Jawapan

Bab 6

1.

Persamaan / *Equation*

Persamaan linear dalam satu pemboleh ubah *Linear equation in one variable*	Bukan persamaan linear dalam satu pemboleh ubah *Non-linear equation in one variable*
$3p + 2 = -1$	$4x - 2y = 8$
$6(m + 1) = \frac{m}{4}$	$6k^2 - 2 = 3$

2. (a) $k + k - 6 = 84$
$2k = 90$

(b) $p + p + p + p + p = 45$ cm
$5p = 45$ cm

3. (a) Bilangan murid lelaki melebihi bilangan murid perempuan sebanyak 12 orang dalam Kelab Skuasy.
The number of male pupils is 12 *more than female pupils in Squash Club.*

(b) Jumlah harga bagi 4 biji epal dan 3 biji oren ialah RM20.
The total price of 4 *apples and* 3 *oranges is* RM20.

4. (a) (i)

y	Sebelah kiri / *Left hand side*
4	$6 - \frac{4}{3} = \frac{14}{3}$
5	$6 - \frac{5}{3} = \frac{13}{3}$
6	$6 - \frac{6}{3} = 4$

Maka, $y = 6$ ialah penyelesaian bagi $6 - \frac{y}{3} = 4$.
Thus, $y = 6$ *is the solution for* $6 - \frac{y}{3} = 4$

(ii) $6 - \frac{y}{3} = 4$
$-6 + 6 - \frac{y}{3} = -6 + 4$
$-\frac{y}{3} = -2$
$-\frac{y}{3} \times (-3) = -2 \times (-3)$
$y = 6$

(iii) $y \rightarrow \times \left(-\frac{1}{3}\right) \rightarrow + 6 \rightarrow = 4$
$y \leftarrow \div \left(-\frac{1}{3}\right) \leftarrow - 6 \leftarrow = 4$

Pematahbalikan / *Backtraking*
$4 - 6 = -2 \rightarrow -2 \div \left(-\frac{1}{3}\right) = 6$
Maka, / *Thus*,
$y = 6$

(b) (i)

z	Sebelah kiri / *Left hand side*
-1	$5(-1 - 2) = -15$
0	$5(0 - 2) = -10$
1	$5(1 - 2) = -5$

Maka, $z = 1$ ialah penyelesaian bagi $5(z - 2) = -5$.
Thus, $z = 1$ *is the solution for* $5(z - 2) = -5$.

(ii) $5(z - 2) = -5$
$5(z - 2) \div 5 = -5 \div 5$
$z - 2 = -1$
$z - 2 + 2 = -1 + 2$
$z = 1$

(iii) $z \rightarrow - 2 \rightarrow \times 5 \rightarrow = -5$
$z \leftarrow + 2 \leftarrow \div 5 \leftarrow = -5$

Pematahbalikan / *Backtraking*
$-5 \div 5 = -1 \rightarrow -1 + 2 = 1$

Maka, / *Thus*,
$z = 1$

5. (a) $3(h + 7) = 4(h - 2)$
$3h + 21 = 4h - 8$
$3h - 4h = -21 - 8$
$-h = -29$
$h = 29$

(b) $\frac{3g - 1}{4} = 2 - g$

$3g - 1 = 4(2 - g)$
$3g - 1 = 8 - 4g$
$3g + 4g = 8 + 1$
$7g = 9$
$g = \frac{9}{7}$

(c) $\frac{2}{3}m - 1 = 4 - m$

$\frac{2}{3}m + m = 4 + 1$
$\frac{5}{3}m = 5$
$m = 5 \times \frac{3}{5}$
$= 3$

6. (a) Luas segi tiga / *Area of triangle*
$= \frac{1}{2} \times$ panjang tapak $\times$ tinggi
$\frac{1}{2} \times$ *length of base* $\times$ *height*

$\frac{1}{2} \times 12 \times (3x + 4) = 96$
$6(3x + 4) = 96$
$\frac{6(3x + 4)}{6} = \frac{96}{6}$
$3x + 4 = 16$
$3x + 4 - 4 = 16 - 4$
$3x = 12$
$\frac{3x}{3} = \frac{12}{3}$
$x = 4$

(b) Katakan x ialah nombor ganjil pertama dan y ialah nombor ganjil kedua.
Let x be the first odd number and y be the second odd number.

