SECTION A

1. Evaluate the following *(3mks)*

$$\frac{1\,4/5 - (3/4 \div 5/18) + 4/5}{4\,5/8 - (5\,1/5 + 1/5 \text{ of } 25/35)}$$

2. The GCD of three numbers is ten while their LCM is 50,400, if the two numbers are 1440 and 1120, find at least three possible values of the third number. *(3mks)*

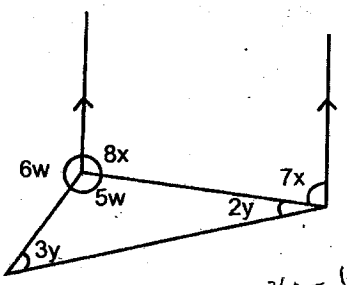
3. Simplify the following $\frac{720^{0.6} \times 576^{0.3}}{0.64^{0.6}}$ *(2mks)*

$$\frac{720^{6/10} \times 576^{3/10}}{0.64^{6/10}}$$

$$\frac{720^{3/5} \times 576^{3/10}}{0.64^{3/5}}$$

4. The density of milk is 1.2g/cm³ while that of water is 1g/cm³. Milk and water are mixed in the ratio 3:5 by mass. Find the density of the resulting mixture. *(3mks)*

5. Find the values of *w*, *x* and *y* below *(3mks)*



$8x + 7x = 15x$

$\frac{180}{15}$

$x = 12$

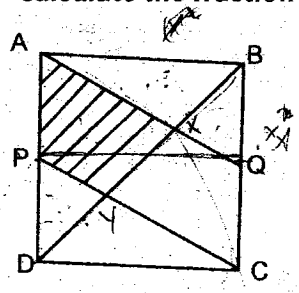
$360 - 12 = \frac{348}{11}$

Total

6. Use square, square root and reciprocal tables to evaluate the value of x. *(4mks)*

$$\frac{1}{x^{\frac{1}{2}}} + \frac{1}{11.34} = 0.01055^{\frac{1}{2}}$$

7. In the figure below, ABCD is a square and P and Q are midpoints of AD and BC respectively. Calculate the fraction of shaded area to the whole square. *(2mks)*



8. The Kisumu – Kitale highway needing recarpeting is shared out to three contractors, Mukoya, Wekesa and Otiende. Mukoya has 30 men working for 9 weeks, Wekesa has 18 men working for 10 weeks and Otiende has 24 men working for 15 weeks. If the total payment for highway construction was Shs. 171,000,000/=.

a) Calculate the total labour week for completion of the highway. *(1mk)*

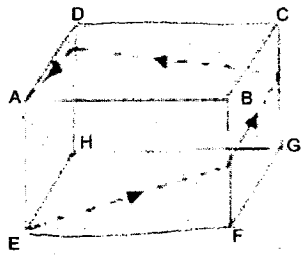
b) Calculate Otiende's wage bill *(1mk)*

9. The line Y = m*x* + 3 is perpendicular to another line n*y* + *x* = 6. Find the values of *m* and *n* if both lines have a common y-intercept. *(2mks)*

Total

10. The cube shown above of side 15cm has a tight rope tied from Point E passed around BF, CG, DH and finally fixed at A as shown.

a) Using scale of 1cm represents 5cm, draw the labelled net of the cube showing the path of the string. *(2mks)*



b) Find the length of AE. (1mk)

11. A solution whose volume is 80 litres is made up of 40% water and 60% alcohol. When x litres of water are added, the percentage of alcohol, drops to 40%.
Find the value of x. *(2mks)*

$\frac{40}{100}(80)$ 32L

$\frac{60}{100}(80)$ 48L.

$\frac{48}{80+x} = \frac{40}{100}$

12. Use logarithms to evaluate the following

(4mks)

$$\left[\frac{0.9324 \times 0.4671}{0.0345}\right]^{-\frac{2}{3}}$$

Total

13. Solve for x in the equation. (2mks)

$3^{2x} + 9^{x} = 2/27$

$3^{2x} + 3^{2x} = \frac{2}{3^3}$

$2 \cdot 3^{2x} = \frac{2}{3^3 \times 3}$

$2 \cdot y^{x}$

$3^{2x} + 3^{2x} = \frac{2}{3^3}$

$x(3^{2x}) = x \cdot 3^{-3}$

$2x = -3$

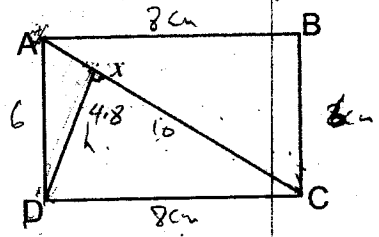
$x = -1.5$

14. Two cylindrical cans of radius r and 1.2r have water upto the same level of height. Some water is poured out from the bigger container to the smaller so as to give the two an equal volume. Find the percentage rise in height on the smaller cylinder. *(2mks)*

$V = \pi r^2 h$

$V_2 = \pi (1.2r)^2 h$

$V_2 = 1.44\pi r^2 h$

15. 

