUB-TOPIC** | **SET CONCEPTS**  **REVISION EXERCISE ON DRAWING VENN DIAGRAMS**   1. Draw the following Venn diagrams 2. All boys are males. 3. All girls are females. 4. All cows are animals. 5. Draw a Venn diagram to show the sets A and B below.   A = {a, b, c, d, e}, B = {b, d, e, f, g, h}  From the above Venn diagram. Find   1. AnB e) n(AnB) 2. AuB f) n(AuB) 3. A – B g) n(A – B) 4. B – A h) n(B – A) 5. Study the Venn diagram below and answer questions that follow.   **Q**  **P**  2 1  3  4 5   1. List all the elements of set Q. 2. How many objects are in set Q? 3. Find set p. 4. What is n(p)? 5. How many subjects are in set Q? 6. Find the number of proper subjects in set P.   Answers   1. a) M b) F c) D 2. (i)   A B  a b f  b d g  e h   1. AnB = {b, d, e} 2. A u B = {a, b, c, d, e, f, g, h} 3. A – B = {a, c} 4. B – A = {f, g, h} 5. n(AnB) = 3 elements 6. n(AuB) = 8 members 7. n(A-B) = 2 members 8. n(B – A) = 3 elements 9. a) Set Q = {1, 2, 3, 4, 5}   b) n(Q) = 5 members  c) Set P = {1, 3}  d) n(P) = 2 objects  e) n(C) = 32 objects  f) = 3 proper subjects | | | | |
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| **3.** | **TOPIC**  **SUB-TOPIC** | **SET CONCEPTS**  **SHADING AND DESCRIBING SHADED SETS.**   1. Shade the following parts of sets. 2. AnB b) AuB c) A-B     d) B – A e) A complement f) (AnB)1 g) (AuB)1     1. Describe the following shaded regions 2. b) c) d) e)   X Y P Q A B X Y C D | | | | |
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| **4.** | **TOPIC**  **SUB-TOPIC** | **SET CONCEPTS**  **SUBSETS**  Concepts:   1. A subset (s) is (are) a small set (s) got from a big set (universal) set. OR it is a part of a given set. 2. Symbol for a subset = “C” 3. An empty set is a subset of every set. Symbol = {} OR . 4. Every set is a subset of itself.   Examples   1. List all the possible subsets of A = {0, 1, 2}   Note  The list begins with an empty and ends with a set itself.  Soln  A = {0, 1, 2}  = {}, {0}, {1}, {2}, {0,1}, {0,2}, {1,2}, {0,1,2}   1. How many subsets can be counted from set x = {all vowels}   Soln  x = {a, e, i, o, u}  n(x) = 5 members  n() = 2n  n() = 25  = (2 x 2) x (2 x 2) x 2  = (4 x 4) x 2  = 16 x 2  = 32 subsects | | | | |
|  | **EVALUATION** | **EXERCISE**   1. List all the possible subsets of each of the following sets. 2. A = {0, 1}   B = {a, b, c}  C = {2, 3, 5, 7}  D = {e}   1. Calculate the number of subsets from: 2. W = {0}   X = {a, b}  Y = {1, 2, 3}  Z = {a, b, c, d}  V = {0, 1, 2, 3, 4}  U = {a, b, c, d, e, f}  Answers:   1. a) A = {}, {0}, {1}, {0,1}   B = {}, {a}, {b}, {c}, {a, b}, {a, c}, {b, c}, {a, b, c}  C = {}, {2}, {3}, {5}, {7}, {2, 3}, {2, 5}, {2, 7}  {3, 5}, {3, 7}, {5, 7}, {2, 3, 5}, {2, 5, 7}  {3, 5, 7}, {2, 3, 7}, and {2, 3, 5, 7}  D = {}, {e}   1. w = 2subsets, x = 4subsets, y = 8subsets, z = 16subsets, v = 32subsets u = 64subsets | | | | |
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| **5.** | **TOPIC**  **SUB-TOPIC** | **SET CONCEPTS**  **PROPER SUBSETS**  Concepts:   1. A proper subset of a set is that subset of the set which is not a set itself.   OR  A proper subset is a subset that is different from the set itself.  OR It is a subset that doesn’t include a set itself.   1. Symbol for proper subset = “C”   Examples   1. List all the possible proper subsets of set P = {0, 1, 2}   Soln  P = {0, 1, 2}  = {}, {0}, {1}, {2}, {0, 1}, {0, 2}, {1, 2}   1. Calculate the number of proper subsets in set x = {a, b, c, d,e}   Soln  x = {a, b, c, d, e}  n(x) = 5 elements  n(c) = 2n – 1  n(c) = 25 – 1  = (2 x 2) x (2 x 2 x 2) – 1  = (4 x 4) x 2 – 1  = (16 x 2) – 1  = 32 – 1  = 31 proper subsets | | | | |
|  | **EVALUATION** | **EXERCISE**  List all the possible proper subsets of:   1. x = {a}   y = {a, b}  z = {a, b, c}  w = {a, b, c, d}  2. Find the number of proper subsets from:  a) v = {a}  w = {a, b}  x = {a, b, c}  y = {a, b, c, d}  z = {a, b, c, d, e}  Answers:   1. a) x =   y =  {a}, {b}  z =  {a}, {b}, {c}, {a, b}, {a, c}, {b, c}  w = , {a}, {b}, {c}, {d}, {a, b}, {a, c}  {a, d}, {b, c}, {b, d}, [c, d}, {a, b, c}, {a, c, d}  {c, d, b}, {a, b, d}, {}   1. a) v = 1 proper subset   w = 3 proper subsets  x = 7 proper subsets  y = 15 proper subsets  z = 31 proper subsets | | | | |
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| **6.** | **TOPIC**  **SUB-TOPIC** | **SET CONCEPTS**  **FINDING THE NUMBER OF ELEMENTS GIVEN SUBSETS**  Concepts   1. Express the subsets given in powers of 2.   Examples   1. Set A has 8 subsets, how many elements are in set A?   Soln  n(c) = 2n  2n  = 8 subsets 2 8  2n = 2 x 2 x 2 2 4  2 2  2n = 23 1  :. n = 3 elements   1. Given that set P has 15 proper subsets, find the number of elements in set P   Soln  n(c) = 2n – 1  2n – 1 = 15 proper subsets  2n – 1 + 1 = 15 + 1  2n – 0 = 16  2n = 16  2n = 2 x 2 x 2 x 2  2n = 24  :. n = 4 members\_ | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Given the following subsets, find the number of elements each set: 2. X = 4 subsets   Y = 16 subsets  Z = 32 subsets  W = 64 subsets  V = 128 subsets   1. A = 3 proper subsets   B = 7 proper subsets  C = 31 proper subsets  D = 63 proper subsets  Answers   1. X = 2 members   Y = 4 members  Z = 5 members  W = 6 members  V = 7 members   1. A = 2 elements   B = 4 elements  C = 5 elements  D = 6 elements | | | | |
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| **7.** | **TOPIC**  **SUB-TOPIC** | **SET CONCEPTS**  **REPRESENTING INFORMATION ON A VENN DIAGRAM**  Concepts   1. Summarize the statements given.   Examples  (i) In a group of 12 pupils, 8 pupils got pens (P) and 7 pupils got books (B).  a) Show this information on a Venn diagram.  Soln  n() = 12, n(P) = 8, n(B) = 7  n(PnB) = ?  Venn diagram.  = 12    b) From the Venn diagram above. Find the value of m.  Soln  (8 – m) + m + (7 – m) = 12  8 + 7 + m – m - m = 12  15 – m = 12  15 – 15 – m = 12 – 15  0 – m = -3  -m = -3  =  M = 3 pupils   1. How many pupils got only one type of stationery?   Soln  Only one = (8 – m) + (7 – m)  = (8 – 3) + (7 – 3)  = 5 + 4  = 9 pupils   1. Given that n(A) = 30, n(B) = 25, n(AuB) = 45 and n(Au B)1 = 5 2. Show this on a Venn diagram.   Soln  Let P be n(AnB)  n() = 45     1. Find the elements in AnB.   Soln  30 + p + p + 25 – p + 5 = 45  30 + 25 + 5 – p = 45  60 – p = 45  60 – 60 – p = 45 – 60  0 – p = -15  -p = -15  -1(-p) = -1(-15)  :. P = 15 elements\_   1. How many elements are in at least one set only?   Soln  At least one = (30 – p) + p + (25 – p)  = (30 – 15) + 15 + (25 – 15)  = 15 + 15 + 10  = 30 + 10  = 40 pupils\_ | | | | |
|  | **EVALUATION** | **EXERCISE**   1. In a class of 25 pupils, 15 like fish (F), and 18 like beans (B). 2. Show this on a Venn diagram. 3. Find; (i) n(FnB) (ii) n(F) only (iii) n(B) only 4. How many pupils like only one type of food? 5. If n(x) = 15, n(y) = 20, n(xuy) = 35, n(xuy)1 = 10. 6. Represent this information on a Venn diagram. 7. Find the number of element in 8. xny 9. set x only 10. set y only 11. There are 75 members in a group of which 45 like debate (D), 40 like music (M), 15 like none of the two subjects while some like both. 12. Put this on the Venn diagram. 13. How many members like both subjects. 14. In a class, 16 pupils belong to a MTC club, (M), 20 belong to a debate club (D), 4 don’t belong to any and 10 belong to both clubs. 15. Put this on the Venn diagram. 16. How many pupils are in the class altogether? 17. Find the number of pupils who belong to at least one club.   Answers   1. a)   n(    b) (i) FnB = 8 pupils  (ii) F only = 7 pupils  (iii) B only = 10 pupils  c) only one = 17 pupils   1. (a) Venn diagram   n(  X =15 Y = 20  15 – m m 20 – m  10  b) (i) Xny = 10 elements  (ii) set x only = 5 elements  (iii) y only = 10 elements   1. (a) Venn diagram   n(    D =45 M = 40  45 – k k 40 – k  15  b) K = 25 members   1. a) Venn diagram   n(    b) n(  c) at least one = 26 pupils | | | | |
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| **8.** | **TOPIC**  **SUB-TOPIC** | **MORE ABOUT APPLICATION OF SETS**   1. Study the venn diagram below carefully   n(  n=(M) n = (E)  15 P 8  5   1. Find the value of P 2. How many members are in set m? 3. Calculate n(E) 4. In a class of 30 members, 15 ate chicken(C) on Easter, y ate meat (M), 5 ate both meat and chicken, while 4 of them ate neither. 5. Complete the venn diagram below   n(  C = M =  \_\_\_\_ 5 \_\_\_\_  4     1. Find the value of y. 2. Find the probability of selecting a member who ate chicken only. | | | | |
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| **9.** | **TOPIC**  **SUB-TOPIC** | **MORE ABOUT APPLICATION OF SETS**   1. In a class of 40 pupils, 21 pupils play football (F) only, 15 pupils platy Volley ball (V) only and K pupils play both games. 2. Use the information to complete the venn diagram below   n(  V=\_\_\_\_ F=\_\_\_    \_\_\_\_\_\_ K \_\_\_\_       1. Find K 2. Find the probability of picking a team captain who plays Volly ball.      1. At Nankinga Junior School, there are 215 pupils, 130 pupils eat Rice (R), 15 eat both rice and posho; 75 eat only posho (P) while x eat none of the two. 2. Complete the venn diagram   n(  n(R)=\_\_\_\_ n(P)=\_\_\_    \_\_\_\_ 15 \_\_\_\_  x     1. How many pupils eat none of the foods? 2. Find the number of pupils who eat posho. | | | | |
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| **10** | **TOPIC**  **SUB-TOPIC** | **SET CONCEPTS**  **FINITE AND INFINITE SETS**  Concepts:   1. A finite set is a set whose members can be listed.   Note  Finite means having an end.   1. An infinite set is that whose elements cannot be listed.   Note  Infinite means having no end.  Examples  State whether it is finite or infinite sets.   1. If A = {a, b, c, d, e}   Soln  A = 5 members  :. Set A is a finite set.   1. A set B = {counting members}   Soln  Set B = {1, 2, 3, 4, 5, 6, 7, 8, 9, ……}  Set B = infinite set. | | | | |
|  | **EVALUATION** | **EXERCISE**  Which of the following sets are finite and infinite.   1. The set of English Alphabet. 2. The set of all pupils in P.7. 3. The set of , , …… 4. The set of even numbers between 2 and 100. 5. The set of all whole numbers. 6. The set of all people in Uganda. 7. The set of all integers. 8. Give two infinite sets.   Answers   1. Finite set. 2. Finite set. 3. Infinite set. 4. Finite set. 5. Infinite set. 6. Finite set. 7. Infinite set. 8. (i) A set of even numbers (n) A set of prime numbers | | | | |
|  | **REMARKS** |  | | | | |
| **11** | **TOPIC**  **SUB-TOPIC** | **SET CONCEPTS**  **SETS ON A NUMBER LINE**  Concepts:   1. We use the word “interval” when representing sets on a number line. 2. Interval means parts of a line or a line segment. 3. Different meanings of brackets. 4. [ ] represent elements from the first to the last in given as set e.g   [1, 5] = {(1),2, 3, 4, (5)}   1. X X X X X   0 1 2 3 4 5 6 7  ( ) represents elements between the first and the last given in a set.  e.g (1 , 5) = {2, 3, 4}   1. X X X   1 2 3 4 5 6 7 8  [ ) represents elements in a given set where the last is not included.  e.g [ 1, 5) = {(1), 2, 3, 4}  d) X X X X  0 1 2 3 4 5 6 7  ( ] represents elements in a given set where the first is not included  e.g ( ] = {2, 3, 4, (5)}  X X X X  -1 0 1 2 3 4 5 6 7 8 | | | | |
|  | **EVALUATAION** | **EXERCISE**   1. List the elements of the following sets and show each on a number line 2. [1, 4] 3. (2, 6) 4. [1, 7) 5. (2, 6] 6. List the elements of the following sets. 7. [2, 4] U [1, 5] 8. (2, 5) n (3, 7) 9. [-5 , 3] 10. [-2, 8)   Answers   1. a. = {1, 2, 3, 4}   b. = {3, 4, 5}  c. = {1, 2, 3, 4, 5, 6}  d. = {3, 4, 5, 6}   1. a. = {1, 2, 3, 4, 5}   b. = {4}  c. = (-5, -4, -3, -2, -1, 0, 1, 2, 3}  d. = {-2, -1, 0, 1, 2, 3, 4, 5, 6, 7} | | | | |
|  | **REMARKS** |  | | | | |

**PROBABILITY**

**DICE**

1. If a dice is tossed once, what is the probability of having the following on top;
2. Composite number?
3. Even number?
4. Odd number?
5. Square number?
6. Cube number?
7. Triangular number?
8. Number less than 5?
9. Multiple of 3?
10. Number?

**Note :**  A dice has 6 faces numbered from one to six

1. In a bag, there are six oranges and four lemons. What is the probability of picking the following from the bad;
2. An orange?
3. A lemon?
4. A mango?
5. An orange and a lemon?
6. In a factory of 192 smart phones, the probability of picking a brown smart phone is . How many black smart phones are there?

**2. NUMERATION SYSTEMS AND PLACE VALUE**

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| **1** | **TOPIC**  **SUB-TOPIC** | **WHOLE NUMBERS**  **IDENTIFYING MAIN PLACE VALUES**  Concepts:   1. A digit on the left is ten times greater than that on it’s right. 2. In a place value table, the number is read from the right to the left i.e   Example.  In the number 3568924 there are;  4 Ones = 4 x 1  2 Tens = 2 x 10  9 Hundreds = 9 x 100  8 Thousands = 8 x 1000  6 Ten thousands = 6 x 10,000  5 Hundred thousands = 5 x 1, 000,000  3 millions = 3 x 1,000,000  **FORMING NUMBERS FROM DIGITS**  Concepts   1. Re-arrange the digits in the order given.   Examples.  Given the digits 5, 1, 2, 4, 3.  Form the:   1. The largest number. 2. The smallest number.   Soln   1. Digits = 5, 1, 2, 4, 3   Largest = 5, 4, 3, 2, 1  Largest number = 54, 321  Soln   1. Digits = 5, 1, 2, 4, 3   Smallest = 1, 2, 3, 4, 5  Smallest number = 12, 345 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Given the number 94567201   How many   1. Tens are there? 2. Millions are there? 3. Ten thousands are there? 4. Ones are there? 5. Ten millions are there? 6. From the above number, find the position of the following digits 7. 9 8. 6 9. 2 10. From the digits below   2, 9, 3, 7, 5  From the following numbers   1. Smallest 2. Biggest 3. What is the difference between the biggest and smallest numbers formed above?   Answers   1. (a) 0 Tens   (b) 4 Millions  (c) 6 Ten thousands  (d) 1 Ones  (e) 9 Ten millions   1. (a) Eighth (8th) position   (b) Fifth (5th) position  (c) Third (3rd) position   1. (i) 23,579 Smallest   (ii) 97532 Biggest  (iii) 73953 Difference | | | | |

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| **3** | **TOPIC**  **SUB-TOPIC** | **WHOLE NUMBERS**  **WRITING WORDS IN FIGURES**  Concepts:   1. Identify and group the problem into the 3 main place values i.e millions, thousands and ones.   Examples   1. Write in figures “fifty seven millions, four hundred twenty one thousand, nine hundred five.   Soln  Fifty seven / four hundred twenty one thousand/nine hundred five  57,000,000 / 421,000 905  57,000,000  + 421,000  905  57,421,905\_  FIGURES IN WORDS  Concepts:   1. Group the number into 3 main place values by counting 3 digits from the right.   Examples.  Write 82, 057, 607 in words  Soln  82, 057, 607  Millions Thousands Units  82 057 607  = Eighty two million fifty seven thousand, six hundred seven. | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Write in figures; 2. Seventy nine. 3. Eighty hundred fourteen. 4. Nine thousand eight. 5. Thirty three thousand, thirty three. 6. Four million seventy two. 7. Eight hundred seven million, four hundred two thousand, fourty two. 8. Write in words; 9. 19 10. 202 11. 10101 12. 204509 13. 9876543 14. 123345678 15. 987654321   Answers:   1. a) 79 2. 814 3. 9,008 4. 33,033 5. 4,000,072 6. 807,402,042 7. a) Nineteen.   b) Two hundred two.  c) Ten thousand, one hundred one.  d) Two hundred thousand, five hundred nine.  e) Nine million, eight hundred seventy six thousand, five hundred forty three.  (f) Twelve million, three hundred forty five thousand, six hundred seventy eight.  (g) Nine hundred eighty seven million, six hundred fifty four thousand, three hundred twenty one. | | | | |

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|  | **TOPIC**  **SUB-TOPIC** | **WHOLE NUMBERS**  **IDENTIFYING PLACE VALUES**  Concepts:  4 6 7 8 9 5 8  Ones  Tens  Hundreds  Thousands  Ten thousands  Hundred thousands  Millions   1. Identify the place value f each digit in the given numbers 2. 4531 3. 1035 4. 19836 5. 25183 6. Write the place value of the underlined digits in the numbers given below 7. 8 9 3 1 8. 5 9 6 3 9. 9 8 3 4 0 10. 1 5 6 3 7 11. 1 4 3 8 8 | | | | |
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| **4.** | **TOPIC**  **SUB-TOPIC** | **WHOLE NUMBERS**  **ROMAN NUMERALS**  Concepts:   1. Identify the major Roman numerals. 2. Identify the groups of Roman numerals. 3. Expand then write each in Hindu or Roman form. 4. BASIC ROMAN NUMERALS   HINDU ROMAN   1. 1   5 V  10 X  50 L  100 C  500 D  1000 M   1. Groups of ROMAN NUMERALS 2. Repeated – one number repeats itself.   2 = 1+1  = 11  20 = 10+10  = XX  200 = 100+100  = CC  3 = 1+1+1  = III  30 = 10+10+10  = XXX  300 = 100+100+100  = CCC   1. Addition – small one added to the major   6 = 5+1  = VI  60 = 50+10  = LX  600 = 500+100  = DC  7 = %+2  = VII  70 = 50+20  = LXX  700 = 500+200  = DCC  8 = 5+3  = VIII  80 = 50+30  = LXXX  800 = 500+300  = DCCC   1. Subtraction:- minor subtracted from the major / minor comes before the major.   4 = 5-1  = IV  40 = 50-10  = XL  400 = 500-10  = CD  9 = 10-1  = IX  90 = 100-10  = XC  900 = 1000 – 100  = CM  Conversions   1. HINDU TO ROMAN   Concepts:   * Expand in value form. * Write each expanded in Roman form. * Write a bar on top which means multiply by 1000.   e.g  1. Write in Romans 1962  Soln  1962 = 1000+900+60+2  1962 = M+CM+LX+II  :. 1962 = MCMLXII  2. What is 6000 in Romans?  Soln  6000 = 6 x 1000  \_\_  = VI\_\_\_\_\_\_\_\_\_   1. ROMANS TO HINDU ARABIC   Concepts:   1. Expand in Roman form. 2. Write each expanded in Hindu-Arabic   Eg.   1. Write CXCV in Hindu – form.   Soln 100  CXCV = C+ XC + V 90  = 100+90+5 5  = 195\_\_ 195  \_\_   1. Write XV in Hindu-Arabic form   Soln  \_\_\_  XV = XV x 100  = 15 x 1000  = 15,000 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Write in Roman form; 2. 9 3. 18 4. 27 5. 84 6. 105 7. 404 8. 777 9. 1062 10. 2347 11. 45000 12. Write in Hindu-Arabic system. 13. VIII 14. XII 15. XXXIX 16. XCIX 17. DCII 18. CMLXXXIV 19. MCDXLIX 20. IV 21. LVI 22. CD   Answers   1. a) IX   b) XVIII  c) XXVII  d) LXXXIV  e) CV  f) CDIV  g) DCCLXXVII  h) MMCCCXLVII  i) MLXII  j) XLV  2. a) 8  b) 12  c) 39  d) 99  e) 602  f) 984  g) 1449  h) 4,000  i) 56,000  j) 400,000 | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **MORE ABOUT ROMAN NUMERALS**   1. Read and write down the time on each of the clock faces below in Hindu Arabic 2. XII b) XII   XI I XI I  X II X II  IX III IX III  VII IV VIII IV  VII V VII V  VI VI   1. Romeo delivers grapes to a factory near his farm every week on Tuesday. The following is a record of the masses of grapes he delivered in five weeks. Read the table then answer the questions below i. e.  |  |  |  |  |  | | --- | --- | --- | --- | --- | | 1st week | 2nd week | 3rd week | 4th week | 5th week | | CCLX | CCXC | CCCV | CCCXLIX | CDII |      1. How many kg of grapes did he deliver in the  * 1st week * 2nd week * 3rd week * 4th week * 5th week  1. Which week did he deliver the most grapes? 2. Write true or false. From 1st week to 5th week, the amount of grapes he delivered was decreasing. 3. Explain your answer for part (C) | | | | |
|  | **TOPIC**  **SUB-TOPIC** | **WHOLE NUMBERS**  **ROUNDING OFF**  Concepts:   1. Borrow if the digit to the right of the required place is greater than 5 (5, 6, 7, 8, 9) 2. Borrow 0 if the digit to the right is less than 5 (0,1, 2, 3, 4). 3. Never include the zero’s if the number is a decimal.   Examples:   1. Round off 43256 to the nearest ten thousand.   Soln  43256  43256  + 0\_\_\_\_  :. 43256 40000\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. DECIMAL  * Remove all the digits after the required place value then form a common fraction. * If the fraction is greater than half, borrow 1 but if it’s less than half borrow O. * Round off 21. 267998 to the nearest ten thousandths.   Soln  21. 267998  21. 267998 = 0  21. 2679 = 98 = 1  100 2  21. 2679  + 1\_\_\_\_\_\_\_  :. 21.267998 21.2680 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Write / Round off as instructed. 2. 23 (tens) 3. 1254 (Hundreds) 4. 96702 (Thousands) 5. 234567 (Ten thousands) 6. 4208007 (Millions) 7. a). 6.73 (tenths)   b) 12.998 (hundredths)  c) 9.26782 (whole number)  d) 39.245376 (thousands)  e) 239.8967432 (millionths)  Answers:  1 a) 20  b) 1,300  c) 97000  d) 230000  e) 4000000  2. a) 6.7  b) 13.00  c) 10  d) 39.245  e) 239.896743 | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **WHOLE NUMBERS**  **DECIMALS IN WORDS AND FIGURES**  Concepts:   1. Group the number into wholes and decimals. 2. Give the place value of the last decimal.   Examples   1. Write 125.678 in words   Soln  125. 678  Whole and Decimals  125 . 678 Thth  One hundred five and six hundred seventy eight thousandths.     1. Write in figures “fourteen and sixteen hundredths.   Soln  Fourteen and sixteen hundredths  14 . 16  100  14 + 16 = 14+0.16  100  = 14.16\_\_\_\_\_ | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Write in words; 2. 1.2 3. 2.25 4. 0.125 5. 0.5 6. 3256.1235 7. 0.009 8. Write in figures; 9. Tenths 10. Three and eight tenths 11. Seventy and five thousandths 12. One hundred five and twenty eight thousandths 13. Five and four ten thousandths   Answers   1. a) one and two tenths.   b) Two and twenty five hundredths.  c) One hundred twenty five thousandths.  d) Five tenths.  e) Three thousand two hundred fifty six and one thousand two hundred thirty five ten  thousandths.  f) Nine thousandths.   1. a) 0.1   b) 3.8  c) 70.005  d) 105 . 028  e) 5.0004\_\_\_\_\_\_\_\_ | | | | |
|  | **REMARKS** |  | | | | |
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| **6.** | **TOPIC**  **SUB-TOPIC** | **WHOLE NUMBERS**  **CONVERSATION IN DECIMALS**  Concepts:   1. The number of zeroes in the denominator is equal to the number of decimal places and vice versa. 2. Write as a decimal.   Soln  2 zeroes = 2 decimal places.  002 = 0.02\_\_\_\_\_\_  100   1. Write 3 as a decimal   Soln  3 = (3 x 10) + 4  10  = 30+4  10  = 34  10  :. 3 = 3.4\_\_\_\_\_\_\_\_\_   1. Write 0.02 as a common fraction.   Soln  0.02 = 0.02  = 0.02 x 100  1 x 100  = 2  **100\_\_\_\_\_\_\_\_**   1. Express 3.05 as a common fraction   Soln  3.05 = 3.05  1  = 3.05 x 100  1 x 100  = 305  100\_\_\_\_\_\_\_\_\_\_\_  OR  3 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Express as decimals; 2. 1 3. Write as common fractions; 4. 0.2 5. 2.5 6. 0.05 7. 1.25 8. 0.125   Answers   1. a) 0.3   b) 1.1  c) 0.04  d) 4.5  e) 1.25   1. a)   b)  c)  d)  e) | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **WHOLE NUMBERS**  **BASES**  Concepts:   1. A base is a system in which a number operates / works.  |  |  |  |  | | --- | --- | --- | --- | |  | **Base** | **Name** | **Digits** | |  | Two | Binary | = {0, 1} | |  | Three | Ternary | = {0, 1, 2} | |  | Four | Quarterly | = {0, 1, 2, 3} | |  | Five | Quinary | = {0, 1, 2, 3, 4} | |  | Six | Senary | = {0, 1, 2, 3, 4, 5} | |  | Seven | Septenary / Heptenary | = {0, 1, 2, 3,4, 5, 6} | |  | Eight | Octal | = {0, 1, 2, 3, 4, 5, 6, 7} | |  | Nine | Nonary | = {0, 1, 2, 3, 4, 5, 6, 7, 8} | |  | Ten | Dentary / Decimal |  | |  |  | Ordinary / mother | = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9} |   CONVERSIONS:   1. TO BASE TEN   Concepts:   * Give the number the powers. * Expand the number in the given base. * Express each bracket in multiplication form. * Get the value of each bracket then add.   Examples:   1. Express 1010two in base ten.   Soln  1010two = 1010  1010two = (1 x 2) + (0x2) + (1x2) + (0x2)  1010two = (1x2x2x2) + (0+2x2) + (1x2) + (0x1)  1010two = 8 + 0 + 2 + 0  :. 1010two = 10ten\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. Convert 103four to decimal base   Soln  103four = 1 0 3    Ones  Four  Four – fours  = (1x4x4) + (0x4) + (3x1)  = 16 + 0 + 3  = 19  Ten\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. FROM BASE TEN TO ANY BASE.   Concepts.   * Divide the number in base ten by the required base only till the result is less than that base. * Record the remainders from the bottom upwards as the answer (required base).   Examples   1. Convert 33 to binary system.   Soln  33ten = Base N0. Rem  2 33 R  2 16 1  2 8 0  2 4 0  2 2 0  1 0  :. 33ten = 100001two\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_    OR  33ten = (11) (11) (11) (11)(11)(11)(11)(11)(11)(11)(11)(11)(11)(11)(11)(11)  = 16 groups of 2 rem. 1  16ten  = (11)(11)(11)(11)(11)(11)(11)(11)  = 8 groups of 2 rem. 0  8ten = 4 groups of 2 rem. 0  4ten = (11)(11)  = 2 groups of 2 rem.0  2ten = (11)  = 1 group of 2 rem.0  :.33ten = 100001two\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Convert the following to base ten; 2. 10ten 3. 21three 4. 101two 5. 240five 6. 10110two 7. 33six 8. Change the following into the base instructed in brackets; 9. 9ten to base two 10. 13ten (Ternary) 11. 15ten (Quinary) 12. 30ten (Senary) 13. 24ten (Quarternary) 14. 18ten (two)   Answers   1. a) 2ten   b) 7ten  c) 5ten  d) 70ten  e) 22ten  f) 21ten   1. a) 1001two   b) 111three  c) 30five  d) 50six  e) 120four  f) 10010two | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **WHOLE NUMBERS**  **EXPANDED BASE:**  Concepts:   1. Get the expanded number then change the required / common base used.   Example   1. What number has been expanded to give (1x23) + (0x22) + (0x21) + (1x20)?   Soln  = (1x23) + (0x22) + (0x21) + (1x20)  = (1x2x2x2) + (0x2x2) + (0x2) + (1x1)  = 8 + 0 + 0 + 1  = 9ten  Common base = 2  9ten = Base N0. Rem  2 9 R  2 4 1  2 2 0  1 0  :. Expanded base = 1001two | | | | |
|  | **EVALUATION** | **EXERCISE**   1. What base / number has been expanded to give; 2. (1x23) + (1x22) + (0x21) + (0x20)? 3. (2x32) + (1x31) + (0x30)? 4. (1x42) + (1x41) + (1x40)? 5. (1x24) + (0x23) + (1x22) + (0x21) + (1x20)? 6. (3x53) + (2x52) + (1x51) + (0x50)? 7. (1x61) + (1x60)?   Answers   1. (i) 12ten   (ii) 1100two   1. (i) 21ten   (ii) 210three   1. (i) 21ten   (ii) 111four   1. (i) 21ten   (ii) 11101two   1. (i) 430ten   (ii) 3210five   1. (i) 7ten   (ii) 11six | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **WHOLE NUMBERS**  **OPERATION IN BASES:**  Concepts   1. Addition   Concepts   * The sum must be less than the base used. * If the sum is more than the used base, divide it by that base, record the reminder and carry the full units.   E.g  - Add. 101two + 111two  Soln  101two  + 111two  1100two\_\_\_\_\_\_   1. Subtraction   Concepts:   * If the problem is impossible, borrow the base units used and add then subtract.   e.g  Subtract 1001two - 111two side work  Soln 1 – 1 = 0  1 0 0 1two  2 – 1 = 1 (Borrow 1two)   * 0 1 1 1two 1 – 1 = 0   0 0 1 0two 0 – 0 = 0   1. Multiplication   concepts:   * The product must be less than the base. * If the product is more than the base, divide by that base, record the reminder first then carry the full unit.   Eg.  Multiply: 123four  x 23four  Soln  22  123four  x 23four  1101  + 3120\_\_\_\_  10221four\_\_\_\_   1. Division   Concepts:   * First change all the numbers to base ten. * Change the answer to the required base.   e.g  Divide 204five 14five  Soln  204 14five = (2x52) + (0x51) + (4x50) (1 x51) + (4x50)  = (2x5x5) + (0x5) + (4x1) (1x5) + (4x1)  = (2x25) + 0+4 5+4  = 54 9  = 6ten  Required base = 5   1. 6ten = Base No Rem   5 6 R   1. 1   :. 204five 14five = 11five. | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Work out:   a) 1 2 4five b) 1 1 2three c) 2 4 5 6seven  + 3 4 3five + 2 2 2three + 2 4 6 3seven  \_\_\_\_\_\_ \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_     1. Simplify: 2. 2 3 2four b) 3 4 1five   - 1 2 3four - 1 3 2five  \_\_\_\_\_\_ \_\_\_\_\_\_  c) Subtract 3 4 5six from 4 3 1seven and give your answer in base eight.  Work out:   1. a) 1 2 1three x 2three   b) 24six x 32six  c) 64eight x 24eight and give your answer in a base nine.   1. Divide: 2. 144five 12five 3. 231six 21six 4. 103nine 15nine answer in base five.   Answers   1. a) 1022five b) 1111three c) 5252seven 2. a) 103four   b) 204five  c) (i) 345six = 137ten  (ii) 431seven = 218ten   1. difference = 081ten 2. 081ten = 121eight 3. a) 1012three   b) (i) 1152six (ii) 1520nine   1. a) (i) Quotient = 7ten   (ii) 7ten = 12five   1. (i) Quotient = 7ten   (ii) 7ten = 11ten   1. (i) Quotient = 6ten   (ii) 6ten  = 11five | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **WHOLE NUMBERS**  **SOLVING FOR UNKNOWN BASES**  Concepts:   1. Change eache base/side to base ten. 2. Collect like terms and solve.   E.g  Solve for K : K2 = 71nine  Soln  K2 = 710nine  K2 = (7 x 91) + (1 x 90)  K2  = (7 x 9) + (1 x 1)  K2 = 63 + 1  K2 = 64  K2 = 64  K2 = (2x2) x (2x2) x (2x2)  K2 = 22 x 22 x 22  K = 2 x 2 x2  :. K = 8\_\_\_\_\_\_\_\_\_\_\_\_\_\_  The used base in eight. | | | | |
|  | **EVALUATION** | **EXERCISE**  Solve for the unknown bases below;   1. 44p = 35nine 2. 23x = 19ten 3. 55n  = 43eight 4. 112three = 22x 5. 31y = 221three 6. P2 = 54nine 7. 213six = 100n 8. P3 = 121seven 9. n2 + n2 = 112five   Answers   1. p = 7 2. x = 8 3. n = 6 4. x = 6 5. y = 8 6. p = 7 7. n = 9 8. p = 8 9. n = 4 | | | | |
|  |  | **DATE** | **CLASS** | **TIME** | **SUBJECT** | **N0. OF PUPILS** |
|  | **P.7** |  | **MTC** |  |
|  | **TOPIC**  **SUB-TOPIC** | **OPERATION ON WHOLE NUMBERS**  **NUMBER SYSTEMS**  Concepts:   * Number systems are the different types of numbers we use.   Examples   1. Natural numbers   These are the same as counting numbers and they begin from 1.  If m = {counting numbers less than 5}  Soln  M = {1, 2, 3, 4}   1. Whole numbers   These are numbers which start from zero.  X = {whole numbers greater than 5 but less than 10}  Soln  X = {6, 7, 8, 9}   1. Even numbers   These are whole numbers which are completely divisible by 2.  Note  How are even numbers obtained?  Concepts   1. When a whole number is multiplied by 2/ doubled you get an even number   Eg  0 x 2 = 0 2 x 2 = 4 4 x 2 = 8  1 x 2 = 2 3 x 2 = 6 5 x 2 = 10  Order of even numbers = {0, 2, 4, 6, 8, 10, ……..}   1. When any two even numbers are added, the result is an even number.   Eg. 2 + 4 = 6  0 + 8 = 8   1. When any two even numbers are multiplied, the result is an even number.   Eg. Ox6 = 0  2 x 8 = 16  NB formular for even numbers = ”2n”   1. Odd numbers   These are whole numbers which are not completely divisible by 2.  Note:  How do we get odd numbers?   1. When a whole number is multiplied by 2 then add 1 to the result, you get an odd number. OR add 1 to an even number   Formular = “2n + 1”  e.g (0x2) + 1 = 1  (1x2) + 1 = 3  (2x2) + 1 = 5  Order of odd numbers = {1, 3, 5, 7, 9, ……….}   1. When any two odd numbers are multiplied, the result is an odd number.   Eg. 1x3 = 3  3x5 = 15  5x7 = 35   1. When any odd number is added to any even number, the result is an odd number.   Eg. 1+2 = 3  2+3 = 5  4+5 = 9  Note:   * When any odd number is subtracted from any odd number, the result is an even number.   Eg. 0x1 = 0  2x3 = 6  5x4 = 20   * When any odd number is subtracted from any odd number, the result is an even number.   Eg. 3-1 = 2  7-3 = 4  15-7 = 8   1. Prime numbers:   These are numbers which have only 2 factors ie one and itself.   * Order of prime numbers = {2, 3, 5, 7, 11, 13, 17, 19, 23, 29, …..}  1. Composite number.   These are numbers with more than two factors. (opposite of prime numbers) order of composite numbers = {4, 6, 8, 9, 10, 12, 14, 15, 16, ……}   1. Square numbers:  * These are numbers got by multiplying a number by itself / squaring a number.   e.g 12 = 1x1 = 1  22 = 2x2 = 4  32 = 3x3 = 9   * Square numbers are also got by adding consecutive odd numbers from 1.   e.g 1 = 1  1+3 = 4  1+3+5 = 9  1+3+5+7 = 16   * Order of square numbers = {1, 4, 9, 16, …………}  1. Triangular numbers:   These numbers are got by adding consecutive counting numbers from 1.  Eg 1 = 1  1+2 = 3  1+2+3 = 6  1+2+3+4 = 10  1+2+3+5 = 15   * Order of triangular numbers = {1, 3, 6, 10, 15, ……………}  1. Cube numbers   These are numbers obtained by multiplying counting number by itself three times / cubing a number.  Eg. 13 = 1x1x1 = 1  23 = 2x2x2 = 8  33 = 3x3x3 = 27  43 = 4x4x4 = 64   * Order of cube number = {1, 8, 27, 64, …………}  1. Integers:   These are a combination of negatives, positives with zero.  Eg. –ve integers = {-2, -1}  +ve integers = {+2, +1}  With zero = {-2, -1, 0, 1, 2, ……………}   1. Rational numbers:   These are numbers which can be written as fractions / they are the same as fractions e.g = {, } | | | | |
|  | **EVALUATION** | **EXERCISE**   1. State the difference between whole and natural numbers. 2. What is the first? 3. Whole number? 4. Natural number? 5. Even number? 6. Odd number? 7. Prime number? 8. Composite number? 9. Square number? 10. Triangular number? 11. Cube number? 12. a) Using the formular “2n”, work out and list a set of any 5 even numbers.   b) using the formular “2n”, work out and list a set of any 5 odd numbers.   1. a) By squaring a number, work out and list a set of numbers greater than 9 but less than 100.   b) By adding consecutive odd numbers from 1, work out and list a set of number from 25 to 100.  c) By adding consecutive counting numbers from 1, workout and list a set of numbers from 21 to 55.  d) Finally, by cubing any number, workout and list a set of numbers from 125 to 512.  Answers   1. Whole numbers start from 0 while natural numbers start from 1. 2. a) 0 b) 1 c) 0 d) 1 e) 2 f) 4 g) 1 h) 1 i) 1 3. a) {2, 6, 10, 14, 18} b) {3, 7, 11, 15, 19} 4. a) {16, 25, 36, 49, 64, 81}   b) {25, 36, 49, 64, 81, 100}  c) {21, 28, 36, 45, 55}  d) {125, 216, 343, 512} | | | | |
|  | **REMARKS** |  | | | | |