$y = x + 2$
$x + y = 48$

$x + (x + 2) = 48$
$2x + 2 = 48$
$2x + 2 - 2 = 48 - 2$
$2x = 46$
$\frac{2x}{2} = \frac{46}{2}$
$x = 23$
$y = x + 2$
$= 23 + 2$
$= 25$

(c) Umur ayah Samad ialah 40 tahun dan umur Samad ialah 12 tahun.
Samad's father is 40 *years old and Samad is* 12 *years old.*
Selepas x tahun, / *After x years,*
Umur ayah Samad
Samad's father's age
$= 40 + x$

Umur Samad / *Samad's age*
$= 12 + x$
$40 + x = 2(12 + x)$
$40 + x = 24 + 2x$
$40 - 24 + x - x = 24 - 24 + 2x - x$
$16 = x$
$x = 16$

Umur ayah Samad ialah dua kali ganda umur Samad pada 16 tahun kemudian.
Samad's father will be twice as old as Samad after 16 *years.*

(d) Katakan / *Let*
umur Izzati / *Izzati's age* $= x$
umur Siti / *Siti's age* $= x - 5$
Maka, umur Husna / *Hence, Husna's age*
$= 2(x - 5)$

Jumlah umur / *Total age* $= 3x - 1$
$x + (x - 5) + 2(x - 5) = 3x - 1$
$x + x - 5 + 2x - 10 = 3x - 1$
$4x - 15 = 3x - 1$
$-3x + 4x - 15 + 15 = -3x + 3x - 1 + 15$
$x = 14$

Umur Izzati / *Izzati's age* = 14 tahun / *years old*
Umur Siti / *Siti's age* $= 14 - 5$
$= 9$ tahun / *years old*
Umur Husna / *Husna's age* $= 2(9)$
$= 18$ tahun / *years old*

(e) $(2x - 4) + (x + 4) + (x + 7) = 43$
$2x + x + x - 4 + 4 + 7 = 43$
$4x + 7 = 43$
$4x = 36$
$x = 9$

Bahagian 1 / *Part* 1 $= 2(9) - 4$
$= 14$ cm

Bahagian 2 / *Part* 2 $= (9) + 4$
$= 13$ cm

Bahagian 3 / *Part* 3 $= (9) + 7$
$= 16$ cm

Bahagian 3 ialah bahagian terpanjang dengan panjang 16 cm.
Part 3 *is the longest part with* 16 cm *length.*

(f) Katakan x ialah digit pada nilai tempat sa.
Let x be the digit in ones' place.

Maka, digit pada nilai tempat puluh
Hence, the digit in tens' place
$= 13 - x$

Nombor asal *Original number* $10(13 - x) + x$ $=130 - 9x$	Nombor baharu *New number* $10(x) + (13 - x)$ $=13 + 9x$

Nombor baharu = Nombor asal + 27
New number = Original number + 27

$$\begin{aligned} 13 + 9x &= 130 - 9x + 27 \\ 13 + 9x - 13 &= 157 - 9x - 13 \\ 9x &= 144 - 9x \\ 9x + 9x &= 144 - 9x + 9x \\ 18x &= 144 \\ \frac{18x}{18} &= \frac{144}{18} \\ x &= 8 \end{aligned}$$

Digit pada nilai tempat puluh
Digit in tens' place
$= 13 - 8$
$= 5$

Maka, nombor asal ialah 58.
Hence, the original number is 58.

7. Aktiviti PAK-21

9.

- Persamaan Linear / *Linear Equation*
  - Satu pemboleh ubah / *One variable*
    - $x = 3x - 2$
    - $\frac{3}{2}t - 1 = 5$
    - $g - 2 = -\frac{g}{4}$
  - Dua pemboleh ubah / *Two variables*
    - $-4p - 3q = -8$
    - $r = 2 + s$
    - $5m + 4n - 7 = 4m$

10. (a) $0.8x + 0.5y = 12$

(b) $\frac{x + y}{2} = 80$

11. (a) Jumlah harga bagi 2 kg ikan dan 1 kg bawang ialah RM13.
The total price for 2 kg *of fish and* 1 kg *of onions is* RM13.

(b) Ramesh mempunyai m keping wang kertas RM5 dan n keping wang kertas RM10 dengan jumlah RM110.
Ramesh has m pieces of RM5 *notes and n pieces of* RM10 *notes with a total of* RM110.

