

Penyelesaian Lengkap

PRAKTIS 1

Praktis Formatif

1.1 Ubahan Langsung Direct Variation

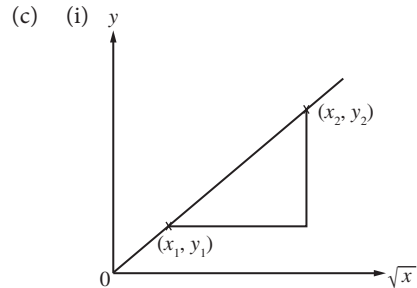
- 1 (a) Ya/Yes
(b) (i) Bertambah 3 kali ganda/Tripled
(ii) Berkurang sebanyak 20%/Decreases by 20%
(c) $10\text{ l} \rightarrow 50\text{ min}$
 $60\text{ l} \rightarrow 300\text{ min}$
 $= 300 \div 60\text{ jam/hours}$
 $= 5\text{ jam/hours}$
- 2 (a) masa bertambah sebanyak tiga kali ganda
the time increases three times
(b) masa dikurangkan separuh
the time becomes halved
- 3 (a) (i) $1\text{ kg} = 1\,000\text{ g}$
 $1\,000\text{ g} \rightarrow \text{RM}t$
 $500\text{ g} \rightarrow \frac{\text{RM}t}{2}$
 $\rightarrow 0.5t$
(ii) $1\,000\text{ g} \rightarrow \text{RM}t$
 $10\,000\text{ g} \rightarrow 10t$
(b) Jisim mentega berubah secara langsung dengan harganya. $m \propto t$
The mass of butter varies directly as the price. $m \propto t$
- 4

p	3	6	9	12	15
q	1	2	3	4	5
$\frac{p}{q}$	$\frac{3}{1} = 3$	$\frac{6}{2} = 3$	$\frac{9}{3} = 3$	$\frac{12}{4} = 3$	$\frac{15}{5} = 3$

(a) Oleh sebab nilai $\frac{p}{q} = 3$ (pemalar), maka p berubah secara **langsung** dengan q . $p \propto q$
As the value of $\frac{p}{q} = 3$ (constant), then p varies directly as q . $p \propto q$

(b) $\frac{p}{q} = 3$
Apabila/When $q = 20$,
 $\frac{p}{20} = 3$
 $p = 60$

5 (a) y berubah secara langsung dengan $\sqrt{x}$.
 y varies directly as $\sqrt{x}$.
(b) Apabila/When $x = 25$,
 $y = 3(\sqrt{25})$
 $y = 15$
 $\therefore$ Apabila $x = 25$, $y = 15$.
When $x = 25$, $y = 15$.



(ii) Satu graf garis lurus yang melalui asalan.

A straight line graph passing through the origin.

- (d) Pemalar ubahan boleh diperoleh dengan membahagi nilai $y_2 - y_1$ dengan nilai $x_2 - x_1$, iaitu, $\frac{y_2 - y_1}{x_2 - x_1}$.

The constant of variation can be obtained by dividing the value of $y_2 - y_1$ with $x_2 - x_1$, that is, $\frac{y_2 - y_1}{x_2 - x_1}$.

- 6 (a) (i) $m \propto n$
 $k = \frac{m}{n}$
 $= \frac{0.28}{56}$
 $= \frac{1}{200}$
 $\therefore m = \frac{n}{200}$
(ii) $m = \frac{200}{200}$
 $= 1$
(b) (i) $n \propto m$
 $k = \frac{n}{m}$
 $= \frac{56}{0.28}$
 $= 200$
 $\therefore n = 200m$
(ii) $n = 200(18)$
 $= 3\,600$
(iii) 200

- 7 (a) $t \propto rx^3$ (c) $e \propto fgh^{\frac{1}{3}}$
(b) $w \propto q^2\sqrt{t}$ (d) $r \propto st$