**OPERATION OF NUMBERS**

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| **1** | **TOPIC**  **SUB-TOPIC** | **NUMERATION (OPERATION)**  **ARITHMETIC**  Concepts:   1. Arithmetic is the study of numbers/ digits ie 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 under different operations like addition, subtraction, multiplication and division. 2. The operations in arithmetic are called the “Four rules” ie 3. Addition (together, sum, total, plus) – to 4. Subtraction (difference, minus, take away) – from 5. Multiplication product, groups of, times) – through (by) 6. Division (quotient, over) – by (through)   Note   1. Addition   Examples   1. Add 48 + 19   Soln expanding  Side word  48 40 + 8  + 19 10 + 9  67 50 + 17 = 50  + 17  67   1. Workout 378946 + 27996   Soln  1 1 1 1 1  3 7 8 9 4 6  + 0 2 7 9 9 6  4 0 6 9 4 2  **Exercise**   1. Add the following:- 2. 2,545 + 3,455 + 1,011 3. 34 + 2,004 + 33,333 + 5,321 4. The principal of a National Teacher’s College bought 1,450kg of flour in term 1, 2007kg and 1,549kg of flour in term II of the same year. How much flour did he buy during the period? 5. Manjasi High School bought 299,450 exercise books in February this year and 300,990 exercise books in July. How many exercise books were bought altogether? 6. Kigo Primary school received a grant of sh. 2,345,940 from the government of March 2009 and sh. 1,450,945 in July the same year. How much money did the school get that year?  |  |  |  |  |  | | --- | --- | --- | --- | --- | | Date | Class | Time | Subject | No. of pupils | |  | P.7 |  | MTC |  |   **Subtraction:**  Examples   1. Subtract: 48 – 19   Soln  48 40 + 8 30 + (10 + 8) 30 + 18  - 19 10 + 9 10 + 9 10 + 9  20 + 9    20  + 9  29  :. 48  - 19  29   1. Find the difference between 65717 and 579.   Soln  65717  - 00579  65138  **Activity**   1. Subtract 2. 1,000 – 342 3. 19,000 - 9889 4. Subtract one thousand ten from four thousand six 5. The reading of an electric meter is 003980. At the end of the month, it was reading 003993. How many units were used? 6. What is the difference between 456 264 and 109 239?  |  |  |  |  |  | | --- | --- | --- | --- | --- | | Date | Class | Time | Subject | No. of pupils | |  | P.7 |  | MTC |  |   **Multiplication**  Examples   1. Simplify: 58 x 3   Soln  58 50 + 8 150  x 3 x 3 + 24  150 + 24 174  :. 58  x 3  174   1. A factory produced 4395 crates of soda, if each crate contains 24 bottles, how many bottles did it produce?   Soln  Crates = 4395  Bottles@ = 24  Product = 4395 x 24  = 4395  x 24  17580  + 87900  105480 bottles  A factory produced 105,480 bottles.  **Activity (Application of multiplication)**   1. Multiply the following 2. 243 x 14 3. 531 x 19 4. In a school there are 29 classrooms with 149 pupils in each classroom. 5. How many pupils are in the school? 6. If one Friday each class had 24 pupils absent, how many pupils attended classes that day? 7. If there are 120 workers in Tororo District and each worker is paid sh. 9,460 a month, how much money will be paid to the workers in four months? 8. The bus charges sh. 400 per kilometer travelled and a bodaboda charges sh. 500 every two kilometers. How much money will Mary pay if she travelled 160km by bus and 20km by bodaboda?  |  |  |  |  |  | | --- | --- | --- | --- | --- | | Date | Class | Time | Subject | No. of pupils | |  | P.7 |  | MTC |  |   **Division**  The components of division include;   1. A divisor (D) – a number that divides into another. 2. A dividend (D) – a number that divided into. 3. A quotient (Q) – a number that tells the number of times a number is divided into. 4. A reminder (R) – a number that is left over when a number is not completely divided into.   Division formular.  Dividend = Division x Quotient + reminder.  Examples   1. Divide 148 4   Soln  Note  The steps for long division in order;   1. Divide / group 2. Multiply 3. Subtract 4. Borrow 037 side work   148 4 = 4 148 - 0.4 in 1  = 0 x 4 - 0 - 4+4+4 = 3 fours  14  -  = 3 x 4 12 - 4+4+4+4+4+4+4 = 7 fours  28  -  = 7 x 4 28  Xx  :. 148 4 = 37  **Activity**   1. Workout the following:- 2. 6,069 ÷7 3. 12,493 ÷13 4. Matovu had 3 children. He left dollars 78,240 to them when he died. If the children shared the money equally, how much money did each child get? 5. In a district, there are 26,688 pupils in the district. If each school had the same number of children, find the number of children in each school. 6. During the tree planting season, 27,045 young trees were shared equally among 621 schools. How many trees did each school get? | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **NUMBERS (OPERATION)**  **QUICK WAY CALCULATIONS / DISTRIBUTIVE PROPERTY**  Concepts:   * identify the common factor from the number parts (brackets). * Pullout the common factor and the sign.   Examples   1. Calculate the following using distributive property only. 2. (379 x 27) + (27 x 21) side work   Soln 379  = (379 x 27) + (27 x 21) +  = 27 x (379 + 21) 021  = 27 x (400) 400  = 27 x 400 x 27  = 10,800 2800  500  10,800   1. (156 13) + (260 13)   Soln  = (156 13) + (260 13) side work  = (156 + 260) 13 156  = 416 13 260  4126 416  13  = 32\_\_\_\_\_\_\_\_ | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Fill in the missing numbers; 2. (3 x 7) +(3x4) = 3x (--- + 4) = 3x ---------- 3. (6x4) + (6x7) = ---- (4 + ----) = 6x ------- 4. (13x15) + (13x5) = ---- x (15 + ----) = 13x -------- 5. (25 x 130) – (25x30) = --- x (---- - 30) = 25 x ----- 6. (147 12) – (3 12) = --- (-- - --) 12 = ---- 7. Calculate using distributive property; 8. (59 13) – (7 13) 9. (125 7) + (22 7) 10. (27 x 29) – (27 x 19) 11. (420 x 12) + (420 x 8) 12. (17 3) + (10 3)   Answers   1. a) 3x(7+4) = 3 x 11   b) 6 x (4 + 7) = 6 x 11  c) 13 x (15 + 5) = 13 x 20  d) 25 x (130 – 30) = 25 x 100  e) (147 – 3) 12   1. a) 4 b) 21 c) 270 d) 8400 e) 9 | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUBTOPIC** | **NUMBERS (OPERATION)**  **EXPANDED NOTATION**  Concepts   * Expanded notation is a way of making a number become bigger in size. * Forms of expanded notation;  1. Place value form. 2. Value form. 3. Exponent / index / power form. 4. Scientific / standard form. 5. Place value form   Concepts:  Multiply a digit by its place value then get its value.  Eg  Expand 7962 in place value form.  7962 = (7x1000) + (9x100) + (6x10) + (2x1)   1. Value form   Concept:  Multiply a digit by its place value then get its value.  Eg  Expand in value form;   1. 7,962 2. 0.6259   Soln  a) 7962 = (7x1000) + (9x100) + (6x10) + (2x1)  = 7000 + 900 + 60 + 2  b) 0.6259 = (6x ) + (2x ) + (5 x ) + (9 x )  = + + +  = 0.6 + 0.02 + 0.005 + 0.0006   1. Power/ exponent / index form   Concepts   * The powers of tern are the number of zeros a number has. * Multiply a digit by its place value.   Eg  Expand in power form;   1. 7,962 2. 0.6259   soln   1. 7,962 = (7x1000) + (9 x 100) + (6 x 10) + (2x1)   = (7x10 x 10x10) + (9x10x10) + (6x10) + (2x)  = (7x103) + (9 x102) + (6 x101) + (2 x 100)   1. 0.6259 = (0x1) + (6x ) + (2x ) + (5 x ) + (9 x )   = (0x1) + (6 x ) + (2 x ) + (5 x ) + (9 x)  = (6 x 10-1) + (2 x 10-2) + (5 x 10-3) + (9 x 10-4) | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Expand the following in place value form. 2. 23 3. 234 4. 12345 d) 9876543 e) 9876543 5. a) 34 b) 2.3 c) 125.4 d) 2.3456 e) 3456.78 6. expand in powers of ten: 7. 32 b) 134 c) 2.35 d) 135.6789 e) 0.12345   Answers   1. a) (2x10) + (3x1) 2. (2x100) + (3x10) + (4x1) 3. (1x10,000) + (2x1000) + (3 x 100) + (4x10) + (5x1) 4. (9x1000,000) + (8x100,000) + (7 x 10,000) + (6 x 1000) + (5 x 100) + (4x10) + (3x1) 5. (2x10,000) + (0x1000) + (4x100) + (5x10) + (0x1) 6. a)30 +4   b) 2+0.3  c) 100 + 20 + 5+ 0.4 + 0.06  d) 2+0.3 + 0.04 + 0.005 + 0.0006  e) 3000 + 400 + 50 + 6 + 0.7 + 0.08   1. a) (3 x101) + (2x100)   b) (1x102) + (3x101) + (4x100)  c) (2x100) + (3x10-1) + (5x10-2)  d) (1x102) + (3x101) + (5x100) + (6 x 10-1) + (7x10-2) + (8x10-3) + (9x10-4)  e) (1x10-1) + (2x10-2) + (3x10-3) + (4x10-4) + (5x10-5) | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **OPERATION ON WHOLE NUMBERS**  **COMMUTATIVE PROPERTY**  Example 1  8 + 4 = 4 + 8  The statement is commutative under addition  Example 2  4 x 6 = 6 x 4  The statement is commutative under multiplication  **N.B:**  The order in which any two numbers are added or multiplied does not affect the result.  **Exercise**  Fill in the missing numbers   1. 5 + 6 = \_\_\_\_ +5 2. 11 + 7 = \_\_\_\_ +11 3. 19 + 8 = 8 + \_\_\_\_ 4. 40 + 9 = \_\_\_\_ + 40 5. 5 x 2 = \_\_\_ x 5 6. 8 x 3 = \_\_\_\_ x 8 7. 4 x 7 = 7 x \_\_\_\_ 8. 11 x 5 = 5 x \_\_\_\_ | | | | |

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|  | **TOPIC**  **SUB-TOPIC** | **OPERATION ON WHOLE NUMBERS**  **ASSOCIATIVE PROPERTY**  Example 1  (6 + 4) + 5   1. + 5 2. 15   3X (4X5)  =3X20  =60  Therefore (3 x 4) x 5 = 3x(4x5) is associative property of multiplication  **Note**: When carrying out addition or multiplication of more than two numbers, the way in which numbers are grouped does not affect the sum or product.  **Exercise**  Fill in the missing numbers   1. 4 + (6+3) = (4+ \_\_ ) + 3 2. (9 + 2) + 5 = 9+ (2 + \_\_\_) 3. 7 + (6 + 8) = (7 + \_\_\_ ) + 8 4. (5 x 3) x 6 = \_\_\_ (3 x 6)   **Workout the following using the associative property**   1. 3 + 5 + 7 2. 16 + 14 + 10 3. 6 x 3 x 5 4. 8 x 5 x 9 | | | | |

**NUMBER PATTERNS AND SEQUENCES**

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|  | **TOPIC**  **SUB-TOPIC** | **NUMBER PATTERNS AND SEQUENCES**  **NEXT NUMBERS IN THE SEQUENCES**  Concepts   * Identify the name of the sequence. * Follow the order of the sequence.   Examples   1. Square numbers   Find the next number in sequence below  1, 4, 9, 16, 25, -----  Soln  1, 4, 9, 16, 25 36  1+3 = 4  1+3+5= 9  1+3+5+7 = 16  1+3+5+7+9 = 25  The next number: 1+3+5+7+9+11 = 36  OR  1 4 9 16 25 36  1 + 3 = 4  4 + 5 = 9  9 + 7 = 16  16 + 9 = 25  :. The next N0: 25 + 11 = 36   1. Cube numbers   Got by multiplying a number by itself three time.  e.g  find the next number in the sequence below  1, 8, 27, 64, 125, ------------  Soln  1, 8, 27, 64, 125, 216  13 23 33  43 53 63  1x1x1 = 1  2x2x2 = 8  3x3x3 = 27  4x4x4 = 64  5x5x5 = 125  The next N0: = 6x6x6  = 216\_\_\_   1. Triangular numbers   NB  These are got by adding consecutive counting numbers starting from one. E.g. Find the next number in the sequence below. 1, 3, 6, 10, 15, 21, ------  Soln  1, 3, 6, 10, 15, 21, ---  1, 3, 6, 10, 15, 21, 28  1 + 2 = 3  3 + 3 = 6  6 + 4 = 10  10 + 5 = 15  15 + 6 = 21  :. The next N0: = 21 + 7 = 28\_\_\_\_   1. Other sequences   Examples  Find the next number:   1. 1, 3, 9, 27, ----   Soln  1, 3, 9, 27, 81  1x3= 3  3x3 = 9  9 x 3 = 27  27 x 3 = 81   1. Find the next number 9, 3, 1, ------   Soln  9, 3, 1,  9, 3, 1,  ÷3 ÷3 ÷3   1. What is the next number?   1, 3, 6, 11, 18, 29, 42, -----  Soln  1, 3, 6, 11, 18, 29, 42, 59  +2 +3 +5 +7 +11 +13 +17  :. The next N0: = 42  + 17\_\_  59\_\_   1. 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ---------   Soln  0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 8 + 2, 9+ 2  :. 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 | | | | |
|  | **EVALUATION** | **EXERICSE**  Find the next number (s) in the sequence below:   1. 2, 4, 6, 8, 10, ----- 2. 17, 15, 13, 11, ----- 3. 1, 2, 4, 7, 11, ------ 4. 21, 18, 14, 9, -----, ----- 5. 1, 3, 4, 6, 7, 9, ---- 6. 1, 2, 4, 5, 7, ---, ---- 7. 1, 4, 9, ---- 8. 1, 8, 27, ------ 9. 16, 8, 4, ----- 10. 9, 3, 1, , -------   Answers   1. 12 2. 9 3. 16 4. 4, -4 5. 10 6. 8, 10 7. 16 8. 64 9. 2   **Divisibility test for 2**  A number is divisible by 2 if it ends with an even digit.  **For example**  42  42 is divisible by 2 since it ends with an even digit.  **Exercise**   1. Which of the following numbers is divisible by 2?   4 6 3, 5 4 2, 8 6 0, 9 5 1     1. Without dividing, which number is divisible by 2?   i) 4 8 9 or 9 4 6  ii) 3 5 4 or 5 7 8  iii) 9 4 5 or 3 3 4  iv)7 5 6 or 2 5 3   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Date** | **Class** | **Time** | **Subject** | **No. of pupils** | |  |  |  |  |  |   **Divisibility tests for 3**  A number is exactly divisible by 3 if the sum of its digits is divisible by 3.  **For Example**  33; Is divisible by 3 since its sum i.e 3 + 3 = 6 is divisible by 3.  **Exercise**   1. Which of the following numbers is divisible by 3?   - 30, 32, 35, 37, 39   1. Without dividing, which number is divisible by 3?   - 76 or 72  - 96 or 94  - 144 or 166  - 135 or 73     |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Date** | **Class** | **Time** | **Subject** | **No. of pupils** | |  |  |  |  |  |   **Divisibility test for 4**  A number is divisible by 4 if its last two digits are zero or multiples of 4  **For example**  356  356 is divisible by 4 since its last two digits are multiples of 4.  **Exercise**   1. Which of the following numbers are divisible by 4?   10, 185, 949, 3700, 444   1. Without dividing, which number is divisible by 4? 2. 108 or 442 3. 62 0r 68 4. 18254 or 30700 5. 90 or 900   **Divisible test for 5**  A number is divisible by 5 if it ends with 0 or 5.  **For example**  70  70 is divisible by 5 since it ends with 0  **Exercise**   1. Which of the following numbers are divisible by 5   4, 5, 7, 10, 55, 66   1. Without dividing, which number is divisible by 5?  * 101 or 205 * 18 or 30 * 12 or 80 * 60 or 78 | | | | |
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|  | **REMARKS** |  | | | | |
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| **2** | **TOPIC**  **SUB-TOPIC** | **NUMBER PATTERNS AND SEQUENCES**  **DIVISIBILITY TESTS**   1. Examples 2. Divisibility test for 6.   Concepts   * A number is divisible by 6 if it is divisible by 2 and 3. * A number is also divisible by 6 if the sum of its digits is divisible by 3.   Eg state whether 612 and 738 are divisible by 6.  Soln  612 = 6 + 1+ 2  = 9 (divisible by 3)  738 = 7+3+8  = 10 + 8  = 18 divisible by 3)  :. 612 and 738 are divisible by 6.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Date** | **Class** | **Time** | **Subject** | **No. of pupils** | |  |  |  |  |  |   **Activity**   1. Which of the following numbers is divisible by 6.  * 7, 8,, 12, 18, 19, 20  1. Without dividing which number is divisible by 6?  * 1200 or 700 * 64 or 72 * 28 or 30 * 42 or 63  |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Date** | **Class** | **Time** | **Subject** | **No. of pupils** | |  |  |  |  |  |  1. Divisibility test for 7.   Concepts.  When the last digit of a number is doubled and when the result is subtracted from the remaining number is divisible by 7.  e.g 1s 861 and 1792 divisible by 7?  Soln  86(1) = 1+1  86 = 2  86 = 86 – 2  = 84 (Divisible by 7)  **Activity**   1. Which of the following numbers is divisible by 7?  * 14, 16, 21, 25, 28      1. Without dividing, which number is divisible by 7  * 100 or 91 * 112 or 107 * 63 or 79 * 36 0r 56   NB. For big N0’s repeat the procedure till you get a small number.  179 (2) = 2+2  = 4  179 = 179 – 4  = 175  17 (5) = 5+5  17 = 10  = 17 – 10  = 7 (divisible by 7).  :. 861 and 1792 are all divisible by 7.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Date** | **Class** | **Time** | **Subject** | **No. of pupils** | |  |  |  |  |  |  1. Divisibility test for 8:   Concepts:  A number is divisible by 8 if the number formed by the last 3 digits is also divisible by 8.  e.g check whether 7.960 and 5788 is divisible by 8.  Soln  7 (960) = 960  8  = 120 (divisible)  188  8  = 23 ½ (Not divisible)  :. 7960 is divisible by 8 but not 5188.  **Activity**   1. Which of the following numbers is divisible by 8  * 135, 144, 400, 500, 600, 960, 188  1. Without dividing, which number is divisible by 8  * 1200 or 500 * 1244 or 5288 * 2700 or 35200 * 11288 or 9478  |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Date** | **Class** | **Time** | **Subject** | **No. of pupils** | |  |  |  |  |  |  1. Divisibility test for 9.   Concepts   * A number is divisible by 9 if the sum of its digits is divisible by 9.   e.g take 198 to see whether its divisible by 9.  Soln  198 = 1 + 9 + 8  = 10 + 8  = 18 (divisible by 9)  :. 198 is divisible test for 9  **Activity**   1. Which of the following numbers is divisible by 9  * 10, 18, 21, 27, 28, 46, 50  1. Without dividing, which number is divisible by 9 ?   I 66 or 72  108 or 118  651 or 126  903 or 288   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Date** | **Class** | **Time** | **Subject** | **No. of pupils** | |  |  |  |  |  |   Divisibility test for 10  A number is divisible by 10 if the digit in the ones place is 0 or if it ends with 0.  **Or:** Any number divisible by 10 is also divisible by 2 and 5  **For example**  80 – is divisible by 10 since 0 is in the place of ones  **Exercise**   1. Which of the following numbers is divisible by 10  * 52, 10, 15, 20, 25, 55, 33, 77, 60  1. Without dividing, which number is divisible by 10  * 388 or 450 * 4508 or 1890 * 133 or 200 * 1458 or 2700  |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Date** | **Class** | **Time** | **Subject** | **No. of pupils** | |  |  |  |  |  |  1. Divisibility test for 11   Concepts.   * A number is divisible by 11 if the difference between the sum of the digits in the even places and that of the digits in the odd places stating with odd zero or divisible by 11.   Examples.   1. Check whether 733689 and 676390 are divisible by 11.   Soln  Odd places starts from the last digit while even places start from the second last digit.   1. even position   7 3 3 6 8 9  odd position   1. sum in odd position = 7 + 3 + 8   = 10+8  = 18   1. sum in even position = 3+6+9   = 9+9  = 18   1. difference between the sum = 18   - 18  00 (divisible by 11).   1. Odd   6 7 6 3 9 0  Even   1. Sum in even position = 7+3+0   = 10   1. Sum in odd position = 6+6+9   = 12 + 9  = 21   1. Difference in sums = 21   -10  11 (divisible by 11)  :. 733689 and 676390 are all divisible by 11.  **Activity**   1. Which of the following numbers is divisible by 11?  * 121, 187, 128, 132, 143, 147, 148, 149  1. Without dividing, which number is divisible by 11?  * 3333 or 6425 * 2678 or 1001 * 814 or 444 * 8080 or 6666 | | | | |
|  | **EVALUATION** | **EXERCISE**  Which of the numbers given are divisible by the number given?   1. 6 = {2367, 2376, 814, 4625, 2782, 1001, 3333} 2. 7 = {379, 144, 912, 814} 3. 8 = (76344, 98020, 59752, 4576128} 4. 9 = {342, 783, 660, 8757, 4827, 70308, 54696} 5. 10 = {8001, 72000, 144, 245} 6. 11 = {2397, 901,938, 326044, 769034}   Answers   1. By 6 = {2367, 2376, 3333} 2. By 7 = Nil 3. By 8 = {59752, 4576128} 4. By 9 = {342, 783, 8757, 70308} 5. By 10 = {72000} 6. By 11 = Nil | | | | |
|  | **REMARKS** |  | | | | |