12. (a) Apabila / *When* $x = 1$,
$3(1) + 2y = 25$
$3 + 2y = 25$
$2y = 25 - 3$
$= 22$
$y = 11$

Apabila / *When* $x = 3$,
$3(3) + 2y = 25$
$9 + 2y = 25$
$2y = 25 - 9$
$= 16$
$y = 8$

Apabila / *When* $x = 5$,
$3(5) + 2y = 25$
$15 + 2y = 25$
$2y = 25 - 15$
$= 10$
$y = 5$

Penyelesaian: (1, 11), (3, 8) dan (5, 5)
Solution: (1, 11), (3, 8) *and* (5, 5)

(b) Apabila / *When* $x = 1$
$7(1) + 3y = 25$
$7 + 3y = 25$
$3y = 25 - 7$
$3y = 18$
$y = 6$

Apabila / *When* $x = 4$
$7(4) + 3y = 25$
$28 + 3y = 25$
$3y = 25 - 28$
$3y = -3$
$y = -1$

Apabila / *When* $x = 7$
$7(7) + 3y = 25$
$49 + 3y = 25$
$3y = 25 - 49$
$3y = -24$
$y = -8$

Penyelesaian: (1, 6), (4, –1) dan (7, –8)
Solution: (1, 6), (4, –1) *and* (7, –8)

13. (a)

x	0	1	2	3
y	–2	–1	0	1
(x, y)	(0, –2)	(1, –1)	(2, 0)	(3, 1)

Apabila / *When* $x = 0$,
$2y = 2(0) - 4$
$2y = -4$
$y = -2$

Apabila / *When* $x = 1$,
$2y = 2(1) - 4$
$2y = -2$
$y = -1$

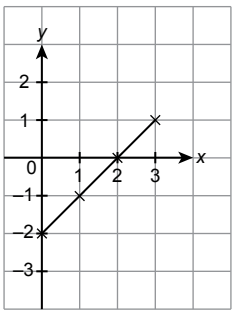
Apabila / *When* $x = 2$,
$2y = 2(2) - 4$
$2y = 0$
$y = 0$

Apabila / *When* $x = 3$,

$2y = 2(3) - 4$

$2y = 2$

$y = 1$



14. (a) (i) Katakan x ialah harga sebiji buah mangga dan y ialah harga sebiji buah jambu batu.
Let x be the price of a mango and y be the price of a guava.

$2x + 3y = 8$

$3x + y = 5$

(ii) Persamaan 1/ *Equation* 1:

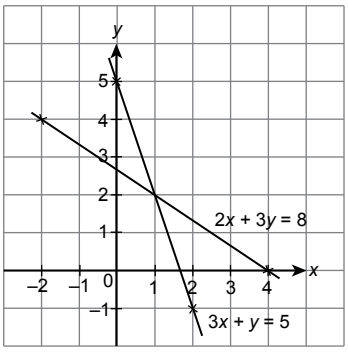
$2x + 3y = 8$

x	−2	4
y	4	0

Persamaan 2 / *Equation* 2:

$3x + y = 5$

x	0	2
y	5	−1



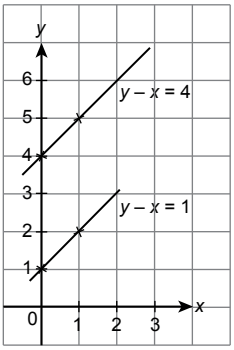
Kedua-dua garis bersilang pada satu titik (1, 2). Oleh itu, persamaan linear serentak ini mempunyai penyelesaian unik.
Both lines intersect at a point (1, 2). *Hence, these simultaneous linear equations have a unique solution.*

(b) (i) Katakan x ialah skor pasukan A dan y ialah skor pasukan B.
Let x be the score of team A and y be the score of team B.

$y - x = 4$

$y - x = 1$

(ii)



Persamaan 1 / *Equation* 1:

$y - x = 4$

x	0	1
y	4	5

Persamaan 2 / *Equation* 2:

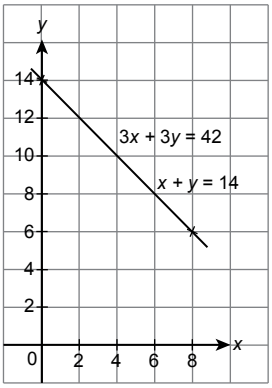
$y - x = 1$

x	0	1
y	1	2

Kedua-dua garis adalah selari. Oleh itu, persamaan linear serentak ini tidak mempunyai penyelesaian.
Both lines are parallel. Hence, the simultaneous linear equations do not have solution.