- 8 $p \propto \sqrt[3]{q}r^2$
 $k = \frac{63}{\sqrt[3]{343} \times 2^2}$
 $= 2.25$
 $p = 2.25\sqrt[3]{q}r^2$
 $d = 2.25 \times \sqrt[3]{8} \times 6^2$
 $= 162$

$$0.225 = 2.25 \times \sqrt[3]{e} \times 1^2$$

$$\sqrt[3]{e} = 0.1$$

$$e = 0.001$$

$$d \times e = 162 \times 0.001 \\ = 0.162$$

9 (a) (i)	Isi padu Volume (cm ³)	$\frac{2}{3} \times \frac{22}{7} \times 4^3 = 134.1$	$\frac{2}{3} \times \frac{22}{7} \times 2^3 = 16.76$	$\frac{2}{3} \times \frac{22}{7} \times 1^3 = 2.10$
	Harga/Price (RM)	21.46	2.68	0.34
	Harga bagi 1 cm ³ biskut Price of 1 cm ³ of cookie (RM)	0.16	0.16	0.16

Ya, harga biskut, p berubah secara langsung dengan isi padu biskut, v . Harga bagi 1 cm³ biskut adalah pemalar bagi ketiga-tiga biskut tersebut, iaitu RM0.16.

Yes, the price of cookie, p varies directly as the volume of the cookie, v . The price per 1 cm³ of cookie is constant for all three cookies, which is RM0.16.

(ii) $p = 0.16v$

(b) Harga/Price = $0.16 \times \frac{2}{3} \times \frac{22}{7} \times 3^3$
= RM9.05

1.2 Ubahan Songsang Inverse Variation

1 (a) (i) $\frac{\text{RM5 000}}{\frac{500}{100}} = \text{RM10}$
(ii) $\frac{\text{RM5 000}}{100} = \text{RM50}$

(b) Amaun yang diderma oleh setiap penderma berubah secara songsang dengan bilangan penderma. $m \propto \frac{1}{n}$

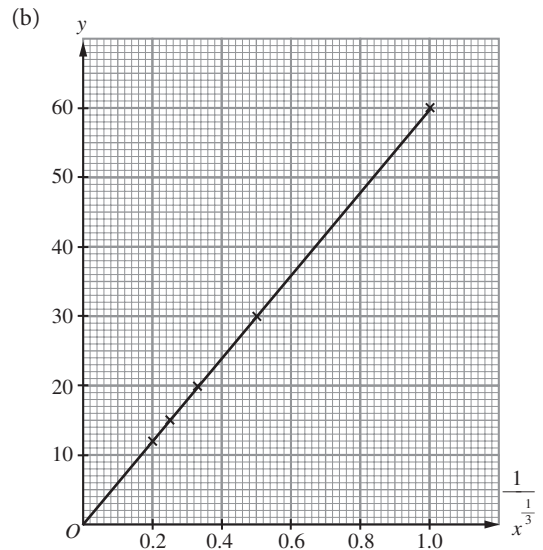
The amount of donation per donor changes inversely as the number of donors. $m \propto \frac{1}{n}$

2 (a)

y	60	30	20	15	12
x	1	8	27	64	125
$\frac{1}{x^3}$	1	2	3	4	5
$\frac{1}{x^3}y$	60	60	60	60	60
$\frac{1}{\frac{1}{x^3}}$	1	0.5	0.33	0.25	0.2

Oleh sebab nilai $\frac{1}{x^3}y = 60$ (pemalar yang sama), maka y berubah secara songsang dengan x^3 .

Because the value of $\frac{1}{x^3}y = 60$ (same constant), then y varies inversely as x^3 .



(c) Kecerunan graf mewakili pemalar ubahan.

Gradient of graph represents the constant of variation.