**TERM II**

**FRACTIONS**

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|  | **TOPIC**  **SUBTOPIC** | **FRACTION**  **REVISION ON OPERATION FRACTIONS**  Concepts:   * Get the LCMof the denominators. * Divide the Lcm by each denominator then multiply the result the numerator above. * Change a mixed fraction to improper. * Reduce the answer to its lowest terms.   e.g work out the following:  a) +  soln  + = Lcm 12  + = (4x1) + (3x3)  12  = 4+9  12  = 13  12  = 1 ½\_\_\_\_\_\_  b) + -  soln  + - = ( + ) - Lcm of 2 and 4 = 4  = (2x1) + (1x1) -  4  OR  2 + 1 - + - = Lcm 20  4 + - = (1x10) + (5x1) -(4x1)  - Lcm = 20 20  - = (5 x3) + (4 x1) = 10 + 5 - 4  20 20  = 15 – 4 = 15 - 4  20 20  = 11 = 11  20 20   1. 6 - 3 + 1   Soln  6 - 3 + 1 = - +  = + -  = (32x2) + (13x1) – (18x2)  10  = 64 + 13 – 36  10  = 77 – 36  10  = 41  10  = 4  OR  6 +1 + - 3  7 + + - 3  7 – 3 + + -  4 + (2x2) + (1x3) – (4x3)  10  4 + 4 + 3 - 6  10  4 + 7 - 6  10  4+  = 4   1. Subtraction of fractions   Concepts  Follow the same steps above  Examples   1. Subtract: from   Soln  from = - Lcm = 15  - = (5x1) – (3x1)  15  = 5 – 3  15  =   1. Work out - + -   Soln  - + - = + -  = ( + ) - -  = (1x5) + (3x1) - -  6  = 5 + 3 - -  6  = - - Lcm = 30  = (5x8) – (10 x 1) – (6x1)  30  = 40 – 10 – 6  30  = 24  30  = | | | | |
|  | **EVALUATION** | **EXERCISE**  Work out the following fractions:   1. a) + b) 3 + c) - d) 2 - e) - +   f) + - g) 3 + 1 h) 2 - 4 + 5  answers:  1.a) 1 b) 3 c) d) 1 e) f) g) 4 h) 3 | | | | |
|  | **REMARKS** |  | | | | |
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| **2** | **TOPIC**  **SUB-TOPIC** | **FRACTIONS**  **REVISION ON DIVISION OF FRACTIONS**  Concepts;   * Get the Lcm of the denominators * Multiply each fraction by Lcm. OR * Apply the idea of reciprocal.   Examples:  Work out:   1. 2   \_\_\_\_\_  1  Soln  2 = 2 1  \_\_\_\_\_  1  = Lcm = 12  = ( x 12) ( x 12)  = (7x4) (7x3)  = 28 21  = 28  21  = 4  3  = 1  b) 24  soln  24 =  = x  = x  = 8 x 4  = 32\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. How many 5 litres cups are in a 2 litre container?   Soln  5 litres in 2 contain = 2 5  =  = ( x 2) ( x 2)  = 5 10  =  = litre cups.   1. Multiplication of fractions:   Concepts   * Don’t get the Lcm of denominators, instead multiply the numerators direct and the denominators direct. * Cancel / reduce where necessary.(simplify)   Examples   1. What is 24 of ?   Soln  24 of = x  = 6 x 3  = 18   1. Find 1 of 126   Soln  1 of 126 = x  = 3 x 63  = 189\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. Multiply: 1 x 1 x   Soln  1 x 1 x = x x  = 5 x 8 x 1  4 x 5 x 6  = 1x1x1  1x1x3  =   1. Work out: of ( + ) 1   Soln  of ( + ) 1 = x ( + )  = x (4 + 1)  6  = x x  = 1x1x1  1x2x1  = | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Work out the following: 2. b) 2 c) 1 d) 35 e) 3   60 \_\_\_\_\_  7 13  12   1. Simplify: 2. x 12 b) 22 x c) d) 6 3. Work out: 4. ()2 x b) of (1 x 1 ) c) () x   d)  \_\_\_\_\_\_\_  +   1. a) A boy was told to cut pieces of cloth of length m from a big roll of m. How many pieces did he cut? 2. A boy can carry a tin of litres from a well. How many rounds will be made to fill a container of 12 litres?   Answers:  1.a) 1 b) c) 1 d) 1 e)   1. a) 6 b) 14 c) d) 27 2. a) b) c) d) 3 3. a) 17 m b) 18 litres | | | | |
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| **3** | **TOPIC**  **SUB-TOPIC** | **FRACTIONS**  **WORD PROBLEMS ON FRACTIONS**  Concepts:   * Read and understand the statements. * Pull out key words and summarize the statements.   Examples:   1. Rose ate of her cake. What fraction remained?   Soln  Original fraction = (1)  Fraction eaten =  Fraction left = -  =   1. A man rode of his journey then his bicycle broke down. He was left with 12km to reach. How far is the whole journey?   Soln  Covered fraction =  Covered distance = ?  Original fraction = (1)  Uncovered fraction = ?  Uncovered distance = 12km   1. Uncovered fraction = -   - = 4 – 1  4  =   1. Let his journey be m.   of m = 12km  x = 12km  3m = 12km Lcm = 4  4  4 x 3m = (12 x 4) km  4  3m = (12 x 4) km  3 3  M = 4 x 4 km  :. M = 16km  The whole journey was 16 km long.   1. Peter, Rose and Robert collected some money for a business, Peter paid and Rose paid . 2. What did Robert? 3. If Robert paid shs. 30,000, what was their total collection?   Soln   1. (i) Total payment by Peter and Rose.   + = 3 + 5  10  =  =  (ii) Original payment =  Robert payment = -  - = 10 – 8    10  =  =   1. (i) Let their total collection be m.   Robert paid sh. 30,000 = side work  of m = sh. 30,000 30,000  x = sh. 30,000 x 5  = sh. 30,000 Lcm = 5 150,000  5 x = sh. 30,000 x 5  :. M = sh. 150,000  :. Their total collection was sh. 150,000 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. After using of the cooking oil, mother some oil left. What fraction was left? 2. A man had 144 heads of cattle, but of them are cows. 3. What fraction is for bulls? 4. How many cows are there? 5. How many bulls are there? 6. When I walked of my journey. I still had 63km left. How long was my journey? 7. If and are men and women in the distinct respectively. 8. What fraction is of the children? 9. If there are 6000 children in the district, how many people are in the district? 10. How much money will the district spend if it supplies a blanket of sh. 3500 to each member of the district?   Answers:   1. (a) b) 64 cows c) 80 bulls 2. a) Uncovered fraction = b) Whole journey = 108km 3. a) b) 30,000 people c) sh. 105,000,000 | | | | |
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| **4** | **TOPIC**  **SUB-TOPIC** | **FRACTIONS**  **MORE ABOUT WORD PROBLEMS / APPLICATION**  Concepts   * Read and understand the statements. * Summarize the statements.   Example   1. John spent of his money on books and of the reminder on transport. 2. What fraction of his money was spent on transport? 3. What fraction of the money was left? 4. If john was left with sh. 45,000. How much did he have at first?   Soln   1. (i) – Original fraction =   - Spent on books =  Reminder fraction = -  - = 3 – 1  3  =  (ii) Transport fraction = of the reminder.  = x  = 1 x 1  3 x 3  =   1. (i) Total fraction on books and transport   + = 3 + 1  9  =  (ii) Remaining fraction from books and transport  Original =  Total =  Fraction left = -  - = 9 – 4  9  =   1. (i) Fraction left =   Amount left = sh. 45,000  Original amount = sh. 45,000  5 parts = sh. 45,000  1 part = sh. 45,000  5  :. 9 parts = sh. 45,000 x 9  5  = sh. 9000 x 9  = sh. 81,000  John original amount was sh. 81,000. | | | | |
|  | **EVALUATION** | **EXERCISE**   1. A lady spent of her money on food, of the reminder on drinks and she was left with sh. 80,000. 2. What fraction was left? 3. How much was her income? 4. A school spends of its money on books, on salaries and of the reminder on transport. The remaining amount was sh. 40,000. 5. Find the fraction spent on books and salaries. 6. What fraction was spent on transport? 7. How much money did the school have at first?   Answers  1.(a) (i) Reminder =  (ii) Drinks =  (iii) Total =  (iv) Left =  b) Income = sh. 160,000  2(a) (i) Total = (ii) Transport = c) sh. 120,000 | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS**  **APPLICATION – TAPS**  Concepts:   1. When all taps are filling the tank, you add the fractions but when one tap is removing / drawing away water, you subtract that fraction. 2. Change the given minutes to fractions.   OR   1. Apply the formular “product over sum”   ie Product = when all taps are filling.  Sum  Examples   1. Tap A fills the tank in 6 minutes and tap B fills the same tank in 3 minutes. How long will both taps take to fill the tank if they are opened at the same time?   Soln   1. In I minute each tap   Tap A fills = of tank.  Tab B fills = of the tank.   1. In one minute both taps   Both taps fill = + of the tank  + = 1 + 2  6  =  =   1. In (one tank divided into )   1 = minutes  = x  =  = 2 minutes  :. Both taps will take 2 minutes to fill the tank.  OR  Duration = Product  Sum  = 6 x 3  6 + 3  =  = 2 minutes  :. Both taps will take 2 minutes to fill the tank.   1. Tap A takes 3 minutes to fill the tank and tap B takes 4 minutes to draw water from the tank. How many minutes will it take both taps to fill the tank if left open?   Soln   1. In one minute each tap   Tap A fill = of the tank.  Tap B draw = from the tank.   1. In one minute both taps   Fill = -  - = (4 x 1) – (3 x 1)  12  = 4 – 3  12  =   1. One tank divided into   1 =  = x  =  = 12 minutes  :. Both taps will take 12 minutes to fill the tank. | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Tap A takes 9 minutes to fill the tank and tap B takes 12 minutes to fill. How long will both taps take to fill the tank? 2. Tap A fills the tank in 12 minutes, tap B in 9 minutes and tap C in 18 minutes. How long will the taps take to fill the tank? 3. A tank has 2 taps, one tap fills in of the tank in one minute and another fills in of the tank in one minute. How long will it take both taps to fill the tank? 4. Tap A takes 6 minutes to fill the tank and tap B takes 8 minutes to draw water from the tank. How long will it take to fill the tank if both taps are left open? 5. Tap A, B and C are joined to a tank. A fills in 9 minutes, B fills in 12 minutes and C empties it in 6 minutes. If the tank holds 7200 litres of water. 6. How much water is put in the tank by tap A after one minute? 7. How long will all the taps take to fill the tank if left open?   Answers:   1. a) In one min = b) Duration = 5 minutes 2. a) In one min = () b) Duration = 4 minutes 3. a) In one min = () b) Duration = 6 minutes 4. a) In one min = b) Duration = 24 minutes 5. a) In one min tap A = 800 litres b) In one min 3 taps = c) Duration = 36 mins | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS**  **REVIEW ON ADDITION AND SUBTRATION OF DECIMALS.**   1. ADDITION   Concepts:   * Arrange decimals vertically according to their place values.   Examples  Work out: 2.62 + 14 + 6.4  Soln  02.62  14.00  + 06.40  23.02\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. SUBTRACTION   Concepts:  Arrange vertically according to their place values.  Example  Subtract 2.73 from 10.  Soln   * 1. from 10 = 10 – 2.73   = 10.10  - 02.73  7.27\_\_\_\_\_\_\_\_   1. MIXED   Concepts:  Follow the order of “BODMAS” to work out.  Examples:  Simplify 3.07 – 4.04 + 1.85  Soln   * 1. – 4.04 + 1.88 = 3.07 + 1.85 – 4.04   = 3.07  + 1.85  4.92  = 4.92  - 4.04  0.88\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | |
|  | **EVALUATION** | **EXERCISE**  Work out the following decimals;   1. a) 9.76 + 3.42   b) 3.7 + 57.4  c) 4.067 + 29.52  d) 0.93 + 0.099  e) 53.09 + 12 + 8.5 + 2.36   1. a) 9.87 – 1.524   b) 6.01 – 0.724  c) 0.1 – 0.0827  d) 0.915 – 0.07  e) 6.5 – 2.75   1. a) 2.5 + 6.3 – 3.8   b) 4.6 – 5.9 + 3.5  c) 8 – 6.7 – 0.5  d) 2.34 – 7.8 + 6.9  e) 2.3 – 4.8 + 5.4  Answers:   1. a) 13.18 b) 61.1 c) 33.587 d) 1.029 e) 75.95 2. a) 8.346 b) 5.376 c) 0.09123 d) 0.845 e) 3.75 3. a) 5.0 b) 2.2 c) 0.8 d) 1.44 e) 2.9 | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS**  **MULTIPLICATION**  Concepts   * change to common fraction OR * Ignore the order of decimal points and multiply as wholes.   Examples   1. Multiply 3.20 x 2.5   Soln   * 1. x 2.5 = 3.20   x2.5 3dp  1600  + 6400  8:000  OR   * 1. x 2.5 = 320 x 25 side work   100 10 320  = 8000 x25  1000 1600  = 8\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 6400  8000   1. Work out: 12.42 x 8   Soln side work  12.42 x 8 = 1242 x 8 1242  100 1 x8  = 9936 9936  100  = 99.36\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  DIVISION  Concepts:   * Change all to common fractions. * Introduce the brackets to separate the numerators from the denominators. OR * Make the biggest divisor a whole number.   Examples   1. Work out: 40.6 7   Soln  40.6 7 = 406 7  1 1  = 406 x 1  1 7  = 58   1. Simplify: 0.28 x 0.81   0.27 x 4.2  Soln  0.28 x 0.81 = (28 x 81) (27 x 42)  0.27 x 4.2 100 100 100 10  = (28 x 81) x (100 x 10)  100 100 27 42  = (28 x 81) x 1 x 1  1 10 27 42  = 2  10  = 0.2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  OR  0.28 x 0.81 = (0.28 x 0.81) x 100  0.27 x 4.2 (0.27 x 4.2) x 100    = 28 x 81  27 x 420  =  = 0.2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | |
|  | **EVALUATION** | **EXERCISE:**   1. Multiply the following; 2. 0.34 x 6 3. 11.9 x 0.3 4. 0.08 x 0.08 5. 0.62 x 9 6. 7.075 x 6 7. Work out the following; 8. 0.36 9 9. 1.08 1.2 10. 3.5 x 2.5   1.25   1. 0.12 x 0.27   0.03 x 0.9   1. 1.44 x 3.6   1.2 x 1.8  Answers:   1. a) 2.04 b) 03.57 c) 0.0064 d) 5.58 e) 42.450 2. a) 0.04 b) 0.9 c) 7 d) 1.2 e) 2.4 | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS**  **ORDERING FRACTIONS**  Concepts   * Turn decimals to common fractions. * Use the Lcm, equivalent fraction or percentage to get the value of each fraction. Biggest denominator in the Lcm.  1. Arrange in descending order.   0.36, 0.054, 0.07 and 0.8  Soln  0.36 = 36 36 x 1000 = 360 (2)  100 100  0.054 = 54 54 x 1000 = 54 (4)  1000 1000  0.07 = 7 7 x 1000 = 70 (3)  100 100  0.8 = 8 8 x 1000 = 8000 (1)  10 10  Lcm = 1000  :. Descending order = 0.8, 0.36, 0.07, 0.054   1. Arrange in descending order , ,   Soln  , , Lcm = 45  = 4 x 9 36 - (1)  5 x 9 45  = 7 x 5 35 - (2)  9 x 5 45  = 8 x 3 24 - (3)  15 x 3 45  :. Ascending order = , and | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Arrange as instructed in the brackets 2. 0.002, 0.2, 0.02, 20 (descending order) 3. 0.01, 1.1, 0.011, 0.0011 (ascending order) 4. 0.07, 0.707, 7.7, 7.007 (descending order) 5. 0.06, 6.6, 6.004, 6.06 (ascending order) 6. and (descending order) 7. and (ascending order)   Answers:   1. a) 20, 0.2, 0.02, 0.002   b) 0.0011, 0.01, 1.1, 0.011  c) 7.7, 7.007, 0.707, 0.07  d) 0.06, 6.006, 6.06, 6.6  e) and  f) | | | | |
|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS**  **CONVERSION IN RECURRING AND NON RECURRING DECIMALS.**  Concepts   * Recurring is the same as non – terminating which means having digits repeat themselves many times / endlessly. * Terminating means having digits that don’t repeat themselves. * Symbols for representing recurring decimals :- a dot on top. * A bar   Converting proper fractions to decimals.  Concepts:   * Apply long division. * Keep adding 0 to the difference to make it become bigger than the divisor. * Put only “3” dots to show that digits don’t end.   Examples  Change the following to decimals   1. b)   Soln   1. = 0.625   50  -  0 x 8 0  50  -  6 x 8 48  20  -  2 x 8 16  40  -  8 x 5 40  xx  :. = 0.625   1. = 1   1.333…  3  -  1 x 3 3  10  -  3 x 3 9  10  -  3 x 3 9  10  -  3 x 3 9  :. = 1.333… / 1.3 / 1.33 / 1.33 | | | | |
|  | **EVALUATION** | **EXERCISE**  Change the following into decimals;   1. a) b) c) d) e) f) g) h) i) j)   Answers:  1.a) = 0.8 b) = 0.66 c) = 0.5 d) = 0.4 e) = 0.125 f) = 0.25 g) = 0.33  h) = 0.6 i) 0.166 j) 0.1428… | | | | |
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| **10** | **TOPIC**  **SUB-TOPIC** | **FRACTIONS**  **CONVERTING RECURRING DECIMALS TO FRACTIONS.**  Concepts:   * Name the fraction any letter. * Get a whole number / digit from the decimal. * Remove a decimal point. * Reduce to its lowest terms.   Examples;  Change the following into fractions.   1. 0.333… b) 2.666… c) 0.122…   Soln   1. (i) 0.333…   Let P be the fraction.  P = 0.333… (i)  (ii) x both side by 10  P x 10 = 0.333 x 10  10P = 3.333…… (ii)  (iii) Difference between (ii) and (i)  10P = 3.333…  - P = 0.333…  9P = 3.000  9P = 3  9P = 3  9 9  P =  OR  Let P be the fraction  P = 0.333…  P = 0.3  P = 0.3 x 10  1 x 10  P = 3  10  P = 3 – 0  10 - 1  P = 3  9  :. P =   1. 2.666…   Let a be the fraction.  Soln  a = 2.666…. I  x both sides by 10.  a x 10 = 2.666 x 10  10a = 26.666…. II  Difference  10a = 26.666  - a = 2.666  9a = 24.000  9a = 24  9a = 24  9 9  a =  :. a = 2   1. 0.122…   Soln  Let x be the fraction  X = 0.122…… I  X both sides by 10  X x 10 = 0.122 x 10  10x = 1.22…… II  Difference  10x = 1.222  - x = 0.122  9x = 1.100  9x = 1.1  X both sides by 10  (9 x 10) = 1.1 x 10  90x = 11  90x = 11  90 90  :. X = | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Change the following decimals to fractions 2. 0.2424… b) 0.3636…. c) 0.45 d) 0.727272…. e) 0.233 3. 0.55 g) 0.255 h) 0.133 i) 7.63 j) 9.12..   Answers:  1.a) x = b) y = c) z = d) k = e) y = f) p =  g) r = h) w = i) z = 9 j) v = 100 | | | | |
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| **11** | **TOPIC**  **SUB-TOPIC** | **FRACTIONS**  **PYTHAGORAS WITH RATIONAL AND IRRATIONAL NUMBERS.**  Concepts:   1. Rational numbers are those which can from a fraction / those which have a perfect square root. 2. Irrational numbers are those without a perfect square ie they remain with a square root sign.   Example:  Find the unknown and state whether it is rational or irrational.        Soln  a2 + b2 = c2  C2 = 4cm 2+ 3cm2  C2 = (4 x 4)cm2 + (3 x 3)cm2  C2 = 16cm2 + 9cm2  C2 = 25cm2  C2 = 25cm2  C2 = 52cm2  C = 5cm  5a is a rational N0. because it is perfect square root.    Soln  a2 + b2 = c2  h2 + cm2 = 1cm2  h2 + cm2 = 1cm2  h2 + x cm2 = 1cm2  h2 + cm2 = 1cm2  h2 + - cm2 = cm2 - cm2  h2 + 0 = -  h2 = cm2  h2 = cm2  h2 = cm2  h2 = cm2  h **=** cm  :.  is an irrational number. | | | | |
|  | **EVALUATION** | **EXERCISE**  Apply Pythagoras to see whether the value of the unknown is rational or irrational number.  h   1. 2.   2cm 4cm 5cm    1cm 1cm xcm  w  3.  cm 3cm  4.    Answers:   1. h = 3 irrational 2. x = 3cm rational 3. w = cm irrational 4. w = 32 irrational | | | | |
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| **12** | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PROPORTION)**  **PROPORTION**  **TYPES OF PROPORTION**   1. Simple / Direct proportion 2. Inverse / Indirect proportion 3. Constant proportion 4. Compound proportion   SIMPLE / DIRECT PROPORTION  Concepts:   1. We use unitary method in proportion which state that: 2. The required item must be put on the right hand side. 3. Always get what one item is equivalent to by doiong. 4. When one item increases, the other also increases but when one item decreases, the other also decreases.   Examples   1. Two books cost. Sh. 400. What is the cost of 8 such books?   Soln  Books = cost  2bks = sh. 400 (more) side work  1bk = sh. 400 (less) 400  2 x4  :. 8bks = sh. 400 x 8 (more) 1600  2  = sh. 400 x 4  = sh. 1600  OR  New N0 = New part x N0 sidework  Old part 400  = 8 x sh. 400 x4  2 1600  = 4 x sh. 400  = sh. 1600   1. Six books cost shs. 3,600. How many books can one buy with sh. 600?   Soln  Cost = Books  Sh. 3600 = 6bks  Sh. 1 = 6  Sh. 3600  :. Sh. 600 = 6 x sh. 600  Sh.3600 1  = 1 book | | | | |
|  | **EVALUATION** | **EXERCISE**   1. The cost of 4 pens is sh. 800. What is the cost of 6 pens? 2. If 5kg of sugar cost sh. 11,000. What is the cost of 8kg of sugar? 3. A car uses 6 litres of petrol to travel 30km. How many litres does it need to travel 45km? 4. A dozen of pencils cost sh. 1800. Find the cost of 9 pencils. 5. 5 metres of cloth can make 2 shirts. How many metre of cloth are needed to make 8 shirts? 6. 3 shirts cost sh. 33,000, how many shirts will one buy with sh. 22000? 7. 9 plates can cost sh. 3600. How many plates can 1 buy with 800?   Answers   1. Sh. 1200 2. Sh. 17,600 3. 225 litres 4. Sh. 1350 5. 20 metres 6. 2 shirts 7. 2 plates | | | | |
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| **13** | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PROPORTION)**  **MORE ON DIRECT PROPORTION**  Example:   1. of the books in the book shop are school text books. How many books are in the bookshop altogether if there are 240 school text books?   Soln  Fraction of text books =  Number of text books = 240  = 240 bks  2 parts = 240 bks  1 part = 240 bks  2  :. 3 parts = 240 x 3 bks  2  = (120 x 3) bks  = 360 bks  :. There are 360 bks in the book shop  OR  Let n be the number of books  of n = 240 bks  x n = 240 bks Lcm = 3  3 x x n = 240 bks x 3  2n = (240 x 3) bks  2n = 240 x 3 bks  2 2  n = 120 x 3 bks  :.n = 360 bks | | | | |
|  | **EVALUATION** | **EXERCISE**   1. of my salary is sh. 90,000. What is my salary? 2. of the pupils in the class passed the exams. If 60 pupils passed, how many pupils are in the class? 3. of the man’s salary is spent on drinks, he drinks sh. 12000 4. How much is the man’s salary? 5. What is of the man’s salary? 6. of the pupils in the class are absent, 15 pupils are present, how many pupils are in the class? 7. In a school, 18000/= is paid for lunch. This is of the total school fees in a school. What is the total school fee in a school? What is the total school fees that the school charges.   Answers:   1. Sh. 270,000 2. 80 pupils 3. a) sh. 48,000 b) sh. 4,000 4. (i) present = (ii) total = 45 pupils 5. Sh. 432,000 | | | | |
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| **14** | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PROPORTION)**  **INVERSE / INDIRECT PROPORTION**  Concepts   1. When one item increases, the other decreases but when one item decreases, the other increases. 2. Apply the unitary method.   Examples  12 men can build a classroom in 5 days.   1. How many more men are needed to do the whole 4 days?   Soln  Day = Men   1. 5 days = 12 men   1 day = (12 x 5) men  :. 4 days = 12 x 5 men  4  = 3 x 5 men  = 15 men   1. More men for 4 days   15 men  - 12 men  3 more men   1. How many days will 10 men take to do the same job?   Soln  Men = days  12men = 5days  1 man = (5 x 12) days  :. 10 men = 5 x 12 days  10  = (1 x 6) days  = 6days | | | | |
|  | **EVALUATION** | **EXERCISE**   1. 4 men take 9 days to complete a job. How long will 12 men take to finish the job at the same rate? 2. It takes 12 women to dig a shamba in 4 days. How many more days will 8 women take? 3. 25 girls can construct a road in 8 days. How many girls will construct a wad in 10 days? 4. A car which travels at a speed of 20km/hr covers a journey in 4 hrs. How long will it take to cover the journey at 16km/hr? 5. 5 men take 6 days to dig a trench. How many more days will 3 men take? 6. A Taylor makes 8 shirts a day. How long does he take to make 2 shirts?   Answers   1. 3 days 2. (i) 6 days (ii) 2 more days 3. 20 girls 4. 5hrs 5. (i) 10 days (ii) 4 more days | | | | |
|  | **REMARKS** |  | | | | |
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| **15** | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PROPORTION)**  **CONSTANT AND COMPOUND PROPORTION**   1. CONSTANT PROPORTION   Concepts:   * The change in one item doesn’t affect the other item ie all remain the same.   Example  20 eggs take 10 minutes to boil. How long will I need to boil 25 eggs.  Soln  Take common sense,  25 eggs will take the same time as 20 eggs to boil which is 10 minutes.  COMPOUND PROPORTION:  Concepts:   * More than two items / quantities used e.g   If 10 men working 4hrs can dig a farm in 5 days, how long will 6 men working 8 hrs take to do the same job?  Soln   1. First working hrs for 10 men.   Men = Hrs = Days  10 men = 4hrs = 5days  Hrs = 10 x4  = 40hrs   1. Second working hrs for 6 men   Men = Hrs  6 men = 8hrs = 6 x 8  = 48 hrs   1. Working days from 5   Working hrs = Days  40hrs = 5 days  1 hr = 5 days  40  :. 48hrs = 5 x 48 days  40  = 1 x 6 days  = 6 days | | | | |
|  | **EVALUATION** | **EXERCISE**   1. 5 people can sing a song in 10 minutes, how long will 15 men take to sing the same song? 2. 25 choir members can sing the National Anthem in 8 minutes, how many minutes will 30 members take to sing the same anthem? 3. a) 36 men working for 10hrs a day can build a house in 75 days, how many days will 60 men working for 8hrs take to build the same house?   Answers:   1. the same minutes = 10 minutes 2. the same time = 8 minutes 3. 100 days | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (RATIOS)**  **QUANTITIES AS RATIOS**  Concepts   * A ratio is a comparison of two or more numbers by division ie the first by the second. * Qualities to be compared in ratios must have the same units. * Ratios are written in their lowest terms without units.   Examples   1. What is the ratio of 20 minutes to 1 hour?   Soln  1hr = 60 minutes  = 20 min to 1hr  Fraction = 20 min  1hr  = 20 min  60 min  = 2  6  =  :. Ratio = 1:3   1. What is ratio of 20cm to 2m?   Soln  1m = 100cm  :. 2m = (2 x 100) cm  = 200cm  Fraction = 20cm  2m  = 20cm  200cm  = 20  200  = 2  20  = 1  10  :. Ratio = 1:10 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Find the ratio of the following: 2. to 3. 40m to 80m 4. 240 boys to 360 girls 5. Sh. 12,000 to sh. 10,000 6. a) 30cm to 2m   b) 240gm to 15kg  c) 14 days to 1 week  d) 40 minutes to 1hr.   1. Mary has 60 sweets and James has 20 sweets, what is the ratio of Jame’s sweets tp Mary’s sweets?   Answers   1. a) 5:6 b) 2:3 c) 1:2 d) 2:3 e) 4:5 2. a) (i) 200cm (ii) 3:20 b) (i) 15000gm (ii) 2:125   c) (i) 7 days (ii) 2:1 d) (i) 60min (ii) 2:3   1. 1:3 | | | | |
|  | **REMARKS** |  | | | | |
|  |  | **DATE** | **CLASS** | **TIME** | **SUBJECT** | **N0. OF PUPILS** |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (RATIOS)**  **INCREASE AND DECREASE**   1. **INCREASE**   Concepts   * Increase is the same as add on, raise. * Divide the big by the small part then multiply the given number.   Example;  Increase 80kg in the ratio 5:4  Soln  Big part = 5  Small part = 4  Given N0. = 80kg  New N0. = Big x N0.  Small  = x kg  = (5 x 20)kg  = 100kg\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  OR  New N0. = New : Old  5 : 4  ? : 80kg  4 parts = 80kg  1 part = 80kg  4  :. 5 parts = x  = (20 x 5)kg  = 100kg\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. DECREASE:   Concepts   * Decrease is the same as reduce on, subtract, deduct. * Divide the small by the big part then multiply the given number.   Example  Decrease sh. 20,000 in the ratio 3:5  Soln  Small part = 3  Big part = 5  Given N0. = sh. 20,000  New N0. = small x N0.  Big  = x sh.20,000  = 3 x sh. 4,000  = sh. 12,000\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  OR  New : Old  3 : 5  ? : sh. 20,000  5 parts = sh. 20,000  1 part = sh. 20,000  5  :. 3 parts = sh. 20,000 x 3  5  = sh. 4,000 x 3  = sh. 12,000\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Increase the following: 2. Sh. 1500 in the ratio 6:5 3. 630 pupils in the ratio 9:7 4. 12cm in the ratio of 4:3 5. The price of a ratio was increased in the ratio of 7:5. What is the new price of the ratio if the old price is sh. 20,000. 6. My salary was increased in the ratio of 3:2. What is my salary if the old one was sh. 240,000? 7. Decrease the following: 8. 2999 goats in the ratio of 3:5 9. Sh. 3600 in the ratio of 5:9 10. Sh. 30,000 in the ratio of 1:2 11. Mukasa had 20 oranges, if 4 of them were eaten. Find his new number of oranges if decreased in the ratio of 3:4. 12. A woman’s salary was decreased in the ratio pf 7:12. If her old salary was sh. 480,000. Find her new salary.   Answers  1. a) sh. 1800 b) 810 pupils c) 16cm  2. sh. 28,000  3. sh. 360,000  4. a) 1200 goats b) sh. 2000 c) sh. 15000  5. (i) 16 (ii) 12 oranges c) sh. 280,000 | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (RATIOS)**  **FINDING RATIO OF INCREASE AND DECREASE**   1. RATIO OF INCREASE   Concepts   * To get the ratio of increase, divided the big part by the small part.   Example  The number of pupils in a school increased from 600 to 500. In what ratio did the number increase?  Soln  New part = 800  Old part = 600  Fraction of increase = 800  600  =  =  :. Ratio of increase = 4:3\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. RATIO OF DECREASE   Concepts   * To get the ratio of decrease, divide the small part by the big part.   Example:  A man’s salary was decreased from sh. 15000 to sh. 12000. In what ratio did it decrease.  Soln  New/ small = sh. 12000  Old / big = sh. 15000  Fraction of dec = sh. 12000  Sh. 15000  = sh. 12000  Sh. 15000  = 12  15  =  :. Ratio of decrease = 4:5 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Asekenye’s earnings now is sh. 300,000, she was earning sh. 250,000. In what ratio has her salary increased? 2. Sh. 108,000 increased to 360,000/=. Find the ratio of increase. 3. In what ratio has the number of pupils increased from 24 pupils to 36 pupils? 4. Mukasa had 20 oranges, if 4 of them were eaten, in what ratio were the oranges decreased? 5. In what ratio must 24 be decreased to 20? 6. In what ratio must 30 be decreased to become 24?   Answers   1. 6:5 2. 10:3 3. 3:2 4. 4:5 5. 5:6 6. 4:5 | | | | |
|  | **REMARKS** |  | | | | |
|  |  | **DATE** | **CLASS** | **TIME** | **SUBJECT** | **N0. OF PUPILS** |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (RATIOS)**  **SHARING IN RATIOS**  Concepts   * Get the total ratio / share.   Examples  Share 18 fruits in the ratio of 4:5  Soln  Let the shares be 1st and 2nd share   |  |  |  | | --- | --- | --- | | 1st share | 2nd share | Total | | 4 | 5 | 18 |  1. Total ratio = $ + 5 = 9 parts 2. (i) 1st share = x 18   = (4 x 20) fruits  = 8 fruits\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  (ii) 2nd share = x 18  = (5 x 2) fruits  = 10 fruits\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Example II  Dan and Mike shared some money in the ratio of 3:5 respectively. Mike got sh. 3000.   1. How much money was shared? 2. How much money did Dan get?   Soln  Concepts   * Get the common share.  |  |  |  | | --- | --- | --- | | Dan | Mike | Toal | | 3 | 5 | ? | | ? | Sh. 3000 | ? |  1. (i) Common share from Mike’s share given   5 parts = sh. 3000  :. 1 part = sh. 3000  5  = sh. 600\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. (i) Dan’s share = 3 parts x sh. 600   = sh. 1800    (ii) Total amount shared = sh. 3000  + sh. 1800  Sh. 4800\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  OR   1. Let the total share be = 3 + 5   = 8 parts  Let n be the total amount  of n = 300/= Mike got.  x n = 3000/= Lcm = 8  8 x = 3000 x 8  5n = 3000 x 8  5 5  n = 600 x 8  :. n = sh. 4,800\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Example III   * A,B and C share a certain sum of money in the ratio of 2:3:5 respectively.   If C gets sh. 1500 more than A.   1. How much money was shared? 2. How much money did each get?   Soln   |  |  |  |  | | --- | --- | --- | --- | | A | B | C | Total | | 2 | 3 | 5 | ? | | ? | ? | Sh. 1500 |  |  1. (i) Parts equal to sh. 1500 from C   5 – 2 = 3 parts  (ii) Common share from C  3 parts = sh. 1500  :. 1 part = sh. 1500  3  = sh. 500   1. A’s share = 2 parts x sh. 500   = sh. 1000   1. B’s share = 3 parts x sh. 500   = sh. 1500   1. C’s share = 5 parts x sh. 500   = sh. 2500   1. Total amount share = sh. 2500   Sh. 1500  + sh. 1000  = sh. 5,000 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Share 360 in the ratio of 2:3 2. Divide 450m in the ratio of 5:4. 3. Sh. 1000 was shared between A and B in the ratio of 2:3, how much did each get? 4. A, B and C contributed money for a business, and the ratio of 3:4:5. If C contributed sh. 10,000. How much did each contribute? 5. In a village, the ratio of children to men to women is 2:4:6 respectively. If there are 640 more women than children. 6. How many children are there? 7. How many women are there? 8. How many men are there? 9. How many people are in the village altogether?   Answers   1. 1st = 144 2nd = 216 2. 1st = 250 2nd = 200 3. A’s = 400/= B’s = 600/= 4. a) Common share = sh. 2000   b) A = 6000/= c) B = 8000/= d) C = 10,000/=   1. (i) parts equal to 640 = 4 parts   (ii) Common number = 160 people  (iii) 320 children  b) 960 women  c) 640 men  d) 1920 people | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PERCENTAGES)**  **PERCENTAGES**  Concepts   * A percentage is a ratio of any given number to one hundred OR * A percentage is a fraction with a denominator one hundred. * “Percent” means out of hundred. * The original percentage is 100%.   Conversion in percentages.   1. Percentage to decimals   Concepts   * Turn to a common fraction then reduce.   Example:  Change 112% to a decimal.  Soln  Percentage = 112%  Fraction = 112  100  = 1.12  100  = 1.12   1. Percentages to fractions.   Concepts   * Convert to a common fraction then reduce.   Example  Change 12 to a fraction.  Soln  Percentage = 12 %  Fraction = (12 x 2) + 1%  2  = 24 + 1%  2  = 25%  2  = Lcm  = 25 ÷ 200  =  =     1. Percentages to ratios   Concepts  Express as a fraction then reduce.  Example  Express 33 % as a ratio.  Soln  Percentage = 33 %  Fraction = (33 x 3) + %  3  = 99 + 1%  3  = 100%  3  = 100 100  3 1  **=** 100 x 1  3 100  = 1 x 1  3 x 1  =  :. Ratio = 1:3 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Change to decimals: 2. 6% b) 15% c) 55% d) 80% e) 101% 3. Express as fractions: 4. 4% b) 30% c) 22 ½ % d) 70% e) 87 ½ % 5. Convert to ratios:   a) 2% b) 25% c) 37 ½ % d) 130% e) 66 %  Answers   1. a) 0.06 b) 0.15 c) 0.55 d) 1.01 e) 1.01 2. a) ½ 5 b) c) d) e) 3. a) 1:20 b) 1:4 c) 3:8 d) 13:10 e) 2:3 | | | | |
|  | **REMARKS** |  | | | | |
|  |  | **DATE** | **CLASS** | **TIME** | **SUBJECT** | **N0. OF PUPILS** |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PERCENTAGES)**  **CONVERTING TO PERCENTAGES**  a) DECIMAL TO PERCENTAGES  concepts   * Convert to common fraction then multiply by 100.   Example  Express 0.115 as a percentage  Soln  Decimal = 0.115  Fraction = 115  100  Percentage = 115 x 100%  100  = 11.5%   1. FRACTIONS TO PERCENTAGES:   Concepts  Multiply the fraction by 100%  Example  Express 1 as a percentage.  Soln  Fraction = 1  =  Percentage = x 100%  = (7 x 25)%  = 175%   1. RATIOS TO PERCENTAGES:   Concepts   * Convert to common fractions then multiply by 100%   Example  Write as a percentage  Soln  Ratio =  Fraction =  =  Percentage = ( ) x 100  = 3 x 25  = 75% | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Convert each of the following to percentages;   1.a) 0.03 b) 2.3 c) 0.35 d) 0.125 e) 2.04   1. a) b) c) 1 ½ d) 4 ¼ e) 2. a) 1:2 b) 3:5 c) 3:1 d)   answers   1. a) 3% b) 250% c) 35% d) 12.5% e) 204% 2. a) 33% b) 20% c) 150% d) 225% e) 6 ¼ % 3. a) 50% b) 60% c) 300% d) 60% e) 35% | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PERCENTAGES)**   1. **REMAINING PERCENTAGES**   Concepts   * Form an equation and solve   Example  80% of the cars in Uganda are white in colour, what percentage of the cars is not white?  Soln  Let P be cars not white  P + 80% = 100%  P + 80% - 80% = 100% - 80%  P + 0 = 20%  :. P = 20%  :. 20% is the percentage for cares which are not white   1. **EXPRESSING QUANTITIES AS PERCENTAGES**   Concepts   * Form a fraction then multiply by 100%.   Example  Express 30gm as a percentage of 4kg.  Soln  1kg = 1000kg  :. 4kg = (4 x 1000)kg  = 4000kg  Fraction = 30gm  4kg  = 30gm  4000gm  Percentage = 30gm x 100%  4000gm  = 30 x 100%  4000  = % | | | | |
|  | **EVALUATION** | **EXERCISE**   1. a) 15% of the people in a class are absent. What is the percentage present?   b) A man spends 35% of his salary, what percentage does he save?  c) 60% of the villagers are adults, x% are children and 25% are women. What percentage are children?  d) 10% of the books on the bookshelf are English, 48% are Science books, 27% are SST books. What percentage are the rest?   1. a) Find 10% of sh. 240.   b) What is 33% of 810.  c) Work out 18% of 4400.  d) A math test was marked out of 25. If Okoti got 72%. What was his original mark?   1. a) Express 20gm as a percentage of 1kg.   b) What 30cm as a percentage of 3m?  c) Write 14 days as a percentage of 2 weeks.  d) Express 120m as a percentage of 4km.  Answers   1. a) 85% b) 65% c) 15% d) 15% 2. a) 24 b) 27000 c) 792 d) 18 marks 3. a) (i) 1000kgm (ii) 2%   b) (i) 300cm (ii) 10%  c) (i) 14 days (ii) 100%  d) (i) 4000m (ii) 3% | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PERCENTAGES)**   1. **FINDING ORIGINAL**   Concepts   * Summarize the statement   Example  If 20% a number is 40. What is the number?  Soln  Let n be the number.  20% of n = 40  20 x n = 40  100  n = 40 Lcm = 5  5  5 x n = 40 x 5  5  n = 40 x 5  :. n = 200  OR  Since 20% of a N0. = 40  1% of a N0. = 40  20  :. 100% of a N0. = 40 x 100  20  = 20 x 10  = 200  :. The number is 200.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. If 30% of my salary is spent on food and I save sh. 21000. What is my salary?   Soln   |  |  |  | | --- | --- | --- | | Food | Savings | Total | | 30% | ? | 100% | | ? | Sh. 21000 | ? |  1. Percentage equal to sh. 21000 for savings   Savings = 100%  - 30%  70%   1. Let m be my salary.   70% of m = sh. 21000 saved  70 x m = sh. 21000  100  7m = sh. 21000 Lcm = 10  10  10 x 7m = sh. 21000 x 10  10  7m = sh. 21000 x 10  7 7  M = sh. 3000 x 10  :. M = sh. 30,000   1. In a school there are 20% more boys than girls. If the number of girls was 280. What is the total number of pupils in a school?   Soln  Let P be the percentage for girls   |  |  |  | | --- | --- | --- | | Boys | Girls | Total | | P + 20% | P | 100 | | ? | 280 | ? |  1. Value of P   P + 20% + P = 100%  P + P + 20% = 100%  2p + 20% - 20% = 100% - 20%  2p + 0 = 80%  2p = 80%  2 2  :. P = 40%  Girls = 40%   1. Let n be the total number of pupils   40% of n = 280  40 x n = 280  100 1  2n = 280 Lcm = 5  5  5 x 2n = 280 x 5  5  2n = 280 x 5  2 2  n = 140 x 5  :. n = 700 pupils  OR   * Total percentage for boys and girls = 100% * Percentage for only boys = 20% * Equal percentage for boys and girls = 100%   - 20%  80%   * Percentage for only girls = 80   2  = 40%  Girls = 40%  40% = 280  1% = 280  40  :. 100% = 280 x 100  40  = 7 x 100  = 700 pupils  :. There are 700 pupils in a school. | | | | |
|  | **EVALUATION** | **EXERCISE**   1. a) If 10% of a number is 48. Find the N0.   b) Given that 120% of a number is 288. What is the number?  c) There are 40 pupils in the class. If 15% are absent. How many pupils are present?  d) 20% of a number is 40, what is 60% of the same number?   1. a) After spending 40% of his money, he had sh. 1800 left. How had he originally?   b) After walking 20% of the journey, Joogo still had 60km to go. How long was the journey?   1. a) In a class there are 10% more boys than girls. If there are 18 girls in the class 2. Find the percentage of girls. 3. Find the percentage of boys. 4. How many pupils are in the class altogether?   b) Rose, Mary and Robert shared a certain amount of money; Rose got X%, if Mary got twice as much as Rose and Robert got 16%more than Rose. If Robert got sh. 7400.  a) Find the value of x.  b) Calculate what each person got.  c) How much money did they share?  Answers   1. a) 480 b) 240 c) 340 d) 120 2. a) (i) 60% (ii) sh. 3000 b) (i) 80% (ii) 75km 3. a) (i) 45% (ii) 55% (iii) 40 pupils   b) (i) X = 21% (ii) Rose = 4200/= (iii) Mary = 8400/= (iv) Robert = 7400/=  c) Total = 20,000/= | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PERCENTAGES)**  **INCREASE AND DECREASE**   1. INCREASE   Concepts   * Get the increment then all to the old number. OR * Get the new percentage then multiply by the old number.   Examples   1. Increase sh. 800 by 20%   Soln   1. Increment = 20% of sh. 800   = 20 x sh. 800  100 1  = 20 x sh. 8  = sh. 160   1. New N0. = sh. 800   + sh. 160  = sh. 960   1. Increase sh. 4800 by 10% and then by 20%   Soln   1. New percentage = 100% + 10%   = 110%   1. New N0. = 110 x sh. 4800   100  = 110 x sh. 48  = sh. 5280   1. New percentage = 100% + 20%   = 120%   1. New N0. = 120 x sh. 5200   100  = 12 x sh. 528  = sh. 6336   1. DECREASE:   Concepts   * Get the new percentage then multiply by old number. * Example   Decrease sh. 1200 by 15%  Soln   1. New percentage = 100%   - 015%  = 85%   1. New N0. = 85% of sh. 1200   = 85 x sh. 1200  100 1  = 85 x sh. 12  = sh. 1020  and by 20% OR  new percentages = (100 – 15) and (100 – 20)  = 85% and 80%  New N0. = ( x ) x sh. 1200  = 17 x 4 x 12/=  = 68 x 12/=  = 816/= | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Decrease 240 by 25% 2. Decrease 400 by 12 ½ %. 3. A man’s salary was sh. 180,000. If it was reduced by 30%, calculate his new salary. 4. Reduce 700kg by 35%. 5. Decrease 1000 by 10% then by 20% 6. a) A man’s salary was increased by 24%. He used to earn sh. 46,000. Calculate his new salary.   b) The price of the ratio was increased by 30% from sh. 90,000. What is the new price of the ratio?  c) Increase 360 by 20%.  d) Increase 720 by 10% then by 25%.  e) Increase 800 by 12 ½ %  Answers   1. 180 2. 350 3. Sh. 126,000 4. 455kg 5. 720 6. 570,400/= 7. 112,000/= 8. 432 9. 990 10. 900 | | | | |
|  | **RREMARKS** |  | | | | |
|  |  | **DATE** | **CLASS** | **TIME** | **SUBJECT** | **N0. OF PUPILS** |
|  | **P.7** |  | **MTC** |  |
|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PERCENTAGES)**  **ORIGINAL AFTER DECREASE AND INCREASE**  Examples   1. What amount of money when increased by 20% becomes sh. 1440?   Soln   1. New percentage = 100   + 020  120%   1. Let n be the money of money   Soln  120% of n = sh. 1440  120 x n = sh. 1440  100  5n = sh.1440 Lcm = 5  5  5 x 6n = sh. 1440 x 5  5  6n = sh. 1440 x 5  6 6  n = sh. 240 x 5  :. n = sh. 1200   1. If a man’s salary is decreased by 35%, it becomes sh. 1560. What is his old salary?   Soln   1. New percentage = 100   - 35  = 65%   1. 65% of a N0. = sh. 1560   1% of a N0. = sh. 1560  65  :. 100% of a N0. = sh. 1560 x 100  65  = sh. 120 x 20  = sh. 2,400 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. What number when increased; 2. By 20% becomes 720? 3. By 20% becomes 1200? 4. a) My salary of 77,000/= was increased by 10%. What is my new salary?   b) What sum of money when decreased by 20% becomes sh. 10800?  c) What number when decreased by 20% becomes 720?  Answers   1. a) (i) 120% (ii) 600 b) (i) 120% (ii) 1000 c) (i) (ii) 2. a) (i) 115% (ii) 70,000/= b) (i) 80% (ii) sh. 13,500 c) (i) 80% (ii) 900 | | | | |
|  | **REMARKS** |  | | | | |
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|  | **P.7** |  | **MTC** |  |
|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PERCENTAGES)**  **PERCENTAGE INCREASE AND DECREASE**  Concepts   1. Get the increase / decrease.   Examples   1. When 144 porters are increased by X%, they become 168. Find the percentage increase/value of x.   Soln   1. Increase = New – old   = 168  -144  = 24 porters   1. Percentage increase = Increase x 100   Old N0.  X = 24 x 100  144 1  = 20%  3  :. X = 16 %   1. When 240 is decreased it becomes 192. Calculate the percentage decrease.   Soln   1. Decrease = Old – New   = 2410  - 192  = 48   1. Percentage decrease = Decrease x 100%   Old  = 48 x 100%  240  = 2 x 10  = 20% | | | | |
|  | **EVALUATION** | **EXERCISE**   1. When 1000 is decreased by x%, it becomes 900. Find the value of x. 2. By what percentage will 480 be increased to become 540? 3. After decreasing 630 by a certain percentage, it becomes 431. Find the percentage decrease. 4. When the price of 24,000/= of a shirt is increased by P% it becomes 25,920/=. What is the percentage increase? 5. A man’s salary was 18,000/=, he was given a deduction of a certain percentage to 15,300/=. Find the percentage deduction of the man’s salary.   Answers   1. a) 100 (b) x = 10% 2. a) 60 (b) 12 ½ % 3. a) 199 (b) 31 % 4. a) 1920/= (b) P = 8 5. a) 27,000/= (b) 15% | | | | |
|  | **REMARKS** |  | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PERCENTAGES)**  **PROFIT AND LOSS**   1. (i) Profit is realized when you buy an article and sell at a price higher than you bought it or profits is an increase on the cost price ie profit = S.P - C.P. 2. Percentage profit is the ratio of profit to the buying price multiplied by 100% ie percentage profit = Profit x 100   B  N.B P – P is calculated on the cost price.  Example  An article was bought at sh. 100,000 and later sold at sh. 120,000. Calculate the percentage profit.  Soln   1. Profit = sh. 120,000 – sh. 100,000   = sh. 120,000  - sh. 100,000  Sh. 20,000   1. Percentage profit = sh. 20,000 x 100%   Sh. 100,000  = 20%   1. Loss is realized when you buy an article and sell it at a price lower than you bought it. Loss is a decrease on the C.P ie Loss = B.P - S.P  * Percentage loss is the ratio of loss to the buying price times one hundred.   NB. P.L is calculated on the C.P  Example.  I bought a house at Ush. dollars 120,000 and sold it at Ush. Dollars 100,000. Calculate my percentage loss.  Soln   1. Loss = B.P - sh.   = sh. 120,000  = sh. 100,000  = sh. 20,000   1. Percentage loss = Loss x 100%   BP  = sh. 20,000 x 100%  120,000  = 2 x 100%  12  = 50%  3  = 16% | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Amito bought a pen at sh. 500 and sold it at sh. 700. What was her profit percent? 2. Kasule sold a shirt at 15,000/= which he bought at 12,000/=. What was his percentage profit? 3. Calculate the percentage loss if the cost price and selling price of an article are; 4. Cost price sh. 5800/= and selling price 500/=. 5. Cost price sh. 100,000 and selling price sh. 90,000. 6. Cost price sh. 42,000 and selling price sh. 30,000. 7. Ziporah sold a school bag which she bought at sh. 10,000 with a profit of sh. 2000. Calculate the percentage gain.   Answers   1. a) 200/= b) 40% 2. a) 3000/= b) 25% 3. a) (i) 800/= (ii) 13%   b)(i) 10,000/= (ii) 10%  c) (i) 12,0 00/= (ii) 28 %   1. a) (b) 25% | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PERCENTAGES)**  **FINDING THE COST PRICE / S.P**  Concepts   * Get new percentage.   Examples   1. After selling an article at sh. 21,000, a trader made a profit of 20%, calculate the cost / buying price of an article hence get the profit.   Soln  Profit is calculated on the C.P   1. General formular.   S.P = New percentage x C.P / B.P  New percentage = 100%  + 20%  120%  S.P = sh. 21,000 (OR simpler C.P = (100) x SP  C.P = ? New%  Profit = 120%  SP = New percentage x CP  Sh. 21,000 = 120% of CP  Sh. 21,000 = 120 x CP  100  Sh. 21,000 x 6CP Lcm = 5  5  Sh. 21,000 x 5 = 6Cp x 5  5  Sh. 21,000 x 5 = 6CP  6 6  Sh. 3500 x 5 = Cp  Sh. 17,500 = CP  :. Cost price = sh. 17,500   1. Profit = Given percentage x CP   = 20% x sh. 17,500  = 20 x sh. 17500  20  = 20 x sh. 175  = sh. 3,500   1. Robert bought a car at sh. 3,000,000. He sold it to Peter at a profit of 10%. Peter also decided to sell it to James at a loss of 20%. How much money did James pay for the car?   Soln  SP for Robert = BP for Peter = sh?  BP for Robert = sh. 3,000,000  New percentage = 100%  + 10%  110%   1. SP = New percentage x BP   = 110% of sh. 3,000,000  = 110 x sh. 3,000,000  100  = 110 x sh. 30,000  = sh. 3,300,000   1. BP for Peter = sh. 3,300,000   New percentage = 100%  - 020%  = 80%  SP = New percentage x CP  = 90 x sh. 3,300,000  100  = 90 x sh. 33,000  = sh. 2,640,000  SP for Peter = BP for James  :. James bought a car at sh. 2,640,000 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. After selling a book at sh. 2,200, a boy made = profit of 10%. Calculate his cost price. 2. By selling a shirt for sh. 45,000 a dealer made a loss of 12 ½ %. Find the cost price. 3. A trader offers an article for sh. 12,000 thus making a profit of 20%. Calculate the cost price. 4. A trader bought a set of chairs at sh. 60,000, he sold it later making a loss of 33%. Calculate the selling price. 5. Inne bought a dress show at sh. 12,000 and sold it to Josephine at a profit of 20%. Josephine also later sold it to Deborah at a profit of 10%. Calculate the amount Deborah paid for the dress. 6. Felix bought a ball at sh. 80,000 and sold it to Jude at a loss of 30%, Jude decided to sell it to Isaac at a profit of 20%. How much did Isaac pay for the ball?   Answers   1. BP = sh. 2,000 2. BP = sh. 40,000 3. BP = sh. 10000 4. SP = sh. 40,000 5. (a) SP = sh. 14,400   (b) SP = sh. 15,840   1. a) SP = sh. 56,000   (b) SP = sh. 67,200 | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PERCENTAGES)**  **MORE ABOUT PERCENTAGE PROFIT AND LOSS**  Examples   1. A book seller bought 30 books at sh. 24,000. At what price did he sell each book? If he made a loss of 20%?   Soln   1. Loss = Given percentage x BP   = 20 x sh. 24,000  100  = sh. 20 x 240  = sh. 4800   1. SP for 30 books = BP for 30 books – Loss   = sh. 24,000  - sh. 04800  = sh. 19,200   1. SP for 1 book = SP for 30 bks   N0. Of bks  = sh. 19,200  30  = sh. 640   1. The cost price of a 50kg bag of sugar is sh. 45,000. At what price must one sell each kilogram in order to make a profit of 20%?   Soln   1. SP for 50kg = New percentage x BP   = 100%  + 20%  120%  SP = New% x CP  = 120 x sh. 45,000  100  = 120 x sh. 450  = sh. 54,000   1. SP for 1kg = SP for 50kg   N0. Of kg  = sh. 54,000  50  = sh. 1080 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. The cost price of 100kg bag of rice is sh. 80,000. At what price must I sell each kilo in order to get a profit of 30%? 2. A book seller bought 40 books of MK MTC at sh. 200,000. At what price must he sell each copy to get a profit of 15%. 3. Norah bought a 15kg goat at sh. 30,000. She sold each kg at x/= and made a profit of 15%. Find the value x. 4. Ocen bought a radio at sh. 25,000, he sold it and made a loss of 10%. 5. Calculate his selling price. 6. At what price must he sell in order to gain 15%? 7. Byaruhanga bought a 72kg sack of irish potatoes at sh. 40,000. He sold the potatoes in kg making a loss of 10%. 8. At what price was he selling each kg? 9. What would be his profit percent if he had sold the whole sack at sh. 45,000.   Answers   1. a) SP 4 100kg = sh. 104,000   b) Sp 4 1kg = sh. 1040   1. a) SP 4 40bks = sh. 230,000   b) SP 4 1bk = sh. 5,750   1. a) SP 4 15kg = sh. 34,500   b) (i) Sp 4 ikg (x) = sh. 2,300  4. a) SP 4 a radio = sh. 22,500  b) (i) SP 4 again of 15% = sh. 28,750  5. a) (i) SP 4 72kg = sh. 36,000  (ii) SP 4 1kg kg = sh. 500  b) PP = 12 ½ % | | | | |
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|  | **TOPIC**  **SUBTOPIC** | **FRACTIONS / PERCENTAGES**  **MORE APPLICATION OF PROFIT**  Concepts  Get the SP and BP then equate to the profit.  Example   1. I buy 30 eggs at sh. 60 each, x eggs are bad, I sell the rest at sh. 100 each and made a profit of sh. 700. How many eggs are bad?   Soln  Total = 30 eggs  BP for each egg = sh. 60   1. BP for 30 eggs = sh. 30 x 60   = sh. 300  x 6  = sh. 1,800   1. Good eggs = (30 – x) eggs 2. Sp for good / rest = sh. 100 (30 – x)   = sh. (3000 – 100x)  Profit = S.P - B.P  Sh. 700 = sh. 3000 – 100x – sh. 1800  Sh. 700 = sh. 3000 – 1800 – 100x  Sh. 700 = sh. 1200 – 100x  Sh. 700 – 700 + 100x = sh. 1200 – 100 x + 100x  0 + 100x = sh. 500 – 0  100x = sh. 500  100x = sh. 500  100 100  X = 5 eggs  :. 5 eggs are bad. | | | | |
|  | **EVALUATION** | **EXERCISE**   1. I buy 10 bottles of soda at sh. 250 each. If x bottles were broken, I sell the rest at sh. 450 each and made 9 profit of 1100/=. Find x. 2. A trader bought 20 pineapples at sh. 200 each, but x pineapples got spoiled. He sold the rest at sh. 300 each making a profit of sh. 800. Calculate the value of x. 3. Mrs. Musoke bought 30 eggs at 90/= each, but some eggs got broken, she sold the rest at 120/= making a profit of sh. 180. How many eggs got broken?   Answers   1. (i) B.P = 2500/=   (ii) S.P = sh. (4500 – 450 x)  (iii) X = 2 bottles   1. (i) B.P = sh. 4000   (ii) S.P = sh. (6000 – 300 x)  (iii) x = 4 pineapples   1. (i) B.P = sh. 2700   (ii) S.P = sh. (3600 – 120 x)  (iii) k = 6 eggs | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PERCENTAGES)**  **DISCOUNT**  Concepts   1. Discount is when the trader sells an article at a price less than the marked price. 2. Marked price is the price written / amount written on an article.   Examples   1. The marked price of a shirt was sh. 1500. After a discount, the customer paid sh. 1200. How much was the discount?   Soln  Discount = marked price – cash price  = sh. 1500  - Sh. 1200  :. Discount = sh. 300   1. The marked price of a bicycle is sh. 60,000, a customer is offered a discount of 15% for cash. How much money does the customer pay?   Soln  Cash price = marked price – discount   1. Discount = 15% of M.P   = 15 x sh. 60,000  100  = 15 x sh. 600  = sh. 9000   1. Cash price = sh. 60,000   - sh. 9000  = sh. 51,000  OR   1. Discount % = 100%   - 15%  85%   1. Cash price = New% x M.P   = 85 x sh. 60,000  100  = 85 x sh. 600  = sh. 8500 x 6  = sh. 51,000   1. The marked price of a basin is sh. 1500. Gift paid sh. 1200 after being given a discount. What was her percentage discount.   Soln   1. Discount = M.P - C.P   = sh. 1500  - sh. 1200  = sh. 300   1. Percentage discount = Discount x 100%   MP  = sh. 300 x 100%  Sh. 1500 1  = 20%   1. Cissy paid sh. 18,000 for a hand bag after being given a discount of 10%. Calculate the marked price for the bag.   Soln   1. New percentage = 900%   - 10%  90%   1. Let m be the marked price.   90% of m = sh. 18,000  90 x m = sh. 18,000  100  9m = sh. 18,000 Lcm = 10  10  16 x 9m = sh. 18,000 x 10  10  9m = sh. 180,000  9m = sh. 180,000  9 9  :. M = sh. 20,000  :. The cash price was sh. 20,000 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. The marked price of a book is 4000/=. If a customer was given a 10% discount. 2. How much is the discount? 3. How much money does the customer pay? 4. A trader gives a discount of 10% for cash. Calculate the cash price if the marked price of all articles is 130,000/=. 5. Joseph paid sh. 8,500,000 for a car after being given a discount of 15%. What was the price of the car before the discount? 6. A man paid 28,000/= for an article whose marked price was sh. 32,000. Calculate the percentage discount. 7. The marked price of a shirt is sh. 11,000, a watch is sh. 15,000, a pair of shoes is 35,000. A customer who paid cash was given a discount of 10% on a shirt, 20% on a watch and 15% on a pair of shoes. 8. Calculate the total discount given to the customer. 9. How much did the customer pay for all the items?   **Answers**   1. a) 400/= b) 3600/= 2. a) 1300/= b) 117000/= 3. a) PD = 85% b) MP = 10,000,000/= 4. a) D = 4000/= b) PD = 12 ½ % 5. a) Total discount = sh. 9350/= b) Total cash price = sh. 51650 | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PERCENTAGES)**  **COMMISSION**  Concepts   1. A commission is the money paid to people who sell other people’s goods. 2. People who sell other people’s goods are called salesmen / sales agents / sales representatives.   Examples   1. A sales man was paid a salary of sh. 10,000 pens and a commission of 105 of the value of goods he sold with sh. 6500. How much did he earn altogether?   Soln   1. His commission = 10 x sh. 6500   100 1  = 10 x sh. 65  = sh. 650   1. Total earning = commission + salary   = sh. 10,000  + sh. 00650  Sh. 10,650   1. Khaitsa was given a commission of 3% of his sales. How much commission did she earn if she sold 80 toys at sh. 15,000 each.   Soln   1. Total earning from 80 toys = sh. 150,000   x8  = sh. 1,200,000   1. Her commission = 3% of the total sales   = 3 x sh. 1,200,000  100  = 3 x sh. 12,000  = sh. 36,000 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. A sales man is paid a commission of 6% of his sales. Calculate his commission if he sold goods with sh. 18,000. 2. Jane was paid sh. 400 for every sh. 8000 the sells. What is the percentage commission? 3. A trader employs 5 salesmen at commission if they sell goods worth sh. 800,000. How much does each salesman get? 4. A sales woman is given 60 bunches of matooke to sell at sh. 2,000 each, calculate his total pay if she is given a commission of 9% plus lunch of sh. 1800. 5. Hanifah was paid a salary of sh. 12,000 plus a commission of 5% on the goods sold she was given a total package of sh. 20,000. What was the total value of the goods?   Answers   1. C = sh. 1080 2. PC = 5% 3. A salesman = sh. 40,000 4. a) Total sales = sh. 120,000   b) Commission = 10,800/=  c) Total pay = 12,600/=   1. a) Commission = 8,000/=   b) Value = 160,000/= | | | | |
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|  | **TOPIC**  **SUB-TOPIC** | **FRACTIONS (PERCENTAGES)**  **SIMPLE INTEREST**  Concepts   1. principal (P) - money borrowed / deposited / kept in the bank. 2. Rate ® U – percentage charged every year. 3. Time (T) - period in years the borrowed / kept / deposited money spends. 4. Simple interest (S.T) - extra payment / money after using the borrowed / kept / deposited. 5. Amount (A) – total money paid back together with simple interest.   Examples  A man deposited sh. 40,000 for 5yrs at a rate of sh. 2 ½ 5 per year. Calculate the amount will get.  Soln   1. Amount = S.I + Principal   S.I = P x R x T  = sh. 40,000 x 2 ½ % x 5yrs  = sh. 40,000 x % x 5 yrs  = sh. 40,000 x x 5yrs  = sh. 40,000 x x x yrs  = sh. 200 x 25 yrs  = sh. 5,000   1. Amount = P + S.I   = sh. 40,000  + sh. 05,000  = sh. 45,000 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. What is the simple interest on sh. 2000 after 2yrs at 6% per year? 2. Calculate the amount on sh. 40,000 after 9 months at 15% per year? 3. A lady borrowed sh. 80,000 for 6 month at 5% per year. What is the simple interest? 4. Mrs. Kabawo borrowed sh. 110,000 for 4yrs at 2% per annum. How much interest did he pay? 5. What will sh. 8000 amount to in 3yrs at 4% interest per year? 6. Atim bought a house of sh. 200,000. She had sh. 150,000 of her own and she borrowed the rest at a 20% interest for 3yrs. 7. How much interest must she pay back? 8. Calculate the total amount the house cost her.   Answers   1. 240/= 2. a) S.I = 4,500/ b) Amount = 44,500/= 3. S.I = 2,000/= 4. S.I = 12,100/= 5. a) S.I = 960/= b) A = 8,960/= 6. a) Borrowed = 50,000/=   b) S.I = 30,000/= c) A = 50,000/= | | | | |
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| **34** | **TOPIC**  **SUB-TOPIC** | **FRACTIONS / PERCENTAGES**  **MORE ABOUT SIMPLE INTEREST**  **Examples**   1. Rose deposited 50,000/= on a bank, at the end of the 3 years, the S.I earned was 15,000/=. Calculate the rate of interest.   **Soln**  Rate = S.I x 100  P x T  = 15,000 x 100  50,000 x 3  :. Rate = 10%   1. What sum of money will yield an interest of sh. 600 at 5% for 3 yrs.   Soln  P = ST x 100  R x T  = 600 x 100  5 3  = 40 x 100  :. Principal = sh. 4,000   1. In what time will sh. 12,000 yield an interest of sh. 1800 at 5% per year?   Soln  Time = ST  P x R  = 1800  12000 x 5  = 1800  120 x 5  = 3years | | | | |
|  | **EVALUATION** | **EXERCISE**   1. a) Mary had sh. 18,000 on the savings account. She earned sh. 1080 in 2 yrs. Find the rate of interest.   b) Calculate the SI rate if the interest on sh. 20,000 borrowed for 2yrs is 1000/=.   1. a) Calculate the principal that yields 24,000/= for 8 months at 15% p.a.   b) What principal can yield 4,000/= at 2% p.a for 5 yrs?   1. a) In what time will 40,000/= yield SI of 4,000/= at 2% p.a?   b) Calculate the time sh. 8000 can yield an interest of 1600/= at 10% p.a.  Answers   1. a) Rate = 3% b) Rate = 2 ½ % 2. a) P = sh. 240,000 b) P = 40,000/= 3. a) T = 5yrs b) T = 2yrs | | | | |