(c) (i) Katakan x ialah harga segelas jus strawberi dan y ialah harga sebiji kek coklat mini.
Let x be the price of a glass of strawberry juice and y be the price of a mini chocolate cake.
$x + y = 14$
$3x + 3y = 42$

(ii)



Persamaan 1 / *Equation* 1:
$x + y = 14$

x	0	8
y	14	6

Persamaan 2 / *Equation* 2:
$3x + 3y = 42$

x	0	8
y	14	6

Kedua-dua garis adalah bertindih. Oleh itu, persamaan linear serentak ini mempunyai penyelesaian tak terhingga.
Both lines are overlapping. Hence, the simultaneous linear equations have infinite solutions.

15. (a) (i) $9e + 3f = 6$ ..... ①
$2e - 3f = 5$ ..... ②

① + ② : $11e + 0 = 11$
$e = 1$

Gantikan $e = 1$ ke dalam ①,
Substitute e = 1 into ①,
$9(1) + 3f = 6$
$3f = 6 - 9$
$f = \frac{-3}{3}$
$= -1$

Maka, $e = 1$ dan $f = -1$.
Therefore, e = 1 and f = –1.

(ii) $8m - 12n = 76$ ..... ①
$5m - 6n = 40$ ..... ②

① ÷ 2 : $4m - 6n = 38$ ..... ③
② – ③ : $m + 0 = 2$
$m = 2$

Gantikan $m = 2$ ke dalam ②,
Substitute m = 2 into ②,
$5(2) - 6n = 40$
$-6n = 40 - 10$
$n = \frac{30}{-6}$
$= -5$

Maka, $m = 2$ dan $n = -5$.
Therefore, m = 2 and n = –5.

(b) (i) $g + 2h = 4$ ..... ①
$3g - 4h = 7$ ..... ②

Daripada / *From* ①, $g = 4 - 2h$..... ③
Gantikan ③ ke dalam ②,
Substitute ③ *into* ②,
$3(4 - 2h) - 4h = 7$
$12 - 6h - 4h = 7$
$-10h = 7 - 12$
$h = \frac{-5}{-10} = \frac{1}{2}$

Gantikan $h = \frac{1}{2}$ ke dalam ③.
Substitute $h = \frac{1}{2}$ *into* ③.

$g = 4 - 2\left(\frac{1}{2}\right)$
$= 3$

Maka, $h = \frac{1}{2}$ dan $g = 3$.
Therefore, $h = \frac{1}{2}$ *and* $g = 3$.

(ii) $\frac{x}{3} + y = -2$ ..... ①
$x - 2y = 14$ ..... ②

Daripada / *From* ②, $x = 14 + 2y$..... ③
Gantikan ③ ke dalam ①,
Substitute ③ *into* ①,

$\frac{14 + 2y}{3} + y = -2$
$14 + 2y + 3y = -2(3)$
$5y = -6 - 14$
$y = \frac{-20}{5} = -4$

Gantikan $y = -4$ ke dalam ③,
Substitute y = –4 into ③,
$x = 14 + 2(-4)$
$= 6$

Maka, $x = 6$ dan $y = -4$.
Therefore, x = 6 and y = –4.

16. (a) $4x + 3 = x + 2y$
$3x - 2y = -3$ ..... ①

$(4x + 3) + (x + 2y) + (3y - 1) = 47$
$5x + 5y + 2 = 47$
$5x + 5y = 45$
$x + y = 9$ ..... ②

Dari / *From* ②, $x = 9 - y$ .....③

Gantikan ③ ke dalam ①,
Substitute ③ *into* ①,
$3(9 - y) - 2y = -3$
$27 - 3y - 2y = -3$
$-5y = -30$
$y = 6$

Gantikan $y = 6$ ke dalam ③,
Substitute $y = 6$ *into* ③,
$x = 9 - 6$
$x = 3$
Maka, $x = 3$ dan $y = 6$.
Hence, $x = 3$ *and* $y = 6$.

