

DEPARTMENT OF MATHEMATICS

END OF TERM I EXAMINATIONS

MATHEMATICS

TIME 2 ¼ HOURS

INSTRUCTIONS

- Attempt all numbers from section A and only four numbers from section B

SECTION A

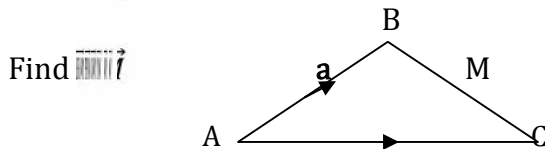
1. Given that $f(x) = dx - 7$ and that $f(8) = 17$. Find the value of d :

- (i) d
- (ii) $f(2)$

2. Find the equation of a line passing through $(1, 3)$ and $(-1, -1)$

3. Given n that $P * q = \frac{p^2 + 2p}{3p - q}$ find $3 * 2$

4. In the figure below $AB = \mathbf{a}$ and $AC = \mathbf{b}$. if $2\mathbf{m} = \mathbf{c}$



5. Given that $205_n = 77$. Find base n

6. $Q = \frac{MBTY^2}{p+x}$ make Y the subject. Hence find Y if $Q = 12$, $P = 20$, $x = 5$, $M = 3$,

$B = 2$ and $T = 1$

7. Solve the equation $\frac{2}{3}x - 4 = x + 6$

8. A point $K(-2, 3)$ is translated to K^1 by a translation vector $T = \begin{pmatrix} 6 \\ -5 \end{pmatrix}$. Find the image coordinates K^1

9. Given that $A = \{16, 25\}$ $B = \{-5, -4, 4, 5\}$ Draw an arrow diagram between A and B showing a relation is "a square of" and state the type of relation obtained

10. Work out $(1 \frac{2}{3} \div 3 \frac{1}{3}) \div (1 \frac{2}{2} \times \frac{4}{9})$

SECTION B

11. MNTB is parallelogram with M(2 -6), N(4, -1) and T (-3, 6). Find the:-

- (i) Coordinates of B
- (ii) Length of MT
- (iii) Mid- point of line NB

12. The data below shows the marks got in a maths test

10	17	11	13	14	15	11	12
14	14	10	16	12	14	13	13
15	16	13	14	10	10	14	15
16	15	12	17	11	11	17	14
10	14	11	16	14	15	16	14

- (a) Use it to find mean.
- (b) State the modal mark

13. (a) On one graph draw lines $y = -3x + 1$ and $y = 2x + 6$

- (b) State the point of intersection of the above lines
- (c) Find the area between line $y = 2x + 6$ and the two axes

14. Given that $f(x) = \frac{ax^2}{ax-2}$ and that $f(1) = 2$. Find the value of :-

- (i) a
- (ii) $f(2)$
- (iii) $f(3)$
- (iv) $f(-1)$

15. (a) Given that $p = \begin{pmatrix} 2 \\ 6 \end{pmatrix}$, $q = \begin{pmatrix} 1 \\ -2 \end{pmatrix}$ and $r = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$

Find

- (i) Length of $p - q + r$,
- (ii) The value of it $tq - r = \begin{pmatrix} 5 \\ -14 \end{pmatrix}$

(b) The mid-point the line joining the points A (m, -4) and B (1, 2n) is (2, 3), find the values of m and n

END