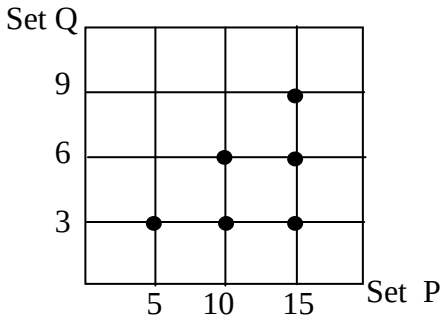
MODUL MENGGILAP MUTIARA
KERTAS 1
SET 2

1. Graph 1 shows the relation between set P and set Q.
Graf 1 menunjukkan hubungan antara set P dengan set Q.



Graph 1 *Graf 1*

State/ *Nyatakan*
(a) the images of 15,
imej bagi 15,
(b) the objects of 9,
objek bagi 9,

[2 *marks*/*markah*]

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2. Given function $f : x \rightarrow 3x + m$ and $f^{-1} : x \rightarrow 3kx + 2$, where m and k are constants find the value of m and k.
Diberi bahawa fungsi $f : x \rightarrow 3x + m$ *dan* $f^{-1} : x \rightarrow 3kx + 2$, *di mana m dan k ialah pemalar, carikan nilai m dan k.*

[3 *marks*/ *markah*]

3. Given function $f : x \rightarrow 4x - 5$ and $g : x \rightarrow \frac{6}{x-1}$, $x \neq 1$

   Diberi fungsi $f : x \rightarrow 4x - 5$ *dan* $g : x \rightarrow \frac{6}{x-1}$, $x \neq 1$

   Find the value of x if $f^2(x) = fg(3)$
   Cari nilai x jika $f^2(x) = fg(3)$

   [4 *marks*/*markah*]

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4. Solve the quadratic equation $(2x+1)(x-5) = -4(x+1)$. Give your answers correct to four significant figures.
   Selesaikan persamaan kuadratik $(2x+1)(x-5) = -4(x+1)$. *Berikan jawapan anda betul kepada empat angka bererti.*

   [3 *marks*/*markah*]

5. Form the quadratic equation which has the roots of -3 and $\frac{1}{2}$. Give the answer in the form of $ax^2 + bx + c = 0$ where *a*, *b* and *c* are constants.
Bentukkan persamaan kuadratik yang mempunyai punca-punca -3 and $\frac{1}{2}$. *Berikan jawapan dalam bentuk* $ax^2 + bx + c = 0$ *dengan keadaan a, b dan c adalah pemalar.*
[3 *marks/markah*]

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6. Diagram 6 shows the graph of a quadratic function $y = f(x)$.
Rajah 6 menunjukkan graf fungsi kuadratik y = f(x) .
State
Nyatakan

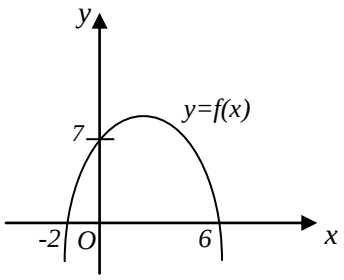

Diagram 6/*Rajah 6*

(a) the roots of the equation $f(x) = 0$.
punca-punca bagi persamaan f(x) = 0 .

(b) the equation of the axis of symmetry of the curve.
persamaan paksi simetri bagi lengkung itu.
[3 *marks*/markah]

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7. Diagram 7 shows the graph of a quadratic functions $k(x) = (x+5)^2 + 2m - 6$, where *m* is a constant.
Rajah 7 menunjukkan graf fungsi kuadratik $k(x) = (x+5)^2 + 2m - 6$ *dengan keadaan m ialah pemalar.*

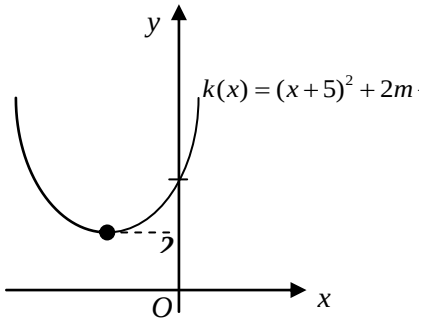

Diagram 7/*Rajah 7*

(a) State the equation of the axis of symmetry of the curve.
Nyatakan persamaan paksi simetri bagi lengkung itu.

