AHMES SECONDARY SCHOOL

FORM ONE HOLIDAY PACKAGE

BASIC MATHEMATICS

1.   (a)   Cups are sold 6 in a package and plates are sold 8 in a package. If you want to have the same number of each item for a ceremony, what is the least number of packages of each type you need to buy?

(b)   A block is cut into equal units of 10g, 20g and 35g. Use prime factorization method to find the smallest possible mass of the block from which pieces can be cut.

(c)   Kisiki and Jembe are riding in a circular path. Kisiki completes a round in 24 minutes whereas Jembe completes a round in 36 minutes. If they started at the same time and go in the same direction, after how many minutes will they meet together gain in a starting point?

(d)   Mangoes are to be exactly divided into groups of 20, 30 or 36. What is the minimum number of mangoes required?

(e)   I want to plant 45 sunflower plants, 81 corn plants and 63 tomato plants in my garden. If I put the same number of plants in each row and each row has only one type of plant, what is the greatest number of plants I can put in one row?

2.   (a)   Three relatives shared Tsh 140,000/= so that the first one got twice as much as the second, and the second got twice as much as the third. How much money did the first relative get?

(b)   Kitwana paid Tsh 900,000/= for a desktop computer and sold it the following year for Tsh 720,000/=. Find the loss and percentage loss.

(c)   A computer is advertised in a shop as having a list price of Tsh 2,500,000/= plus value added tax (VAT) of 20%. The sales manager offers a discount of 25% before adding the VAT. Calculate

(i)   The list price including VAT

(ii)   The amount of discount before VAT is added.

(iii)   The reduced final price of the computer.

(d)   A dealer bought 10 books for 200,000/=. He sold $\frac{2}{5}$ of them at Tsh 30,000/= each and the remaining at Tsh 25,000 each. What was the percentage profit?

(e)   A shopkeeper makes a profit of 20% by selling a radio at Tsh 480,000/=.

(i)   Find the ratio of buying price to selling price.

(ii)   If the radio would be sold at Tsh 360,000/= , what would be the percentage loss?

3. (a) Find area of the shaded region from the figure below

    (i)

    28 cm

    (ii)

    7 cm
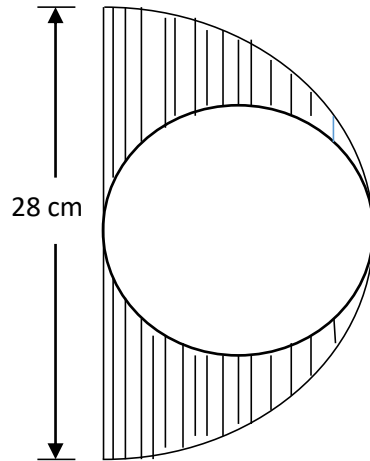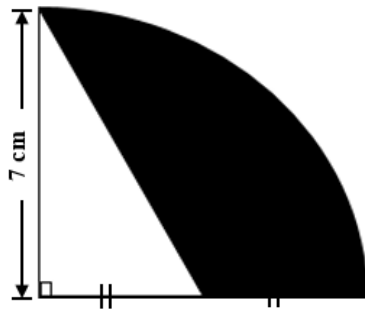
    (b) Find the height of a right angled triangle whose base is $(4 - \sqrt{2})cm$ and area is $7cm^2$.

    (c) A straight line which passes through A(-3,6) has x-intercept -9 , find equation of this line in the form $ax + by + c = 0$.

    (d) The two bases of trapezium are in the ratio 2:5. If its height is 40cm and area $2800cm^2$. Find the length of the bases.

4. (a) Find the equation of the line passing through the points (3,5) and (7,9). Express your answer in the form of $y = mx + c$

    (b) If the slope of the straight line through the points (7,4) and $(-2, t)$ is 1

    . Find the value of t.

    (c) If the gradient of the straight line $ky = kx + x + 7$ is 2, find the value of k.

    (d) Determine the slope of the line $7x + 2y = 8$

(e) If the lines $ax - 2y = 5$ and $2x - by = 8$ intersects at a point $(11,3)$. Find the values of a and b.

5. (a) Given that $2^{a-1} \times 3^{b+1} = 2592$ evaluate $\frac{a-b}{b}$

(b) What is the sum of $(64)^{\frac{1}{3}}$ and $(32)^{\frac{1}{5}}$

(c) Find the value of $+n$, given that $7^m \times 5^n = 875$

(d) Find the value of $\frac{a}{b}$, given that $3^a \times 5^b = 675$

(e) Find the value of x in the equation $9 \times 3^{4x} = 27^{x-1}$

6. (a) Find the values of x and y from the equation $\frac{3^{x+2}}{5^{2y-8}} = 2025$

(b) Find the value of x given that $\sqrt{5^{2x-3}} - 9 = 116$

(c) Simplify $27^{\frac{1}{4}} \times 3^{\frac{1}{4}} \times (\sqrt{3})^{-2}$

(d) Solve for x in the equation $4^{-2x} \times 8^2 = 4 \times 16^x$

(e) Solve for t in the equation $(\frac{1}{81})^{-6x} \times 81 = \sqrt{9}$

7. (a) Rationalize the denominator of $\frac{2}{2\sqrt{3}+\sqrt{2}}$

(b) Simplify completely the expression $4a^2 - 9b^2$

(c) Make R the subject of the formula: $T = \frac{R+RV^2}{8M}$

(d) Simplify $\sqrt{8}(\sqrt{50} + \sqrt{18}) - \sqrt{2} \times \sqrt{2}$

(e) Given that $x = 3\sqrt{2}$ and $y = 2\sqrt{3}$ simplify $\frac{x^2-y^2}{x-y}$

8. (a) Express $(\sqrt{3} + 5)^2$ in the form of $p + q\sqrt{3}$

(b) Evaluate $\sqrt{50} - 2\sqrt{18} + \sqrt{8} + \sqrt{2}$

(c) Simplify the expression $\frac{5}{\sqrt{11}-3} \div \frac{\sqrt{2}}{\sqrt{22}+3\sqrt{2}}$

(d) Simplify the expression $(3 + \sqrt{2})(4 - 2\sqrt{2})$

(e) Evaluate the expression $\sqrt{40} + \sqrt{45}$

9. (a) By factorization, find a solution set of $x^2 - x - 6 = 0$

(b) Find the value of y which satisfies the equation $3(2 - y^2) - 17y = 0$

(c) Factorize $2x^2 + x - 10$ completely by splitting the middle term

(d) If one of the root of quadratic equation $x^2 + bx + 24 = 0$ is $\frac{1}{2}$. Find the value of b.

(e) Solve the equation $4x^2 - 32x + 12 = 0$ by completing square method.

10. Solve each following quadratic equations using completing square method.

(i) $x^2 + 9x + 20 = 0$

(ii) $x^2 - 5x + 6 = 0$

(iii) $x^2 - 6x + 8 = 0$

(iv) $2x^2 + 14x + 24 = 0$

(v) $x^2 + 4x - 5 = 0$

NOTE: **1.** **THE QUESTIONS ABOVE WILL BE USED TO COMPILE OPENING EXAM.**

2. **YOU ARE REMINDED TO COMEBACK WITH YOUR OWN FORM TWO REVIEW FOR BASIC MATHEMATICS AND MATHEMATICAL TABLE (FOUR FIGURE) FOR EXAMINATIONS.**