**INTEGERS**

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|  | **TOPIC**  **SUB-TOPIC** | | | **INTEGERS**  **REVISION ON OPPOSITES:**  Concepts:  1. Every integer has its opposite (inverse).  2. Opposite of a positive integer is a negative integer.  Examples  Give the opposite of the following illustrate with a diagram.  a) – 4  b) + m  Soln  a) Opposite of – 4 = + 4\_\_\_  b) Opposite of + m = - M\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **EVALUATION** | | | **EXERCISE**  State the opposite integers of each of the following integers:  1. -5 3) - 7 5) + K 7) + 30 9) - M  2. +10 4) - 12 6) - X 8) - 4P 10) + 100. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | **USE OF ADDITIVE INVERSE**  Concepts:  a) To get the additive inverse, add its opposite e.g.  Workout – 9 using the additive inverse.  Soln.  -9 using = - 9 + (+ 9)  = - 9 (++) 9  = - 9 + 9  = 9 – 9  = 0\_\_\_\_\_\_\_\_\_\_\_  **EXERCISE:**  Simplify the following using their additive inverses.  1. – 12 3) - 12 5) - n 7) - 5 9) - 6  2. – P 4) - 90 6) - 30m 8) - 200 10) - 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **REMARKS** | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **INTEGERS:**  **ADDITION OF OPPOSITES**  Concepts  1. Multiplication of similar signs give a positive while different signs give a negative.  2. An integer added to its opposite gives zero.  Examples:  1. Work out the following:  a) - 5 + + 5  b) + y + - y  Soln.  -5 + +5 =  -5 (+ +) 5  = - 5 + 5  = 5 – 5  = 0  Soln.  + y + - Y = +y (+ -)y  = +y - y  = 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **EVALUATION** | | | **EXERCISE:**  Add the following integers:  1. +7 + -7 3) +m + -m 5) +13 + - 13 7) 14 + -14 9) -3y + +3y  2. -10 + +10 4) -9 + +9 6) -3x + +3x 8) 50 + -50 10) -1 + +1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **REMARKS** | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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|  | | | **TOPIC**  **SUB-TOPIC** | **INTEGERS**  **REVISION OF INTEGERS SHOWN ON ARROWS:**  Concepts:  1. An arrow pointing to the right is a positive arrow.  2. An arrow pointing to the left is a negative arrow.  3. To get an integer on the arrow, count the steps moved.  Examples  State the integers shown by the arrows below.  x    -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9  Y  Z    Soln  Arrow X = -8  Y = +12  Z = - 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **EVALUATION** | | | | Exercise  Give the integers represented by each arrow below.  i  a f  c  -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9  b e  d  h g  j  Answers  a) = +2 c) =  −4 e) = +4 g) = +5 i) =  −9  b) = −4 d) =  −3 f) =  −12 h) =  −5 j) = +17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **4.** | | | **TOPIC**  **SUB-TOPIC** | **INTEGERS**  **REVISION ON COMPARING INTEGERS using symbols**  Concepts:  1. All positives are greater than all negatives.  2. On a number line, any integer to the right is greater than that on its left.  Examples  Compare the following:  a) -9 \_\_\_\_\_\_\_ +2  b) -7 \_\_\_\_\_\_\_\_\_ -2  soln  -9 \_\_\_\_\_\_\_ +2  -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7  :. -9 < +2  -7 \_\_\_\_\_\_\_ -2  -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9  Ascending order = {-6, -3, -2, 0, 1, 3}. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | |  | EXERCISE:  1. Use > , < or = to complete the following  a) +2 \_\_\_\_\_\_ -2 c) -5 \_\_\_\_\_\_ +3 e) -3 \_\_\_\_\_\_\_\_ -3  b) 4 \_\_\_\_\_\_\_ 0 d) -4 \_\_\_\_\_ 0  Answers  a) +2 > -2 c) -5 < +3 e) -3 = -3  b) 4 > 0 d) -4 < 0  2. Arrange the following as instructed.   1. {-5, 0, 5, 3, -3, 2, -2, 1, -1} in descending way. 2. {-2, 0, 1, 3, -1, -3, 4, 5, -6} in ascending way. 3. {-1, 0, 1, 2, -2, 3, -3, 4, -4} in ascending way. 4. {1, 0, 2, 3, 4, 5, 7} in descending way. 5. {-2, -1, -4, -3, 0, -5} in ascending way.   Answers:  a) {5, 3, 2, 0, 1, -1, -2, -3, -5}.  b) {-6, -3, -2, -1, 0, 1, 2, 3, 4}  c) {-4, -3, -2, -1, 0, -1, 0, 1, 2, 3, 4}  d) {7, 5, 4, 3, 2, 1, 0}.  e) {-5, -4, -3, -2, -1, 0} | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **5** | | | **TOPIC**  **SUB-TOPIC** | **INTEGERS**  **REVISION ON MULTIPLICATION OF INTEGERS.**  Concepts:  a) Multiplication of similar signs give a positive while different signs give a negative.  Examples  Work out:   1. +3 x +3 3. -2 x +3 2. -4 x -3   Soln   1. +3 x +3 = 3 x 3   = 9\_\_   1. -4 x -3 = (-4 x -3)   = +12\_\_   1. -2 x +3 = -2 x +3   = -6\_\_\_\_  2. Work out using a number line:  (i). 3 x 2  (ii). -2 x 4  Soln  (i) 3 x 2 = means 3 laps of 2 steps.  1st (+2)  2nd (+2) 3rd (+2)  -2 -1 0 1 2 3 4 5 6 7  :. 3 x 2 = 6  (ii) -2 x 4 = Re-arrange  = 4 x -2 4 laps of -2 steps from 0.( 4 laps of **-**2).  -2  -2 -2  -2  -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5  :. -2 x 4 = -8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | **EVALUATION** | 1. Multi Exercise  1. Multiply without using a number line.  a) 3 x 3 c) -5 x -4 e) -4 x -8 g) -4 x 0  b) 8 x -3 d) -10 x 3 f) 3 x 9 h) +6 x -5  Answers   1. 9 c) 20 e) 32 g) 0 2. -24 d) -30 f) 27 h) -30   2. Work out using a number line.  a) 2 x 3 c) 5 x -3 e) -4 x +2  b) -3 x 4 d) -5 x 2  Answers:  a) 6 c) -15 e) -8  b) -2 d) -10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | **REMARKS** |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **6** | | | **TOPIC**  **SUB-TOPIC** | **INTEGERS**  **REVISION ON ADDITION AND SUBTRACTION**  Concepts  1. Addition:  a) Your face is a positive while your back is a negative.  b) Addition means moving to the positive direction moving to the direction you want is a positive (right).  Examples  i. Workout the following:-  a) +5 + +3  soln  +5 + +3 = +5 (++)3  = +5 + 3  = 5 + 3  :. +5 + +3 = 8  **OR**  +5 + +3 = +5 (++)3  = +5 + 3  **+3**  **D:\CORNERSTONE 2015\all drawings others\numberline 3.PNG +5**  **+8**  2. Subtraction  a) Your back is a negative while your face is a positive.  b) Backwards is a negative while forwards is a positive.  c) Subtraction means moving to the negative direction (left).  d) Subtraction of integers is the same as adding the opposite of second to the first.  Examples  Work out  a) +5 - +6  b) +4 - -3  soln +5 - +6  a) +5 - +6 = +5(-+)6 opposite of +6 = -6  = +5 – 6 +5(+ -)6  = -1 +5 - 6 = -1    OR  +5 - +6  K -6  +5  -2 -1 0 + 1 +2 + 3 +4 + 5  -1  :. +5 - +6 = -1  **OR**  +5 - +6 = +5 (- +)6  = 5 - 6  = -ve +ve  + + + + + +  + + - + +  -1 Nil  :. +5 - +6 = -1  b)  +4 - -3  soln  +4 - -3 = +4(--)3  = +4 + 3  = 4 + 3  :. +4 - -3 = 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | **EVALUATION** | **EXERCISE:**  1. Addition the following integers.  a) +7 + +3 c) -5 + +2 e) +5 + -2  d) +2 + +3  Answers  a) = +10 c) = -3 e) = +3\_  b) = +5 d) = -8\_  2. Subtract the following integers.  a) +6 - +3 c)  -15 - +2 e) -3 -7  b) +13 - +8 d) -7 - +8 f) -9 -  -6  Answers  a) = +3 c) = -17 e) = -10  b) = +5 d) = -15 f) = -3\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | **REMARKS** |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **7** | | | **TOPIC**  **SUB-TOPIC** | INTEGERS  b) USING MIND MAPS.  i) Have only one sign in the middle by multiplying.  ii) Cancel pairs of negatives and positives and take the remainder as the answer.  Example  Simplify:  a) +3 - 5 b) +3 - -4  soln  a)  +3 – 5 = -ve +ve  + + + +  + - +  -2 Nil    :. +3 – 5 = -2  b) +3 - -4 = +3(--)4  = +3 + 4  -ve +ve  + + +  \_\_\_\_\_\_\_+ + + +  Nil\_\_\_+7\_\_\_    :. +3 - -4 = +7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | **EVALUATION** | **EXERCISE**  1. Subtract by re-naming with letters.  a) 10 – 3 c) -9 - -5 e) -2 - +9  b) 5 - -3 d)  -4 – 9 f) -1 - +10  Answers  a) = 7 c) = -4 e) = -11  b) = 8 d) = -13 f) = -11  2. Subtract using mind maps.  a) -12 - +2 c) = +9 - +11 e) -7 - -2  b) +7 - +5 d) = 9 - -10 f) -10 - -12  Answers:  a) = -14 c) = -2 e) = -5\_  b) = +2 d) = +19 f) = +2\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **8** | | | **TOPIC**  **SUB-TOPIC** | **INTEGERS**  **MORE REVISION ON DIVISION, SUBTRACTION AND ADDITION.**  Concepts:  1. When all are positives, the answer is also a positive e.g.  +7 - -4  Soln  +7 - -4 = +7(--)4  = +7 + 4  :. +7 - -4 = +11  2. When all are negative, the answer is also a negative e.g.  -7 + -4  Soln  -7 + -4 = -7(+ -)4  = -7 – 4  :. -7 + -4 = -11  3. When the positive is bigger than the negative, the answer is a positive. Eg  +7 – 3  Soln  +7 – 3 = +4   1. When the negative is bigger than the positive, the answer is a negative e.g   +8 – 10  Soln  +8 – 10 = -2  DIVISION.  a) A negative ÷ a negative = a positive eg.  -12 ÷ -3  Soln  -12 ÷ -3 = +12 ÷ +3  -1  -1  4  = ~~12~~ X +1  +1 ~~3~~  1  :. -12 ÷ -3 = 4  b) A negative ÷ a positive = a negative. eg  -8 ÷ 2    Soln  -8 ÷ 2 = 8 ÷ 2  -1 1  4  = ~~5~~ x 1  -1 2  :. -8 ÷ 2 = -4\_   1. A positive ÷ a positive = a positive. e.g   20 ÷ 5  Soln  20 ÷ 5 = 20 ÷ 5  1 1  4  ~~20~~ x 1   1. 5   1  :. 20 ÷ 5 = 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | **EVALUATION** | **EXERCISE**  1. Work out the following addition and subtraction.  a) 6 - -4 c) -11 - -9 e) -9 - -4  b)  -7 + -3 d) -13 – 13 f) 6 + 7  Answers:  a. = 10 c. = -2 e. = -5  b. = -10 d. = -26 f. = 13  2. Divide the following integers.  a. 12 ÷ 4 c. 63 ÷ 9 e. -19 ÷ -1  b. -12 ÷ 6 d. -18 ÷ 3 f. 50 ÷ -2  Answers  a. = +3 c. = +7 e. = 19  b. = -2 d. = -6 f. = -25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | **REMARKS** |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **9** | | | **TOPIC**  **SUB-TOPIC** | **INTEGERS**  **APPLICATION OF INTEGERS**  Concepts  1. Debt = -ve, Loss = -ve, profit = +ve, Gain = +ve  Pay = +ve  2. Starting time of an event = 0  3. Time before the start = -ve  4. Time later / after the start = +ve  Examples  1. Aguti arrived at the station 15 minutes before the normal departure time for the train to Kasese. If the train was 35 minutes late, how long did she wait for the train?  Soln  1. Before departure = -ve (15) minutes.  2. Later time = +ve (35) minutes.  Duration = later time – time before departure  = (+35 - -15) minutes  = 35(--)15  = 35 + 15  = 50 minutes  She waited for 50 minutes.  2. Kayemba had a debt of shs. 15,000 from each of his three friends. He received shs. 40,000 as salary. Find Kayemba’s financial position after paying off his debts.  Soln  Debt = -ve (shs. – 15,000)  Total debt = shs. -15,000  x3  shs. -45,000  Salary = shs. 40,000  Remaining debt = shs. -45,000 + 40,000  = shs. 40,000 – 45,000  = shs. -5,000  3. A lady born in 17 BC and died in 35 AD. How old was she when she died?  Soln  Time of birth = -17 BC  Time of death = + 35 Ad  Age = Death – birth  = 35 - -17  = 35(--)17  = 35 + 17  = 52 years\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | **EVALUATION** | **EXERCISE**  1. A woman was born in 20 BC and died in 45 AD. How old was she when she died?  2. Kigombe borrowed sh. 40,000. He received sh. 72,000 at the end of the month as salary. How much did he remain with after paying the debt?  3. Rita borrowed a loan of 35 million shillings from the bank, she used the loan and borrowed another 45 million shillings.  How much does she owe the bank now?  4. In an interview, one mark is deducted for every wrong answer made and 2 marks awarded for every correct answer. What is the score mark for a candidate who gives  a) 3 correct answers and 2 wrong ones?  b) 5 correct answers and 3 wrong ones?  Answers  1. 65 yrs 3. 80 milloin  2. Sh. 32,000 4. a) 4 marks  b) 7 marks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **10** | | | **TOPIC**  **SUB-TOPIC** | **INTEGERS**  **SOLUTION SETS**  Concepts  a) A solution set is a collection of all possible values of the given unknown in an inequality.  b) List the first 5 – 6 then put 3 dots to show that they continue.  Examples  1. If X is a negative integer, find the solution set for x > -6    Soln  x > -6 (integers greater than -6)  x > -6  x x x x x x x x x x  -6 -5 -4 -3 -2 -1 0 1 2 3  :. X = {-5, **-**4, **-**3, **-**2, **-**1}  NOTE:  - The least possible value of X = -5  - The greatest possible value of X = -1  2. If y is a positive integer, find the solution set for y < 5.  **Soln**  y < 5 (integers less than 5)  y < 5  x x x x x  0 1 2 3 4 5 6 7 8  :. Y = {1, 2, 3, 4}  3. Find the solution set for X ≥ 3. If X is a whole number.  Soln  X 3 (greater than and equal to 3)  x x x x x  -2 -1 0 1 2 3 4 5 6 7  :. X = {(3), 4, 5, 6, 7,………….}  4. Find the solution set for y ≤ -2. If y is a negative integer.  Soln  Y ≤ -2 {less than and equal to -2}    Y ≤ -2  x x x x  -5 -4 -3 -2 -1 0 1 2 3 4  :. Y = {…., -5, -4, -3, -2} | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | **EVALUATION** | **EXERCISE**  Find the solution set for:  1). x > 2 3). x < -1 5). x ≥ 0 7). x ≥ -5 9) x ≥ -2  2). x < 3 4). x > -5 6). x ≤ -10 8). x ≤ -4 10). x ≤ 1  Answers  1. x = {3, 4, 5, 6, 7, …} 3. x = {…, -4, -3, -2}  2. x = {…, -2, -1, 0, 1, 2} 4. x = {-4, -3, -2, -1, 1, 0, …}   1. x = {(0), 1, 2, 3, 4, 5, …} 2. x = {… -15, -14, -13, -12, -110, (-10)} 3. x = {(-5), -4, -3, -2, -1, 0, …} 4. x = {… -7, -6, -5, (-4)} 5. x = {(-2), -1, 0, 1, 2 …} 6. x = {… -3, -2, -1, 0, (1)} | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **11.** | | | **TOPIC**  **SUB-TOPIC** | **INTEGERS**  **MORE ABOUT SOLUTION SETS.**  Concepts:  a) Read from the middle, left wards then later right wards.  b) Here integers have an end.  Example  1. Find the solution set for -3< x < 5    Soln  -3 < x < 5 = {integers greater than -3 but less than 5}  OR = {integers between -3 and 5}  x x x x x x x x  -3 -2 -1 0 1 2 3 4 5 6 7  :. X = {-2, -1, 0, 1, 2, 3, 4}  2. What is the solution set for: -2 ≤ x ≤ 4?  Soln  -2 ≤ x ≤ 4 = {integers from -2 to 4} or  = {integers greater than and equal to -2 but less than and equal to 4}  x x x x x x x  - 3 -2 -1 0 1 2 3 4 5 6 7  :. X = {(-2), -1, 0, 1, 2, 3, 4} | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | **EVALUATION** | **EXERCISE**  Find the solution set for each of:  1) -1 < y < 3 5) 3> x > -3  2) -2 ≤ y ≤ 2 6) 3 ≥ x ≥ -3  3) -3 < y < 4 4) 2 > x > -4  Answers   1. y = {0, 1, 2} 2. y = {(-2), -1, 0, 1, (2)} 3. y = {-2, -1, 0, 1, 2, 3} 4. x = {1, 0, -1, -2, -3} 5. x = {2, 1, 0, -1, -2,} 6. x = {(3), 2, 1, 0, -1, (-2)} | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | **REMARKS** |  | | |  | | | | | | | | |  | | | |  | | | | | | |  | | | | | | | |
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| **12.** | | | **TOPIC**  **SUB-TOPIC** | **INTEGERS**  **WRITING INEQUALITIES FOR THE GIVEN SOLUTION SETS**  Concepts:  a) Re-name the solution with any letter.  b) Describe the solution set (arrangement of integers on the number line).  Examples  Write an inequality for the solution sets given below.  1. x x x x x x x x  -4 -3 -2 -1 0 1 2 3 4 5  Soln  Let x be the inequality  X = {integers from -3 to 4} OR  = {integers between -4 and 5}  :. -5 < x < 5  2. x x x x x x x x  -3 -2 -1 0 1 2 3 4 5 6 7  Soln  Let y be the inequality  Y = {integers between -4 and 5} OR  = {integers from -3 to 4}  :. = {(-3) ≤ y ≤ 4}  **Answers**   1. p = 7 2. x = 8 3. n = 6 4. x = 6 5. y = 8 6. p = 7 7. n = 9 8. p = 8   **Activity**  Write an inequality for the solution sets shown on the number line   1. D:\CORNERSTONE 2015\all drawings others\numberline 3.PNG   D:\CORNERSTONE 2015\all drawings others\numberline 3.PNG      D:\CORNERSTONE 2015\all drawings others\numberline 3.PNG      D:\CORNERSTONE 2015\all drawings others\numberline 3.PNG | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **11** | | **TOPIC**  **SUB-TOPIC** | | | **FINITE SYSTEM**  Concepts:   1. Finite system is the same as modular (mod), and clock arithmetic (dial). 2. Finite system is the way of counting where reminders are taken in most cases as the answer. 3. In finite system, the digits used must be less than the finite in the equation.   OPERATION IN FINITE   1. SUBTRATION   Concepts:   1. Simplify: 2 – 3 = ---- (finite)   Soln  2 – 3 = ---- (finites)  2 – 3 = -1 (finites)  2 – 3 = -1 + 5 (finites)  2- 3 = 5 + 1 (finites)  :. 2 – 3 = 4 (finites)  OR  2 – 3 = ------ (finites)  (5 + 2) – 3 = --- (finites)  7 – 3 = 4 (finites)  :. 2 – 3 = 4 (finites)  OR  Finites = {0,1,2,3,4}  2 – 3 = ---- (finites)  0  Anti-clockwise movement  4 1  3 2  :. 2 – 3 = 4 (finites)  **Exercise**  Simplify   1. 2 – 4 = \_\_\_ (finite 5) 2. 1 – 2 = \_\_\_\_ (mod 5) 3. 9 – 12 = \_\_\_ (finite 11) 4. 5 – 8 = \_\_\_ (mod 7) 5. MULTIPLICATION   Concepts:   * The product must be less than the finite in the equation. * With a dial, the first number represents the laps of the second number from zero.   E.g .  Simplify: 2 x 3 = --- (mod 5)  Soln  2 x 3 = -- (mod 5)  2 x 3 = 6 (mod 5)  65 = 1 rem (mod 5)  :. 2 x 3 = 1 (mod 5)  OR  (Mod 5) = {0,1,2,3,4}  2 x 3 = -- (mod 5) 2 laps of 3 step from 0  0 2nd  1  4  2 1st  3  :. 2 x 3 = 1 (mod 5)   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  | MATH |  |  1. DIVISION   Concepts:   * Get the multiple of the divisor then divide to get the answer ie adding the finite in the equation. OR * Apply repeated subtraction till the result is zero, count the number of subtractions made as the answer. OR * Use algebraic express.   Eg   1. Work out: 1 5 = --- (mod 6)   Soln  Multiple of the divisor   * 1 5 = (mod 6)   (6 + 1) 5 = --- (mod 6)  7 5 = -- (mod 6)  (6 + 7) 5 = -- (mod 6)  13 5 = (mod 6)  (6 + 13) 5 = -- (mod 6)  19 5 = --- (mod 6)  (6 + 19) 05 = -- (mod 6)  25 5 = 5 (mod 6)  :. 15 = 5 (mod 6)  OR  1 (mod 6) = 1, 1+6, 7+6, 13+6, 19+6, 25+6, ………  = 1, 7, 13, 19, (25), 31, …….  Multiple of 5 = 25  1 5 = 25 (mod 6)  5  25 5 = 5 (mod 6)  :. 1 5 = 5 (mod 6)  Repeated subtraction  1 5 = -- (mod 6)  1 – 5 = ?\_ (mode 6)  (6 + 1) – 5 = ---- (mod 6)  7 – 5 = 2 (mod 6) – 1st  (6 + 2) – 5 = ---- (mod 6)  8 – 5 = 3 (mod 6) –2nd  (6 + 3) – 5 = -- (mod 6)  9 – 5 = 4 (mod 6)-- 3rd  (6 + 4) – 5 = --- (mod 6)  10 – 5 = 5 (mod 6) –4th  5 – 5 = ­0 (mod 6) – 5th  :. 1 5 = 5 (mod 6)  **Activity**  **Divide**   1. 4 ÷ 3 = \_\_\_\_ (finite 5) 2. 3 ÷ 4 = \_\_\_\_ (mod 7) 3. 5 ÷ 4 = \_\_\_\_ (mod 7) 4. 2 ÷3 = \_\_\_ (finite 5)   Algebra  Let n be the result  1 5 = n (mod 6)  1 = n (mod 6)  5 1  (nx5) = (1x1) (mod 6)  5n = 1 (mod 6)  5n = 6+1 (mod 6)  5n = 7 (mod 6)  5n = 6 + 7 (mod 6)  5n = 13 (mod 6)  5n = 6 + 13 (mod 6)  5n = 19 (mod 6)  5n = 6 + 19 (mod 6)  5n = 25 (mod 6)  5  ~~5~~n = ~~25~~ (mod 6)  ~~5~~ ~~5~~  :. n = 5 (mod 6) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | **REMARKS** | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | |  | | | **DATE** | | | **CLASS** | | | | | | | | **TIME** | | | | | | | | | | **SUBJECT** | | | | | | **N0. OF PUPILS** | | | |
|  | | | **P.7** | | | | | | | |  | | | | | | | | | | **MTC** | | | | | |  | | | |
| **12** | | **TOPIC**  **SUB-TOPIC** | | | **INTEGERS**  **SOLVING EQUATIONS IN FINITE SYSTEM**  Concepts   * keep adding the finite in the equation till the multiple of the divisor is got   eg.   1. Solve x – 4 = 5 (finite 7)   Soln  X – 4 = 5 (finite 7)  X – 4 + 4 = 5 + 4 (finite 7)  X – 0 = 9 (finite 7)  X = 9 7 (finite 7)  X = 1r(2) (finite 7)  :. X = 2 (finite 7)   1. Solve : 2 (2 x - 1) = 4 (finite 7)   Soln  2(2 x - 1) = 4 (finite 7)  4x – 2 = 4 (finite 7)  4 x -2 + 2 = 4 + 2 (finite 7)  4x – 0 = (finite 7)  4x = 6 (finite 7)  4x = 6 + 7 (finite 7)  4x = 13 (finite 7)  4x = 13 + 7 (finite 7)  4x = 20 (finite 7)  4x = ~~20~~ (finite 7)  ~~4~~ ~~4~~  :. X = 5 (finite 7) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | **EVALUATION** | | | **EXERCISE**  Solve the following:   1. a) x – 3 = 4 (mod 5)   b) y – 5 = 4 (finite 7)  c) m – 9 = 6 (mod 12)  d) x – 2 = 2 (finite 5)  e) d – 8 = 5 (mod 12)   1. a) 3x = 3 (mod 4)   b) 5x = 3 (mod 9)  c) 5(x – 1) = 4 (finite 6)  d) 6(x – 3) = 4 (finite 8)  e) 4 (x – 2) = 2 (finite 6)  Answers   1. a) x = 2 b) y = 2 c) m = 3 d) x = 4 e) d = 1 2. a) x = 5 b) x = 6 c) x = 3 d) x = 5 e) x = 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | **REMARKS** | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | |  | | | **DATE** | | | **CLASS** | | | | | | | | **TIME** | | | | | | | | | | **SUBJECT** | | | | | | **N0. OF PUPILS** | | | |
|  | | | **P.7** | | | | | | | |  | | | | | | | | | | **MTC** | | | | | |  | | | |
| **13** | | **TOPIC**  **SUB-TOPIC** | | | **INTEGERS**  **APPLICATION OF FINITE SYSTEM**   1. FINITE 7   Concepts:   * Finite 7 is applied in the days of the week because a week has 7 days. * Equivalences  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Sun | Mon | Tue | Wed | Thur | Fri | Sat | | 0 | 1 | 2 | 3 | 4 | 5 | 6 |  * “will it be” – means future - add. * “was it ago” – means past – subtract.   Examples   1. Today is Thursday. What say of the week will it be 82 days from now?   Day + Days = ----- (finite 7)  4 + 82 = ----- (finite 7)  4 = 82 = 86 (finite 7)  86 7 = 12 rem (2) (finite 7)  :. 4 + 82 = 2 (finite 7)  2 stands for Tuesday.  The day will be Tuesday.   1. If today is Tuesday, what day of the week was it 17 days ago?   Soln  Day – Days = ----- (finite 7)  2 – 17 = ----- (finite 7)   1. + 2) – 17 = ----- (finite 7)   9 – 17 = (finite 7)  (7 + 9) – 17 = --- (finite 7)  16 – 17 = --- (finite 7)  (16+ 17) – 17 = --- (finite 7)  23 – 17 = 6 (finite 7)  :. 2 – 17 = 6 (finite 7)  6 stands for Saturday  The day was Saturday. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | **EVALUATION** | | | **EXERCISE**   1. Today is Tuesday, what day of the week will it be 16 days from now? 2. If today is Friday, what day of the week will it be 27 days from today? 3. Today is Tuesday, what day of the week was it 6 days ago? 4. If today is a Wednesday, what day of the week was it 172 days ago? 5. If today is Friday, what day of the week will it be 536 days from now.   Answers   1. The day will be Thursday 2. The day will be Thursday 3. The day was Tuesday 4. The day was Saturday 5. The day will be Friday | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | |  | | | **DATE** | | | **CLASS** | | | | | | | | **TIME** | | | | | | | | | | **SUBJECT** | | | | | | **N0. OF PUPILS** | | | |
|  | | | **P.7** | | | | | | | |  | | | | | | | | | | **MTC** | | | | | |  | | | |
| **14** | | **TOPIC**  **SUB-TOPIC** | | | **INTEGERS**  **MORE APPLICATION OF FINITE 7**  Concepts:   * Get the total number of days.   Examples   1. Today is Wednesday, 14th June, what day of the week will it be on 20th August the same year?   Soln   1. Days from 14th June to July = 30 – 14 = 16 days 2. Days from July to August 20th = 31 + 20 = 51 days 3. Total days = 51 + 16 = 67 days 4. Day + Days = ------- (finite 7)   3 + 67 = -------- (finite)  3 + 67 = 70 (finite 7)  70 7 = 10r0 (finite 7)  :. 3 + 67 = 0 (finite 7)  O stands for Sunday  The day will be Sunday   1. If today is Thursday 18th August. What day of the week was it 15th April of the same year?   Soln   1. Days from April to May = 310 – 15 = 15 days 2. Days from May to August = 15 April + 32 May + 30 June + 31 July + 18 August   = 125 days.   1. Day – Days = ------ (finite 7)   4 – 125 = -- (finite 7)  7  4 – 125 7 = 17r (6) (finite 7)  4 – 6 = ---- (finite 7)  (7 + 4) – 6 = -------- (finite 7)  11 – 6 = 5 (finite 7)  :. 4 – 125 = 5 (finite 7)  5 stands for Friday  The day was Friday. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | **EVALUATION** | | | **EXERCISE**   1. Today is Wednesday 12th July. What day of the week will it be on 15th August the same year? 2. If today is Thursday, 26th June 1996, which day of the week was it on 11th September 1996?   Answers   1. The day will be Tuesday (19 days) = 34 days 2. The day was Sunday (4 days, 77 days) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | |  | | | **DATE** | | | **CLASS** | | | | | | | | **TIME** | | | | | | | | | | **SUBJECT** | | | | | | **N0. OF PUPILS** | | | |
|  | | | **P.7** | | | | | | | |  | | | | | | | | | | **MTC** | | | | | |  | | | |
| **15** | | **TOPIC**  **SUB-TOPIC** | | | **ENTEGERS**  **APPLICATION OF FINITE 12**  Concepts:   1. Finite 12 is applied in the months of the year because 12 months make up a year. 2. Equivalences  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **J** | **F** | **M** | **A** | **M** | **J** | **J** | **A** | **S** | **O** | **N** | **D** | | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **0** |   Examples   1. This month is July. Which month of the year will it be after 2132 months?   Soln  Month + months = --- (finite 12)  7 + 2132 = -- (finite 12)  7 + 2132 = --- (finite 12)  7 + 2132 = 2139 (finite 12)  2139 12 = 2139 (finite 12)  12  = 178 rem (3) (finite 12)  :. 7 + 2132 = 3 (finite 12)  3 stands for March  The month will be March   1. It is April now. Which month of the year was it 346 months ago?   Soln  Month – months = --- (mod 12)  4 – 346 = --- (mod 12)  12  28  4 – ~~346~~ = 28 rem (10) (mod 12)  ~~12~~  4 – 10 = --- (mod 12)  (12 + 4) – 10 = --- (mod 12)  16 – 10 = 6 (mod 12)  :. 4 – 346 = 6 (mod 12)  6 stands for June  The month was June. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | **EVALUATION** | | | **EXERCISE**   1. It is February now. Which month of the year was it 134 months ago? 2. If this month is September, which month of the year will it be 1242 months from now? 3. It is October now, which month of the year will it be 92 months to come? 4. Karuma was born 1341 months ago, in which month was he born if it is August now? 5. If this month is October, which month of the year will it be 438 months to come?   Answers   1. The month was December 2. The month will be March 3. The month will be June 4. The month was November 5. The month will be April | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | **REMARKS** | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | |  | | | **DATE** | | | **CLASS** | | | | | | | | **TIME** | | | | | | | | | | **SUBJECT** | | | | | | **N0. OF PUPILS** | | | |
|  | | | **P.7** | | | | | | | |  | | | | | | | | | | **MTC** | | | | | |  | | | |
| **16** | | **TOPIC**  **SUB-TOPIC** | | | **INTEGERS**  **MORE ABOUT APPLICATION OF FINITE 12**  Concepts:   * Finite 12 can also be applied in the 12 hour clock system ie * An odd quotient got changes in   pm to am  am to pm   * An even quotient got doesn’t make any   Examples   1. It is 7:00am, what time will it be after nine hours from now.   Soln  Time + hrs = ---- (finite 12)  7:00 + 9 = -- (finite 12)  7 + 9 = 16 (finite 12)  16 12 = 1rem (4) (finite 12)  :. 7 + 9 = 4 (finite 12)  The time will be 4pm because the quotient is odd.   1. Given that the time now is 4am. What time of the say will it be 95 hrs later?   Soln  Time + hrs = --- (mod 12)  4 + 95 = --- (mod 12)  4 + 95 = 99 (mod 12)  99 12 = 8 rem (3) (mod 12)  :. 4 + 95 = 3 (mod 12)  The time will be 3 am because the quotient is an even. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | **EVALUATION** | | | **EXERCISE**   1. It is 3am now. What time will it be after 14 hrs now? 2. A plane left London at 7:30am. If it landed at Entebbe after 36 hrs, at what time did it land? 3. A meeting started at 8am, if lasted for 8hrs, at what time did it end? 4. Cissy travelled for 81hrs after leaving at 2pm. At what time did she arrive at her destination? 5. A train left Mombasa at 5:00am, it reached Kasese after 83hrs. Find its arrival time. 6. It is 8am, what time will it be after 17 hrs from now? 7. It is 10pm now, what time will it be after 42hrs from now? 8. It is 6pm now, what time will it be after 8hrs from now?   Answers:   1. 5pm 2. 5pm 3. 4pm 4. 11pm 5. 4pm 6. 1am 7. 4pm 8. 2am | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | **REMARKS** | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | |  | | | **DATE** | | | **CLASS** | | | | | | | | **TIME** | | | | | | | | | | **SUBJECT** | | | | | | **N0. OF PUPILS** | | | |
|  | | | **P.7** | | | | | | | |  | | | | | | | | | | **MTC** | | | | | |  | | | |
| **17** | | **TOPIC**  **SUB-TOPIC** | | | **INTERGERS**  **APPLICATION**  Concepts   1. Get the equivalent numbers of each given finite. 2. From the equivalent number, get the common factor/ number to be the answer.   Example  A teacher bought some pens. Teacher Adam put them in groups of 95 and 7 pen were left. When he put them in groups of 8’s only 4 pens were left. But when he put them in groups of 3’s only one pen was left. How many pens did the teacher buy?  Soln  Equivalences   * Groups of 9’s = finite 9 rem. 7   7 (finite 9) = 7, (7 + 9), (7 + 9 + 9), (7 + 9 + 9+ 9), (7 + 9 +9+9+9)  = 7, 16, 25, 34, 43, (52), 61, 70, ……   * Groups of 8’s = finite 8 rem 4   4 (9finite 8) = 4, (4+8), (4+8+8), (4+8+8+8), (4+8+8+8+8)  = 4, 12, 20, 28, 36, 44, (52), 60, 68, ………   * Groups of 3’s = finite 3 rem 1   1 (finite 30 = 1, (3+1), (3+1+3), (3+1+3+3), (3+1+3+3+3)  = 1,4,7,10,13,16,19,22,25,28,31,34  37, 40, 43, 46, 49, (52), 55, 58, 61, ………  Common number  = 52 pens  :. The teacher bought 52 pens. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | **EVALUATION** | | | **EXERCISE**   1. What is the least number of cows such that when divided by 4 people 3 cows remain, when divided by 8 people 7 cows remain? 2. Find the least number such that when divided by 5, 2 remain and when divided by 8, 3 remain. 3. M is a number when divided by 7, the remainder is 6, when divided by 3, 1 remains and when divided by 9, 7 remains. Find the value of M. 4. A man had some oranges, when he grouped them in heaps of 6,5 oranges were left and when he put them in heaps of 7, 6 remained. How many oranges did he have? 5. A class teacher arranged the children in his class in groups of 15 pupils, but 10 remained | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  | MATH |  |   **DATA HANDLING**  INTERPRETING TRAVEL GRAPHS  Note   1. A travel graph represents distance travelled and time taken. 2. Distance is shown on the vertical axis while time is shown on the horizontal axis. 3. A scale is what one small square stands for (represents) vertically or horizontally   Example  The graph below shows the journey of a motor car and a motor bike. Use it to answer questions that follow.  **Y-axis**  50  40  30  20  10    0 1 2 3 4 5 6 7  **X-axis**  **TIME IN HOURS**  **Questions**   1. State the scale on both axes   Solution   1. Vertical axis – 1 small square represents 5 km 2. Horizontal axis – 1 small square represents 30 minutes 3. At what speed is the motorist moving per hour?   **Solution**  20  10  0  1pm 2pm  **TIME**  Speed =  =  = 25kmhr  The motorist is moving at a speed of 25 km/hr   1. At what speed is the cyclist moving per hour.   **Solution**  5  5km  0 1  1hr  Speed = distance  Time  = 5 km/hr  1  = 5 km/hr  The cyclist is moving at a speed of 5 km/hr   1. What time did the motorist take to cover 40 km?   Solution  40 km = 1  hours  The motorist took 1  hours to cover 40 km   1. What distance did the cyclist cover in 3 hours?   Solution  3hours = 15 km  The cyclist covered 15 km in 3 hours  CLASS DISCUSSION ACTIVITY  The graph below represents the distance travelled by 3 people. Use it to answer questions that follow.  **Y-axis**  250  200  150  100  50    8am 9am 10am 11am 12noon 1pm 2pm 3pm  **X-axis**  **TIME IN HOURS**  **Question**   1. State the scale on both axes.   V = 25 km, h = 30min   1. At what time did john start his journey?   At 8:00 am   1. How long did Henry spend travelling?   5 hours   1. What did Henry meet 5 hours?   At a distance of 126 km from Kampala or 124 km from Pakwach   1. For how long did john rest at Pakwach?   One hour   1. What was john’s average speed for the whole journey?   500 km  6  83km/hr |
|  | **TOPIC**  **SUB TOPIC**  **TOPIC**  **SUBTOPICS**  **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  | MATH |  |   DATA HANDLING  DRAWING TRAVEL GRAPHS  Note  1. Set your own convenient scale on both axes from 1s ,2 s,5 s,10 s20s etc.  2. Get the total distance and time.  3. Draw a line representing distance travelled in relation to time taken.  Example  Obbo leaves town K for town L at 8:00 am he travels for 1hours at 20 km/hr.he rests for 30 minutes and then continue to town L at 30km/hr for 3 hours after resting at K for 30 minutes he returns to town K reaching at 3:30 pm.  Draw a graph for obbo’s journey  Ist Route  Distance from k – the resting place  Distance = speed X time  =  km X  = 10 km X 3  = 30 km.  Arrival time at the resting place  = HRS MIN  8 : 00  + 1 : 30  9 : 30 am  Departure time at the resting place.  9 : 30  + 0 : 30  10 : 00 am  2nd route  Distance from the resting place to town L.  Distance = speed X time  = 30 km X 3hours  1 1  = 30 km X 3  = 90 km (3 hours ,90km)  Arrival time at town L  10 : 30  + 3 : 00  13 : 00 hrs  = 1:00 p.m  Departure at town L (return)  1 : 00 arrival  + 0 : 30 resting  1 : 30 am  Arrival time back at town k  = 3:30pm  Co-ordinates  1.(1hours , 30km)  2. (3 hours , 90km)  Vertical scale = 1 small square represents 10km  Horizontal scale = 1 square represents 30min  **GRAPH**  **L**  120  100  80  60  40  20    **K**0 8am 9am 10am 11am 12noon 1pm 2pm 3pm 4pm **TIME IN HOURS**  **Exercise**  Refer to page 174 Mk book 7 exercise 10:4.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  | MATH |  |   DATA HANDLING  CO – ORDINATES GRAPH  **Note**  Co-ordinates – ordered pairs of numbers used to mark / plot a point on a graph in the order x:y.   * The axes; Number lines with units of distance marked on them.   i.e  a) The x – axis .horizontal number line  X-Axis X-Axis  **-**4 **-**3 **-**2 **-**1 0 1 2 3 4 5 6  b) The Y- axis ( Vertical number line)  Y – axis  3  2  1  -1  **0**  -2  -3  -4  -5  Y-axis  The point of origin; the area where the two axes are crossing each other.  The grid ( Cartesian plane) the surface containing x – and y axes.  **2**  **1**  **-2 -1 0 1 2**  **-1**  **-2**  The four quadrants of a grid.the four (quarters) divisions of a grid showing the coordinates.  D:\CORNERSTONE 2015\all drawings others\grid 2.PNG1st quadrant – the upper right side with (t,t) i.e   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO.OF PUPILS | |  | P.7 |  | MTC |  |   NAMING AND DRAWING PARALLEL LINES ON THE AXES  Note  1. X- Lines lines parallel to y-axis and cross the x –axis.  b) they are named according to the point they cross the x – axis.  e.g. Draw the x – lines below  a) X = -3, b) X = 3 , c) X = 1  **X-Axis** **X-Axis**  -**6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7**    2(a) y – lines – lines parallel to x – axis and cross y – axis  b). They are named according to the point they cross y –axis e.g  draw the y- line below   1. y= -4 b) y = 1, c) y = 3   Y – axis  6  5  4  **3**  2  **1**    -1  -2  -3  -4  -5  -6  Y-axis |
|  | **TOPIC**  **SUB TOPIC**  **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  | MATH |  |   **DATA HANDLING**  **NAMING COORDINATES OF PLOTTED POINTS**  **Note**  Co – ordinates are plotted in the order of (x,y) i.e 1st m x – axis and 2nd y – axis   * To name the co-ordinates of a point formed, start by naming the x – line then the y – line i.e (x,y) when X line and Y line cross each, they a points. * e.g Name the coordinates of the plotted points below.   **Y -axis**  7  6  5  4  3  2  1  **X-Axis** **X-Axis**  -7 -6 -5 **-**4 **-**3 **-**2 **-**1 1 2 3 4 5 6 7 8  -1  -2  -3  -4  -5  -6  -7  **Y-axis**  1.point A X =2, Y= 1  A = (2,1)  ii) point B ; X = 3, Y = 2  B(3,2)  iii) point C : X = 2,y=2  c (2,2)  iv) Point D : X = 1, y = 0  D (1,0)  v) Point E : X = 0 , y = 3  E = (0,3)  Exercise refer to page 177 – 178 MK. book 76 exercise 10 :18   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  | MATH |  |   DATA HANDLING  PLOTTING CO-ORDINATES ON THE GRID  Rule   * to plot / mark a point on agrid,start from x – line then the y – line (x,y) * E.g. Draw 7 by 7 grid and plot the following points.   A (1,1) B (3,2) C (2,0) D (0,3), E (4,O) F(-2,2)  **Y -axis**    3  2  1  **X-Axis** **X-Axis**  -6 -5 **-**4 **-**3 **-**2 **-**1 1 2 3 4  -1  -2  -3  **Y-axis**  Solution  A (1,1) = X = 1 B(3,2) = X = 3  Y = 1 Y = 2  C(2,0) X = 2 D(0,3) X = 0  Y = 0 Y = 3  E(-4,0) X = -4 F(-2,-2) X = -2  Y = 0 Y = -2  Exercise refer to explain : 10:16 – 17 page 178 MK book 7 |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  | MATH |  |   **DATA HANDLING**  **FORMING FIGURE BY PLOTTING AND FINDING THE AREAS.**  **Note**   * Plot the given points * Join all the points to form a shape * Name the shape then find it’s area in square units   **Examples**  **Plot the points below hence find their areas**   1. E (-1,1) F (3,4) H (-4,4) G (6,1) 2. U(3,0) V(0,-5) W (-4,-5) X (-1,0) 3. E(-1,0) X = -1 F(3,0) X = 3 H(-4,-5) X = -4   Y = 0 Y = 0 Y = -5  G(0,-5) X = 0  Y = -5   1. U(3,0) X = -1 V(0,5) X = 0 W(-4,-5) X = -4   Y = 0 Y = -5 Y = 0,5  X(-1,1) X = -1  Y = 0  **Y -axis**  7  6  (-1,4) 5 (3,4)  4 **a**  3  2 (6,1)  (-1,1) 1  **X-Axis** (-1,0) (3,0) **X-Axis**  -7 -6 -5 **-**4 **-**3 **-**2 **-**1 1 2 3 4 5 6 7 8  -1  -2  -3  -4  (-4,-5) -5 (0,-5)  -6  -7  **Y-axis**   1. EFGH is a parallelogram   Area = b X h  Base = 4 units  Length = 5 units  Area = 4 units X 5 units  = 20 square units   1. UVWX is a trapezium   Area = X h (a + b)  H = 3 units  A = 4 units  B = 7 units  Area = X 3 units (4 units + 7 units)  = X 3 units (11 units)  = X 3 units X 11 units  = 31units  2  = 16 square units |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   **GRAPHS**  **FORMIMG EQUATIONS OF LINES**  **Note**   * Separate the x and y co-ordinates * Get the range between each type of co-ordinates * To get x co-ordinates on the table multiply x by the range of y co-ordinates * Compare x and y co-ordinates on the table to get the equation starting with y * e.g Name the coordinates of the plotted points below.   **Y-axis**  **D:\CORNERSTONE 2015\all drawings others\grid 2.PNG**  **X-Axis**  **Line A**  Tabulate   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 1(X) | -4 | -3 | -2 | -1 | 0 | 1 | | 1(Y) | 0 | 1 | 2 | 3 | 4 | 5 |   Y = -4 +  = 0  -4 +  = 0  -4 + 4 = 0 + 4   = 4  Equation y = 4  Line B = (-3,-2),(-2,-1) (-1,0) (0,1) (1,2) (2,3)  X= -3, -2, -1 ,0, 1, 2  Y = -2 , -1 , 0 , 1 ,2 ,3  Tabulate   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 1(X) | -3 | -2 | -1 | 0 | 1 | 2 | | 1(Y) | -2 | -1 | 0 | 1 | 2 | 3 |   -3+  = -2  -3 + 3 +  = -2 + 3   = 1  Equation y = x + 1 |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   **DATA HANDLING**  **DRAWING LINES FOR GIVEN ORRDERED PAIRS**  Note  List your own 4 – 5 x – co-ordinates then substitute for y- coordinates  e.g  draw a graph of coordinates and plot line y = x – 2  solution  let x co-ordinate be (-2, -1 ,0 ,1, 2 …)  when x = -2  y = x – 2  y = -2 – 2  y = -4  when x = -1  y = x – 2  y = -1 – 2  y = -3  when x = 0  y = x – 2  y = 0 – 2  y = -2  when x = 1  y = x – 2  y = 1 – 2  y = -1  when x = 0  y = x – 2  y = 2 – 2  y = 0 |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   **DATA HANDLING**  **CARTESIAN PRODUCTS AND PROBABILITY**  **Note**  **Here more than one coin and die is tossed**  **Example**   1. If two coins are tossed at once, what is the probability of two heads showing up?   Sample space  Events = H,H  Probability = n(events)  Total  = (H,H)  HH,HT,TH,TT  Probability =   1. Calculate the probability of scoring a total of 8 when two dices are tossed once.   Events = (6,2) (5,3) (3,50 (2,6)  Probability = n(events  Total  = 5  36 |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   DATA HANDLING  MORE ABOUT INTERPRETING PIE CHART  Note   * Pie chart are interpreted in : * Percentages i.e 100% total sectors * Fractions i.e 1 whole total sector * Degrees i.e 3600 total sectors   e.g  The circle graph below represents the expenditure and saving of family.  Rent Clothing  (3x-10)% (x+20)%  (2x+10)% (x+10)%  Car repair Others   1. Find x   X + 10% + x + 20% + 3x – 10% + 2x + 10% = 100% (original%)  X + X + 2X + 3X + 10% + 20% + 10% - 10% = 100%  7X + 40% - 10% = 100%  7X + 40 -10 = 100%  7X + 30% = 100%  7X + 30% - 30%  7X + 0  7X 70%  7X 70  7 7  X = 10%   1. If sh.288,000 is spent on Clothing, find the family’s income   Solution  Car = X + 20%  = 10% + 20%  = 30%  30% of income = sh 28800  1 % of income = sh 28800  30  100% of income = 28800 X 100  30  = 960 x 100  = 96,000  The family income is shs 96,000/= |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   DATA HANDLING  DRAWING (CONSTRUCTING ) PIE CHART  Note   * Pie chart are constructed in degrees(change all the given data to degrees by multiplying the 3600) * Draw a circle of the given radius then measure the degrees clockwise only.   e.g.  Otti spends  of his income on rent of the remainder on food.   1. What fraction does he spend on food?   Remainder =  -  = 4 - 1  4  = 3  4  ii) food = of  X  = 1  3   1. If he saves shs 60, 000, what fraction does he save?   Total fraction food + rent  + = 3 + 4  12  = 7  12  ii) saved fraction  = 12 - 7  12 12  = 12 – 7  12  = 5  12   1. What is his income?   Solution  Saved = sh 60,000  5 = 60 ,000  12  5 parts = 60,000  1 part = 60,000  5  12parts = 60,000 X 12  5  = 12000 X 12  = 144,000 /=  His income is sh 144,000/=   1. Use the above information to construct a pie – chart   Solution  Each sector in degrees  Rent =  =  X 3600  = 900  Food = X 360  = 1200  Saved =  = X 3600  = 5 X 300  = 1500  AN ACCURATE PIE CHART. |