(b) Given that the minimum value of the function is 2, find the value of *m*.
Diberi nilai minimum bagi fungsi itu ialah 2, cari nilai m.
[3 *marks* / markah]

8. Diagram 8 shows a straight line PQ .
Rajah 8 menunjukkan suatu garis lurus PQ.

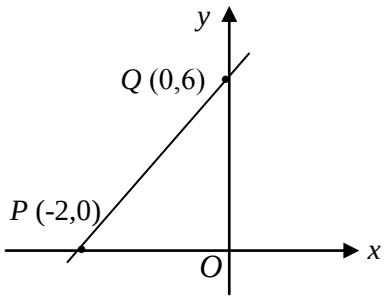

Diagram 8/*Rajah 8*

Given M is the midpoint of PQ, find
Diberi M ialah titik tengah PQ, cari

(a) the coordinates of M
koordinat M

(b) the equation of the perpendicular bisector to PQ.
persamaan pembahagi dua sama serenjang bagi garis PQ.

[4 *marks*/*markah*]

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9. The point A is (0, 4). A point P (x, y) moves such that $PA = 5$.
Find the equation of the locus of P.
Titik A ialah (0,4). *Titik P(x, y) bergerak dengan keadaan PA = 5.*
Cari persamaan lokus bagi P. [3 *marks*/*markah*]

10. Solve the equation $4^{\log_3 x} = 8$
Selesaikan persamaan $4^{\log_3 x} = 8$

[3marks/*markah*]

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11. Given $\log_3 x = 2m$, $\log_9 y = 4n$ and $\frac{x^2}{y} = 3^k$, express *k* in terms of *m* and of *n*

Diberi $\log_3 x = 2m$, $\log_9 y = 4n$ *dan* $\frac{x^2}{y} = 3^k$, *ungkapkan k dalam sebutan m dan n*

[4 *marks/markah*]

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12. Given that the mean for four positive integer is 9. When a number *y* is added to the four positive integer, the mean becomes 10. Find the value of *y*.

Diberi min untuk empat integer positif adalah 9. Apabila suatu nombor y ditambah ke set empat integer positif tersebut, min menjadi 10. Cari nilai y.

[3 *marks*/*markah*]

13. Diagram 13 shows a circle with centre O and radius 10 cm.
Rajah 13 menunjukkan sebuah bulatan berpusat O dan berjejari 10 cm.

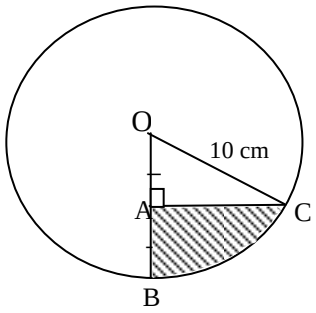

Diagram 13/*Rajah 13*

Given that *A, B* and *C* are points such that $OA = AB$ and $\angle OAC = 90^o$,
Diberi A, B dan C adalah titik dengan keadaan $OA = AB$ *dan* $\angle OAC = 90^o$.

(Use / guna $\pi = 3.142$)

Find/ *Cari*

(a) $\angle BOC$, in radians ,
$\angle BOC$ *dalam radian.*

(b) the area , in cm^2 ,of the shaded region.
luas, dalam cm^2, *kawasan berlorek* . [4 *marks/ markah*]

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14. The first three terms of an arithmatic progression are $k + 1$, $2k - 1$ and $k + 2$.
Find the value of k.
Tiga sebutan pertama suatu janjang aritmetik ialah $k + 1$, $2k - 1$ *dan* $k + 2$.
Carikan nilai k.

[2 *marks*/*markah*]

15. Given the geometry progression $6, -\frac{9}{2}, \frac{27}{8}, \ldots,$ find the sum to infinity of the progression.
Diberi janjang geometri $6, -\frac{9}{2}, \frac{27}{8}, \ldots,$ *Cari hasil tambah hingga ketakterhinggaan janjang itu.*

[3 *marks*/*markah*]

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16. The sum of the first *n* terms of an arithmetic progression is given by $S_n = \frac{n}{2}[3n + 1]$.
Hasil tambah n sebutan pertama suatu janjang aritmetik diberi oleh $S_n = \frac{n}{2}[3n + 1]$
Find/*Cari*

(a) the sum of the first 5 terms,
hasil tambah 5 sebutan pertama

(b) the 5^{th} term.
Sebutan ke-5

[4 *marks*/*markah*]

