MATHEMATICS

HOLIDAY PACKAGE JANUARY 2018 for S3

WEEK ONE

1. In the table below, y is directly proportional to the square of x. Find the values of a,b and c.

x	2	a	5	b
y	c	200	50	98

2. Given that p * q = $\frac{1}{2}\left(\log_2^p + \log_3^q\right)$, find the value of 128*81.

3. Solve the simultaneous equations $2x - 3y = -1$ and $x = \frac{-6y-38}{5}$

4. Okello travelled from Kampala to Seeta at x km/h. The two towns are 10km apart. He then continued to Lugazi at (x+6)km/h. Seeta and Lugazi are 25km apart. If the time he takes from Kampala to Seeta is equal to the time he takes from Seeta to Lugazi, find the value of x.

5. In a triangle ABC, the mid – points of BC, AC and AB are L, M, and N respectively, AM = **m** and AN = **n**

Point G lies on $\overline{A}L$ such that $3\overline{A}G = 2\overline{A}L$

a). Express the following vectors in terms of **m** and **n.** (i) AB (ii) AC (iii) BC (iv) BG (v) GM

b). Show that the points B, G and M are collinear.

WEEK TWO

1. Given that $p^2+q^2 = 925$ and $p - q = 25$, find the value of pq.
2. Find the interest on shs 567, 800 invested for 8 years at 12.5% per annum compound interest.
3. Given that $g(x,y) = 5xy - 7y^2$, find k if $g(2k,3) = 57$.
4. The electrical resistance of a wire, R, varies inversely as the square of the diameter, d, of the cross-section. If the resistance is **0.8** ohms when the diameter is **0.3** cm, find the diameter of a wire whose resistance is **0.45** ohms.
5. (a). On the imported goods, customs duty and Value Added Tax were levied as shown in the table below:

Customs duty	25% of the value of the goods
Value Added Tax	15% of (Value of the goods + Customs duty)

Find the total amount which was levied on importing a hypsum vehicle valued at sh. 12,000,000.

(b) A sales man received a monthly salary of sh.750, 000 in June 2013. He also received a 2.5% commission on the first sh.25,000,000 worth of the sales and 5 % commission on the value of the sales in excess of 25,000,000. (i) Calculate the total income he received that month if he sold goods worth 48,200,000. (ii) If in the following month, he received a total income of sh.4,950,000, find the value of the sales he made that month.

WEEK THREE

1. Use log tables only to find the value of $\frac{2185 \times 0.02451}{95.43}$
2. Mr. Hungry Hyena receives a monthly salary of sh. 450, 000 plus a commission of 30% of the value of the goods he sells. In the Month of July 2015, she sold goods worth sh. 500,000 in Week 1, sh.420, 000 in Week 2, sh.500, 000 in Week 3 and sh. 555,000 in Week 4. Find the total income Mr. Hungry Hyena got that Month.
3. The equation $x^2 + bx + c = 0$ has roots x = -2 and x = -5. Find the values of b and c.
4. A line passing through T(2,-8e) and D(4e,5) is perpendicular to the line 5x+9y = 4.Find the value of e.
5. (a) Tap A fills a tank in 12 minutes, tap B fills the same tank in 15 minutes but tap C empties the tank in only 10 minutes. If the tank has a capacity of 60,000litres, find; (i) how much water is put in the tank by tap A in 8 minutes (ii) how much water is put in the tank by taps A and B. (iii) how long the tank will take to be filled when all the three taps are left open.

   (b) In a factory, 50 AGOA girls can make 240 shirts in 18 days. How many girls are needed to make 400 shirts in 10 days, assuming that they all work at the same rate.

   (c) During a sports meeting in Kayunga, the organizers had enough food to feed 600 participants for 32 days. Before the meeting started, 200 more participants joined the meeting. How many days did the food last the group?

WEEK FOUR

1. Simplify the following; (a) $16^{\frac{-3}{2}} \times 128^{\frac{2}{7}} + 27^{\frac{-2}{3}}$ (b) $\frac{1}{2}\log_{10}^{25} - 2\log_{10}^{d} + \log_{10}^{2d^2}$
2. Evaluate $\frac{3.125^2 - 1.875^2}{1.250}$
3. If P and Q are the points (3,7) and (11,3) respectively, find the modulus of PQ.

4. In a group of handball playersof boys and girls, the mean age of the group is 18years and 3 months.The group contains 5 boys and their mean age is 19years and 6 months. Find the size of the group if the mean age of the girls is 18 years.

5. (a) Given that $y = \frac{1+2x}{x-2}$, express 2x+y in terms of (i) x only (ii) y only

   (b) A two digit number is such that the sum of its digits is 10. When the digits are reversed, the number is increased by 36. Find the number.

   (c) Make X the subject of the formula; $V = \sqrt[3]{\frac{(X-A)y}{3M}}$.

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