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|  | **TOPIC**  **SUB TOPIC** | **MEASUREMENTS**  **MEASURE 1**  **LENGTH**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   MEASURES 1 LENGTH  CONVERSION OF METRIC UNITS  CONTENT   * The basic unit for length is a metre. * Bigger units  1. 1 km = 1000m   1 km = 100,000 cm  1 km = 1,000,000 mm  1 km = 10,000 dm  1 km = 100 dm   1. 1 m = 100 cm   1 m = 1000 mm  1 m = 10dm   1. 1 cm = 10mm 2. Bigger units to smaller units.  * Multiply the value of smaller unit by the big unit given.   e.g change as instructed  a) 1 ½ km to m  solution  1 km = 1000 m  1 ½ = (1 ½ X 1000) m  = 3 X 1000  2 1  = 3 X 500 m  = 1500 m  b). 0.5 to cm  solution  1 m = 100 cm  0.5 = ( 0.5 X 100) cm  = 5 X 100  10 1  = ( 5 X 10) cm  = 50 cm  Or  0.5 m = 0.5 X 100 cm  = 50 cm  c). 3 km to cm  solution  1km = 100,000 cm  3km = (3 X 100,000) cm  = 300,000 cm  d). ½ m to mm  solution  1m = 1000 mm  ½ m = ½ X 1000 mm  = 1 x 500 mm  = 500 mm  e). 9 cm to mm  solution  1 cm = 10 mm  9 cm = (9 X10) mm  = 90 mm   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO. OF PUPILS | |  |  |  |  |  |  1. Smaller units   1m = km (0.001 km)  1 cm =  km (0.00001km)  1 cm = 1 m (0.01m)  100  1 mm = 1c m (0.1 cm)  10  1 m m = 1 m (0.001m)  1000  Smaller units to biggest units  Divide the smaller unit given by the value of the smaller unit in a bigger unit.  e.g convert as instructed.   1. 1500 m to km   Solution  1 m = 0.001 km  1500m = 1500 ÷ 0.001  = 1500 X 1 km  1000  = 15 km  10  = 1.5 km   1. 50 cm to m   Solution  1 cm = 1 m  100  50 cm = 1 X 50  100 1  = 15  10  = 0.5 m   1. 300000 cm to km   Solution  1 cm = 1  100000 km  300000 cm = 1 X 300000 km  100000 km 1  = 3 km |
|  | **TOPIC**  **SUB TOPIC** | 1. 500 mm to m   Solution  1 mm = 1  1000 m  500 mm = 1 X 500  1000 1  = 5  10  = 0.5 m   1. 90 mm to cm   Solution  1 mm = 1 cm  90 mm = 1 X 90  10 1  = 1 X 9  = 9 cm  Exercise   1. Change as instructed 2. 6 km to m 3. 0.4 km to m 4. 3 m to cm 5. 41/2 to mm 6. 0.05 cm to mm 7. 20 cm to mm 8. Express as instructed   i). 30 m to km  ii). 0.4 cm to m  iii). 0.05 cm to km  iv) 40mm to cm  v) 5mm to m  vi) 20 mm to cm   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   MEASURE 1 LENGTH  ADDITION AND SUBTRACTION OF METRIC UNITS  Clue  1.Add / subtract similar units together  e.g  1. add 5 cm, 8 mm + 8 cm , 3 mm  Solution  Cm mm  5 8  8 3  14 1  8 + 3 = 11 = 14.1 cm / 14 cm/mm  2). Add 5 m ,6 cm,3mm + 4m , 9 mm  Solution  m cm mm  5 06 3  + 4 00 9  9 07 2 = 907.2 cm / 9 m 087 cm 2 mm  3). Subtract 8 m – 7 cm  Solution  1 m = 100 cm  m cm  8 100   * 0 07   7 93 7.93m / 7m 93 cm  4). Subtract : 7 km, 3 dm – 6 hm,8dm  Solution  1 km = 100 dm  Km hm dm  7 0 3   * 0 6 8   6 3 5 6 km 3hm 5 dm / 6.35 km    Exercise   1. Addition 2. During a school sports day, a pupil jumped 5 m ,7 dm,4 cm.he tried again and jumped 4 cm,9dm ,7 cm.what was the total distance jumped? 3. A car travelled for 42 km 680 m from town A to B and returned on the same route. What distance did it cover? 4. A lorry delivered cartons of oil to a town 12 km 500m away, later the same truck carried 17 km 800m to a village store. What distance has the oil been moved?   2). Subtraction  i) A carpenter bought a plank of wood measuring 4 m 6 dm.he used 1m 9 cm of it to make a seat. What was left?  ii). A car broke down after covering 8 km 350 m.if it had complete 30 km  What distance remained?  iii) A tailor bought 6 m of cloth. He cut off 1 m 5 dm 8 cm to make a shirt. What length of the cloth remained? |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   MEASURES 1 (LENGTH)  MULTIPLICATION OF METRIC UNITS   1. Multiplication   e.g work out 7 cm,9mm X 4  solution  cm mm  7 9  X 4  31 6 4 X 9 = 36  (4 X 7) + 3 = 31  31 cm 6 m 31.6 cm  **Multiplication of Metric units**  **Activity**   1. Israel has 4 pieces of wire each measuring 4m 5cm 3mm. Find the total length of the wire 2. Deborah made 7 ropes each measuring 3m 7cm 4mm. Calculate their total length 3. A tailor bought 12 pieces of cotton material each measuring 2m 8cm 5mm. Find the total length of the pieces.  |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |  1. Division  * In division units must be the same.i.e change bigger units to smaller units then divide   e.g How many pieces of wire 60 m can be got from 2.4 km wire?  Solution  1 km = 1000 m  2.4 km = 2.4 X 1000 m  = 24 X 1000 m  10  = 2400 m  No of pieces = total length in m  @ length in m  = 2400 m  60 m  = 40 pieces  Exercise  2. Division  a) a milk can contains 4.8 litres of milk  How many small cups of 40 dl can be obtained from the milk can?  1 litre = 100 d  b). A road is 15 m wide, how many strides of 30 cm each can a boy take to cross the end.  c) How many books of 1.5 cm in thickness can be packed on a book shelf of 2.25 m wide?  d). A man’s stride is 70 cm.how many strides does he make to cover the journey of 2.8 km?  e) The road workers construct 15 m of the road per day. How many days will they take to construct a 3.6 km road? |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   **MEASURES 1 (PERIMETER)**  **FINDING PERIMETER OF SHAPE**  **Note**  Perimeter is the total length around the edges of a shape or  Perimeter is the total external distance around the shape ( is the total length of the outer sides of a figure)  Clues   1. Add all the outer sides   e.g find the perimeter of the shapes.  i) **Triangle** solution  5cm perimeter = a + b + c  7cm 3cm = ( 4 cm + 6 cm) + 7 cm + 5cm  = 10 cm + 12 cm  4cm 6cm **= 22 cm**    **Square**  ii) solution  1.2dm perimeter = 45  = 4 X 5  = 4 x 1.2 dm  = 4.8 dm  **Rectangle**  iii) solution  5m perimeter = 2 (L + W)  = 2 ( 1.4 m + 5 m)  1.4m = 2 ( 6.4m)  = 2 X 6.4 m  **= 12.8 m**  **Parallelogram**  iv) perimeter = 2 (l + b)  = 2 (8 mm + 11mm)  4mm = 2 (19 mm)  = 2 x 19 mm  11mm **= 38 mm**  **Rhombus**  v). solution  6cm 6cm perimeter = 4 s  2cm 13cm = 4 X S  = 4 X 13 cm  **= 52 cm**  8cm  vi) 8m 5cm  4m 5m 4cm  12m 12cm  Perimeter a) = a + b + c + d  = 8m + 12 m + 5 m + 4 m  = 20m + 9 m  **= 29m**    **Or for Isosceles trapezium**  Perimeter b) = a + b + c + d  = 8 m + 12 m + 5 m + 5 m  = 20 m + 10 m  **= 30 m**  vii)  13cm 7dm  Perimeter = a + b + c + d  = 13 dm + 13 dm + 7 dm + 7dm  = 26 dm + 14 dm  **= 40 dm**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   viii) clue 2   * Compare parallel sides to get the value of the unknown side.   e.g Find the perimeter of:  12cm  5 12-5=7  7 7cm  X  Y  3cm 3cm Xcm(7 +3)cm  5cm (5cm + y) = 12cm  i). X = 7m + 3 m  = 10 m  ii) Y = 12m – 5m  y = 7m  perimeter = a+ b + c +d + e + f  = 5m + 10m + 12m + 7m + 7m + 3m  = 44 m  Exercise   1. A squares piece of land measures 120m by 120m .calculate it’s perimeter in 2. meters 3. centimeters 4. A rectangular garden measures 0.5 km wide by 9 km long. Find its perimeter. 5. Okello moved 3 times round the shape below. What distance did he cover? 6. Find the distance round the shapes below.   4cm  4cm 3cm 9cm 3cm  3cm 7cm 8cm  4cm  5cm |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   MEASURE 1 (PERIMETER)  FINDING UNKNOWN SIDE GIVEN PERIMETER  Clues  Use / drive the formular for the perimeter of that given shape  e.g  1. The perimeter of a rectangle is 24 cm. Find its width if it’s length is 7 cm.  P = 24cm  W = ?  L = 7cm  Solution  2 ( l + w) = perimeter  2l + 2 w = 24 cm  (2 X 7 cm) + 2 w = 24 cm  14cm + 2 w = 24 cm  14cm – 14cm + 2 w = 24 cm – 14 cm  0 + 2w = 10 cm  2 = 10  2 2  W = 5 cm   1. The perimeter of a triangle is 34cm.one of its shortest sides is 8 cm and the sloping side is 10 cm. Find the other side.   8cm 10cm  a + b + c = perimeter  8cm + b + 10cm = 34cm  8cm + 10cm + b = 34cm  18cm + b = 34cm  18m – 18cm + b = 34cm – 18cm  B = 16cm  **Therefore other side is 16cm**  **Exercise**   1. The perimeter of the squared piece of land is 24 km.find the length of each side. 2. Two sides of a triangle are 12 dm,7 dm and its perimeter is 30 dm. Find the unknown side. 3. A square plot of land has a perimeter of 40 mm. Find its sides. 4. The perimeter of the shape below is 48 cm. Find its length and width.   w 3xcm    L  (2x + 4)cm   1. A rectangle has a perimeter of 42 cm if the length is 6 cm. Find its width. |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   **MEASURE 1 (AREA)**  **FINDING AREA OF SHAPES (TRIANGLE)**  Note   * Area is the amount of surface enclosed within lines / curves or * Area is the amount of surface enclosed by the polygon.   Area is measured in square units  e.g  Find the area of each shape below.   1. Area =  X b X h   =  X 12 cm X 8 cm  10cm = 1 X 6 cm X 8 cm  8cm = 48 cm  12cm  ii) Find the area of the shaded region below.  Solution  Area =  X b X h  9dm 15dm =  X 8dm X 9 dm  7dm = 1 X 4 dm X 9dm  = 36 dm2  6dm 8dm  10cm  8cm Height = 8 cm  Base = X cm + X cm  xcm  a 2 + b 2= c2  X2 + 82 cm = 102 cm  X 2+ (6 X8) cm = (10 X10) cm2  8cm 10cm X 2+ 64 cm = 100 cm  X2 + 64 cm 2– 64 2cm = 100cm2 -64cm2  X2 + 0 = 36 cm 2  X2 + 0 = 36 cm2  xcm  2= cm2  2 = cm 2  2 = cm 2  X = 6 cm  Base = (X + X) cm  = ( 6 + 6) cm  = 12 cm  Area =  X b X h  =  X 12 X 8 cm  = 1 X 6cm X 8 cm  = 48 cm**2**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   iv) FINDING UNKNOWN SIDES OF A TRIANGLE   1. Given area   e.g The area of a triangular garden is 96 km**2**.calculate it’s base if it’s height is 20km.  solution  X b X h =Area  X b X 20 km = 96 km X km  b X 10 km = 96 km X km  10 km 10 km  b = 9.6  10 km  Base = 9.6 km.   1. By comparing areas.   Clue   * Let the area of one triangle be equal to the area of the second triangle. e.g find the length marked b below.   12cm 20cm 12cm 9.6cm  9.6cm  6cm bcm 20cm  Area of angle A = Area of angle B  X b X h =  X b X h  X b X 12 cm =  X 20 cm X 9.6 cm  b x 6 cm = 10 cm X 9.6 cm  b x 6 cm = 10 cm X 96  10  b X 6 cm = cm x 96 cm  6 cm 6 cm  b = 16 cm  **Exercise**   1. Find the area of each triangle below.   Y  8cm 5cm  3cm  13cm  5cm  **A**  9dm 7dm  4dm  **D**  12dm **C**  4dm **B**   1. Calculate the length of lines marked by letters.   15dm x 24cm  8dm 6cm  12dm 20cm  2m  4m  15m h   1. A triangular piece of land has an area of 32 m2.if it’s height is 8 cm. Find its base   b). If the base of a triangle is 6 cm and its area is 15 cm2.calculate its height.  c). Find the base of a triangle whose area is 72 cm2 and height is 12 cm.  d) The area of a triangular piece of paper is 42 cm2.its base is 7 cm calculate the height. |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   **MEASURES 1 (AREA)**  **FINDING AREA OF QUADRILATERALS.**  **Note:**  A quadrilateral is any shape with four sides e.g. Finds the area of each figure below.  **Parallelogram**  i). Solution  6dm 8dm Area = b X h  = 11 dm X 6dm  11dm = **66 dm2**  ii). **Rectangle**  Solution  Area = LX W  = 12 cm X 5 cm  W=5cm **= 60 cm2**  L=12cm  iii). **Kite** Area =  X D X D  3cm =  X (3 + 3) cm X + (8 + 4)  4cm 8cm =  X 6 cm X 12 cm  3cm = 3 cm X 12 cm  = 36 cm2  **OR**  Total Area of angle A + area of angle B  = ( X b X h) + ( X b X h)  = ( X 6cm X 4cm) + ( X 6cm X 8cm)  = (3cm X 4cm ) + (3cm x 8cm)  = 12cm 2+ 24 cm2  = 36 cm2  iv) **Square** Solution  Area = side X side  = 0.4dm X 0.4dm  = 4 dm X 4 dm  0.4dm 10 10  = 1.6 dm2  100  = 0.16 dm2  **v) Trapezium**  b  7mm 9mm  a h  4mm  h 4mm  b a 7mm  9mm  Area =  X h (a + b)  =  X 4mm (7mm + 9mm)  =  X 4mm (16 mm)  = 2 mm X 16 mm  = **32 mm2**  vi)  **Rhombus** Solution  Area =  X D1 X D2  5m =  X 24mm X 10 mm  = 1 X 12 mm X 10 mm  12m 12m **= 120 mm2**  5m  Area = ( X b X h) X 4 triangle  =  X 5mm X 12 m) X 4  = 5 mm X 6 mm X 4  = 30 mm x 4  **= 120 mm2**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   vii) **Combined shape** solution  Total area= area of figure A + Area of figure B  5m **B** = (L X W) + (L X W)  = (4m X 4m ) + (7m X 5m)  3m = 16mm2 + 35 mm2  4m **A** **= 51 mm2**  4m  **Exercise**  Calculate the area of each shape below.  4dm  2dm  2.5m  1.2m 3dm  5m 4dm  7cm 3cm  3mm 5mm  10cm  **C**  **B**  **A** AB = 14cm  **D** CD = 12cm |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  |  |  |   MEASURES 1. (AREA)  FINDING THE UNKNOWN SIDE GIVEN AREA OF A QUADRILATERAL.  Example  1. The area of a squared piece of land is 20 m2 .find the length of each side.  Solution  Side X side = Area  S X S = 20 m2  S2 = (20 X 4) + 1 m2  4  S2 = 80 + 1 m2  4  S2 = 81 M2  4  2 = 81 m2  4  2 =  m2  2 = m2  2 = m2  Side = 3 X 3  Side = 9  2  Side = 4 m   1. The area of a trapezium is 32cm2.if its height is 4 cm one parallel side is 9 cm.find the second parallel side.   x h (a + b) = Area  x 4 cm (9cm + b) = 32 cm2  x 4cm (9 cm + b) = 32 cm2  18cm2 + 2bcm = 32 cm x 32 cm2  18cm2 – 18cm2 + 2 b = 32cm2 – 18 cm2  2bcm = 14cm2  2bcm = 14cm x cm  2 bcm = 14xm X cm  2 cm 2 cm  b = 7cm  Therefore; the second parallel side is 7cm  **Exercise**   1. The area of square is 16cm2 .find its side 2. The length of rectangle is 13 and its area is 78 cm2.calculate it’s width. 3. Find the base of a parallelogram whose height is 6 cm and area is 54 cm2. 4. A kite has an area of 72 dm2.if one of its diagonals is 8dm.find the second diagonal. 5. The sides of a rectangle are 6 cm wide and 8 cm long. Calculate the length of its diagonal. 6. The area of a trapezium is 34 cm2.it’s height is 4cm and one shortest parallel side is 7cm.Find the length of the longest parallel side. |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   **MEASURES 1.(AREA)**  **COMPARING DIFFERENT AREAS.**  Clues   * Make sure that the units are the same e.g. Deborah used square tiles of side 20 cm to cover her floor measuring 7m by 5m.  1. How many square tiles covered the floor? 2. If each tile costs shs.150. Find the cost of covering the whole floor.   Solution  Floor 5m  7m   1. 1m = 100 cm 1m = 100 cm   7m = (7 X 100) cm 5m = (5 X 100) cm  = 700 cm. = 500 cm  ii) No of tiles = length of a floor X width of a floor  side of a tile side of a tile  = 7m X 5m  = 20cm X 20 cm  = (100 X 500) cm2  20 X 20 cm2  = 175 X 5  = 875 Tiles   1. Tile = cost   1 tile = shs 150/=  875 tiles = shs 150 X 875  = shs 13125  Exercise   1. How many square tiles each 30 cm are needed to cover a floor of 15m long by 9m wide? 2. How many mats each 2m by 1.2 m can be used to cover a sitting room 10m by 6m? 3. Buwule used small bricks each measuring 15 cm by 8 cm to cover his rectangular compound of 30m by 20m.    1. How many bricks were used?    2. If each brick costs.shs. 50.what was the cost of covering the whole compound? 4. Iron sheets each 150m by 75cm are used on a rectangular roof of 4.5 m by 7m. 5. How many iron sheets were used? 6. Find the cost of roofing a rectangular house if each sheet costs shs 20,000. |
|  | **TOPIC**  **SUB TOPIC**  **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   **MEASURES 1 (AREA)**  **MORE ON AREA**  **Clue**   * Compare the side to get the unknown length and width * Get the area of each shape e.g a carpet is laid centrally on a floor of a room 10m by 8m.find the area of the uncovered part of the floor if the carpet left 1m on all sides.   **Solution**  Floor  1m  1m 1m  1m Carpet  10m   1. I) Length of the carpet = 10m – (1 + 1)m   = 10m – 2m  = 8m  ii) Width of the carpet = 8m – (1 + 1 )m  = 8m – 2m  = 6m  b (i) Area of a floor = L X W  = 10m X 8m  = 80m2  ii) Area of a carpet = L X W  = 8m X 6m  = 48m2  c). Area off un covered part = Area of floor – Area of a carpet  = 80 m2  - 48 m2  32 m2  Exercise   1. Calculate the area of the uncovered parts below.   3m  15 cm 3m 3m  **5m**  25cm **7m**  3m  30cm    2dm 5mm 5mm  30dm 6mm  2dm 2dm 7mm  5mm  2dm 5mm  20dm  4cm  4cm 4cm 16cm  4cm  24cm   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MTC |  |   MEASURES 2.(CIRCLES)  RADIUS AND DIAMETER  Note   1. A diameter is a straight line passing through the centre of a circle dividing it into two equal parts.   Centre  Diameter   1. A radius is a straight line running from the edge of the circle to the centre .it is half of the diameter   Circumference  Radius  CALCULATIONS / COMPARISON  Note  1. Diameter is twice the radius.  i.e. Diameter = R + R  Diameter = 2R  E.g. Find the diameter of a circle whose radius is 2.8cm.  solution  Diameter = 2r  = 2 X R  = 2 X 2.8 cm  = 5.6 cm  2 Radius is half a diameter  i.e Radius = D  = D  2  E.g. calculate the radius of a circle whose diameter is 3.2 dm.  solution  Radius = D  2  = 3.2dm ÷ 2 dm  = 32 ÷ 2  10 1  = 32 X 1  10 4  = 16  10  = 1.6 dm  EXERCISE  1.find the radius of the following circles whose diameters are:  a) 3cm  b) 12 dm  c) 8 cm  d) 21 mm  e) 3.4 m  2 calculate the diameter of the circle whose radii are   1. 1m 2. 3.5 cm 3. 72 mm 4. 3dm 5. 110 cm |

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|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  |  |  |   MEASURES 2. (CIRCLE)  MEASURING CIRCUMFERENCE AND DIAMETER  CIRCUMFERENCE  Circumference is the total distance round the circular object  Activity  Apparatus   * Circular objects – tins, cups, bottles and plates. * String/rope/tread and ruler.   Procedure   * Tie the string around the circular object. * Transfer the string (length measured) to ruler to read the exact length   Diameter  Apparatus   * Circular objects – cups, tins, bottle and plates. * String/thread and a metre ruler.   Procedure   * Measure the distance a cross the circular and then transfer the string to the metre ruler and read the exact length.   Pi (π)  Pi is the number of times the diameter fits into the circumference  i.e Pi (π) = C  D  The standard units for Pi =3.14  = 3  = 22  7   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  |  |  |   CALCULATING CIRCUMFERENCE  Note  When given diameter  C = π D  e.g Find the circumference of a circle whose diameter is 10dm (take any Pi suitable for the diameter)  solution  C = π D  C = 10dm X 3.4  = 10dm X 314  100  C = 31.4 dm  10  C = 31.4 dm  When given the radius  C =2 π r  C = 2 X 22 X 14m  7  C = 2 X 22 X 2 m  C = 44 X 2 m  C = 88 m  Exercise  1 Find the circumference of a circle whose diameter is (take any Pi)   * 1. 5mm   2. 20dm   3. 14 cm   4. 21 m   5. 1.4 cm   2 Calculate the circumference of a circle whose radii are (use any Pi)   * 1. 1.4 cm   2. 28 m   3. 7 cm   4. 70 mm   5. 63 dm |
|  | **TOPIC**  **SUB TOPIC**  **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   MEASURES 2 (CIRCLES)  PERIMETER OF CIRCULAR SHAPES  Clues   * Get the length of the unknown curves.   Examples  Find the perimeter of the shapes below  **Semi – circle**  Solution  AC = curve (circumference)  A C Diameter = 14cm  14cm  Circumference AC =  πD  =  X 22 X 14  7  = 11 x 2 dm  = 22 dm  Perimeter = AB + Curve  = 14 cm + 22 cm  = 36 cm  OR  Perimeter = ( Πr) + D  =(  X 22 X 14) + 14 cm  7  = (11 X 2 cm) + 14 cm  = 22 cm + 14 cm  = 36 cm  **Quadrant**  C Solution  AB = AC = radii=7dm  AC = curve (circumference)  Curve BC = 2πr  =X 2 X 22 X7  1 1  A 7dm B = 11dm  Perimeter = BC + AB + AC  = 11dm + 7dm + 7dm  = 11dm + 14 dm  = 25 dm  Or  Perimeter = (2πr) + 2r  = X 2 X 22 X7 dm + (2 X 7) dm  1 7 1  = 11 dm + 14 dm  = 25 dm  c).  **A** 14cm  **B** 14cm **C**  AB = BC = Diameter  AC = 28 cm  Curve AC =  X 22 X 14 X 2  7  = 11 X 2 cm  = 22 cm X 2  = 44 cm  Curve AB/BC =  X πD  = X 22 X 14cm  7  = 11 X 2 cm  = 22 cm  Perimeter = AC + BC + AB  = 44 cm + 22 cm + 22 cm  = 66cm + 22 cm  = 88cm  Exercise  Calculate the perimeter of the shapes below.  a) b)  21cm 14dm  c) d)  7cm  7m  14m 14m  e) 14m f)  28cm  28cm  28cm  28cm   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  | MATH |  |   MEASURES 2 (CIRCLES)  MORE ON CIRCUMFERENCE (REVOLUTION)  Note   * Circumference = revolution * Get the total distance and circumference * Make the units become the same. * Never consider remainders   e.g. 1  How many revolutions can a wheel of a car of diameter 35 cm make in a distance of 4.4 km?  Solution  Diameter = 35 cm  Total distance = 4.4 km  Circumference =   1. Circumference = πD   = 22 X 35  7 1  = 22 X 5 cm  = 110 cm   1. Total distance in cm = (4.4 X 100000) cm   = 44 X 100000  10 1  = 440,000 cm   1. No of revolutions = Total distance   Circumference  = 440000 cm  110 cm  = 4000 revolutions.  e.g ii  a wire of length 352 m is wound round a tin 400 turns. Find the diameter of the tin.  Solution  Total distance = 352 m  Revolution = 400 turns  Circumference =?  Diameter =?  Total distance in cm = (352 X 100) cm  = 35200 cm  Circumference = total distance in cm  Revolution  = 35200  400  = 88 cm  Revolution = total distance  Circumference  400 = 35200  1 C  400C = 35200  400 400  C = 88 cm  C = πD  88 = 22D  1 7  22D = 88 X 7  22D == 88 X 7  22 22  D = 4 X 7  D = 28 cm  **Exercise**   * + 1. A wheel has a radius of 14 dm.  1. What distance can it cover in 1 revolution? 2. What distance can it cover in 3 revolution?    * 1. The distance from town A to B can be covered by a wheel of diameter 35 m in 100 revolutions. What is the distance between town A and B.      2. How many revolutions can a wheel of diameter 70 cm make to cover a distance 88 km.      3. The tread 4400 cm long has been wound 50 times around a cylindrical tin calculate its diameter.      4. Find the diameter of the tin below whose wire length is 88m.   D:\CORNERSTONE 2015\all drawings others\LENGTHS.PNG |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | | P.7 |  |  | MATH |  |   MEASURES 2 (CIRCLE)  AREA OF A CIRCLE AND ITS PARTS  Clues  Use ∏ as 22 when the radius is amultiple of 7 and use ∏ as 3.14 when the radius is not a multiple of 7  e.g  1.Find the area of a circle whose diameter is 14 dm  Solution  Area = πr2  D= 14 dm  24dm r = 7 dm  Area = πr2  = 22 X r X r  7  = 22 X 7 dm X 7 dm  7 1 1  = 22 X 7 dm X dm  = 154 dm2  2 Find the area of the shapes below  10cm  Solution  D = 10 cm  r = 10 cm  2  r = 5 cm  area =  πr2  = X 22 X 5 cm X 5 cm  7  = 11 X 25 cm  7  = 39cm2   1. r = 14 cm   area =  πr2  = X 22 X 14 X 14  7 1 1  14cm = 11 X 14 cm2  = 154 cm2   1. Solution   450 r = 7 dm  centre angle = 450  7dm  Area = 45 πr2  = 45 X 22 X 7 dm X 7 DM  360 7 1 1  = 11 X 7 dm2  4  = 77 dm2  4  = 19dm2  Exercise  1.Find the area of a circle whose diameters are.  a) 42 dm  b) 14 cm  c) 7 cm  d) 56 dm  2 Find the area of each shape below.  14cm  600  21cm  28dm |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  | MATH |  |   **MEASURES 2 (CIRCLE)**  **AREA OF MORE SHAPE**  Clue   * Get the area of each shape then add.   Examples  Find the area of the shape below.  14cm  20cm  14cm 14cm L x h 14m  20cm  Total area = 2 πr2 + L + W  = ( 2 X 1 X 22 X 7 X 7 )+ (20cm X 14 cm)  1 2 7 1 1  = (22 X 7 cm) + 280 cm  = 154 cm2 + 280 cm2  = 434 cm2  Exercise  Calculate the area of each shape.  15cm  7m  14cm    20dm 8cm  7dm  6cm |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  | MATH |  |   **MEASURES 2. (CIRCLES)**  **AREA OF SHADED PARTS**  Clue   * Get the area of each shape and subtract where necessary   Example  Find the area of the shaded region below  12m    14m  14 m **A**  **B** 14m **C** 14m  12m   1. Area of A and C =  πr2 X 2   = ( 1 X 22 X 7m X 7m X 2 )  2 7 1 1 1  = 22 X 7m X m  = 154m2   1. Area of B = L X W   = 12m X 14 m  = 168 m2   1. Area of the shaded part = 168 m2   - 154 m2  014 m2  Exercise   1. Calculate the area of the shaded parts below   7cm 7dm  12cm 7dm 28dm  28cm  14cm  42cm  28cm  7cm  14cm |
|  | **TOPIC**  **SUB TOPIC**  TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | | P.7 | 18/7/2011 | 12:30 – 1:00 | MATH | 19 |   **MEASURES 2 (CIRCLE)**  **MORE ABOUT AREA (KNOWLEDGE OF CUTTING AND PACKING)**  Clues   * Never consider any reminder. * Refer the clues about knowledge of packing.   Example  A rectangular manila card is 49 cm by 35 cm circular cards of radius 7 cm are cut off the manila card as shown below.  35cm  14cm  49cm   1. How many circular cards are cut out of the manila?   No of cards = length of a manila X Width of a manila  Diameter diameter  = 49 X 35  14cm 14 cm  = 3 X 2  = 6 cards   1. Find the area of the manila wasted   Solution  i). Area of a rectangular manila  area = L X W  = 49 cm X 35 cm  = 1715 cm2  ii) Total area of 6 cards  area = 6 πr2  = 6 X 22 X 7 cm X 7 m  7 1 1  = 132 X 7 cm2  = 924 cm2  iii) Area of the wasted manila = Area of a rectangle – total area of a card  = 1715cm2  - 0924 cm2  0791 cm2  Exercise   1. Apiece of a rectangular paper 35dm by 21 dm is designed with circular paintings each of radius 3dm. 2. How many circular cards were in the design? 3. What is the area of the paper without circles? 4. Patrick prepared rectangular dough of 70cm by 56 cm. if he cut pan cakes of radius 7 cm. 5. How many pancakes did he cut out? 6. Calculate the area of the remaining dough 7. How many circular discs of diameter 7 m can be cut from a square metallic plate of side 42 m?   b). calculate the area of the wasted metallic plate.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  | MATH |  |   MEASURES 3 (AREA)  TOTAL SURFACE OF SOLID SHAPE   1. Calculate the total surface area of the shapes below   **Cuboid** Solution  T.S.A = 2LW +2Wh + 2lh  = (2 X 10m X 5m) + (2 X 5m X 8m) + (2 X 10m X 8m)  8m = (2 X 50m2) (2 X 40M2) +(2 X 80M2)  = 100m2 + 80 m2 + 160 m2  5m = 180 m 2+ 160 m2  10m = 340 m2  b).  8dm    5dm  10dm  T.S.A = LW + 2WH + 2LH  = (10dm X 5 dm) + (2 X 5dm X 8 dm) + (2 X 10dm X 8 dm)  = 50dm2 + (2 X 40dm2 ) + (2 X 80dm2)  = 60 dm2 + 80 dm2 + 160 dm2  = 290 dm2  **Cube**  Solution  T.S.A = 6 S2  = 6 X (S X S)  = 6 X (12 cm X 12 cm)  = 6 X 144 cm2  12cm = 864 cm2      **Open cube**   1. Solution   T.S.A = 5 S2  = 5 X (S X S)  = 5 X (12 cm X 12 cm)  = 5 X 144 cm2  12cm = 720 cm2  **Triangular prism**  10dm  6dm  20dm  8dm  = ( X b X h) + X b X h + ( L + W) + ( L X W) + (L X W)  = X 8dm X 6 dm X 2 ) + (20dm X 8 dm) + (6 dm X 20 dm) + (20dm X 10dm)  = 48dm2 + (160dm2 + 120dm2 ) + 200 dm2  = 48 dm2 + 280dm2 + 200dm2  = 528 dm2 |
|  |  | **Exercise**   1. A box chalk is 20 cm long, 10 cm wide 8 cm high.(a) what is the area of the manila used to make it’s faces?   b). Calculate the total length of the manila used to make it’s faces  2. A factory packs biscuits in boxes each of height 15 cm, length 6 cm and width 5cm.find the area of the hard paper required to make the faces of each box.  3. A carpenter makes square money boxes each of side 30dm.calculate the area of the wood needed to make one money box.  4. Calculate the area of each open cube whose side is 8 cm.  b) Find the total surface area of an open rectangular box whose length is 12 dm,  5. Find the area of the shapes below.  13cm  15cm  12cm  12cm xcm  10cm  5cm |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  |  |  |   MEASURES 2 (AREA)  TOTAL SURFACE AREA OF A CYLINDER  Note   1. A cylinder is a space shape with two circular ends (faces)   i.e Circular end  Circular end Curved surface  ∏r2 2∏rh ∏r2  T.S.A = πr2 + 2 πrh + πr2  = 2 πr2 + 2 πrh  Or  = 2 πrh (r + h)  e.g Find the total surface area of a cylinder below  10m  14m  Radius = 14m  2  = 7m  Height = 10m  T.S.A = 2 πrh ( r + h)  = 2 X 22 X 7 (7m + 10m)  1 7 1  = (2 X 22 X m) (17)  = 44m X (17m)  = 44m X 17m  = 748 m2  MORE ON A CYLINDER  Note  1.When a cylinder is cut open  - it forms a rectangle whose  a) length is the circumference of circular end (face)  b) width is the height of the cylinder  i.e  r  h = A = L X W w = h  OR  A = 2∏rh  L = C  Example  The diagram below shows a metallic drum which was cut open to form a door sheet.  14m  10m   1. Find the length of the door sheet which was made out of the sheet (take π = 22 )   7  L = C  Length = circumference w = h  C = πD  = 22 X 14 m  7  = 22 X 2 m  = 44m  The length of the door sheet is 44m   1. Calculate the area of the door sheet in (cm2)   L = C = 44m  W = h = 10m  Area = L X W 1m2 = 10,000 cm2  = 44m X 10m 440m2 = (10,000 X 440)cm2  = 440m2 = 4,400,000 cm2  **Exercise**  1.calculate the area of the shapes below  7cm  21cm  11cm 21cm  10m  14m  2.Find the area of the cylinder whose height is 0.5m and radius 0.7m  3. What is the area of the curved surface of an open cylinder whose radius is 10 cm and height is 50 cm as shown below?  20cm  50cm  b). Use the cylinder which was cut open to form a rectangular sheet below.  11m  7m  i). Find its length  ii) Calculate the area of a rectangle formed.  iii) a cylinder was opened to four rectangle. If the cylinder had the height of 21 dm and a radius of 21 dm   1. Find the circumference of the cylinder face. 2. Find the area of a rectangle formed. |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | | P.7 | 19/7/2011 | 8:40 – 9:20 | MATH | 21 |   MEASURERS 3 (VOLUME)  VOLUME OF SHAPES (PRISMS)  Review volumes of a cuboid and cube e.g Find the volume of the shapes below.  Prisms  Find the volume of the prism below  Solution  Volume = Area of triangle face X length  **Triangular prism**  = ( X b X h) X L  7m = ( X 7m X 3m) X 10m  6m = ( 7m X 3m) X 10m  10m = 210m3  16m  b). **Trapezoidal prism**  6dm 20dm  4dm    9dm  Volume = Area of a trapezoidal face X length  = ( X h (a + b) +XL  =  X 4 dm (6 dm + 9dm) X 20 dm  = 2 dm (15 dm) X 20 dm  = (2 X 15 dm2) X 20 dm  = 30dm2 X 20 dm  = 600 dm3  **c). Cylinder**  14m  solution  volume = Area of a circular face X height  = πrr2 h  = (22 X 14m X 14m) X 10 m  10m 7 2 2 1  = (22 X 7m2) X 10m  = 154m2 X 10m  = 1540m3  VOLUME OF A CONCRETE OF A CYLINDER  Note   * Concrete is the material used inside any pipe .i.e. inner space left empty. * Volume of concrete is got by subtracting the volume of outer cylinder and inner cylinder.   Example.  The figure below shows the cylindrical hollow pipe of concrete .calculate the volume of concrete (inner space left)  7cm  20cm  14cm  N.B height remain the same  - radius of inner cylinder =  that of outer   1. Volume of inner cylinder   Volume = πrr2 h  = (22 X 7 cm X 7cm ) X 20 cm  7 2 2 1  = (11 X 7cm2) x 10cm  = 77cm2 X 10 cm  = 770 cm3   1. Volume of outer cylinder   Volume = πrr2 h  = (22 X 7 cm X 7cm ) X 20 cm  7 2 2 1  = (22 X 7 cm2) X 20 cm  = 154 cm2X 20 cm  = 3080 cm3   1. Volume of concrete = outer volume – inner volume   = 3080 cm  - 0770 cm3  2310 cm3  Volume of concrete = π h (R2 – r2)  Where by R2 = Radius of outer cylinder  R2 = radius of inner cylinder  Volume of concrete = 22 X 30 cm (7 cm X 7cm) – 7cm X 7 cm)  7 2 2  = 440 cm (49 cm2 – 49cm2)  7 1 4  = 440 cm (196 cm2 – 49cm2)  7 4  = 440 cm X 147 cm  7 4  = 110 cm X 21cm2  = 2310 cm3  Exercise  1. What is the volume of each shape below?  a) b)  8cm  20dm  10cm  6cm  14dm  c)  10m  10m  10m  10m  Concrete   1. Calculate the volume of the concrete in the cylinder below.   80cm 28cm  7cm  14cm 35m 14m 21m    21m  14cm |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  | MATH |  |   MEASURES 3 (CAPACITY ) VOLUME  CAPACITY OF SOLID SHAPES  Note   * Capacity is the maximum amount of a liquid a contains holds in liters * Capacity in cm3 is got by “dividing” the volume in cm3 by 1000 cm3 i.e 1 cm3 = 1 litres   1000   * Capacity in m3 is got by ‘multiplying the volume in m3 by 1000 cm3   i.e 1 m3 = 1000 litres  - First get the volume of the container in cubic units.  Example  How many litres of water can the tank below hold?  2m  3m  4m  i). volume in m3 = (L X W) X h  volume = (4m X 3m ) X 2m  = 12m2 X 2m  = 24m3  Capacity = volume in m3 X 1000 m3  = 24m3 X 1000 m3  = (24 X 1000) litres  = 24000 litres  2.find the capacity of the cylinder whose base area is 154cm2 and height 100cm  Solution  Volume in cm3 = ( πr2 )h  = 154 cm2 X 100 cm  = 154000 cm3  Capacity = volume in cm3  1000 cm3  = 154000 cm3  1000 cm3  = 154 litres  Exercise   1. Calculate the capacity of each containers below   80cm  7cm 8m  10dm  20dm    25dm   1. How many litres of water can a rectangular tank of 50m by 40m and by 30m hold? 2. Find the volume of the cube in litres whose side is 20 cm. 3. Calculate the capacity of a cylinder whose radius is 7 cm and height 10cm. |

