



BINA BANGSA SCHOOL KEBON JERUK
AY 2022-2023

TOPICAL TEST – SECONDARY 3 ACCELERATED
CHAPTER 7/8 COORDINATE GEOMETRY AND LINEAR LAW

NAME:

DATE:

PARENT'S SIGNATURE:

SCORE:/50

Answer all the questions. Show all necessary working. Marks may be deducted for missing steps.

Question 01

A and B are the points $(-3, 3)$ and $(7, 9)$.

The line $y = mx + c$ is the **perpendicular bisector** of the line segment AB .

Find the values of m and c .

[4]

Question 02

The line $y = 4 - 2x$ meets the curve $2x^2 - 3y^2 = 3x - 3$ at points P and Q .

Find the coordinates of the midpoint of PQ .

[5]

Find the length of PQ .

[2]

Question 03

$ABCD$ is a parallelogram whose diagonals meet at K .

(a) Given that the coordinates of ABC are $A(0, 2)$, $B(4, 3)$ and $C(3, -1)$, find the coordinates of K and D . [2]

(b) Find the equation of the diagonal AC . [2]

(c) Find the equation of the straight that passes through C and is parallel to BD . [2]

(d) Find the area of the parallelogram $ABCD$. [3]

Question 04

The coordinates of 3 points are $A(-4, 4)$, $B(k, -2)$ and $C(2k + 1, -6)$.

Find the value of k if A , B and C are **collinear**.

[3]

Question 05

The equations of the sides of the triangle PQR are given by $QR: y + 3 = 0$, $PQ: 3x + 2y = 0$, $PR: 5x - 6y = 48$.

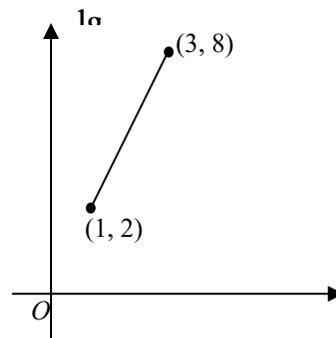
(a) Find the coordinates of P , Q and R . [4]

(b) Find the area of ΔPQR . [2]

(c) Find the length of the perpendicular distance from Q to PR . [3]

Question 06

The diagram shows part of a straight-line graph drawn to represent the equation $y = pq^x$. Calculate the values of p and of q .

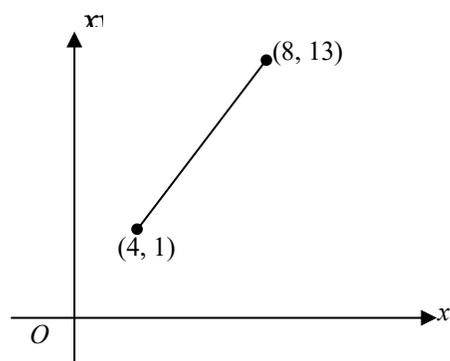


[4]

Question 07

Find the values of the constants a and b for which the straight-line graph shown in the diagram

represents the equation $ay = \frac{b}{x} + x$



[4]

Question 08

The table below shows experimental values of two variables x and y .

It is known that x and y are related by an equation of the form $y = x^2 + ax - b$, where a and b are constants.

x	1	2	3	4	5
y	5.7	6.4	9.1	16.8	20.5

- (a) Plot $y - x^2$ against x and draw a straight-line graph using 2 cm to represent 1 unit on the x -axis and 2 cm to represent 2 units on the y -axis. [4]
- (b) Determine which **y-value** in the table above is inaccurate and estimate its correct value. [2]
- (c) Use your graph to estimate the value of a and of b . [2]
- (d) On the same diagram, draw the line representing the equation $y - 2 = x(x + 1)$ and hence find the value of x for which $a - \frac{2}{x} = 1 + \frac{b}{x}$. [2]