(b) Katakan / *Let*
$x =$ Harga tiket bagi seorang dewasa
Ticket price for an adult
$y =$ Harga tiket bagi seorang kanak-kanak
Ticket price for a child

$3x + 2y = 201$ ..... ①
$10x + 7y = 681$ ..... ②

① × 7 : $21x + 14y = 1\,407$ ..... ③
② × 2 : $20x + 14y = 1\,362$ ..... ④

③ − ④ : $x = 45$

Gantikan $x = 45$ ke dalam ①:
Substitute $x = 45$ *into* ①:
$3(45) + 2y = 201$
$135 + 2y = 201$
$2y = 66$
$y = 33$

∴ Maka, harga tiket bagi seorang dewasa ialah RM45 dan harga tiket bagi seorang kanak-kanak ialah RM33.
Therefore, the ticket price for an adult is RM45 *and the ticket price for a child is* RM33.

(c) $2x + 3y - 2 = 2(2x + y) - 5$
$2x + 3y - 2 = 4x + 2y - 5$
$y - 2x = -3$ ..... ①

$(2x + 3y - 2) + (2x + y) = 6y + x - 1$
$4x + 4y - 2 = 6y + x - 1$
$3x - 2y = 1$ ..... ②

① × 2: $-4x + 2y = -6$ ..... ③
③ + ②: $-x = -5$
$x = 5$

Gantikan $x = 5$ ke dalam ①,
Substitute $x = 5$ *into* ①,
$y - 2(5) = -3$
$y - 10 = -3$
$y = 7$

Maka, panjang asal tali
Therefore, the original length of the rope
$= 6(7) + 5 - 1$
$= 46$ cm

Praktis Masteri 6

BAHAGIAN A

1. Persamaan linear dalam satu pemboleh ubah ialah persamaan yang mempunyai hanya satu pemboleh ubah dan kuasa tertinggi pemboleh ubah tersebut ialah 1.
Linear equation in one variable is an equation that involves only one variable and the highest power of the variable is 1.

D: $3 - z^2 = 12$

Bukan persamaan linear kerana kuasa tertinggi pemboleh ubah tersebut ialah 2.
Not a linear equation because power of the variable is 2.

Jawapan / *Answer*: **D**

2. Jawapan / *Answer*: **B**

3. $\frac{2}{5}p = 8$
$= 8 \div \frac{2}{5}$
$= {}^{4}\cancel{8} \times \frac{5}{\cancel{2}_{1}}$
$= 20$

Jawapan / *Answer*: **B**

4. Katakan nombor tersebut sebagai x.
Let the number be x.
$\frac{x}{2} \times 5 = 60$
$\frac{x}{2} = 60 \div 5$
$= 12$
$x = 12 \times 2$
$= 24$

Jawapan / *Answer*: **C**

5. $2j + 2j + 2j + 2j = 56$
$8j = 56$

Jawapan / *Answer*: **C**

6. $h - 3k = -5$ .....①

$h + 3k = 7$ .....②

Daripada / *From* ①: $h = -5 + 3k$ .....③

Gantikan ③ ke dalam ②
Substitute ③ *into* ②

$(-5 + 3k) + 3k = 7$
$-5 + 3k + 3k = 7$
$-5 + 6k = 7$
$6k = 7 + 5$
$= 12$
$k = 12 \div 6$
$= 2$

Gantikan $k = 2$ ke dalam ③
Substitute $k = 2$ *into* ③

$h = -5 + 3(2)$
$= -5 + 6$
$= 1$

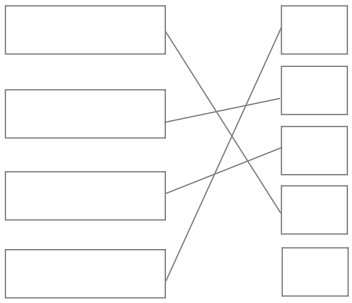
Jawapan / *Answer*: **A**

BAHAGIAN B

7. (a) ✓
(b) ✗
(c) ✗
(d) ✓

8. (a) Dua / *Two*
(b) Bersilang / *Intersect*
(c) Penyelesaian unik / *Unique solution*
(d) (9, 7)

9.



10. $\frac{5k}{2} - 12 = 18$

$\frac{5k}{2} - 12$ [+ 12] $= 18$ [+ 12]

$\frac{5k}{2} =$ [30]

$\frac{5k}{2}$ [× 2] $= 30$ [× 2]

$5k = 60$

$k =$ [12]

BAHAGIAN C

11. (a) $p + 2p + (p - 10) = 26$
$4p = 36$
$p = 9$

(b) (i) $3(3x - 5) - 13 = 2x$
$9x - 15 - 13 = 2x$
$9x - 2x = 28$
$7x = 28$
$x = 4$