**8. GEOMETRY6**

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| **1** | **TOPIC**  **SUB-TOPIC** | **GEOMETRY (BEARING AND SCALE DRAWING)**  **ROTATION (REVOLUTION)**  Concepts   1. Geometry is a branch of mathematics which deals with shapes, angles, links, surfaces, points and so on. 2. Rotation is the complete turn from a point and back to a point (practically). 3. Rotation is the same as revolution which has one complete turn e.g 3600   CALCULATIONS  Examples  Starting point  1 rev = 3600   1. How many degrees make of a revolution?   Solution  1 revolution = 3600  :. Revolution = 360 x  = 120 x  1  = 1200 x 2  = 2400  Note:  1 revolution = 1 hour = 3600  1 minute = 3600  60  :. 1 minute = 60   1. The time is 2:40pm. What is the smaller angle between the hands of the clock?   Soln  D:\CORNERSTONE 2015\all drawings others\clock.PNG  From 2 2:40pm = 30 minutes  1 minute = 60  :. 30 minutes = (6 x 30)0  = 1800 | | | | |
|  | **EVALUATION** | EXERCISE   1. Calculate the angle made in each of the following movements /revolution). 2. b) c) d) 2 e) f) 0.5 g) 12 (r) 3. a) It is 30 minutes past 6pm. What angle is made by the hands of the clock? 4. The time is a quarter to ten in the morning. 5. Write this in figures 6. What angle have the hands of the clock made? 7. D:\CORNERSTONE 2015\all drawings others\clock.PNGa) Calculate the size of the angle made by the hands of the clock below. 8. D:\CORNERSTONE 2015\all drawings others\clock.PNG (iii)            1. D:\CORNERSTONE 2015\all drawings others\clock.PNGD:\CORNERSTONE 2015\all drawings others\clock.PNG (iv)        1. If it is 8:05am now, through what angle does the minute had turn to make 8:15am?   Answers   1. a) 1440 b) 1800  c) 1800 d) 8100 e) 2700 f) 1800 g) 43200 2. a) 1800 b) (i) 9:45am (ii) 2700 3. (i) 600 (ii) 900  (iii) 2700  (iv) 900 4. 600 | | | | |
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| **2** | **TOPIC**  **SUB-TOPIC** | **GEOMETRY (BEARING AND SCALE DRAWING)**  **FINDING ANGLES ON A COMPASS.**  Concepts   1. The magnetic compass has 8 main directions and the angle between the directions is 450 ie 2. SMALLER ANGLES:   Concepts   * Draw a compass direction and take the shortest distance to the given direction.   Eg  What is the smaller angle between North and South West?  Soln  N  NW NE  W E    SW SE  S      :. Smaller angle = 45  x3  = 1350   1. LARGER ANGLES:   Concepts  Draw a compass direction and take to longest distance to the given direction.  Eg.  Calculate the longer angle between North and South West.  Soln  N  NW NE  W E    SW SE    S  :. Larger angle = 450  x5  = 2250 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. What is the smaller angle between; 2. South west and East? 3. West and North? 4. East and North East? 5. South and East? 6. North and NE? 7. Calculate the larger angle between; 8. South and NE 9. West and South 10. North and North East 11. North West and South West 12. East and South   Answers   1. a) 1350 b) 900 c) 450 d) 900 e) 450 2. a) 2250 b) 2700 c) 3150 d) 2700 e) 2700 | | | | |
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| **3** | **TOPIC**  **SUB-TOPIC** | **GEOMETRY (BEARING AND SCALE DRAWING)**  **CLOCKWISE AND ANTI CLOCKWISE DIRECTIONS**  Concepts   1. CLOCKWISE DIRECTION  * This is the direction in which the hands of the clock turn. OR * It is the right hand turn beginning from North ie   N  W E  S  Clockwise turn.   1. ANTI CLOCKWISE DIRECTION  * This is the left hand turn from North / it is the opposite of clockwise turn. ie   N  W E  S  Anti clockwise turns.  CALCULATIONS:   1. In which direction will I face if I turned clockwise through an angle of 2250 from West?   Soln N  NW NE    W E  SW SE  S   1. Number of turns made = 2250   450  = 5 turns from West   1. New direction = South East 2. What angle will I make if I turned ant-clockwise from South to North East?   Soln  N  NW NE  W E    SW SE  S  :. Angle made from south – NE anti clockwise = 450  x3  = 1350 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. In which direction will I face if I turned clockwise through angle of; 2. 900 from North? 3. 1350 from South? 4. 1800 from East? 5. 2250 fro NE? 6. 3150 from NW? 7. In which direction will I turn if I turned ant-clockwise through an angle of:- 8. 900 from South? 9. 1350 from NE? 10. 2250 from West? 11. 450 from NE? 12. 3150 from West? 13. a) What angle will I make if I turned ant-clockwise from: 14. North to NE? 15. East to NW? 16. South to SE? 17. State the angles made through the following: 18. N b) N c) N     SE SE SW  Clockwise Anticlockwise Clockwise  Answers   1. a) East b) North West c) West d) West e) West 2. a) East b) West c) North East d) North e) North West 3. a) 3150 b) 1350 c) 450 4. a) 1350 b) 2250 c) 2250 | | | | |
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| **4** | **TOPIC**  **SUB-TOPIC** | **GEOMETRY (BEARING AND SCALE DRAWING)**  **ORDINARY BEARING**  Concepts   * Ordinary bearing simply means “direction” * The acute angle describing ordinary bearing is measured from “North” or “South”. * All directions can begin either from North or South through any given angle either clock wise or anti clockwise   Example  Find the direction of the given points below on the compass.  N  NW NE  W E    SW SE  S  N.B If a point is due North then the direction has to begin from North and if the point is due South then the direction has to begin from South.  - with the direction we use the points of the compass as North,South,East and West e.t.c   1. The direction of A from origin is 400 East of North. Ie   (N 400 E)  Soln   1. The direction of B from origin is 300 East of South. E   (S 300 E)  Soln   1. The direction of C from origin is 550 West of South. Ie   (550 W)  Soln   1. The direction of D from the origin is 480 West of North. Ie   (N 480 W) | | | | |
|  | **EVALUATION** | **EXERCISE**  Use the compass below to answer the following questions;  N  E A  W E    C B  S  What is the direction of;   1. A from O? 2. B from O? 3. C from O? 4. D from O? 5. E from O? 6. N   W P  V Q  W E  U R  T S  S  What is the direction of;   1. P from O? 2. Q from O? 3. R from O? 4. S from O? 5. T from O? 6. U from O? 7. V from O? 8. W from O?   Answers   1. a) N750E b) S 350 E c) S 250 W d) S 650 W e) N 700 W 2. a) N200 E b) N 500 E c) S 500 E d) S 250 E e) S 150 W   f) S 650 W g) N 800W h) N 100 W | | | | |
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| **5** | **TOPIC**  **SUB-TOPIC** | **GEOMETRY (BEARING AND SCALE DRAWING)**  **MORE ABOUT ORDINARY BEARING.**  Concepts   * Show the North direction at any point ie the lines that show the North direction of any two or more places must be parallel. Ie   N    x    N    y    Parallel  Lines   * The two co-interior angles between the lines showing the North add up to 1800.   ie  a + b = 1800  x + y = 1800   * The two alternate with between the lines showing the North direction are equal in size ie   a = y  x = b  Examples  Use the figure below to answer questions that follows;  N  N  W E  P  W E  S Q  S   1. Find the direction of Q from P.   Soln  The direction of Q from P is 700 East of South.  (S 700 E) / N 1100 E.   1. What is the direction of P from Q?   Soln  The direction of P from Q is 700 West of North.  Ie (N700 W) / (S 1100 W) | | | | |

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|  | **EVALUATION** | **EXERCISE**  Use the figure below to answer questions that follow;    N N  N  W x y E  Z  S S W E    S  What is the direction of;   1. Y from x? 2. Z from y? 3. Z from x? 4. Y from z? 5. X from y?   Answers;   1. N900 E / S 900 E 2. S 500 E / N 1300 E 3. S 150 E / N 1650 E 4. N 500 W / S 1300 W 5. N 900 W | | | | |
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| **6** | **TOPIC**  **SUB-TOPIC** | **GEOMETRY (BEARING AND SCALE DRAWING)**  **OPPOSITE DIRECTION OF ORDINARY BEARINGS**  Concepts   * Opposite direction means North to South rotation. eg.  1. The opposite of North is South, East is West NE is SW, SE is NW. 2. State the opposite direction for;     N  Q    N  N S  R  W E  P  S  S   1. The direction of Q from R is N600E.   It’s opposite direction is S 600 E.   1. The direction of P from Q is S 400 E.   It’s opposite direction is N 400 E.   1. The direction of R from P is N 700 E   It’s opposite direction is S 700 E | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Given the opposite directions for; 2. S 400 W 3. N 370 W 4. N 150 E 5. S 600 E 6. N 750 W 7. a) The direction of Q from P is N 400 E. Find it’s opposite direction.   b) The direction of Mukono from Lugazi is S 850 W. what is the direction of Lugazi from Mukono?   1. Use the figure below: Use the figure below   N N  890  Q P  S S    Answers   1. a) N 400 W b) S 3700 W c) S 150 E d) N 600 E e) S 750 W 2. b) SS 400 E b) N 850 W 3. a) N 890 E b) S 890 E | | | | |
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| **7** | **TOPIC**  **SUB-TOPIC** | **GEOMETRY (BEARING AND SCALE DRAWING)**  **BEARING (TRUE BEARING)**  Concepts   1. Bearing is an angle measured always from North clockwise. (Bearing are angles starting from only one point the North in only one direction. 2. The 3 rules on bearing: (N C3 rule)   N = Face North  C = Measure clockwise  3 = Use 3 digits  Eg.  N N N N    W E W E W E W E  S S S S    Bearing of East = 0900 Bearing of S = 1800 Bearing of W = 2700 Bearing of N = 3600   1. Bearings are used to describe the position of one place with reference to another. 2. Bearings are used by pilots, sailors, soldiers etc.   Examples   1. What is the bearing of A from B?   N N  A B    S S      Soln  The bearing of A from B is 0900   1. Find the bearing of South West.   Soln  N  NW NE  W E  SW S SE    Soln  The bearing of SW is = 450  x 5  = 2250   1. Give the bearing of the points below from the origin   N  A  D  W E  C B  S    Soln   1. The bearing of A from O = 0670   Soln   1. The bearing of B from O = 900   +300  Soln = 1200   1. The bearing of C from O = 1800   +0400  Soln = 2200   1. The bearing of D from O = 2700   +0250  = 2950 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. What is the bearing of; 2. Western? 3. North Western? 4. SE? 5. NE? 6. SW? 7. Eastern direction? 8. Use the compass below;   N  A  D  W E  B  C  S    What is the bearing of;``   1. A from P? 2. B from P? 3. C from P? 4. D from P?   Answers   1. a) 2700 b) 3150 c) 1350 d) 450 e) 2250 f) 0900 2. a) 0200 b) 1000 c) 2000 d) 3230 | | | | |
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| **8** | **TOPIC**  **SUB-TOPIC** | **GEOMETRY (BEARING AND SCALE DRAWING)**  **MORE ON BEARINGS (TRUE BEARING)**  Example  Find the bearing of C from D below and vice versa  N  C  W E N  S  W E  D  Soln   1. The bearing of C from D = 1800   +1200  3000   1. The bearing of D from = 1200 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Find the bearing of A from B in each figure below;   N N  A B  b) N  N B  A  c)  N N  W  B  W E S    A    d) N  A 1500 N  W E  B  S  e)  N N  B  750  A  f)  N  B N  720  A  S    Answers   1. 2700 2. 2200 3. 2340 4. 3300 5. 2550 6. 2880 | | | | |
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| **9** | **TOPIC**  **SUB-TOPIC** | **GEOMETRY (BEARING AND SCALE DRAWING)**  **OPPOSITE BEARINGS**  Concepts   1. When the given bearing is less than one eighty degrees (1800), it is opposite bearing is got by adding 1800 to that given bearing.   e.g  The bearing of P from Q is 0600. What is the bearing of Q from P?  Soln  Sketch  N  N  P    Q 600 S    S      :. The bearing of Q from P = 1800 + 600  = 2400  :. The bearing of Q from P is 2400   1. When the given bearing is more than 1800, its opposite bearing is got subtracting 1800 from it.   Eg  The bearing of x from y is 3150. Find the bearing of y from x.  Soln  X from y = 3150 more than 1800  Y from x = 3150 - 1800  = 3150  - 1800  1350  :. The bearing of y from x is 1350 | | | | |
|  | **EVALUATION** | **EXERCISE**   1. a) The bearing of A from B is 3150. What is the bearing of B from A? 2. The bearing of H from G is 3300. Calculate the bearing of G from H. 3. Find the bearing of B from A if the bearing of A from B is 1890. 4. Calculate the bearing of Mukono from Lugazi, given the bearing of Lugazi from Mukono as 2000. 5. Workout the bearing of P from Q if the bearing of Q from P is 1900. 6. Use the sketch to help you 7. Find the bearing of x from y if the bearing of y from x is 0300. 8. What is the bearing of A from B. Given that the bearing of B from A is 1750? 9. Calculate the bearing of V from U if the bearing of U from V is 1200. 10. Find the bearing of K from L below. 11. N N   N b    1500 N  K  L  1080 K  Answers   1. a) 1350 b) 1500 c) 0090 d) 0200 e) 0100 2. a) 2100  b) 3550  c) 3000 3. a) 3300 b) 2880 | | | | |
|  | **REMARKS** |  | | | | |
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| **10** | **TOPIC**  **SUBTOPIC** | **GEOMETRY (BEARING AND SCALE DRAWING)**  **SCALE DRAWING:**  Concepts   1. Scale drawing is the construction of big figures using smaller units. 2. The smaller units in construction are centimeters and millimeters. 3. The two types of length used in construction are  * Actual length - on the ground in km. * Drawing length on a map – in cm/mm.  1. A scale is what one centimeter represents in kilometers. Eg   Icm rep. 10km.  CONVERSION IN SCALE DRAWING:  (i) FROM DRAWING LENGTH TO ACTUAL LENGTH.  Concepts   * Multiply the given drawing length by the scale given. Ie small to big – multiply eg.   If 1cm rep. 10km, what will be the actual length of;   1. 8cm 2. 7.5cm   Soln   1. 8cm 1cm rep 10km   :. 8cm rep 10km 48  = (10 x 8)km  = 80km   1. 7.5cm   1cm rep 10km  :. 7.5cm rep 10 x 7.5km  = 10 x 55km   1. 10   = 75km  (ii) From actual length to drawing length  Concepts   * Divide the given km by the scale (km) e.g   If 1cm = 10km, what will be the drawing length of;   1. 80km 2. 14km   Soln   1. 80km   1km = cm  :. 80km = x cm  = 8cm   1. 14km soln   1km = cm  :. 14km = x cm  = 1.4cm  10  = 1.4cm | | | | |
|  | **EVALUATION** | **EXERCISE**   1. What will be the actual length on the ground that represents the following length on the map. If 1cm rep. 10km? 2. 4cm? 3. 11cm? 4. 14.8cm 5. 0.5cm? 6. 1 ½ cm? 7. 0.125cm? 8. What will be the drawing length on the map that represents the following distances on the ground? Given 1cm rep. 10km. 9. 9km? 10. 90km? 11. 2.5km 12. 250km? 13. 45km? 14. 0.05km?   Answers   1. a) 40km b) 110km c) 45km d) 5km e) 15km f) 12.5km 2. a) 0.9cm b) 9cm c) 0.25cm d) 25cm e) 4.5cm f) 0.005cm | | | | |
|  | **REMARKS** |  | | | | |
| **11** | **TOPIC**  **SUB-TOPIC** | **GEOMETRY (BEARING AND SCALE DRAWING)**  **CONSTRUCTION ON BEARINGS**  Concepts   * Make a rough sketch / first * Begin the construction with the working line / base line. * Change the km to cm by dividing by the scale. * Apply NC3 rule – Face with (Draw N at every point)   - Measure clockwise  - Use a 3 digit answer.   * Convert the answer / shortest distance always back to km by multiplying by the scale.   Examples   1. A plot of land is in form of a triangle. The distance from P to W is 60km and from Q to R is 85km. The angle QPR is 400. Use a scale of 1cm rep. 10km. 2. Construct an accurate sketch. 3. Find the shortest distance between Q and R.   Soln   1. P - Q = 60km   P - R = 85km  QPR = 400  Sketch  Q  60 KM  400  P 85km R     1. Drawing length 2. P – Q =   1km = cm  :. 60km = x 60cm  = 6cm   1. P – R   1km = cm  :. 85km = cm  = 8.5cm    An accurate   1. Shortest distance (qr) = 5.5 cm   = 5.5 x 10 km  = 55 km   1. A is 30 km west of town B and town C is 40 km from town B on a bearing of 150 using a scale 1 cm to rep 10 km 2. What is the shortest distance between A – C? 3. Find the bearing of B from C.   Soln   1. A – B = 30 km to the East 2. B – C = 40 km to the SE   ABC = 150 (SE)  Sketch N 30 KM N  1500  40 KM  N   1. Drawing lengths B - C   A – B 1 km = 1/10 cm  1 KM = 1/10 cm 40 km = 1/10 x 40/1  30 km = 1/10 x 30/1 = 4 cm  = 3 cm  An accurate   1. Shortest distance A – C = 6 cm / 6.1 cm / 6.2 cm   = 6 x 10 / 6.1 x10 / 6.2 x10  = 60 km /61 km/62 km   1. The bearing of B from C = 1800 + 1500   = 3300  Exercise   1. Oter left town O and travelled 16 km southwards to town P.He then travelled 12 km west wards to town Q from. 2. Draw a sketch diagram. 3. Using a scale of 1 cm to 10 km, draw an accurate diagram. 4. Find his shortest distance between O and Q 5. Byamuhange left village X and drove west wards to village Y, a distance of 30 km.He then drove southwards from village Y to village 2,a distance of 24 km and returned directly to X from Z. 6. Using a scale of 1 cm = 6km, draw an accurate sketch. 7. Find his shortest distance. 8. A steamer sailed from port D to port P a distance of 270 km on a bearing of 1200,from P it sailed to port Q a distance of 180 km on a bearing of 0300 9. Draw a rough sketch 10. Using a scale of 1 cm = 30 km,construct an accurate sketch. 11. Town A is 50 km on a bearing of 130 from town P. 12. Draw a sketch diagram to represent the two towns. 13. Using a ruler and a potrator, construct an accurate diagram (scale 10 km : 1 cm)   **Answers**   1. O – P = 16 km south   P – Q = 12 km west  **Sketch**  b). Drawing length P – Q = 12 km  O – P = 16 km 1 km = 1/10 cm   1. km = 1/10 cm 12 km = 1.2/10 cm   16 km = 1.6/10 cm = 1.2 cm   * 1. cm   2). X – Y = 30 km west  Y – Z = 24 km south  Sketch  b). Drawing length  X – Y = 30 km Y – Z = 24 km  1 km = 1/6 cm 1 km = 1/6 cm  30km = 1/6 X 30 cm 24 km = 1/6 X 24  = 5 cm = 4 cm   1. X – Z = 6.3 /6.4 cm/ 6.5 cm   = 37.8 km 38.4 km / 39 km  3). D – P = 270 KM – 120  P – Q = 180 km - 0300  **Sketch**  b) . Drawing lengths  D – P = 270 km P – Q = 180 km  1 km = 1/30 cm 1 km = 1/30 cm  270 km = 1/30 X 270 cm 180 km = 1/30 X 180 cm  9 cm = 6 cm  **An accurate**  4). Sketch  b). drawing length  A – P = 50 KM  1 KM = 1/10 cm  50 km = 1/10 X 50/1 cm  = 5 cm  **An accurate**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MTC |  |   GEOMETRY (POINTS AND LINES)  TOPI C  SUB TOPIC  IDENTIFYING POINTS  Concepts   1. A point is a fixed location in space. 2. A point ca n not be seen but can be represented by a dot. 3. Points at the same level form a plane. 4. A plane is a flat surface.   IDENTIFYING LINES  Concepts   1. A line is a set of points extending in both directions without ending. 2. A line has arrows to show that it doesn’t end.   DIFFERENT TYPES OF LINES.   1. A ray: is a part of one end of a line i.e. with one end point./ is a part of a line with onr end point. 2. A line segment is a part of a line with two end points. 3. Parallel lines are lines separated by the same distance at any point and cannot meet.i.e 4. Skew lines. are lines which lie on different planes and never meet i.e majorly edge of a box. i.e 5. Perpendicular lines are lines which form an angle of 90 i.e 6. Intersecting lines are lines that meet at a certain point.   Note  All lines must meet each other successfully .i.e if lines meet each other, they form points.  e.g  a) 2 lines 4 lines  Exercise   1. How many points are formed after successive intersection of: 2. 3 lines? 3. 5 lines? 4. Use the box below to answer questions that follow. 5. Identify parallel lines. 6. Identify skew lines. 7. Identify perpendicular lines.   Answers  1 a) 3 points  b). 9 points   1. (a) AD// BC ,AD// EH , BC // GF , EH // GF   b). AH and DE , BC and GF ,EH and FG  c) AH and HG, DE and EF, AH and HE, BG and GF CF and EF   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MTC |  |   Topic GEOMETRY (ANGLES)  DESCRIPTION OF ANGLES  Concepts  1.An angle is the amount of opening / turning  Types of angles   1. Acute angles ; These are angles less than 900.i.e range from 00 – 890   C:\Users\OFFICE\Pictures\2017-11-13\001.jpgC:\Users\OFFICE\Pictures\2017-11-13\001.jpg  C:\Users\OFFICE\Pictures\2017-11-13\001.jpg   1. Obtuse angles; are angles more than 900 but less than 1800.i.e range from 910 – 1790   C:\Users\OFFICE\Pictures\2017-11-13\001.jpg  C:\Users\OFFICE\Pictures\2017-11-13\001.jpg   1. Straight angles. Are angles on a straight line that add up to 1800   C:\Users\OFFICE\Pictures\2017-11-13\001.jpg  C:\Users\OFFICE\Pictures\2017-11-13\001.jpg   1. C:\Users\OFFICE\Pictures\2017-11-13\002.jpgRight angles; are angles that add up to 900   C:\Users\OFFICE\Pictures\2017-11-13\002.jpg  C:\Users\OFFICE\Pictures\2017-11-13\002.jpg   1. Reflex angles. Angles that are greater than 1800 but less than 3600 i.e range from   1800 – 3590  C:\Users\OFFICE\Pictures\2017-11-13\002.jpg  C:\Users\OFFICE\Pictures\2017-11-13\002.jpg  C:\Users\OFFICE\Pictures\2017-11-13\002.jpg   1. Angles at a point. These are all round angles that add up to 3600   C:\Users\OFFICE\Pictures\2017-11-13\002.jpg  **EXERCISE**   1. State the property of each type of the angle below. 2. Right angles 3. Obtuse angles 4. Acute angles 5. Reflex angles 6. Name the angles below 7. 070 c) 3500 8. 1110 d) 920   3.What is the largest  a) Acute angle?  b) Obtuse angle?  c) Reflex angle?   1. a) add up to 900 2) Acute < 3 a) 890   b). < 900 < 1800 b) Obtuse < b) 1790  c) > 9000 c) Reflex < c) 3590  d) < 180 < 3600 d) Obtuse <   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |     **TOPIC**  **SUB TOPIC**  GEOMETRY (ANGLES)  COMPLEMENTARY ANGLES  Concepts  Complementary angles : are any two or more angles that add up to 900  Examples  1. What is the complement of 300?  Let c be the complement of 300  Complementary angles = 900  C + 300 = 900  C + 300– 300 = 900 - 300  C + 0 = 600  C =600  Side work  90  - 30  60 | | | | |
|  |  | 1. Calculate the complement of (X + 40)   Solution  Complementary angles = 90  = 90 – (X + 40)  = 90 – X – 40  = 90 – 40 - X  = (50 – X)  The complement of (X + 40) is (50 – x)b)   1. What angle is ½ of its complement?   Solution   1. Let C be the complement   ii) Let C X ½ be the angle.  C X ½ = 90 – C  C/2 = 90 – C Lcm = 2   1. X C/2 = (90 – C) 2   C = 180 – 2C  C + 2C = 180 – 2C + 2C  3C = 180 – 0  3C = 180  3 3  C = 600  b). The angle = ½ of C  = ½ X 600  = 300  OR Angle = 90  - 60  30  Exercise   1. Find the complement of; 2. 150 c) 25 0 e) (X + 20) 0 g) (Y-10) 0 3. 800 d) 720 f) (30 – X) 0   2.a) if (X + 20) and (X – 40) are complementary angles, find the value of x  b) Find the value of x  C:\Users\OFFICE\Pictures\2017-11-13\003.jpgC:\Users\OFFICE\Pictures\2017-11-13\003.jpg  C:\Users\OFFICE\Pictures\2017-11-13\003.jpg   1. a) What angle is? 2. 1/3 of its complement? 3. 1/5 of its complement? 4. 2/3 of its complement?   Answers   1. a) C = 750 e) = (70 – X) 0   b). C=010 f) = (100 – y) 0  c) C = 650 g) = (60 + X) 0  d) C = 180   1. a) X = 550   b). i X= 300  ii) X = 150  iii) X = 080  3(a) C = 67.50 b) i = 750  ii) < = 22.50 ii) < = 250  C).i C = 540  ii) , = 360 | | | | |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY (ANGLES)  SUPPLEMENTARY ANGLES  Concepts   * Supplementary angles are any two or more angles that add up to 1800.   examples   * What is the supplement of 300?   Solution  Let K be the supplement of 300  K + 300 = 1800  K + 300 – 300 = 1800 – 300  K + 00 = 1800  K = 1500    The supplement of 300 is 1500  2). Find the supplement of (X + 100) 0  Supplement < = 1800  = 1800 – (X + 100) 0  = 1800 – X – 1000  = 1800 – 1000 – X  = 800 – X  = (80 – X) 0  3). Which angle is ½ of its supplement?  Solution   1. let P be the supplement   let P X ½ be the angle  P X ½ = 180 – P  2 X P/2 = (180 – P) 2  P = 3600 – 2P  P + 2P = 3600 – 2P + 2P  3P = 3600 – 0  3P = 3600  3 3  P = 1200   1. The angle = P of ½   = 120 0X ½  = 600  Exercise   1. Calculate the supplement of; 2. 43 d) (X – 40) 3. 124 e) (30 + X) 4. 72 f) 111 5. (4X – 40) and (X + 20) are supplement angles.   Find the size of each angle   1. What angle is; 2. 1/3 of its supplement? 3. 1/5 of its supplement? 4. ¼ of its supplement?   Answers   1. a) 1370 2 i) X = 400 3 c) 1440   b). 560 ii) 1200 and 600 ii) 360   1. 1080 3 (a) i 1350 2. (220 – X) 0 ii) 450 3. (150 – X) 0 b) i (1500 4. 69 0 ii) 30 0  |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   TOPIC GEOMETRY (ANGLES)  CO – INTERIOR AND CO – EXTERIOR ANGLE   1. Concepts  * Co – interior and co – exterior angles lie on a straight and add up to 180   C:\Users\OFFICE\Pictures\2017-11-13\004.jpgExamples  C:\Users\OFFICE\Pictures\2017-11-13\004.jpg  Find the value of Y  C:\Users\OFFICE\Pictures\2017-11-13\004.jpga)  solution  4y + 5y = 1800 (co – exterior)  9y = 1800  9y = 1800  9 = 9  Y = 200  C:\Users\OFFICE\Pictures\2017-11-13\004.jpg   1. Find the value of     Solution  2X + 110 = 180 (co – interior)  2X + 110 – 110 = 180 – 110  2X + 0 = 70  2X = 70  2X = 70  2 2  X = 35  EXERCISE  Find the size of the unknown angles below  C:\Users\OFFICE\Pictures\2008-08-31\001.jpgC:\Users\OFFICE\Pictures\2008-08-31\001.jpg  C:\Users\OFFICE\Pictures\2008-08-31\001.jpg  C:\Users\OFFICE\Pictures\2008-08-31\001.jpgC:\Users\OFFICE\Pictures\2008-08-31\001.jpg  C:\Users\OFFICE\Pictures\2008-08-31\001.jpg  C:\Users\OFFICE\Pictures\2008-08-31\001.jpg  C:\Users\OFFICE\Pictures\2008-08-31\001.jpg  Answers   1. X = 200 e) X = 400 2. X = 300 f) X = 43 ½0 3. X = 230 g) X = 220 4. X = 200 | | | | |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY (ANGLES)  ALTERNATE AND CORRESPONDING   1. Alternative angles   Concepts  Alternative angles form shape” Z’’ and so they are called “Z” angles. They are equal e.g  C:\Users\OFFICE\Pictures\2008-08-31\002.jpgC:\Users\OFFICE\Pictures\2008-08-31\002.jpg  C:\Users\OFFICE\Pictures\2008-08-31\002.jpgFind the value of x  Solution  3X = 800 – X (alternate interior)  3X = 800 – X  3X – X 800– X – X  2X = 800 – 0  2X = 800  2 2  X = 400   1. Corresponding angles   Concepts   * They face the same plane and equal in size.   Example  C:\Users\OFFICE\Pictures\2008-08-31\003.jpg  C:\Users\OFFICE\Pictures\2008-08-31\003.jpg  Find the size of X  Solution  2X = (X + 50) 0 (corresponding)  2X = X + 500  2X – X = X – X + 500  X = 0 + 500  X = 500  Exercise  Find the value of the unknown below  C:\Users\OFFICE\Pictures\2008-08-31\004.jpgC:\Users\OFFICE\Pictures\2008-08-31\004.jpg  C:\Users\OFFICE\Pictures\2008-08-31\004.jpg  C:\Users\OFFICE\Pictures\2008-08-31\004.jpg  C:\Users\OFFICE\Pictures\2008-08-31\004.jpgC:\Users\OFFICE\Pictures\2008-08-31\004.jpg  C:\Users\OFFICE\Pictures\2008-08-31\004.jpgC:\Users\OFFICE\Pictures\2008-08-31\004.jpg  Answers   1. a) X = 690 e) X = 200   b). X = 370 f) X = 120  c). X = 480 g) n = 300  d) n = 25 0 h) X = 200 | | | | |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   **GEOMETRY (ANGLES)**  **MORE ABOUT ANGLES ON PARALLEL LINES**  Concepts   * Sometimes draw dotted imaginary lines to tell the type of the angle. * Apply the idea of angle properties.   Examples   * Find the value of the unknown angle.   C:\Users\OFFICE\Pictures\2008-08-31\005.jpg  i). angle X = angle m + angle n  angle m = 50 (alternate)  ii) angle n = 1800 – 1100 (co – interior)  = 700  iii) angle X = 500 + 700  = 1200  C:\Users\OFFICE\Pictures\2008-08-31\006.jpg  i). X + 72 = 124 (Two opp interior one extra)  X + 72 – 72 = 120 – 72  X + 0 = 52  X = 52  OR  ii) X + 50 + 72 = 180 ( int < sum D)  X + 128 = 180  X + 128 – 128 = 180 = 128  X + 0 = 52  EXERCISE  Calculate the value of the unknown angles below.  C:\Users\OFFICE\Pictures\2008-08-31\006.jpg  C:\Users\OFFICE\Pictures\2008-08-31\006.jpg  C:\Users\OFFICE\Pictures\2008-08-31\006.jpg  C:\Users\OFFICE\Pictures\2008-08-31\006.jpg  Answers  1 (a) X = 150 0 2 a) r = 1220 d) X = 820  b). X = 800 q = 640 Y = 490  c) X = 700 b) x = 450  d) X = 1200 c) p = 700 | | | | |

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|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY (POLYGONS)  NAMES OF POLYGONS  Concepts   1. A polygon is a simple closed shape joined by line segment at its vertices. 2. “Poly” means many while “gon” means sides 3. Polygons are named according to the number of sides they have i.e   `   |  |  | | --- | --- | | POLYGON | NO OF SIDES | | TRIANGLE | 3 SIDES | | QUADRILATERAL | 4 SIDES | | PENTAGON | 5 SIDES | | HEXAGON | 6 SIDES | | SEPYAGON / HEPTAGON | 7 SIDES | | OCTAGON | 8 SIDES | | NONAGON | 9 SIDES | | DECAGON | 10 SIDES | | NUDECAGON | 11 SIDES | | DUDECAGON | 12 SIDES | |  |  |  1. TYPES OF POLYGONS  * Regular polygons * Irregular polygons   C) Irregular polygon are those whose angles and sides are not equal in size and length e.g scalene shape.  C:\Users\OFFICE\Pictures\2008-08-31\007.jpg  d). Regular polygons – have all the sides and angles equal in size and length e.g square, rhombus, equilateral triangle, pentagon, hexagon to decagon.  C:\Users\OFFICE\Pictures\2008-08-31\007.jpg   1. Types of triangles: A triangle is a plane fig bounded by 3 line segment. 2. **An equilateral triangle** with all the 3 sides and angles equal in length and size e.g   C:\Users\OFFICE\Pictures\2008-08-31\007.jpg  **C:\Users\OFFICE\Pictures\2008-08-31\008.jpgii) An isosceles triangle:** has two opposite sides equal in length and two base angles equal in size e.g  iii) Scalene triangle: where all the sides and angles not equal in length and size.  C:\Users\OFFICE\Pictures\2008-08-31\008.jpg   1. Classes of triangles: based on angles   i). Aright – angled triangle: has one right angle (900) e.g.  C:\Users\OFFICE\Pictures\2008-08-31\008.jpg  ii) An acute triangle with 3 angles less than 900  C:\Users\OFFICE\Pictures\2008-08-31\008.jpg  iii) An obtuse angled triangle: has one angle more than 900 but less than 1800 e.g.  C:\Users\OFFICE\Pictures\2008-08-31\008.jpg  Interior angles  Concepts   * All the three angles of any triangle form a straight line when opened at one vertex. * The interior angle of a triangle is 180 * Example. * Find the value of the unknown terms.   a) Solution  2X + 2X + 48 = 180  4X + 48 = 180  4X + 48 -48 = 180 – 48  4X + 0 = 132  4X = 132  4 4  X = 33  C:\Users\OFFICE\Pictures\2008-08-31\009.jpgb).  K + K + 15 + K + 45 = 1800  K + K + K + 15 + 45 = 1800  3K + 60 = 1800  3K + 60 – 60 = 1800 – 600  3K + 0 = 1200  3K = 1200  3X = 1200  3 3  K = 400  Exercise  C:\Users\OFFICE\Pictures\2008-08-31\010.jpgWork out for the value of the marked angles below  C:\Users\OFFICE\Pictures\2008-08-31\010.jpg  C:\Users\OFFICE\Pictures\2008-08-31\010.jpg   1. Two base angles of a triangle are (2X + 20)0 and (X + 10). Find the value of X if the third angle is (2x – 40)0 2. A triangle has angles marked as 2X, 3X and 4X .find the value of X.   Answers   1. a) X = 550   d). X = 300  e) X = 400 |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY (POLYGONS)  EXTERIOR ANGLES OF A TRIANGLE  Concepts   * all the three exterior angles of a triangle form the angle at a point which add up to 360 * e.g find K   C:\Users\OFFICE\Pictures\2008-08-31\011.jpg  (X + 10) + (2X – 40)0 + (2X – 40 )0 = 3600  X + 2X + 1X + (10 + 20) – 40 = 3600  5X + 30 – 40 = 3600  5X – 10 = 3600  5X – 10 + 10 = 3600 + 100  5X – 0 = 3700  5X = 3700  5 5  X = 740  C:\Users\OFFICE\Pictures\2008-08-31\011.jpgEXERCISE  Calculate for the unknown value  C:\Users\OFFICE\Pictures\2008-08-31\011.jpg  C:\Users\OFFICE\Pictures\2008-08-31\011.jpg  Answers  1(a) X = 400  b). K = 1010  c) X = 53 1/30 |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY (POLYGONS)  INTERIOR AND EXTERIOR ANGLES OF A TRIANGLE  Concepts  Sum of two interior angles – 1 opposite exterior angle.  i.e  C:\Users\OFFICE\Pictures\2008-09-02\001.jpg  < a + < b = two interior angles  < c = opposite extra  < a + < b = < c |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   **GEOMETRY (POLYGONS)**  **PROPERTIES OF QUADRILATERALS**  **Concepts**   1. A quadrilateral is any four sided shape.   Examples   |  |  | | --- | --- | | QUADRILATERAL | PROPERTIES | | C:\Users\OFFICE\Pictures\2008-09-02\001.jpg | * Two opposite sides equal and parallel * Two diagonals equal and bisect each other * Each angle is 900 | | Kite | * Two congruent sides equal * Two opposite angles are equal * Two diagonals and bisect each other at 900 but not equal | | square | * All sides equal in length * Two opposite sides parallel * Two diagonals which are equal and bisect each other at 900 * Each angle 900 | | parallelogram | * Two opposite sides parallel and equal in length * Two opposite angles equal in size sum of angles is 3600 * Two diagonals but not equal | | Trapezium | * Two opposite sides parallel * One angle of 900 * One perpendicular side * Two base angles equal * Angles not equal in size * Two opposite sides equal in length | | Rhombus  C:\Users\OFFICE\Pictures\2008-09-02\004.jpg | * All sides equal in length * Two opposite sides parallel * Two opposite angles equal in size * Two diagonals but not equal and bisect each other at 900 |   Calculations  Concepts   * The interior angle sum of any quadrilateral is 360 * Example * C:\Users\OFFICE\Pictures\2008-09-02\004.jpgFind the unknown  1. M = 181 ii) K = 180   - 068 - 091  M = 1120 K = 890  X + 89 112 92 = 360  X + 293 = 360  X + 293 – 293 = 360 – 293  X + 0 = 67  X = 67  EXERCISE   1. Find the value of the unknown   C:\Users\OFFICE\Pictures\2008-09-02\005.jpg |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY  REGULAR POLYGONS  Concepts   * Each centre angle is equal to each exterior angle.   i.e each centre angle = each exterior + angle  - All exterior / centre angles of any regular polygon add up to 360  Example  Find X  C:\Users\OFFICE\Pictures\2008-09-02\006.jpg  Solution  X + 2X + 3X + X + 10 = 3600  7X + 10 = 360  7X + 10 – 10 = 3600 – 10  7X = 3500  7X = 3500  7 7  X = 500  **EXERCISE**  Calculate the value of the unknown angles  C:\Users\OFFICE\Pictures\2008-09-02\006.jpg  Answers   1. X = 300 2. X = 450 |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY (POLYGONS)  CENTRE / EXTERIOR ANGLES  Concepts   * In regular polygons centre angles are equal to exterior angles. * The size of each centre / extra is equal to the number of sides of a polygon * All centre / extra of any regular polygons add up to 360   Example   1. Calculate the size of each exterior angle of a regular pentagon.   Solution  Pentagon = 5 sides  Each centre angle = all centre angles  No of sides  = 3600  5  Each entre angle is = 720  FINDING THE NUMBER OF SIDES  Concepts  Numbers of sides are got by dividing all centre / exterior angles by each centre / exterior angle.  Example  The exterior angle of a regular polygon is 60.\find the number of sides it has.  Solution  @ exterior angle = 600  All extra = 360  No of sides = 3600  60  = 6 sides  Exercise I   1. A regular polygon has 20 sides, what is the measure of each exterior angle? 2. Calculate the size of each centre angle of a regular polygon with 12 sides. 3. Find the size of each centre angle of 4. Equilateral triangle 5. Square 6. Octagon 7. Nonagon 8. Decagon   Exercise II   1. How many sides has a regular polygon whose exterior angle is 20? 2. calculate the number of sides of a regular polygon with an exterior angle of 72 3. find the number of sides of a regular polygon whose exterior angle is; 4. 450 5. 400 6. 360 7. 720 8. 120 9. 180   Answers  Exercise .I   1. Exterior angle = 180 2. Exterior angle = 300 3. a) Exterior angle = 1200   b). Exterior angle = 900  c) Exterior angle = 450  d) Exterior angle = 400  e) Exterior angle = 360  **Exercise II**   1. Sides = 18 2. 5 sides 3. a) 8 sides   b). 9 sides  c). 10 sides  d) 5 sides  \e) 30 sides  f) 20 sides |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY (POLYGONS)  INTERIOR AND EXTERIOR ANGLES OF A POLYGON  Concepts   * The interior angle and exterior angle of any polygon at any vertex add up to 180 i.e.   C:\Users\OFFICE\Pictures\2008-09-02\007.jpg  EXAMPLES   1. The size of each interior angle of a regular polygon is 144.Name the polygon   **Solution**  @ interior angle = 1440  @ exterior angle =  Interior angle + exterior angle = 1800  144 + e = 1800  144 – 144 + e = 180 – 1440  0 + e = 360  E = 360   1. No of sides = All exterior   @ exterior  = 3600  36  = 10 sides  ii) The polygon is a decagon   1. The interior angle and exterior angle of a regular polygon are in the ratio of 3:2 2. Find the size of each interior and exterior. 3. Name the polygon   Solution   |  |  |  | | --- | --- | --- | | Interior | Exterior | Total | | 3 | 2 | 180 |   Total ratio = 2 + 3  = 5 parts  i). @ interior angle = 3/5 X 1800 side work 36  = 3 X 36 X 3  = 108 108  ii) @ Exterior angle = 2/5 X 1800  = 2 X 36  = 72  b). i) No of sides = All Exterior  @ exterior  = 3600  70  = 5 sides  iii) the five sided polygon is a pentagon   1. The interior angle of a regular polygon is 90 more than the exterior angle 2. Calculate the size of each exterior angle. 3. Name the polygon.   Solution  @ exterior angle = e  @ interior = ( e + 90) 0  Interior + exterior angle = 1800  e + 90 + e = 1800  e + e + 90 = 1800  2e + 90 – 90 = 180 – 900  2e + 0 = 900  2e = 90  2 2    e = 450  ii) @ exterior angle = 45  b). No of sides = All exterior  @ exterior  = 360  45  = 8 sides  ii) The polygon is an octagon.  Exercise   1. The size of each interior angle of a regular polygon is 1500.Name the polygon. 2. Name the polygon whose interior angle is 600 3. the interior angle and exterior angle of a regular polygon are in the ratio of 5:1 4. Find the size of each angle 5. Name the polygon 6. The interior angle of a regular polygon is 100 more than the exterior angle. 7. Find the exterior angle. 8. Name the polygon. 9. The exterior angle of a regular polygon is half the interior angle. 10. Calculate the size of each angle 11. How many sides has the polygon?   Answers  1.i) @ Exterior angle = 30  ii) sides = 12 sides  iii) polygon = dodecagon   1. a) Exterior = 120   b). 3 sides   1. Triangle 2. a) exterior angle = 30   b).interior angle = 150  c) 12 sides  d) dodecagon  4. @ exterior angle = 40  Interior angle = 140  = 9 sides nonagon  5.@ Interior angle = 120  @ exterior = 60  Sides = 6 sides |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY (POLYGONS)  FORMING TRIANGLES FROM POLYGONS  Concepts  1. Forming triangles from polygons is called “Triangulation”.  2. the number of triangle is got by subtracting 2 from the total number of sides of a polygon  “n – 2” where “n” stands for number of sides.  Example  Find the number of triangles formed from a hexagon.  Solution  Hexagon = 6 sides  No of triangles = n – 2  = 6 – 2  = 4 Triangles  FINDING NUMBER OF SIDES GIVEN TRIANGLES  Hint  Apply the formula n – 2 = No of triangle,  Example  If 4 triangles are formed in a polygon how many sides has the polygon?  Solution  Triangle = 4  n- 2 = no of triangle  n – 2 = 4  n – 2 + 2 = 4 + 2  n – 0 = 6  n = 6  Exercise   1. find the number of triangles in a polygon whose number of sides are: 2. 5 sides 3. 10 sides 4. 7 sides 5. 12 sides 6. 15 sides 7. 20 sides 8. Calculate the number of sides of a polygon whose number of a triangle are: 9. 8 triangles 10. 6 triangles 11. 11 triangles 12. 15 triangles 13. 12 triangles 14. 18 triangles   Answers  1.a) 3 triangles  b) 8 triangles  c) 5 triangles  d) 10 triangles  e) 13 triangles  f) 18 triangles  2). a) 10 sides  b) 8 sides  c) 13 sides  d) 17 sides  e) 14 sides  f) 20 sides |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY (POLYGONS)  FORMING RIGHT ANGLES IN A POLYGON  Concepts   1. In a polygon, the number of right angles doubles the number of triangles. i.e   (n – 2) = 2n – 4  Examples  Find the number of right angles in polygon whose number of sides is 7  Solution  No of right angles = 2 n – 4  = (2 X 7 ) – 7  = 14 – 4  = 10 right angles  FINDING SIDES GIVEN RIGHT ANGLES  Concepts   * Drive the formula for right angles   Examples  A polygon has 10 right angles, how many sides does it have?  Solution  2 n – 4 = right angles  2n – 4 = 10  2n – 4 + 4 = 10 + 4  2n – 0 = 14  2n = 14  2n = 14  2 2  n = 7 sides  Exercise   1. Calculate the number of right angles of a polygon whose sides are; 2. 5 sides 3. 11 sides 4. 9 sides 5. 13 sides 6. 20 sides 7. Find the number of sides of a polygon whose number of right angles are; 8. 8 right angles 9. 4 right angles 10. 18 right angles 11. 12 right angles 12. 6 right angles   Answers  1.a) 6 right angles  b) 18 right angles  c) 14 right angles  d) 22 right angles  e) 36 right angles   1. a) 6 sides   b). 4 sides  c) 11 sides  d) 8 sides  e) 5 sides |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   **GEOMETRY (POLYGONS)**  **INTERIOR ANGLE SUM OF REGULAR POLYGONS**   * get the number of sides of any given shape   examples   1. one of the interior angles of a regular pentagon is 180.calculate the sum of it’s interior angles.   Solution  Interior angle sum = No of sides X @ interior angles  = 5 X 108  = 5400  OR  Interior angle sum = 180 (n – 2 )  = 180 ( 5 – 2)  = 180 ( 3 )  = 180 X 3  = 5400  OR  Interior angle sum = 900 ( 2n – 4)  = 900 (2 X 5) – 4  = 900 ( 10 – 4)  = 900 ( 6)  = 900 X 6  = 5400   1. A polygon has X sides. Calculate its interior angle sum.   Solution  Interior angle = 1800 ( n – 2)  = 1800 ( X- 2)  = 180X0 - 3600  Exercise   1. Each interior angle of a regular decagon is 150.calculate its interior angle sum. 2. A polygon has 9 sides. find its interior angle sum 3. Calculate the interior angle sum of a regular polygon whose interior angle is 60. 4. A regular polygon has one of its interior angles 1500 5. Name the polygon. 6. How many triangle does it have? 7. Calculate its interior angle sum? 8. The interior angle of a regular polygon is 9 times than external angle. 9. Calculate the size of each angle 10. Find its interior angle sum.   Answers   1. a) 12 sides   b). Interior angle sum = 18000  2 interior sum = 12600  3 @ exterior angle = 120  3 sides  Interior angle = 30   1. Exterior angle = 30  * 12 sides * Dodecagon * 10 triangle * 20 right angle  1. a) Exterior angle = 18   interior = 162  b). = 20 sides  c) interior angle sum = 32400 |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY (POLYGONS)  NUMBER OF SIDES GIVEN INTERIOR ANGLE SUM  Example  1. The interior angle sum of regular polygon is 1440.how many sides has the polygon?  Solution  180 ( n – 2 ) = Interior angle sum + angle sum  180 ( n – 2) = 14400  180n – 360 = 14400  180n – 360 + 360 = 1440 + 3600  180n – 0 = 18000  180n = 18000  180n = 18000  180 180  n = 10 sides  **Exercise**   1. The sum of interior angles of a regular polygon is 1260.calculate the size of each interior and extra 2. The sum of the interior angles of a regular polygon is 1080 3. How many sides has it? 4. Name the polygon. 5. The sum of the interior angles of a regular polygon is 540 6. Name the size of each centre angle. 7. How many triangles does it have? 8. Calculate the number of right angles it has.   Answers   1. a) 9 sides   b). @ exterior = 400  @ Interior = 1400  2).a) 8 sides  b) an octagon  c) 12 right angles  d) i) @ exterior = 450  interior angle = 1350  ii) 3 : 1  3 a) 5 sides  Ii pentagon  b (i) @ exterior = 720  ii) @ interior = 1080  c). 3 triangles  d). 6 right angles |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY (CONSTRUCTION)  PERPENDICULAR LINES  **Concepts**   1. There are four different types or ways of constructing perpendicular lines .VIZ 2. TO ANOTHER LINE   Procedure  i). if not given 0a line, draw a line of any length and mark any point on it.  ii) Construct 90 at that point.  Example  Given the line AB, below draw a perpendicular line to AB at O   1. AT A GIVEN POINT   Procedure  i). construct 900 at given point on the line given.  e.g  construct a perpendicular line at m  MN is perpendicular Pq.   1. BY BISECTING A GIVEN LINE   Procedure  i). To bisect a line is to divide it into two equal parts.  ii). Measure the exact length / partly less and mark 2 arcs on top and on bottom.  E,g Bisect the line XY below   1. BY DROPPING A PERPENDICULAR FROM A GIVEN POINT. 2. Measure from the given point to the base line (beyond) and mark 2 points on either side of the base line.   b). Construct 90 using the 2 points on the base line  1) drop a perpendicular from C to AB at X   1. Drop a perpendicular from R to PQ at X   Exercise   1. Copy each line below and construct a perpendicular at the given point. 2. Bisect each line below using a pair of compasses and a ruler. 3. Copy and drop a perpendicular from k |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY (ANGLES)  BISECTING ANGLES  Concepts   1. To bisect an angle is to divide it into 2 equal parts   Procedure   1. With the pointer at the angle given, open radius and mark 2 points one on each arm of the angle. 2. With the 2 parts mark 2 intersecting areas in front.   Example  Bisect the angle PQR below  COPYING ANGLES  Hint  Copied angle must be of the same kind with the sketch.  Procedure   * Draw a base line and mark one arm low mark the angle and the point on it. * Draw the arc for the first angle then transfer the same radius to the 2nd point repeat the steps.   E.g  1. copy the angle below  a)  b). copy ZXYZ to point Z  Exercise   1. Copy and bisect 2. Copy the following angles |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY (CONSTRUCTION)  CONSTRUCTION OF TRIANGLES  Concepts   1. Always start with the sketch 2. Construct the base line (longest length) 3. Complete the drawing ( construction) i.e. mark length, angles 4. Always measure the angles with a protractor and length with a pair of dividers   Examples   1. There are three different ways of constructing triangles.VIZ   i). GIVEN ALL THE 3 SIDES ( S.S.S)  Steps   * Construct a base line then complete e.g.   Construct a triangle ABC such that AC = BC = 6 cm and AB = 6.5 cm   1. GIVEN TWO SIDES AND ONE ANGLE ( S A S)   Procedure   * The one and only given angle must be at the base line.   e.g.  construct a triangle XYZ where XY = 5 cm angle XYZ = 30 and YZ = 4.6 cm   1. **GIVEN TWO ANGLES AND ONE SIDE ( ASA)**   Procedure   * All the two angles must be at the base line.   e.g  construct a triangle ABC where by AB = 6.3 cm angle ABC = 45 and angle BAC = 45  Solution  EXERCISE   1. Construct a triangle ABC of sides 4 cm 2. Construct a triangle XYZ where XY = 5 cm YZ = 6 cm and XZ = 7 cm. 3. Construct a triangle PQR such that PQ = 6 cm, angle PQR = 60 and QR = 5 cm .measure PR 4. Construct a triangle RST in which RS = 8 cm, angle R = 30 and RT = 5.9 cm measure ST. 5. Construct a triangle MNO in which angle MNO = 60, angle NMO = 90 and MN = 6.5 Measure angle D. 6. Construct a triangle EFG such that EF = 7 cm ,angle EFG = 30 ANGLE = 45 and measure angle G |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY ( CONSTRUCTION)  CONSTRUCTIING SQUARES  Tips   * A square has 4 sides all equal in length and each angle is 90   e.g.  1. There are two ways of constructing a square VIZ   1. GIVEN ALL THE SIDES   Procedure   * Make a sketch * Construct a base line * Construct 90 at each point at the base line.   e.g  construct a square ABCD of side 4.3 cm  solution   1. Sketch   B) GIVEN THE DIAGONALS  Procedure   * Make a sketch * Draw any diagonal and bisect it. * Measure half of that diagonal and make the points   e.g  Construct a square PQRS where the diagonal PQ = QS = 5 cm .measure the length of each side.  CONSTRUCTING A RECTANGLE  Procedure   1. A rectangle has 2 opposite sides equal in length and each angle of 900 2. Construct a base line and 900 at each point.   e.g  Construct a rectangle ABCD in which AB is 6 cm and CB is 4 cm.  EXERCISE   1. Construct the following squares whose sides are: 2. 3 cm c) 4.5 cm 3. 7 cm d) 5 cm 4. Given the diagonal construct the following squares. 5. AC = BD = 6 cm 6. AC = BD = 8 cm 7. AC = BD = 10 cm 8. AC = BD = 12 cm   3). Construct the following rectangles  a) AB = BD = 8 cm C = AD = 4 CM  b) length AB = 7 cm and width BC = 3.5 cm  c) PQ = 5 cm, QR = 2 cm |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   **GEOMETRY ( CONSTRUCTION)**  **CONSTRUCTING A PARALLELOGRAM**  **Concepts**   * A parallelogram has two opposite sides equal in length and parallel   Procedure   * Make a sketch * Construct the base line (longest) * Construct the given angle and then copy it to the next point at the base line. * Measure and mark the second length (short).   e.g.  Construct a parallelogram PQRS whose longer side QR IS 6 cm angle PQR = 600 and the shorter side PQ = 4 cm. measure the diagonals.  **CONSTRUCTING A RHOMBUS**  **Hints**   * A rhombus has all the 4 sides equal in length * It has two diagonals which bisect at 900   Procedure   * Make a sketch * Construct the base line as a side. * Adjust the radius to half the diagonal and mark the centre. * Complete the rhombus.   E,g  Construct a rhombus ABCD of sides 6 cm with diagonal AC = 8 cm and BD = 6 cm  Solution  Exercise   1. Construct a parallelogram PQRS where QR = 6 cm angle QR = 6 cm angle Q = 45 and line PQ = 3.5 cm   Measure angle PQRS  b). Construct a parallelogram JKLM where JK = 60cm angle J = 60 and JM = 4 cm. measure the diagonals.  c). Construct a parallelogram EFGH where EF = 6 cm EH = 6 cm and the diagonal FH = 10 cm  measure EG   1. Construct a rhombus ABCD where AB = 6 cm diagonal AC = 7 cm, BD = 6 cm. Measure angle ABC. 2. Construct a rhombus PQRS where QR = 7 cm, angle Q = 45 and angle PQ = 3.5 cm.measure angle PRS. 3. Construct a rhombus RSTV where triangle RSV is an equilateral of side 5 cm.   Measure angle U.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY (CONSTRUCTION)  CONSTRUCTING A REGULAR PENTAGON  Concepts   1. A pentagon has five equal sides in length 2. There are three different ways of constructing a regular pentagon VIZ. 3. GIVEN THE RADIUS   Procedure:   * Make a sketch * Mark the interior and exterior angles on the base line. * Mark off 5 arcs of the given side   e.g exterior angle = 360  5  Construct a pentagon of side 4 cm   1. sketch 2. GIVEN THE RADIUS   Procedure   * Make a sketch with the radius and center * Draw the centre angle. * Draw a circle using the radius from the centre * Use the length of the angle to make off 5 equal arcs   Centre angle = 360  5  = 72  e.g construct a pentagon of radius 4 cm.  solution   1. USING HALF THE CENTRE ANGLE AND SIDE   Procedure   * Get half of the interior angle   108  2  = 540   * Make the angle at each point at the base line to get the centre ,draw the circle. * Measure the sides and complete the construction   e.g  Construct a pentagon of side 5 cm.  sketch  Exercise   1. Construct a regular pentagon of side 4.3 cm and measure the radius. 2. Using a pair of campus and a ruler, protractors construct a pentagon in a circle of radius 4.5 cm. 3. By measuring the centre angles, construct a pentagon of side 6.0 cm. |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   **GEOMETRY (CONSTRUCTION)**  **CONSTRUCTING A HEXAGON AND OCTAGON**  **Concepts**   1. A hexagon has all the six side equal in length.   Procedure for hexagon   * Draw a circle of the given radius * With the same radius, mark off 6 equal arcs on the circumference and join. * E.g * Construct a hexagon of radius 4 cm   Solution  Sketch   1. An octagon has 8 equal sides in length.   Procedure   * Make a sketch with the centre angle of 45 * Draw a base line then construct 45 as the centre angle * Draw a circle using the length of the angle.   e.g  construct an octagon of radius 4 cm   1. Sketch   Exercise   1. Construct using a pair of compasses and a ruler only a hexagon of radius. 2. 6 cm 3. 3 cm 4. 5 cm 5. 4.5 cm 6. 2 cm 7. Using a pair of compasses and a ruler only construct an octagon of side. 8. 5 cm 9. 6 cm 10. 3.3 cm 11. 4.7 cm 12. 4 cm |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   **GEOMETRY (CONSTRUCTION)**  **DRAWING PATTERNS**  Concepts   * There are 3 ways of drawing patterns  1. USING INTERNAL ARCS MEETING AT THE CIRCUMFERENCE   Procedure   * Draw any circle and place the pointer at the circumference * Draw an internal arc to meet the circumference * From each point on the circumference mark 2 other arcs and repeat it several times.   An accurate   1. USING HALF ARCS   Procedure   * Draw arcs from the circumference only to the centre.  1. USING THE CIRCUMFERENCE ONLY   Procedure   * Make many circles from one circumference.   An accurate  DETERMING THE CENTRE OF A CIRCLE  Procedure   * Given any side with the unknown radius and centre.  1. Draw any 2 chords not parallel then bisect each. 2. The bisectors will meet exactly at the centre.   e.g  Determine the centre of the circle below.  **EXERCISE**   1. Draw the following patterns. 2. From the circumference to the circumference 3. Using half arcs to the centre. 4. Using the circumference of one circle. 5. Determine the centre of the circles below and measure the radii |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   GEOMETRY ( CONSTRUCTION )  CIRCUMSCRIBING AND INSCRIBING A FIGURE  Concepts   1. Circumscribing a figure means drawing a circle round it such that it passes through all the vertices.   Procedure   * Construct perpendicular bisectors of any two sides of the given figure. * The bisectors will meet at the centre and use it to draw a circle using the radius to the angle.   e.g  Given the triangle below, draw a circle round it.  Concepts  Inscribing a figure means drawing a circle inside it such that if touches all the sides of the figure.  Procedure   * Bisect any two angles of that figure * The bisector will meet at the centre * Measure the radius from the centre to the side and draw the circle.   e.g  Given the angle below, draw a circle inside it  EXERCISE   1. Using a ruler and a pair of compasses only.   i). Draw a triangle ABC of side 3 cm,4 cm,5 cm  ii) Draw the perpendicular bisector of any two sides meeting at X.  iii) Draw a circle round it using AX,BX and CX as the radii  2.Draw a line AC = 6 cm, construct 30 at A construct a perpendicular bisector of AC meeting with the arm of 30 at B. join B to C .Draw a circle round ABC.  3a) In triangle ABC,AB = BC = 7 cm AC = 50cm bisect angle BAC and angle ABC such that the bisectors meet at point m  b). PQR is a triangle in which angle P = 90, angle Q = 45 and PQ = 6 cm inside it. |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  | P.7 |  | MATH |  |   **GEOMETRY (SOLID SHAPES AND NETS)**  **NETS AND PROPERTIES OF PRISMS**  **Concepts**   1. A prism is a solid shape with 3 circumferences i.e. length, width and height  |  |  |  | | --- | --- | --- | | A PRISM | PROPERTIES | NET | | CUBE | * 6 faces * 8 vertices * 12 edges * All sides equal in length |  | | CUBOID | * 6 faces * 8 vertices * 12 edges * Sides not equal in length |  | | CYLINDER | * 2 circumferences * 1 curved surface |  | | TRIANGLE | * 2 triangle faces * 3 rectangular faces * 6 vertices * 9 edges |  | | PENTAGON | * 3 pentagonal face * 5 rectangular faces * 10 vertices * 15 edges |  | | TRAPEZOIDAL | * 2 Trapezoidal faces * 4 rectangular faces * 8 vertices * 12 edges |  | | SQUARED BASED | * 4 rectangular faces * 2 square faces * 8 vertices * 12 edges |  |   PYRAMIDS  Concepts   1. A pyramid is a solid shape with a base of 3 or more sides meeting at one point on top. 2. Pyramids are normal according to the shape of the base.  |  |  |  | | --- | --- | --- | | PYRAMID | PROPERTIES | NET | | CONE CIRCULAR BASED | * 2 faces * 1 vertex * 1 edge |  | | TRIANGULAR TETRAHEDRON | * 4 faces * 4 vertices * 6 edges |  | | SQUARE  RECTANGULAR | * 5 vertices * 5 face s * 8 edges * 5 faces * 5 vertices * 8 edges |  | | PENTAGON | * 6 faces * 6 vertices * 10 edges |  | | HEXAGON | * 12 edges * 7 faces * 7 vertices |  | |