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17. Diagram 17 shows a straight line graph of x^2y against x^3. Given that $y = 4x + \frac{8}{x^2}$, calculate the value of *h* and of *k*.
Rajah 17 menunujukkan graf garis lurus dengan x^2y *melawan* x^3.
Diberi $y = 4x + \frac{8}{x^2}$, *kirakan nilai h dan k.*

[3 *marks/markah*]

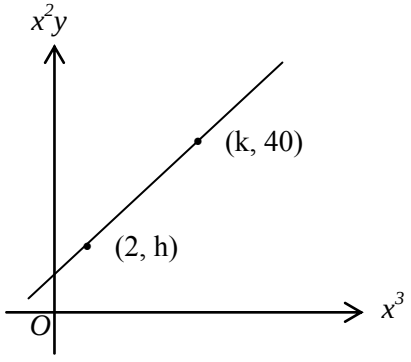

Diagram 17/*Rajah 17*

18. Diagram 6 shows the vectors $\overrightarrow{OA}$ = $\underline{a}$ and $\overrightarrow{OB}$ = $\underline{b}$ on a square grid. Express $\overrightarrow{SQ}$ in terms of $\underline{a}$ and $\underline{b}$.

Rajah 6 menunjukkan vektor $\overrightarrow{OA}$ = $\underline{a}$ and $\overrightarrow{OB}$ = $\underline{b}$ *pada grid segi empat. Ungkapkan* $\overrightarrow{SQ}$ *dalam sebutan* $\underline{a}$ and $\underline{b}$.

[2 *marks*/*markah*]

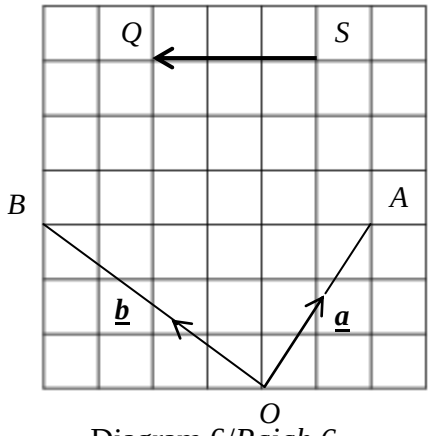

Diagram 6/*Rajah 6*

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19. Diagram 19 shows vector $\overrightarrow{OA}$ drawn on a Cartesian plane.

Rajah 19 menunjukkan vector $\overrightarrow{OA}$ *dilukis pada suatu satah Cartesan.*

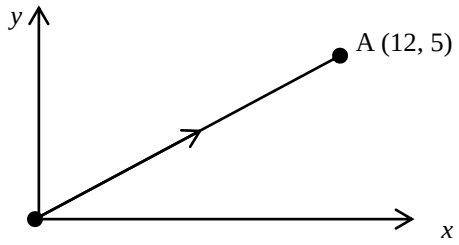

Diagram 7/ *Rajah 7*

(a) Express $\overrightarrow{OA}$ in the form $\begin{pmatrix} x \\ y \end{pmatrix}$

Ungkapkan $\overrightarrow{OA}$ *dalam bentuk* $\begin{pmatrix} x \\ y \end{pmatrix}$

(b) Find the unit vector in the direction of $\overrightarrow{OA}$

Carikan vektor unit dalam arah $\overrightarrow{OA}$.

[3 *marks*/*markah*]

20. A chess club has 10 members of whom 6 are men and 4 are women. A team of 4 members is selected to play in a match. Find the number of different ways of selecting the team if
Sebuah kelab catur mengandungi 10 ahli yang terdiri daripada 6 lelaki dan 4 perempuan. Satu pasukan yang mengangungi 4 orang ahli dipilih untuk bertanding. Cari bilangan cara untuk memilih pasukan tersebut jika

(a) all the players are to be of the same gender,
semua pemain mempunyai jantina yang sama
(b) there must be an equal number of men and women
bilangan lelaki dan perempuan mesti sama

[4 *marks*/*markah*]

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21. The probability that it will rain on Monday and on Tuesday are $\frac{3}{4}$ and $\frac{2}{5}$ respectively. Find the probability that it will rain on only one day.
Kebarangkalian hari akan hujan pada hari Isnin dan hari Selasa adalah $\frac{3}{4}$ *dan* $\frac{2}{5}$ *masing-masing. Cari kebarangkalian bahawa hanya satu hari akan hujan.*

[3 *marks/markah*]