The figure ABC is a rectangle of side 8cm by 6cm. Calculate the ratio Ax:xC

(2mks)

9 : 16.

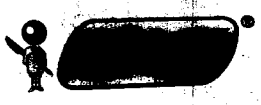
16. Solve the following equations simultaneously. *(3mks)*

$3x + 4y + 2z = 21$

$x + y + 5z = 15$

$x + y + z = 7$

Total



17. A dealer makes a profit of 20% when he sells a calculator at Shs. 960 and loss of x% when he sells a textbook at Shs. 1,080. Calculate the value of x if by selling one calculator and two textbooks he makes an overall loss of 2.5% *(3mks)*

100 / 120 × 960

800

2(1080) + 960 = 3120

3120 / 97.5 × 100 = 3,200

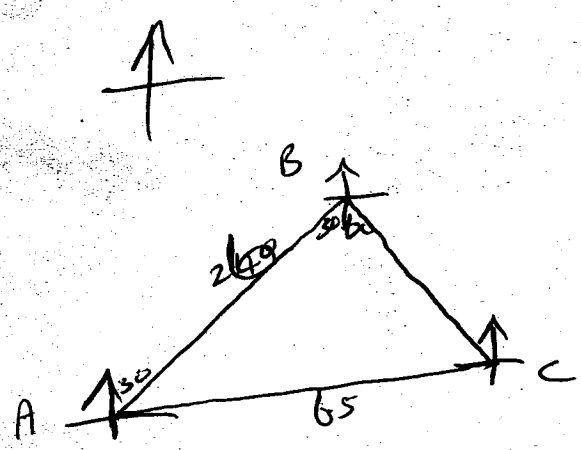
(3200 − 800) / 2 = 1200

1200 = 100%

1080 = ?

18. The points on the earth surfaces are such that B is 240m on a bearing of 030° from Point A. Point C is 120° from B and the distance of C from A is 260m.

a) Sketch the relative positions of A, B and C using the scale of 1cm rep 40m. *(1mk)*



b) Calculate in hectares the area enclosed by the three points A, B and C. *(2mks)*

Total

SECTION B

19. Given that $\log_5 3 = 0.6813$ and $\log_5 2 = 0.4368$, evaluate the following.

a) $\log_5 1.5$ *(2mks)*

b) $\log_5 18$ *(2mks)*

c) $\log_5 500$ *(2mks)*

20. A line L_1 passes through point (2, 2) and has gradient ½. A line L_2 intersects L_1 at point Q whose X-ordinate is 4. L_2 intersect with L_3 at R while L_3 intersect with L_4 at S whose Y-ordinate is -3. If L_1 and L_4 intersect on the Y-axis at Point T and given that QRST is a square, find

a) i) the equation of L_1 and hence the co-ordinates of Q and T (2 mks)

$\frac{y-2}{x-2} = \frac{1}{2}$

$y - 2 = \frac{1}{2}x - 1$

$y = \frac{1}{2}x + 1$

$y = \frac{1}{2} \times 4 + 1$

$y = 3$

$Q = (4, 3)$

ii) the equation of L_4 hence the coordinates of S *(1mk)*

y-intercept of L_4

$T = (0, 1)$

iii) the equations of L_2 and L_3 hence the coordinates of R (1mk)

$L_4 \quad y = -2x + 1$

$-3 = -2x + 1$

$-4 = -2x$

$x = 2$

$(2, -3)$

b) The area of the square. *(2mks)*

Total

21. Using ruler and compasses only, construct
    a) Triangle OBC in which OB = 3cm, OC = 7.4cm and angle BOC = 105°. *(2mks)*
    b) Drop a perpendicular from C to meet BO produced at T, measure CT hence calculate the area of triangle OBC. *(2mks)*
    c) Using BC as the base on opposite side of CB as T, construct a parallelogram BCDE such that angle CBE = 67½° and BE = 5cm. . *(2mks)*

Total

Think BIG. Write BIG.