**TIME**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|  | **TOPIC**  **SUB TOPIC**  **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  |  |  |   **TIME**  **CONVERSION IN TIME**   1. HOUR SYSTEM TO 24 HOUR SYSTEM   Note  – Time from mid night to mid- day is am (ante meridian) i.e morning time. It has 12 hours   * Time at mid day is noon = 12:00 noon * - Time from noon to mid – night is p.m (post meridian) i.e afternoon or evening time.   It has 12 hours  Clues  1. When 12 hour time given is “am” the hours in 24 hour clock do not change.  i.e. add 000 hours  characteristics of 12 hour system   * Uses column (;) and 3 digits for hours less than 10 hours   Characteristics of 24 hr system   * Uses hours and 4 digits though out.   e.g. express 7: 00 am in 24 hour clock  solution  7: 00 am = morning  7:00  + 00:00 hours  07:00 hours  2 When 12 hours time is p.m the hours in 24 hour clock changes by adding 12 hours covered in the morning.  Pm is replaced by “hours”  E.g change 11:25 pm to 24 hours clock system  11:25 pm = after evening 12 hours covered  = 11 25  + 12 00 hours  = 2325 hours  Exercise  Change the following 12 hour to 24 hour clock.   1. 1:15 am 2. 3:45 pm 3. 2:15 am 4. 9:05 pm 5. 6:28 pm 6. 10:25 pm 7. 11:00 am 8. 7:50 pm 9. 4:45 am 10. 9:17 pm   Note  12:00 noon = 1200 hours  12:00 mid night = 0000 hours  12:30 am = 0030 hours  12:30 pm = 1230 hours  Exercise  Change to 24 hour clock system  1.12:55 am  12:20 pm  12:05 am  12:45 pm   |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  | MATH |  |   MEASURE 4 (TIME)  CONVERSION IN TIME  24 HOUR CLOCK TO 12 HOUR CLOCK  Clues  1.when the 24 hour time given is less than 12 hours subtract 0000 hours and that means it is morning time (am)  e.g what is 0730 hours in 12 hours clock?  Solution  0730 hours = 7hours 30 minutes < 12 hours  07:30  + 00:00 hrs  7:30 am  2). When 24 hour time given is greater than 12 hours, subtract 12 hours from it which means afternoon / evening (pm)  E.g convert 1725 hours to 12 hour clock system.  Solution  1725 hours = 17 hours 25 mins > 12 hours  = 17:25  - 12:00 pm  5:25 pm  Exercise  Change the following to 12 hour clock system   1. 0100 hours 2. 2115 hours 3. 0900 hours 4. 1600 hours 5. 0015 hours 6. 2000 hours 7. 1945 hours 8. 0330 hours 9. 1300 hours 10. 0905 hours   Note  24 hours = 12hours  1200 hours = 12:00 noon  2400 hours = 12:00 mid night  1230 hours = 12:30 pm  0030 hours = 12:30 am  Exercise  Write in 12 hour system   1. 1220 hours 2. 0015 hours 3. 1245 hours 4. 0035 hours 5. 1205 hours |
|  | **TOPIC**  **SUB TOPIC** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | | P.7 | 20/7/2011 | 7:30 – 8:00 | MATH | 22 |   **MEASURES 4 (TIME)**  **DURATION (TIME SPAN)**  **Note**   * Duration is the period of time. * Let the units become the same.   Example  1.a plane left Entebbe at 1300 hours and arrived in cairo at 1730 hours .how long did the flight take?  Solution  Duration = Arrival – Departure  = HRS MIN  17 : 30  - 13 : 00  04 : 30  It took 4 hours and 30 minutes  2). A party started at 1700 hours and ended at 10:30 pm.how long did it take?  Solution  10:30 pm to 24 hour = 10 hours 30 minutes  = HRS MIN  10 : 30  + 12 : 00  22 : 30 hrs  Duration ending - starting time  = HRS MIN  22 : 30  + 17 : 00  05 : 30 hrs  It took 5 hours and 30 minutes  3.a nurse on night duty started working as 1845 hours and ended at 0730 hours.  How long was she on duty?  Solution   1. Hours left to complete the first day   = HRS MIN  24 : 00  - 18 : 45  05 : 15 hrs   1. Duration = ending time + remaining hours   = HRS MIN  07 : 30  - 05 : 15  12 : 45 hrs  She worked for 12 hours and 45 minutes  1. How many hours are there between 1130 hours and 1830 hours?  2. How many hours are there between 1700 hours and 0330 hours the next day.  3. A car left mbarara at 1330 hours and reached mbale at 1800 hours .how long did it take?  4. How many hours are there between 1830 hours and 7:30 am the next day?  5. An exam started at 1359 hours and ended at 1610 hours. How long was it?  6. We departed at kisoro at 2220 hours and reached at 0415 hours at kampala.how long was the journey. |
|  | TOPIC  SUB TOPIC | |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  | MATH |  |   **MEASURE 4 (TIME)**  **SCHOOL TIME TIBLE**  Example  Study the time table below and answer questions that follow.   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | From | 8:15am | 9:00 am | 9:45 am | 10:45 am | 11:15 am | 12:00noon | 12:00pm | 2:30pm | | To | 8:55 am | 9:40 am | 10:25 am | 11:10 am | 11:55 am | 12:40pm | 1:00 pm | 3:10pm | | MON | MTC | MTC | B | PAPE | PAPE | L/LAG | L | SWA | | TUE | ENG | ENG | R | R.E | MTC | MTC | U | R.E | | WED | S.S.T | S.S.T | E | IPS | SCI | SCI | N | PAPE MID | | THUR | AGRIC | AGRIC | A | SCI | SCI | L/LAG | C | S.S.T | | FRI | MTC | MTC | K | SWAH | ENG | ENG | H | IPS |   Questions  1. How long is each lesson?  Solution  Duration = To – From  = HRS MIN  8 : 55  - 8 : 15  0 : 40 hrs  @ lesson takes 40 minutes  2). At what time does lunch break starts?  Solution  It starts at 12:40 pm  3). What time do the pupils take studying math the whole week?  Solution  1 Math lesson = 40 minutes   1. math lesson = (40 X 6)   = 240 minutes  1 minute = 1 hours  60  240 minutes = 240 hours  60  = 4 hours  Exercise  Use the same time table above to answer the following questions   1. How long is the: 2. Break time? 3. Lunch break? 4. How long are the following sessions 5. Before break 6. Between break and lunch? 7. After break 8. What time do pupils take studying English in the whole weak? 9. At what time does the lesson begin each morning?  |  |  |  |  |  | | --- | --- | --- | --- | --- | | DATE | CLASS | TIME | SUBJECT | NO OF PUPILS | |  |  |  |  |  |   **MEASURE 4 (TIME)**  **OTHER TIME TABLE (TAXI,BUS ETC)**  Example  The table below shows the departure and arrival of a taxi at given stations   |  |  |  | | --- | --- | --- | | STATION | ARRIVAL | DEPARTURE | | Kayabwe |  | 8:15 am | | Buwama | 8:35 am | 8:40 am | | Kamengo | 9:10 am | 9:17 am | | Mpigi | 9:47 am | 10:02 am | | Katende | 10:15 am | 10:02 am | | Nsangi | 10:40 am | 10:48 am | | Kyengera | 11:05 am | 11:15 am | | Nateeta | 11:30 am | 11:42 am | | Kampala | 11:55 am |  |   Questions  1.how long did the taxi take to move from kayabwe to kamengo?  Solution  Arrival = 9:10 am  Departure = 8:15 am  Duration = arrival – departure  = HRS MIN  9 : 10  - 8 : 15  0 : 55 hrs  It took 55 minutes  2). For how long did the taxi wait at mpigi?  Solution  Departure = 10:02  Arrival = 9;47  Duration = departure – arrival  = HRS MIN  10 : 02  - 9 : 47  0 : 15 hrs  It waited for 15 minutes  3. How many stopovers did the taxi make?  Solution  It made 7 stop overs  4). At what time did it depart from Nateete?  It departed at 11:42 am  5). How long did the taxi take to move from kayabwe to kampala?  Solution  Duration = arrival – departure  = HRS MIN  11 : 55  - 8 : 15  3 : 40 hrs  It took 3 hours and 40 minutes.  Exercise  Refer to the exercises on pages  416 – 423 mk pupils book 7 |

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| **2** | **ALGEBRA 15 LESSONS** | | | | | | | | | |
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|  | | **P.7** | |  | | **MTC** | |  |
| **1.** | **TOPIC**  **SUB-TOPIC** | **ALGEBRA**  **REVISION ON ALGEBAIC EXPRESSIONS**  Concepts  1. Increase, sum, total, altogether = Addition to.  2. Decrease, difference, taken away, minus = Subtract from.  3. Product, times, groups of = Multiplication.  4. Over, quotient = Division.  5. Double / twice = x 2  6. Triple / thrice = x 3  7 Square = to power 2  8. Average = Total  No.  Examples:  1. Sum of 8 and K.  Soln  K + 8  2. Subtract 3 from m  Soln  M – 3  3. Product of n and 9  Soln  9 x n = 9n  4. Divide w by 6  Soln  W  6  5. Double g.  Soln  2 x g = 2g  6. Triple p.  Soln  P x 3 = 3p  7. Square x  Soln  X x X = X2  8. Square root of x.  Soln  √x\_\_\_\_\_\_\_\_\_  9. Half of y    Soln  1 x y = 1 y ( y)  2 2 (2\_)  10. r divided by 2.  Soln  r  2\_\_\_   1. 3 of a number   4  Soln  3 x n = 3n  4 4\_\_   1. Increase P by 3   Soln  P + 3   1. Decrease 3 by P   Soln  3 – p\_   1. Average of a, b, and c   Soln  a + b + c  3\_\_\_\_\_\_\_\_\_ | | | | | | | | |
|  | **EVALUATION** | **EXERCISE**  Write the algebraic expressions for  1. Sum of U and 4  2. Subtract 9 from p  3. Product of m and n  4. Divide 3 by m  5. Triple n  6. Square k  7. A quarter of n  8. Square root of 3  9. Decrease 7 by x  10. Increase m by 20%  11. Average of x and y  Answers  1. 4 + U 6. K2\_  2. P – 9 7. 1 n  4\_\_  3. Mn\_ 8. √3\_\_  4. 3  M\_\_ 9. 7 – x\_  5. 3n\_\_ 10. 20 + m 11. X + y  100\_ 2\_\_ | | | | | | | | |
|  | **REMARKS** |  | | | | | | | | |
|  |  | **DATE** | | **CLASS** | | **TIME** | | **SUBJECT** | | **N0. OF PUPILS** |
|  | | **P.7** | |  | | **MTC** | |  |
| **2** | **TOPIC**  **SUB-TOPIC** | **ALGEBRA**  **REVIEW ALGEBRAIC NOTATION**  Concepts  1. Thrice the difference between x and y.  Soln  3 (x – y)  2. Five times the sum of x and y  Soln  5(x + y)   1. Divide twice the difference between m and n by 5   Soln  2(m-n)  5 | | | | | | | | |
|  | **EVALUATION** | **EXERCISE**  Express in algebraic notation.  1. Double the difference between a and b.  2. The difference between 3b and 4 divided by a.  3. The total of 2a and 3 times 4b.  4. Triple the difference between x and y.  5. Divide the difference between 4 and k by the product of b and 3.  6. The sum of m and 5n multiplied by 2 minus 2n.  7. Multiply the difference between 2b and c by 3d.  8. Add the sum of 4a and 3b times 5 to twice the difference between b and c.  Answers  1. 2(a – b) ∕ 2(b – a) 5. 4 - k  3b\_\_\_\_  2. 3b – 4 6. (m + 5n) (2 – 2n) ∕ (2 – 2n) (m + 5n)  a\_\_\_\_  3. 4b(2a + 3) 7. 3d(2b – c)   1. 3(x – y) 8. 2(b – c) + 5(4a + 3b) | | | | | | | | |
|  | **REMARKS** |  | | | | | | | | |
|  |  | **DATE** | | **CLASS** | | **TIME** | | **SUBJECT** | | **N0. OF PUPILS** |
|  | | **P.7** | |  | | **MTC** | |  |
| **3.** | **TOPIC**  **SUB-TOPIC** | **ALGEBRA**  **REVIEW ALGEBRAIC PHRASES:**  Concepts  1. 2n + 12  Soln  Double a number and add 12 to the result.  2. 2(n + 6)  Soln  Add 6 to a number and multiply the result by 2.  3. n - 5  3  Soln  Divide a number by 3 and subtract 5 from the result.  4. x – 5  3  Soln  Subtract 5 from the number and divide the result by 3.   1. X2 + 7   Soln  Square the number then add 7 to the result.   1. (x + 7)2   Soln  Add 7 to the number then square the result.   1. 5x +2   6  Soln  Add 2 to 5 of a number. (2 added to % a number)  6\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. 5(x + 2)   6  Soln  5 times the sum of x and 2 divided by 6.\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | |
|  | **EVALUATION** | **EXERCISE**  Write the phrases for each of:   1. x+ 15 6. √a 2. n – 19 7. 3x   10   1. 3x 2. n 8. w + x + y + 2   8 4   1. y2 9. 3x + 15   Answers   1. 15 added to a number / 15 more than x. 2. 19 subtracted from a number / 19 less than n. 3. Triple a number / triple x / thrice x / three times x. 4. A number divided by 8 / divide n by 8. 5. Square a number / square of y / square y. 6. Square root of a. 7. of a number / a number multiplied by 8. Average of w, x, y and z. 9. Triple a number and add 15 to the result. 10. Triple the sum of a number and 15. | | | | | | | | |
|  | **REMARKS** |  | | | | | | | | |
|  |  | **DATE** | | **CLASS** | | **TIME** | | **SUBJECT** | | **N0. OF PUPILS** |
|  | | **P.7** | |  | | **MTC** | |  |
| **4.** | **TOPIC**  **SUB-TOPIC** | **ALGEBRA**  **SUBSTITUTION**  Concepts   1. a + b = (a) + (b) 2. m – n = (m) - (n) 3. ab = (a) x (b) 4. ab = (a) x (b)   c (c)   1. ab + ac = (axb) – (a x c) 2. a(b – c) = (a) x (b) – c)   Example   1. If a = 5, b = 2 and c = 0. Evaluate 2a + 3c – b   Soln  2a + 3c – b = (2 x a) + (3 x c) – b  = (2 x 5) + (3 x 0) -2  = 10 + 0 – 2  = 10 – 2  = 8\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. Given that a = 3, b = -2, and c = 5, find the value of a(b2 – c)   Soln  a(b2 – c) = (a) x (b**2** – c)  **=** 3(**-**2**2** – 5)  **=**  3(**-**2 x **-**2) -5  = 3(4 – 5)  = 3(**-**1)  = **-**3\_\_\_\_\_\_\_\_\_\_\_   1. If a = and b = . Work out a + b   Soln  a + b = + Lcm = 12  = (3 x 3) + (4 x 1)  12  = 9 + 4  12  = 13  12  = 1 | | | | | | | | |
|  | **EVALUATION** | **EXERCISE**   1. Given that a = 3, b = 2, c = -1 and d = 4.   Evaluate:   1. a + b + c + d 2. abc 3. 2a + 2b + 2c + 2d 4. 2a2 – c2 5. D2 (a – c) 6. If x = , y = , evaluate xy 7. If m = , n = . Find 8. If p = 1 and q = 2 . Evaluate pq -   Answers   1. (a) = 8 b) = -6 c) = 16 d) = 17 e) = 64 2. 3) = 4 4) = 3 | | | | | | | | |
|  | **REMARKS** |  | | | | | | | | |
|  |  | **DATE** | | **CLASS** | | **TIME** | | **SUBJECT** | | **N0. OF PUPILS** |
|  | | **P.7** | |  | | **MTC** | |  |
| **5.** | **TOPIC**  **SUB-TOPIC** | **ALGEBRA**  **COLLECTING LIKE TERMS**  Concepts   1. Like terms have exactly the same letters. 2. Multiplication, division and brackets make one single term. 3. Group the like terms before adding or subtracting.   Examples   1. When all terms are positives, add their coefficient then put the constant . eg 2. 8a + 5a + a + 2a   Soln  8a + 5a + a + 2a = (8 + 5 + 1 + 2)a  = 16a\_\_\_\_\_\_\_\_\_   1. a2bc + 2a2bc + 7a2bc   soln  a2bc + 2a2bc + 7a2bc = (1+2+7)a2bc  = 10a2bc   1. When all terms are negative, add their coefficients and put the –ve sign before their sum e.g   -3x – 2x – x – 3x  Soln  -3x – 2x – x – 3x = - (3 + 2 + 1 + 3) x  = - 9x   1. When the terms are both +ves and –ves, group the +ves first followed by –ves e.g 2. 3k – 2k – k + 10k – 2k   Soln  3k – 2k – k + 10k – 2k = 3k + 10k – 2k – k – 2k  = (3 + 10)k – (2 + 1 + 2)k  = 13k – 5k  = 8k   1. 3ab – 2ab + 5a + 2a   Soln  3ab – 2ab + 5a + 2a = 3ab – 2ab + 5a + 2a  = (3 – 2)ab + (5 + 2)a  = ab + 7a | | | | | | | | |
|  | **EVALUATION** | **EXERCISE**  Work out the following:   1. 2ab + ab 2. a + a + a + 3a 3. -2b – b – 3b – b 4. 12x – 3x + 2x – 4x 5. -8y – y – 2y 6. 6a + 7p – a – p 7. 2x + 3 + 4x + 3x + 1 8. 2p + 2p + 2p + 2p 9. –a – 2a – 3a – 4a 10. 12y + 3y **+** y   Answers   1. 3ab 6) 5a + 6p 2. 6a 7) 9x + 4 3. -7a 8) 8p 4. 7x 9) -10a 5. -12y 10) 16y | | | | | | | | |
|  | **REMARKS** |  | |  | |  | |  | |  |
|  |  | **DATE** | | **CLASS** | | **TIME** | | **SUBJECT** | | **N0. OF PUPILS** |
|  | | **P.7** | |  | | **MTC** | |  |
| **6.** | **TOPIC**  **SUB-TOPIC** | **ALGEBRA**  **FACTORIZATION**  Concepts:   1. Factorization is the breaking down of an algebraic expression into separate parts (features) ie 2. Identify common factors. 3. Divide the terms through by the common factor.   Examples  Factorize the following completely.  i) 6x – 4y  soln  6x – 4y = 2(63x – 42y)   1. 2   = 2(3x – 2y)  (ii) a2b – ab2  Soln  a2b – ab2 = (a x a x b) + (a x b x b)  = ab (~~a~~ x a x~~b~~) – (~~a~~ x ~~b~~ x b)  ~~a~~ x ~~b~~ ~~a~~ x ~~b~~  = ab (a – b)  iii) ax + ay + bx + by    Soln  a(ax + ay) + b(b + by)  a(~~a~~x + ~~a~~y) + b(~~b~~ + ~~b~~y)  ~~a~~ ~~a~~ ~~b~~ ~~b~~  a(x + y) + b(x + y)  = (a + y) (x + y)  iv) x2 – x + xy – y  soln  x(x2~~y~~ – ~~x~~) + y(x~~y~~ – ~~y~~)  ~~x~~ ~~y~~  x(x – 1) + y (x - )  = (x + y) (x – 1)\_  v) px – qy + qx – py  soln  px – qy + qx – py = px – py + qx – qy  = p(~~p~~x – ~~p~~y) + q(~~q~~x – ~~q~~y)  ~~P~~ ~~q~~  = p(x – y) + q(x – y)  = (p + q) (x – y) | | | | | | | | |
|  | **EVALUATION** | **EXERCISE**  Factorize the following completely:   1. abc – bcd 2. 3a – 6b 3. a2b2 – ab2 4. 3a2 – 9a 5. 54 – 81a 6. x2 – xy – 3x +3y   Answers   1. bc(a – d) 2. 3(a – 2b) 3. ab(ab – b) 4. 3a(a-3) 5. 9(6-9a) 6. (x + y) (x – 3) | | | | | | | | |
|  | **REMARKS** |  | |  | |  | |  | |  |
|  |  | **DATE** | | **CLASS** | | **TIME** | | **SUBJECT** | | **N0. OF PUPILS** |
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| **7.** | **TOPIC**  **SUB-TOPIC** | **ALGEBRA**  **REMOVING BRACKETS**  Concepts:   1. A term without a sign is a positive term e.g 5 = +5, y = +y. Multiply every term inside by a factor outside. 2. A positive term before the brackets doesn’t change any sign inside that bracket   e.g 3(x + y)  soln  3(x +y) = 3x + 3y   1. A negative sign / term outside the brackets or before changes all the signs inside that bracket e.g (i) -(5 – q)   Soln  -(5 – q) = -5 + q OR  = q – 5\_  ii) 3(x + 1) – (x – 1)  soln  3(x + 1) – (x – 1) = 3x + 3 – x + 1  = 3x – x + 3 + 1  = 2x + 4\_   1. Any sign after / in front the bracket does not affect any sign inside that bracket e.g   Add x – 4 to 3x – 5  Soln  (3x – 5) + (x – 4) = 3x – 5 + x – 4  = 3x + x – 5 – 4  = 4x – 9   1. Multiply each term inside the brackets by a fraction outside eg 2. (8m – 12p   Soln  2 3  (8m – 12p) = x ~~8~~m - x ~~12~~p  = (3 x 2m) – (2 x 3p)  = 6m – 9p\_\_   1. of (2x + 4y) + of (6x + 9y)   Soln  of (2x + 4y) + of (6x + 9y) = (2x + 4y) + (6x + 9y)    = ( x ~~2~~x + x ~~4~~y) + ( x ~~6~~x + x ~~9~~y)  = (x + 2y) + (2x + 3y)  = x + 2y + 2x + 3y  = x + 2x + 2y + 3y  = 3x + 5y\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | |
|  | **EVALUATION** | **EXERCISE**  Simplify the following:   1. 2(x + y) 2. -2(-3x) 3. –(x – y - z) 4. 4(y – 2) 5. x(2 + y) 6. (x + 2) – (x + 2) 7. Add y + 4 to y + 6 8. (18a – 27x) 9. (45n – 18m) - (21n – 35m)   Answers   1. 2x + 2y 2. 6x 3. –x + y + z / z + y – x 4. 4y – 8 5. 2x + xy 6. 0 7. 2y + 10 8. 10a – 15x 9. m + 3 10. 2n + 3m | | | | | | | | |
|  | **REMARKS** |  | | | | | | | | |
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| **8.** | **TOPIC**  **SUB-TOPIC** | **ALGEBRA**  **OPERATION ON FRACTIONAL TERMS**  Concepts:   1. Apply the Lcm 2. Cancel where necessary   Examples   1. Workout (a) x + x   2 3  Soln  x + x = (3x x) + (2 x x)  2 3 6  = 3x + 2x  6  = 5x  6\_  (b) p + p  3  Soln  p + p = (3 x p) + (1 x p)  1 3 3  = 3p + p  3  = 4p  3\_  (c) m – m  2 5  Soln  m – m = (5 x m) – (2 x m)  2 5 10  = 5m – 2m  10  = 3m  10\_  (d) x + x - x  4 8  Soln  x + x – x = (8 x X) – (2 x X) + (1 x X)  1 4 8 8  = 8x + 2x – x  8  = 10x – x  8  = 9x  8  (e) x    Soln  x x x = x x x  2 5 2 x 5  = x2  10  (f) 2m x 5p  3 8  Soln  2m x 5p = 5mp  3 8 12 | | | | | | | | |
|  | **EVALUATION** | **EXERCISE**  Simplify the following:   1. a) b + b b) 5a + a c) 2k + k + 3k   2 5 3 3 5 2   1. (a) a – a b) a + 3 – a + 2 c) 2 (2x – 3) - 2 (x + 4)   6 8 2 3 7 7   1. (a) x x x b) w x x c) m x 3m   3 5 11 9 21 5  Answers   1. a) 7b b) 16a c) 71k   10 3 30   1. a) 9 b) a + 13 c) 2x + 2   24 6 7   1. a) x2 b) wx c) m2   15 99 15 | | | | | | | | |
|  | **REMARKS** |  | | | | | | | | |
|  |  | **DATE** | | **CLASS** | | **TIME** | | **SUBJECT** | | **N0. OF PUPILS** |
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| **9.** | **TOPIC**  **SUB-TOPIC** | **ALGEBRA**  **OPERATION WITH POWERS**  Concepts:   1. When adding the same powers of the same base, add only the coefficients and leave the powers e.g 3m2 + 4m2   Soln  3m2 + 4m2 = (3 + 4) m2  = 7m2   1. When adding power of the same base, express in multiplication and add their values   e.g 22 + 23  Soln  22 + 23 = (2 x 2) + (2 x 2 x 2)  = 4 + 8  = 12   1. When subtracting the same powers of the same base, subtract only the coefficients and leave the powers e.g (a) 3p3 – p3   Soln  3p3 – p3 = (3 -1) p3  = 2p3  b) 32 – 23  Soln  32 – 23 = (3 x 3) – (2 x 2 x 2)  = 9 – 8  = 1\_   1. When multiplying powers of the same base, keep the same base and add the powers.   e.g (a) x2 x x3    soln  x2 x x3 = x2 + 3 x2 x x3 = X x X x X x X x X  = x5 = x5\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. When dividing powers of the same base, keep the base subtract powers e.g 2. P8 p2     Soln  p8 p2 = p8 – 2  = p6\_\_\_\_\_\_\_\_\_\_  p8 p2  ~~p~~ x ~~p~~ x p x p x p x p x p x p  ~~p~~ x ~~p~~  p x p x p x p x p x p  = p6   1. x a3 x a   a2  Soln  a2 x a3 x a1 = a2 + 3 =1  a2 a2  = a6  a2  = a6 a2  = a6 – 2  = a4\_   1. When solving powers of the same base, leave the base and take the power   e.g 2r = 8  soln  2r  = 8  2 8  2 4  2 2  1  2r = 2 x 2 x 2  ~~2~~r  = ~~2~~3  :. r = 2 | | | | | | | | |
|  | **EVALUATION** | **EXERCISE**  Work out the following:   1. a) 21 + 22 b) 7 x4 + 2x4 c) 2k2 + k2 + 3k2 2. a) 4n2 – n2 b) 62 – 32 c) 3x2 – x2 – x2 3. a) 23 x 21 b) x6 x x4 c) 72 x 73 4. a) b1 b2 b) x7 x2  c) 25m9 5m7 d) n6 x n2   m2 n4   1. Solve 2. 3n = 27 3. 4x = 16 4. 2k = 16 5. 5n = 125 6. 6x = 216   Answers   1. a) = 6 b) = 9x4 c) = 6k2 2. a) = 3n2 b) = 27 c) = x2 3. a) = 24(16) b) = x10 c) = 75 4. a) = b-1 b) = x5 c) = 5m0 5. a) n = 3 b) x = 2 c) k = 4 d) n = 1 e) x = 3 d) d = n4 | | | | | | | | |
|  | **REMARKS** |  | | | | | | | | |
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| **10.** | **TOPIC**  **SUB-TOPIC** | **ALGEBRA**  **SOLVING INEQUALITIES**  Concepts:   1. Solve for the unknown then give the solution set. 2. The signs change when; 3. You multiply immediately through by a –ve. 4. You divide immediately through by a –ve. 5. The terms are reserved.   Examples:   1. Find the solution set from 3x – 3 12   Soln  3x – 3 12  3x – 3 + 3 12 + 3  3x - 0 15  3x 15  3x 15  3 3  :. X 5 (integers less than 5)\_\_\_\_  x x x x x x  -2 -1 0 1 2 3 4 5 6 7 8  :. X = {… -1, 0, 1, 2, 3, 4}\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. Solve and find the solution set for   2x 3  -2  Soln  2x 3  -2  +2 x 2x 3 x -2  -2  2x  -6  2x -6  2 2  :. X -3 (integers greater than -3)\_\_\_\_\_\_\_  x x x x x x  -4 -3 -2 -1 0 1 2 3 4 5 6  :. X = {-2, -1, 0, 1, 2, 3, ….}   1. Find the solution set for 8 -2 2   Soln  8 -2x 2  8 2x 2  2 2 2  -4 x -1 (integers greater than -4 but less than -1)\_\_\_\_\_  x x  -5 -4 -3 -2 -1 0 1 2 3 4 5  :. X = {-3, -2}\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | |
|  | **EVALUATION** | **EXERCISE**  Solve and give the solution set for each of:   1. x + 3 3 2. y – 5 7 3. -9p 45 4. 3x + 3 -6 5. 3m 3   -7   1. 3(x – 12) 15 2. 16 -4x 12 3. 6+1 n + 3   Answers   1. a) x 0 b) x = {1, 2, 3, 4, 5, …} 2. a) y 12 b) y = {(12), 13, 14, 15, …} 3. a) p -5 b) p = {… -9, -8, -7, -6, (-5)} 4. a) x -1 b) x = {… -5, -4, -3, -2, (-1)} 5. a) m -7 b) m = {… -9, -8, (-7)} 6. a) x 17 b) x = {… 20, 19, 18, (17)} 7. a) x -4 x -3 b) x = {(-4), (-3)} | | | | | | | | |
|  | **REMARKS** |  | | | | | | | | |
|  |  | **DATE** | | **CLASS** | | **TIME** | | **SUBJECT** | | **N0. OF PUPILS** |
|  | | **P.7** | |  | | **MTC** | |  |
| **11.** | **TOPIC**  **SUB-TOPIC** | **ALGEBRA**  **WORD PROBLEMS IN INEQUALITIES**  Concepts:  Re-name the solution set with any letter.  Examples   1. The H/M’s car can accommodate maximally 5 people. 2. Put this information in an inequality form.   Soln  Let y be inequality  Maximally 5 people = less than and equal to 5  :. Y 5   1. Give the solution set for the above inequality.   Soln  Y 5 = (integers less than and equal to 5)\_\_\_  x x x x x  -3 -2 -1 0 1 2 3 4 5 6 7  :. Y ={… 1, 2, 3, 4, (5)   1. The interview panel can interview more than six people but less than thirteen people a day. What possible number of people can the panel interview?   Soln   1. Let k be the inequality more than six but less than 13 = 6 k 13   :. 6 k 13\_   1. Solution set   K = {7, 8, 9, 10, 11, 12}\_   1. What number can be added to seven to give a number greater than 15.   Soln   1. Let n be the number   n + 7 15  n + 7 – 7 15 – 7  n + 0 8  :. n 8\_\_\_\_\_\_\_\_   1. Solution set   n = {9, 10, 11, 12, …..} | | | | | | | | |
|  | **EVALUATION** | **EXERCISE**   1. What counting digit can be added to 4 to give a number less than 5? 2. Okullo is 8 years, Mark is 6yrs, Nakato is 3 years old. A school admits pupils from the age of 5 to 11. Which of these pupils will not be accepted? 3. A ticket states that for children 8 years and below enter freely. Which of these will gain entry? Kato 8yrs, Sarah 7yrs, Asio 10yrs and Abbey 4yrs. 4. A doctor prescribed a dosage for children, she said for children above 8yrs but not more than 17yrs take 2 spoons a day. Write an inequality using d.   Answers   1. a) x 1, b) x = {… -4, -3, -2, -1, 0} 2. a) 5 k II , b) k = {(5), 6, 7, 8, 9, 10, (11)}   Nakato will not be accepted.   1. a) x 8 b) x = {(8), 9, 10, 11, 12, ….} 2. a) 8 d 17 b) d = {9, 10, 11, 12, 13, 14, 15, 16}   **Activity**  **Solve the following equations**   1. a) b – 8 = 3 b) 5y – 7 = 18 c) -3 +2x=9 d) x2 – 3 = 33 2. a) y+2=10 b) 3y + 5 = 14 c)6 + d = 8 d) n2 + 11 = 36 3. a) 2 – m = 4 b) 5 + y = 16 c) 4 – p = 7 4. 3m + 5 = 14 | | | | | | | | |
|  | **REMARKS** |  | | | | | | | | |  |  |  |  |  |
|  |  | **DATE** | **CLASS** | | **TIME** | | **SUBJECT** | | **N0. OF PUPILS** | |
|  | **P.7** | |  | | **MTC** | |  | |
| **12.** | **TOPIC**  **SUB-TOPIC** | **ALGEBRA**  **SOLVING SIMPLE EQUATIONS**  Concepts:   1. WITH SUBTRACTION - Add the known term to either side / both sides.   e.g (a) 2x+ 6 = 18 b) x2 + 1 = 10  Soln x2 + 1 – 1 = 10 – 1 3 9  2x + 6 = 18 x2 + 0 = 9 3 3  2x + 6 – 6 = 18 - 6 x2 = 9 1  2x + 0 = 12  2x = 12 x2 =  2 2 x2  =  :. X = 6\_ x2 = 32  :. x = 3   1. WITH ADDITION - subtract the known term from both sides / either side.   e.g  (a) -8 + p = 5  P – 8 = 5  P – 8 + 8 = 5 + 8  P – 0 = 13  :. P = 13  b) 3a – 8 = 7  3a – 8 + 8 = 7 + 8  3a – 0 = 15  3a = 15  3 3  :. a = 5  **Activity**   1. a) 2x = 16 b) **-**2x = 2 c) 4n = 4 d) **-**k = 3   3   1. a) 7x = 42 b)  **-**3 x **-**6   2   1. x = 2 b) k – 3 = 6 c) 8m = 64  |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Date** | **Class** | **Time** | **Subject** | **No. of pupils** | |  |  |  |  |  |  1. OTHERS 2. WITH A COEFFICIENT – Divide both / either by the coefficient e.g 5x = 25   Soln  5x = 25  5 5  :. x = 5   1. WITH –VE UNKNOWN - Divide / multiply with sides by a negative e.g –P = 10   Soln  -p = 10  - p (-1) = (10) -1  P = -10   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Date** | **Class** | **Time** | **Subject** | **No. of pupils** | |  |  |  |  |  |  1. WITH A DENOMINATOR - Cross multiply / use Lcm eg n = 8   2  Soln  n = 8 Lcm = 2  2  n x ~~2~~ = 8 x 2  ~~2~~  n = 16   1. USING MULTIPLICATIVE INVERSE: Multiply by the inverse of the coefficient   e.g 3m = 7  Soln m =  3m = 7 :. m = 2  x 3m = 7 x | | | | | | | | |
|  | **EVALUATION** | **Activity**   1. a) 2m = 14 b) **-**32 = 5 c) 7y = 14 2. m = 4 b) = 189 c) = 18 3. = 20 b) y= 9 c) = 24 | | | | | | | | |
|  | **REMARKS** |  | | | | | | | | |
|  |  | **DATE** | **CLASS** | | **TIME** | | **SUBJECT** | | **N0. OF PUPILS** | |
|  | **P.7** | |  | | **MTC** | |  | |
| **13.** | **TOPIC**  **SUB-TOPIC** | **ALGEBRA**  **MORE ABOUT SOLVING EQUATIONS**  Concepts:  1. WITH BRACKETS - Multiply each term inside by a factor outside e.g  2(3X – 1) – 4(X – 1) = 4  Soln  6x – 2 – 4x + 4 = 4  6x – 4x + 4 – 2 = 4  2x + 2 = 4  2x + 2 – 2 = 4 – 2  2x + 0 = 2  2x = 2  2 2  :. X = 1\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Activity**  **With brackets**  **Solve the following equations**   1. 5(m+4)=30 b) 2(x +1) +3 (x+1)=0 c)3(3x-1)-6(x-2)24 2. 3(w+1)=12 b)3(y – 3)=21 3. 7(y – 5) = 70 b) 4(m – 2\_ = 32 c)4(x – 1) = 28  |  |  |  |  |  | | --- | --- | --- | --- | --- | | Date | Class | Time | Subject | No. of pupils | |  |  |  |  |  |  1. WITH A POWER - Collect like terms and get the required square root e.g   9n2 = 121  Soln 11 121 3 9  9n2 = 121 11 11 3 3  9n2 = 121 1 1  9 9  n2  = 121  9  n2 = 11 x 11  3 x 3  n2 = 11  3  n = 11  3  :. n = 3  **Activity (with a power)**   1. a) 7 x2 = 567   b) 3n2 = 75  c) 4y2 = 49   1. a) m2 + 1 = 10 b)x2 + 4 = 20 c)w2 – 3 = 46 2. 2m2 = 32 b)9m2 = 16 c)X2 + 5 = 9 3. DOUBLE TERM EQUATION: - Collect unknown terms first e.g (2m + 4m)cm =   (m+ 6)cm  Soln  (2m + 4)cm = (m + 6)cm  2m – m + 4 = M – m + 6  m + 4 = 6  m + 4 – 4 = 6 – 4  m + 0 = 2  :. m = 2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | |
|  | **EVALUATION** | **EXERCISE**  Solve the following equations.   1. a) 5(m + 4) = 30 b) 2(x + 1) + 3(x + 1) = 0 c) 3(3x – 1) – 6(x -2) = 24 2. a) 7x2 = 567 b) 3n2 = 75 c) 4y2 = 49 3. a) 8x – 13 = 3x – 3 b) 5(2x – 1) = 5(x + 5) 4. (2x + 2)cm   (3x – 1)cm    Answers   1. a) m = 2 2) a) x = 9 3) a) x = 2   b) x = -1 b) n = 5 b) x = 6  c) x = 5 c) y = 3 c) x = 3cm | | | | | | | | |
|  | **REMARKS** |  | | | | | | | | |
|  |  | **DATE** | **CLASS** | | **TIME** | | **SUBJECT** | | **N0. OF PUPILS** | |
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| **14.** | **TOPIC**  **SUB-TOPIC** | **ALGEBRA**  **SOLVING FRACTIONAL EQUATIONS**  Concepts:   1. Collect like terms / get Lcm   Examples  Solve the following:   1. m + 6 = 10   2  Soln  m + 6 = 10  2  m + 6 – 6 = 10 6  2  m + 0 = 4  2  m = 4 Lcm = 2  2  m x 2 = 4 x 2  2  :. m = 8\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. p – p = 5 Lcm = 3   Soln  P – p = 5  3 x p – p x 3 = 5 x 3  2p – 3p = 15  -p = 15  + 1 (+p) = -15(15)  :. P = -15\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. 0.4p + 0.5 = 2.1   Soln  0.4p + 0.5 = 2.1  0.4p + 0.5 – 0.5 = 2.1 – 0.5 2.11  0.4p + 0 = 1.6 - 0. 5  0.4p = 1.6 1. 6  0.4p = 1.6  0.4 0.4  P = 16 4  10 10  P = 16 x 10  10 4  :. P = 4\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. m+ 1 + = 2   3  m + 1 + m = 2 Lcm = 12  3 4  (m + 1) x 12 + (m x 12) = 2 x 12 7m + 0 = 20  3 4 7m = 20  4(m + 1) + 3m = 24 7m = 20  4m + 4 + 3m = 24 7 7  4m + 3m + 4 = 24 m = 2  7m + 4 = 24  7m + 4 – 4 = 24 – 4   1. 3x+ 1 = x+ 2   4 2  Soln  3x + 1 = x + 2 Lcm = 4  4 2  (3x + 1) x 4 = (x + 2) x 4  4 2  1(3x + 1) = 2(x + 2)  3x + 1 = 2x + 4  3x – 2x + 1 = 2x – 2x + 4  x + 1 = 0 +4  x + 1 – 1 = 4 -1  x + 0 = 3  :. X = 3 | | | | | | | | |
|  | **EVALUATION** | **EXERCISE**  Solve the following equations   1. x = 4 3) 0.6m - 0.3 = 1.8 2. P - p = 7 4) b + 8 = 6   5) p2 = 400 6) P.3 + p = 8  3 5  7) 3 x -1 = 7x + 1  2 6  Answers   1. X = 6 5) P = 40 2. P = 21 6) P = 13.5 3. M = 2 ½ 7) x = 2 4. B = -3 | | | | | | | | |
|  | **REMARKS** |  | | | | | | | | |
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| **15.** | **TOPIC**  **SUB-TOPIC** | **ALGEBRA**  **WORD PROBLEMS / APPLICATION OF ALGEBRA**  Concepts:   1. Read, understand and summarize the statements. 2. Form simple equations then solve.   Examples   1. Kalema bought 2kg of sugar at sh. 3p and 1kg of salt at sh. (P + 200), find p if Kalema paid sh. 3700.   Soln  Sugar = sh. 3p x 2  = sh. 6p Total = sh. 3700  Salt = sh. (p + 200)  Sh. 6p + sh. (p + 200) = sh. 3700  Sh. 6p + p + 200 = sh. 3700  7p + sh. 200 = sh. 3700  7p + sh. 200 – sh. 200 = sh. 3700 – sh. 200  7p + 0 = sh. 3500  7p = sh. 3500  7p = sh. 3500  7 7  :. P = sh. 500   1. A man is 15 years older than his son. In 5 years time, he will be twice as old as his son. How old is each now?   Soln  Let n be the son’s age now   1. Present age (now)   Father = son  (n + 15)yrs = n   1. Future age (to come)   Father = son  (n + 15) + 5 = 2(n + 5)  Value of n  n + 15 + 5 = 2(n + 5) yrs  n + 20 = 2n + 10  n – n + 20 = 2n – n + 10  0 + 20 = n + 10  20 – 10 = n + 10 – 10  10 = n + 0  10yrs = n  :. n = 10yrs   1. (i) Father’s age now = (n + 15)   = 10 + 15  = 25 yrs  (ii) Son’s age now = n  = 10yrs | | | | | | | | |
|  | **EVALUATION** | **EXERCISE**   1. I think of a number subtract 7 when I double my answer is 18. What is the number? 2. Akot walks 2km more than Akello when going to school. If they walk 8km altogether, what distance does each walk? 3. A man pays sh. 120,000 as tax which is 75% of the salary sh. X as his salary. Find x. 4. A man had twice as much as the mother. If they had sh. 12,000 in total, how much did each have? 5. A mother is 18yrs older than her daughter. In ten yrs time, she will be twice as old as her daughter. How old is each now?   Answers   1. n = 16 2. d = 3km 3. x = sh. 160,000 4. n = sh. 2250   man = sh. 5250  woman = sh. 2250  son = sh. 4500   1. a = 8yrs - Daughter = 8yrs mother = 26yrs | | | | | | | | |
|  | **REMARKS** |  | | | | | | | | |