(ii) $\frac{1}{5}k + 8 = 1 - \frac{1}{2}k$
$\frac{1}{5}k + \frac{1}{2}k = 1 - 8$
$\frac{7}{10}k = -7$
$k = -10$

(c) $x + 2y = 3$ ..... ①
$4x - 3y = 23$ ..... ②

Daripada / *From* ①, $x = 3 - 2y$ ..... ③

Gantikan ③ ke dalam ②,
Substitute ③ *into* ②,

$4(3 - 2y) - 3y = 23$
$12 - 8y - 3y = 23$
$12 - 11y = 23$
$-11y = 23 - 12$
$-11y = 11$
$y = -1$

Gantikan $y = -1$ ke dalam ③.
Substitute $y = -1$ *into* ③.

$x = 3 - 2(-1)$
$= 3 + 2$
$= 5$

Maka, $x = 5$ dan $y = -1$.
Therefore, $x = 5$ *and* $y = -1$.

12. (a) $4x + y = 14$ ..... ①
$2x + 3y = 12$ ..... ②

Daripada / *From* ① : $y = 14 - 4x$ …….. ③

Gantikan ③ ke dalam ②
Substitute ③ *into* ②

$2x + 3(14 - 4x) = 12$
$2x + 42 - 12x = 12$
$-10x = -30$
$x = 3$

Gantikan $x = 3$ ke dalam ③
Substitute $x = 3$ *into* ③

$y = 14 - 4(3)$
$= 14 - 12$
$= 2$

Maka, nilai x tidak sama dengan nilai y. $x \neq y$
Hence, the value of x is not equal to the value of y. $x \neq y$

(b) $2(2y + 3) + 2(14) = 3 \times 18$
$4y + 6 + 28 = 54$
$4y = 20$
$y = 5$

(c) (i) Katakan x ialah harga sebungkus mi sup dan y ialah harga sebungkus nasi beriani.
Let x be the price of a pack of noodle soup and y be the price of a pack of beriani rice.

$6x + y = 30$
$3x + y = 21$

(ii) $6x + y = 30$ ..... ①
$3x + y = 21$ ..... ②
① − ② : $3x = 9$
$x = 3$

Gantikan $x = 3$ ke dalam ①
Substitute $x = 3$ *into* ①

$6(3) + y = 30$
$18 + y = 30$
$y = 12$

Maka, harga sebungkus mi sup ialah RM3 dan sebungkus nasi beriani ialah RM12.
Hence, the price of a pack of noodle soup is RM3 *and a pack of beriani rice is* RM12.

Fokus KBAT

(a) (i) x dan y masing-masing adalah harga bagi sepasang kasut dan sehelai kemeja-T.
x and y are the prices of a pair of shoes and a T-shirt respectively.

$2x + 3y = 600 - 16.30$
$2x + 3y = 583.70$ ..... ①
$x + 5y = 389.50$ ..... ②
Dari / *From* ②:
$x = 389.50 - 5y$ ..... ③

Gantikan ③ ke dalam ①:
Substitute ③ *into* ①:

$2(389.50 - 5y) + 3y = 583.70$
$779 - 10y + 3y = 583.70$
$7y = 195.30$
$y = 27.90$

Gantikan $y = 27.90$ ke dalam ③:
Substitute $y = 27.90$ *into* ③:

$x = 389.50 - 5(27.90)$
$= 389.50 - 139.50$
$= 250$

∴ Harga bagi sepasang kasut dan sehelai kemeja-T masing-masing ialah RM250 dan RM27.90.
The prices of a pair of shoes and a T-shirt are RM250 *and* RM27.90 *respectively.*

(ii) Peratusan diskaun bagi sepasang kasut
The percentage of discount of a pair of shoes

$= \frac{399 - 250}{399} \times 100\%$

$= \frac{149}{399} \times 100\%$

$= 37.34\%$

Peratusan diskaun bagi sehelai kemeja-T
The percentage of discount of a T-shirt

$= \frac{59.90 - 27.90}{59.90} \times 100\%$

$= \frac{32}{59.90} \times 100\%$

$= 53.42\%$

(b) $2(250) + 3(27.90) + 5 \times \frac{90}{100} \times q = 654.35$
$500 + 83.70 + 4.5q = 654.35$
$4.5q = 654.35 - 500 - 83.70$
$= 70.65$
$q = 15.70$

∴ Harga bagi sebotol termos sebelum diskaun 10% ialah RM15.70
The price of a thermos before the 10% *discount was* RM15.70