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| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
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**Topic**: Money

**Sub topic**: Simple rates of buying and selling

**Example**

The cost of 3 books is shs. 1800. What is the cost of  dozens of the same books?

( x 12) books

3 x 3

= 9 books

Now, 3 books = shs. 1800

1 book = shs  x 9 3

Shs. 1800 x 3

= shs. 5400

**Therefore  dozens of books cost shs 5400/=**

1. The cost of 5 pens is shs. 2500, what will be the cost of the following pens at the same rate?
2. 7 pens
3. 2 ½ dozens of pens
4. 15 pens
5. 3 dozens
6. Shama had shs. 20,000 and bought 6 cakes at shs. 500 each, 2 books of bread at shs. 3300 per loaf and 2 sugar canes at shs 15000 @. How much money did she pay?
7. The cost of 6 oranges is shs 1800. How many oranges will I get if I have ;
8. Shs. 2400
9. Shs. 1200
10. Shs. 30,000

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| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
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**Theme**: Measurements

**Topic**: Money

**Sub topic**: Shopping bills

**Examples**

Nandawula bought 3 kg of G/ Nuts at shs. 1800 per kilo, 500 gms of salt at shs 1000 @, 1 ½ kg of posho at shs 2400 per kg

1. Calculate her total expenditure

|  |  |  |
| --- | --- | --- |
| 1kg = 1800  3kg – 3 x 1800  =5400 | x 1000/=  = 500 | 1kg – 2400  1 ½ - 1 ½ x 2400  x 24001200  = 3 x 1200 = 3600 |

Total expenditure

5 4 0 0

+ 5 0 0

3 6 0 0

9 5 0 0

**Her total expenditure is shs 9500.**

1. If she had shs 10,000, work out her change

Shs. 10000

Shs. 9500

Shs. 500

**Activity**

1. Max had shs. 30,000 and bought 3 kg of sugar at shs 2200 @ 2 ½ kg of rice at shs 2600 @, 1 ½ kg of tea leaves at 2000 per kg and 500g of salt at shs 600.
2. How much did she pay?
3. What was her change?
4. A mother had 2 notes of 20,000/= each and bought the following items

* 2kg of sugar each at 2500
* 9 mangoes for shs 500 every 3 mangoes
* 2 loaves of bread each at shs 4000
* A tin of blue band at shs 6000

How much was her change?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  |  |  |  |  |

**Theme**: Measurements

**Topic**: Money

**Sub topic**: Bill tables

**Examples**

Angume bout the following items in the table. Complete the table correctly

|  |  |  |  |
| --- | --- | --- | --- |
| **Items** | **Quantity unit price amount** | | |
| Meat | 3 | Shs. 9000 | Shs. 27000 |
| Cooking oil | 2 litres | Shs. 4000 | Shs. 8000 |
| Sugar | 3kg | Shs 4000 | Shs. 12000 |
| **Total amount** |  |  | **Shs. 47,000** |

Totsal

Shs. 2 7 0 0 0

1 8 0 0 0

+ 1 2 0 0 0

Shs. 4 7 0 0 0

**Activity**

Complete the bill table below

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Quantity** | **Unit cost** | **Amount** |
| Soap | \_\_\_ bars | Shs. 2000 | Shs. 6000 |
| Bread | 2 loaves | Shs. 4000 | Shs. \_\_\_\_\_ |
| Salt | 2 ½ kg | Shs. \_\_\_\_\_ | Shs. 2000 |
| **Total expenditure** | | | **Shs. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

Omara went shopping with a 50,000 shilling note and bought items in the table below

|  |  |  |  |
| --- | --- | --- | --- |
| **Items** | **Quantity** | **Unit price** | **Total cost** |
| Books | 2 dozens | Shs. 6000 | Shs. \_\_\_\_\_ |
| Pens | 7 | Shs. \_\_\_\_ | Shs. 3500 |
| Vaseline | \_\_\_ grams | Shs. 500 | Shs. 12500 |
| Graph books | 5 books | Shs. 1500 | Shs. \_\_\_\_\_\_ |
| **Total** | | | **Shs. 35500** |

|  |  |  |  |  |
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| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  |  |  |  |  |

**Theme**: Measurements

**Topic**: Money

**Sub topic**: Currencies and currency conversion

**Content :**

When changing foreign currencies (currency from another country) we multiply

**For example**

Given that £ 1 = Ugshs. 4600, how much in Uganda shillings are equivalent to £ 20.

1£ = Ugshs. 4600

£20 = Ug shs. 4600 x 20

=Ugshs. 92,000

When changing local currency to foreign currencies, we divide

**Examples**

Change shs. 2760000 to Kenya shs if Kshs. 1 = 23 Ugshs.

Kshs. 1 = Ugs 23

Kshs. 

Shs. 120,000

**Activity**

1. Deborah came from America with 1500 US dollars. If the exchange rate is Us $ 1 = Ug shs 3500, how much in Uganda shilling does she have?
2. Joel has Ug shs. 1200000 and wants to take his family in Kenya. If the exchange rate is Uganda is 1Kshs. = 20, how much money in Kenya shilling does he have?
3. Given that the exchange rate at the forex bureau are;

1US $ = Ugshs 3600

1£ (pound sterling) = Ugshs 4200, how much does Maria have in dollars if she has 120 pound sterling?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
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**Theme**: Measures

**Topic**: Money

**Sub topic**: Buying and selling of foreign currencies

**Content:**

* It is the forex bureau and that conduct the business of buying and selling foreign currencies
* The forex bureau cannot buy or sell the currency of its own country it only buys or sells the foreign currencies.
* When buying foreign currencies, it uses the buying rates and the selling rates when one wants foreign currencies
* The rates at which a bank buys and sells the United States dollars and Kenya shillings are given in the table

|  |  |  |
| --- | --- | --- |
| **Currency** | **Buying rates** | **Selling rate** |
| 1 US dollar (US$) | Ug. Shs. 1700 | Ug. Shs, 1720 |
| 1 Kenya shillings (Kshs.) | Ug. Shs. 19 | Ug shs. 20 |

1. If a tourist has 800 dollars and 350 kshs., how much does he have in Uganda shillings.

The bank is buying foreign currency

1Us dollar – Ugs shs. 1700 800 dollars – Ug shs 800 x 1700

Ug shs. 1360,000

1Kshs. – 19 Ug. Shs.

350Kshs – (350 x 19) Ugshs

= 4650

Total 136000 + 4600

**Workout the following using the above table**

1. If Stephen is to travel to United States with U.S. dollars equivalent to Ug. Shs. 1376000, how many dollars will he get?
2. An officer has 6880000, how many dollars can he get from the bank?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
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**Topic**: Money

**Sub topic**: Coins and Bank notes

**Examples**

1. Annet went in the bank to withdraw some money from her asccount. She was given notes of 5000 each numbered consecutively from AM9084690 to AM9084790. How much money did she get?

No. of notes = AM 9084790

AM 9084690

100 + 1

101 notes

1 note = shs. 5000

101 notes = shs. 5000 x 107

= shs. 505,000

**Activity**

1. Jerome was given money notes numbered consecutively from AZ6018908 to AZ6019014
2. How many notes did he get?
3. How much money did he get if he was given notes of 10,000 shilling each

1. A tourist was given money notes of Ug. Shs 50,000 each numbered consecutively form AZ60897247 to AZ60897846
2. How much in Uganda shillings did he get?
3. If the tourist wants to go to Kenya and the exchange rate is 1Kshs = Ug.shs 25, How much does he have in Kenya shillings?
4. How many notes of two thousand shillings each are in £250 given that the exchange rate is 1£ = ugshs 4200?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  |  |  |  |  |

**Theme**: Measures

**Topic**: Money

**Sub topic**: More about exchange rates

**Examples**

Maria went for shopping in Kenya with Uganda shilling 144000 and bought the following items

* A watch at Kenya shs. (Kshs) 500
* 4 shirts at Kenya shs (Kshs) 600 each
* 2 pairs of shoes at Kshs. 1400

If the exchange rate was K shs. 1 = Ug. 24, find her expenditure in Uganda shs.

Watch shirts shoes Total

Kshs. 500 (4x600)Ksh 1400 Kshs 2400

4300Kshs Ug. Shs 24 x 4300 1400

Ug. Shs 103, 200 500

Kshs. 4300

1Kshs = Ugshs 24

4300Kshs = Ugshs 24 x 4300

= Ug shs 103,200

Calculate Marias change in Kenya shillings

**Activity**

Zawedde went for shopping in Kenya with Uganda shilling 1,440,000 and bought the following items

* A dres at Kenya shillings (Kshs.) 600
* 6 sets of glasses at Kenya shillings (Kshs) 600 each
* 4 pairs of sandles each at 1400 (ksh)

The exchange rate was K shs. 1 = Ug shs. 250

1. Calculate Zawedde’s total expenditure in Uganda shillings
2. What change in Kenya shillings did she have?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  |  |  |  |  |

**Topic**: Money

**Revision exercises**

**Activities**

1. The cost of three books is shs 1800. Find the cost of;
2. 7 books
3.  dozens
4. 2 dozens
5. 3 dozens
6. a) Herman bought 4 pairs of shoes at shs. 20,000 per pair. If he needed 6 pairs, how much more money did he have to pay?

b)If he sold each pair at shs 25,000. Calculate his profit after selling all the 4 pairs of shoes?

1. Mugenyi made a profit of shs. 70,000 after selling a television set at shs. 310,000 to Mubiru.
2. How much did Mugenyi pay for the television set?
3. If Mubiru sold it at shs 280,000. Calculate his loss after selling
4. Mr. Mulogo bought 60 fifty kilogram bags of coment at shs. 500 per kg
5. How much money did he pay for all his cement?
6. How much must he sell each kg if he wants to make a total profit of shs. 150,000?=
7. a) A trader bought 10 bags of cement for shs. 240,000. She hired a pick up for shs. 30,000 to transport cement to her shop. She then paid shs. 10,000 to the workers for off loading cement. How much did the trader spend on one bag of cement?

b)If she sold each bag at shs. 30,000, calculate her profit

1. Mr. Mulere was given a discount of 5% after buying and paying in cash for the following items

* 6kg of wheat flour at shs. 4500 a kg
* 7 tablets for shs. 2000 per bar
* 1 ½ litres of cooking oil at shs 7000 a litre
* 1500 grams of millet flour at shs 3,000 every ½ kg

1. How much money did he pay?
2. If he was given shs. 5000 as change, how much did he have at first?

1. The table below shows the buying and selling prices (exchange rate) of different currencies in Uganda for a certain period of time at Red forex bureau. Use it to answer the questions that follow

|  |  |  |
| --- | --- | --- |
| **Currency** | **Buying rates** | **Selling rates** |
| 1 pound sterling £ | Ug. Shs. 3600 | Ug shs. 3750 |
| 1 US dollar (US$) | Ug shs, 2500 | Ug shs. 2600 |
| 1 Kenya shilling (K. shs) | Ug. Shs. 20 | Ug. Shs, 25 |
| 1 Rwands Fran (RF) | Ug shs. 2.0 | Ug. Shs, 2.5 |
| 1 Euro (Eun) | Ug shs. 1800 | Ug.shs. 2000 |
| 1 Tanzania shilling (TZ shs.) | Ug shs. 2.0 | Ug shs. 2.3 |

**Questions**

1. Mr. Musoke has shs. 2600000 Ugand shilling. Find how much money he has in Us dollars
2. Convert Ug shs. 700,000 to Kenya shillings
3. Mr. Mufumbiro sold 12000kg of millet to a Kenya businessman at K.shs, 20 per kilo. Find how much he got in Uganda shillings
4. A trader transported beans to Dar-e-salam for Ug.shs 4,000,000. From Dar-elsalam, he boght goats for TZ. 148500. Find how much he got in Uganda shilling.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  | **P.7** |  | **MTC** |  |

**Theme:** Measurement

**Topic**: Distance, speed and time

**Sub-topic:** Finding the distance covered

**Content:** Distance = speed x time

**D = S x T**

**Examples**

1. Find the distance covered at a speed of 45km/hr for 6 hours

Distance = Speed x Time

45

x 6

270

45km /hr x 6 hours

 x 6 hours

270km

1. What distance is covered at a speed of 60km for 1 hour and 45 minutes?

Distance = Speed x Time

 x 1 hr

1 5

X 7

105

60km x 1

105km

**Activity**

Find the distance covered by a car at a speed given and time

1. Speed of 100km/hr for 2 hours
2. 20m / sec for 5 minutes
3. 30km /hr for 4 hours
4. 60km / hr for 45 minutes
5. Speed of 48 km/hr from 10:30a.m to 1:30pm
6. G120km/hr for 5 hours
7. 90 km/hr from 9:45 to mid-day

A motorist was moving at a speed of 80km/hr for 1 ¼ hours. What distance in metres did he move?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  | **P.7** |  | **MTC** |  |

**Theme:** Measures

**Topic**: Distance, speed and time

**Sub-topic:** Finding time taken (duration)

**Content:** Time = Distance

Speed used

**Examples**

A taxi moved at a speed of 90km/hr covering a distance of 108km. How long did it take to cover that distance.

Time = Distance

Time

= 108**12**km

9010km /hr

= 1.2 hrs / 1hrs

**Activity**

1. Calculate the time taken to cover a distance given at a given speed
   1. Distance of 144km at a speed of 48km/hr
   2. A distance of 160km at a speed of 40km/hr
   3. A distance of 1,080km at a speed of 90km/hr
2. Find the time taken at o cover a distance at 264km at a speed of 60km/hr.
3. A cyclist covered a distance of 160km at a speed of 20km/hr.
4. Jerome moved a distance of 360km at a speed of 60km/hr. for how long in minutes did he take to cover that distance.
5. An aeroplane flew from Entebbe to Nairobi a distance of 5400km at a speed of 1080km/hr. How long did it take to move from Entebbe to Nairobi?

|  |  |  |  |  |
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| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
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**Theme:** Measures

**Topic**: Distance, speed and time

**Sub-topic:** Finding the speed

**Content:** Speed = Distance

Time

**Examples**

Calculate the speed used to move a distance 200km in 5 hours

Speed = Distance

Time

= 200**40**km

5 1hr

= 40km/hr

Express 72 km/hr to metres per second

72km /hr mls

1km = 1000m

72km = (72 x 1000)m

72,000m

1hr = 3600 sec

Speed = D

T

= 72000**20**m

360010 sec

= 20m/sec

**Activity**

1. At a given distance and time, calculate the speed used
   1. 90km for 3 hours
   2. ½ hour to cover a distance of 70km
   3. 210km for 3 hours
   4. 50sec to cover a distance of 264 km
2. Change the given speed to metres per second
   1. 108km/hr
   2. 36km /hr
   3. 144km/hr

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  | **P.7** |  | **MTC** |  |

**Theme:** Measures

**Topic**: Distance, speed and time

**Sub-topic:** Conversion of speed

**Content:** Speed = Distance This can be in km per hour, metres per second. Km/hr or on/min.

Time

**Examples**

1. Change 144km/hr to metres per sec.

1km - 1000km

144km – 144000m

1hr = 3600sec

So, speed 



40m/sec

144km/hr = 40m/sec

1. Express 160m/sec to km/hr

1m = km

160m = km so speed = 

1sc = hr =  ÷ km/hr

=( x 3600 )km/hr

**160m/sec = 756km/hr**  **576 km/hr**

**Activity**

1. Change the given speed to m/sec
   1. 252km/hr
   2. 36km/hr
   3. 324km/hr
   4. 288km/hr
2. Express the following speed in m/sec to km/hr
   1. 130m/sec
   2. 25m/sec
   3. 90m/sec
   4. 140m/sec
3. Omora moved at a speed of 3 metres per5 second. Express his speed in km/hour

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  | **P.7** |  | **MTC** |  |

**Theme:** Measures

**Topic**: Distance, speed and time

**Sub-topic:** Finding the speed

**Content:** Finding the average speed

**Examples**

Hellen travelled at a speed of 70km/hr for 1 ½ hours from home to the city and used only 1 hour to go back.

1. How far is it from home to the city.

 x hrs 3 5

x 5

35km x 3 105

105km

1. Calculate the average speed for the whole journey

210km ÷2 hrs

210km ÷hr

(210x ) km/hr

(42 x 2)km/hr

84km/hr

Average speed Total distance

Total time

=105km x 2

1 ½ hr + 1hr

210km

2 ½

**Activity**

1. A bus left Masaka for Masindi travelling at a speed of 100km/hr for 3 hours
   1. Find the total distance covered.
   2. Calculate the average speed for the whole journey.
2. A driver drove for 2 ½ hrs at a constant speed of 120km/hr from town A to town B. And then 150km/hr for 3 hours and 30 minutes from B to town C.
   1. Workout the total distance from A to C.
   2. Workout the average speed for the whole journey.
3. Anselem took 3 hours to travel from town K to L and a distance of 110km. He rested for 1 hour in town L and used 2 hours to move back to town K. workout his average speed.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  | **P.7** |  | **MTC** |  |

**Theme:** Measures

**Topic**: Distance, speed and time

**Sub-topic:** Average speed (application)

**Examples**

Mukisa rode from his home to town. He started at 8:00am and moved at a speed of 20km/hr for 2 hours. He got a puncture and took 30 minutes repairing his bike. He continued to town at a speed of 25km/hr for 1 hour. In town, he spent 1 ½ hours and rode back home at a speady speed of 30km/hr.

1. At what time did he get the puncture?

8:00a.m

-2:00

10:00a.m

1. What distance did he cover from home to town

Home 30mm Town

Puncture

20km/hr 25km/hr

8:00 2hours 1hour

Total distance = 40km

+ 25km

65km

Distance = 20km x 2hr D = 25km x 1hr

1hr 25km

40km

1. Calculate the average speed for the whole journey
2. At what time did he come back home?

**Activity**

A bus left Kampala for Mombasa at 7:15hrs at an average speed of 80km/hr. The bus got a puncture in Mbale at 12:15hrs and the repair took 30 minutes. The remaining journey was covered at a n average speed of 60km/hr for 4 ½ hours.

1. Calculate the average speed of the whole journey.
2. At what time did the bus reach Kampala in 24 hour clock system?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  | **P.7** |  | **MTC** |  |

**Theme:** Measures

**Topic**: Distance, speed and time

**Sub-topic:** Travel time tables

The table below shows the arrival and departure time at the bus from station A to station D.

|  |  |  |
| --- | --- | --- |
| **Station** | **Arrival time** | **Departure time** |
| A | \_\_\_\_\_\_\_ | 7:00am |
| B | 7:55am | 8:15am |
| C | 10:00am | 10:15am |
| D | 1:00pm | \_\_\_\_\_\_ |

**Questions**

1. What is the departure time of the bus at station B?
2. At what time did the bus reach station D in 24 hour clock system?
3. How long was the step over at station C?
4. How long did the bus take to move from station A to station D?
5. If the distance from A to D is 140km, calculate the average speed of the bus for the whole journey.

The time table below is of a bus moving from town A to E. Use it to answer the questions that follow:-

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Town** | **A** | **B** | **C** | **D** | **E** |
| Arrival | **\_\_\_** | 10:45am | 12:20pm | 1:10pm | 2:45pm |
| Departure | 10:00am | 11:15am | 2:00pm | 2:00pm | \_\_\_\_ |
| Distance from town A | 0km | 45km | 75km | 110km | 190km |

1. At what time did the bus leave for town D from C?
2. For how long was the bus at town D?
3. How far is town E from town C?
4. Write the arrival time of the bus at station E in 24hr clock system.
5. How long did the bus rest in town B?
6. Calculate the average speed of the bus for the whole journey.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  | **P.7** |  | **MTC** |  |

**Theme:** Operation on whole numbers

**Topic**: Commutative property

**Example 1**

8+ 4 = 4 +8

The statement is commutative under addition

**Example 2**

4x6=6x4

The statement is commutative under multiplication

Note: The order in which any two numbers are added or multiplied does not affect the result.

**Exercise**

**Fill in the missing numbers**

1. 5 + 6 = \_\_\_\_\_ + 5
2. 11 + 7 = \_\_\_\_\_ + 11
3. 19 + 8 = 8 + \_\_\_\_\_
4. 40 + 9 = \_\_\_ + 40
5. 5 x 2 = \_\_\_\_ x 5
6. 8 x 3 = \_\_\_ x 8
7. 4 x 7 = 7 x \_\_\_\_
8. 11 x 5 = 5 x \_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  | **P.7** |  | **MTC** |  |

**Theme:** Operation on whole numbers

**Topic**: Associative property

**Example 1**

(6 + 4) + 5

= 10 + 5

= 15

ii) 6 +(4 +5)

= 6 + 9

= 15

Therefore (6+4) +5 = 6+(4+4) is associative property of addition

**Example2**

i) (3x4) x 5

= 12 x 5

= 60

ii) 3x (4x5)

=3x20

=60

Therefore (3x4) x 5 = 3 x (4x5) is associative property of multiplication

Note: When carrying out addition or multiplication of more than two numbers, the way in which numbers are grouped does not affect the sum or product.

**Exercise**

**Fill in the missing numbers**

1. 4+(6 + 3) = (4+ \_\_) +3
2. (9 + 2) + 5 = 9+ (2+ \_\_)
3. 7+(6+8) = (7+\_\_)+8
4. (5x3)x6=\_\_(3x6)

**Exercise**

**Fill in the missing numbers**

1. 4+(6+3) = (4+\_\_)+3
2. (9+2) +5 = 9+(2+\_\_)
3. 7+(6+8)=(7+\_\_)+8
4. (5x3) x6 = \_\_ (3x6)

Workout the following using the associative property

1. 3 + 5 + 7
2. 16 + 14 + 10
3. 6 x 3 x 5
4. 8 x 5 x 9

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  | **P.7** |  | **MTC** |  |

**Theme:** Money

**Topic**: Simple rates of buying and selling

**Examples**

The cost of 3 books is shs. 1800. What is the cost of dozens of the same books.

( x 12) books

3 x 3

= 9 books

BNow, 3 books = shs 1800

1 book = shs. 1800

3

9 books = shs. 1800 x 9

3

= shs 1800 x 3

= shs 5400

Therefore  dozen of books costs shs 5400

**Activity**

1. The cost of 5 pens is shs. 2500, what will be the cost of the following pens at the same rate?
   1. 7 pens
   2. 2 ½ dozens of pens?
   3. 15 pens?
   4. 3 dozens?
2. Shama had shs 20,000 and bought 6 cakes at sh 500 each, 2 loaves of bread at shs. 3300 per loasf and 2 sugar canes at shs 1500@. How much many did she pay?
3. The cost of 6 oranges is shs. 1800. How many oranges will I get if I have;
   1. Shs. 2400?
   2. Shs. 1200?
   3. Shs. 30,000?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  | **P.7** |  | **MTC** |  |

**Theme:** Measurements

**Topic**: Money

**Sub-topic:** Shopping bills

**Example**

**Question:** Nandawula bought 3kg of G. nuts at shs 1800 per kilo, 500 gms of salt at shs. 1000 @, 1 ½ kg @, 1 ½ kg of posho at shs. 2400 per kg.

1. Calculate her total expenditure

|  |  |  |
| --- | --- | --- |
| **G. nuts** | **Salt** | **Posho** |
| 1kg – 1800  3kg = 3 x 1800  5400 | x 1000  =500 | 1kg – 2400  1 ½ - 1 ½ x shs 2400  - x 2400  3x1200 = 3600 |

Total expenditure

5400

500

+3600

9500

Her total expenditure is sh. 9500.

1. If she had shs. 10,000, work out her change

Shs 10000

- Shs 9500

9500

**Activity**

1. Max had shs 3,000 and bought 3kg of sugar at shs. 2200 each 2 ½ kg of rice at shs. 2600 each, 1 ½ kg of tea leaves at 2000 per kg and 500g of salt at shs. 600.
   1. How much did she pay?
   2. What was her change?
2. A mother had 2 notes of 20,000/= each and bought the following items

* 2kg of sugar each at 2500
* 9 mangoes for shs 500 every 3 mangoes
* 2 loaves of bread each at shs 4000
* A tine of blue band at shs 6000

How much was her change?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  | **P.7** |  | **MTC** |  |

**Theme:** Measurements

**Topic**: Money

**Sub-topic:** Bill tables

**Example**

Angume bought the following items in the table. Complete the table correctly

|  |  |  |  |
| --- | --- | --- | --- |
| **Items** | **Quantity** | **Unit price** | **Amount** |
| Meat | 3 | Shs.9000 | Shs. 27000 |
| Cooking oil | 2 litres | Shs. 4000 | Shs. 8000 |
| Sugar | 3kg | Shs. 4000 | Shs. 12000 |
| **Total amount** |  |  | **Shs. 47,000** |

Meat Oil Sugar Total

Shs. 9000 x 3 shs. 8000 = 2 Shs. 12000 shs. 400 shs. 27000

Shs. 27000 shs. 4000 3 8000

+12000

Shs. 47000

**Activity**

**Complete the bill table below**

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Quantity | Unit cost | Amount |
| Soap | \_\_\_ bar | Shs. 2000 | Shs. 6000 |
| Bread | 2 loaves | Shs. 4000 | Shs. \_\_\_\_\_ |
| Salt | 2 ½ kg | Shs. \_\_\_\_\_ | Shs. 2000 |
| **Total expenditure** | | | **Shs. \_\_\_\_\_\_\_\_** |

Omara went shopping with a 50,000 shillings note and bout items in the table below

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Quantity** | **Unit price** | **Total cost** |
| Books | 2 dozens | Shs. 6000 | Shs. \_\_\_\_\_ |
| Pens | 7 | Shs.\_\_\_\_ | Shs. 3500 |
| Vaseline | \_\_\_kilograms | Shs. 500 | Shs. 12500 |
| Graph books | \_\_\_ books | Shs. 1500 | Shs. \_\_\_\_\_ |
| **Total** | | | **Shs. 35500** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  | **P.7** |  | **MTC** |  |

**Theme:** Measurements

**Topic**: Money

**Sub-topic:** Currencies and currency conversion

**Content:**

When changing foreign currencies (currency from another country) we multiply.

**For example**

Given that £1 – Ugshs 4600. How much in Uganda shillings are equivalent to £ 20

**Solution**

1£ = Ugshs. 4600

£ 20 = Ug shs. 4600 x 20

= Ugshs 92,000

When changing local currency to foreign currencies, we divide

**Example**

Change shs. 2760,000 to Kenya shs. If K shs 1 = 23 Ug shs.

K shs 1 = Ugs 23

Kshs 2760000

23

Shs. 120,000

**Activity**

1. Deborah came from America with 1500 US dollars. If the exchange rate is US $ 1 = Ug shs 3500. How much in Uganda shilling does she have?
2. Joel has Ug shs. 1200,000 and wants to take his family in Kenya. If the exchange rate in Uganda is 1kshs = 20, how much money in Kenya shilling does he have?
3. Given that the exchange rate at the forex bureau are;

1 US $ = Ugshs. 3600

1£ (pound sterling) = UG shs. 4200

How much does Maria have in dollars if shs. 120 pound sterling

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
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**Theme:** Measures

**Topic**: Money

**Sub-topic:** Buying and selling of foreign currencies

**Content:**

* It is the forex bureau that conducts the business of buying and selling foreigh currencies
* The forex bureau cannot buy or sell the currency of its own country it only buys or sells the foreign currencies.
* When buying foreign currencies, it uses the buying rates and the selling rates when one wants foreign currencies.

**Example**

The rates at which a bank buys and sells the United States dollars and Kenya shillings are given in the table

|  |  |  |
| --- | --- | --- |
| Currency | Buying rates | Selling rate |
| 1 US dollar (US $) | Ug. Shs. 1700 | Ug. Shs. 1720 |
| 1 Kenya shillings (K shs) | Ug shs 19 | Ug shs. 20 |

1. If a tourist has 800 dollars and 350 K shs. How much does he have in Uganda shillings.

The bank is buying foreign currency

1 Us dollar – Ugs shs 1700

800 dollars – Ug . Shs 800 x 1700

Ug shs. 1360,000

1 Kshs – 19 Ug shs.

350 Kshs. – (350 x 19) Ug shs. 4650

Total 136000+4600

Work out the following using the above table.

1. If Stephen is to travel to United States with us dollars equivalent to Ug shs. 1376000, how many dollars will he get?
2. An officer has 6990000, how many dollars can he get from the bank?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
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**Theme:** Measures

**Topic**: Money

**Sub-topic:** Coins and Bank notes

**Examples:**

Annet went in the bank to withdraw some money from her account. She was given notes of 5000 each numbered consecutively from AM9084690 to AM9084790. How much money did she get?

No. of notes = AM 9084790

AM 9084690

100 +1

101 notes

1 note = shs 5000

101 notes = shs. 5000 x 101

= shs. 505,000

**Activity**

1. Jerome was given money notes numbered consecutively from AZ6018908 to AZ6019014
2. How many notes did he get?
3. How much money did he get if he was given notes of 10,000 shilling each.
4. A tourist was given money notes of Ug. Shs. 50,000 each number consecutively form AZ60897247 to AZ60897846
5. How much in Uganda shillings did he get?
6. If the tourist wants to go to Kenya and the exchange rate is 1ksh = Ugashs. 25, How much does he have in Kenya shillings?
7. How many notes of two thousand shillings each are in £250 given that the exchange rate is 1£ = Ug shs 4200?

|  |  |  |  |  |
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| **Date** | **Class** | **Time** | **Subject** | **No. of pupils** |
|  | **P.7** |  | **MTC** |  |

**Theme:** Measures

**Topic**: Money

**Sub-topic:** More about exchange rates

**Examples:**

Maria went for shopping in Kenya with Uganda shilling 144000 and bought the following items:-

* A watch at Kenya shs. (Ksh.) 500
* 4 shirts at Kenya shs 600 each
* 2 pairs of shoes at Kshs. 1400

If the exchange rate was K shs. 1 = Ug 24, find her expenditure in Uganda shs.

Watch shirt shoes total

Kshs.500 (4x600)Kshs 1400 kshs 2400

2400 Ksh 1400

500

1 Kshs Ugshs. 24

4300Kshs Ug shs. 24 x 4300

Ug shs. 103,200

Calculate Maria’s change in Kenya shillings

**Activity**

Zawedde went for shopping in Kenya with Uganda shilling 1, 440,000 and bought the following items.

* A dress at Kenya shillings (Kshs) 600
* 6 sets of glasses at Kenya shillings (Kshs) 600 each
* 4 pairs of sandals eact at 1400 (ksh)

The exchange rate was Kshs1 = Ugsh. 250

1. Calculate Zawedde’s total expenditure in Uganda shillings
2. What change in Kenya shillings did she have?