(d) $y = \frac{60}{\frac{1}{x^3}}$ atau/or $x^3 y = 60$

3 (a) $\frac{1}{2}$

(b) 3

4 $p \propto \frac{1}{q^2} \Rightarrow p = k\left(\frac{1}{q^2}\right)$

Apabila/When $p = 30$, $q = 3$

$$30 = k\left(\frac{1}{3^2}\right)$$

$$k = 270$$

Maka/Therefore,

$$p = 270\left(\frac{1}{q^2}\right).$$

Apabila/When $p = 7\frac{1}{2}$,

$$7\frac{1}{2} = 270\left(\frac{1}{q^2}\right)$$

$$q^2 = 270 \times \frac{2}{15}$$

$$q^2 = 36$$

$$q = \pm 6$$

Kaedah Alternatif:
Alternative method:

$$q_1^2 p_1 = q_2^2 p_2$$

$$3^2 \times 30 = q_2^2 \left(\frac{15}{2}\right)$$

$$270 \times \frac{2}{15} = q_2^2$$

$$q_2^2 = 36$$

$$q_2 = \pm 6$$

$$5 \quad t \propto \frac{1}{j^2}$$

$$t = k\left(\frac{1}{j^2}\right)$$

Apabila/When $t = 9, j = 4$.

$$9 = k\left(\frac{1}{4^2}\right)$$

$$k = 144$$

$$\therefore t = 144\left(\frac{1}{j^2}\right)$$

(a) Apabila/When $j = 3$,

$$t = 144\left(\frac{1}{3^2}\right)$$

$$t = 16$$

(b) Apabila/When $t = 4$,

$$4 = 144\left(\frac{1}{j^2}\right)$$

$$j^2 = 144 \times \frac{1}{4}$$

$$j^2 = 36$$

$$j = 6$$

Kaedah Alternatif:
Alternative method:

$$(a) \quad j_1^2 t_1 = j_2^2 t_2$$

$$3^2 \times t_1 = 4^2(9)$$

$$t_1 = \frac{4^2(9)}{3^2}$$

$$t_1 = 16$$

$$(b) \quad j_1^2(4) = 4^2(9)$$

$$j_1^2 = \frac{4^2(9)}{4}$$

$$j_1^2 = 36$$

$$j_1 = 6$$

6 Ubahan songsang, iaitu h berubah secara songsang dengan r^2 .

Inverse variation, that is h varies inversely as r^2 .

$$r_1^2 h_1 = r_2^2 h_2$$

$$(3)^2 8 = (2)^2 h_2$$

$$h_2 = 18$$

1.3 Ubahan Bergabung Combined Variation

$$1 \quad (a) \quad y \propto \frac{x^2}{z}$$

$$y = k\left(\frac{x^2}{z}\right)$$

Apabila/When $x = 3, y = 36$ dan/and $z = 4$.

$$36 = k\left(\frac{3^2}{4}\right)$$

$$k = 16$$

$$\text{Maka/Therefore, } y = 16\left(\frac{x^2}{z}\right)$$

(b) Apabila/When $y = 144$ dan/and $z = 4$,

$$144 = 16\left(\frac{x^2}{4}\right)$$

$$x^2 = 36$$

$$x = \pm 6$$

$$2 \quad p \propto \frac{\sqrt{s}}{qr^2}$$

$$1 = k \frac{\sqrt{144}}{3(2)^2}$$

$$k = 1$$

$$m = \frac{\sqrt{196}}{2(3)^2}$$

$$m = \frac{14}{18}$$

$$m = \frac{7}{9}$$

Praktis Sumatif

Kertas 1

1 C

2 C

3 B

4 C

5 A

6 D

Kertas 2

Bahagian/Section A

1

x	3	5	7	9	11
y	12	20	28	36	44
$\frac{y}{x}$	4	4	4	4	4

Ya. Semua nilai $\frac{y}{x} = 4$ (pemalar yang seragam), maka y berubah secara langsung dengan x .

Yes. Because all the values of $\frac{y}{x} = 4$ (uniform constant), thus y varies directly as x .

2

p	4	25	$y = 49$
q	12	$x = 30$	42

$$\frac{12}{\sqrt{4}} = \frac{x}{\sqrt{25}}$$

$$x = 30$$

$$\frac{12}{\sqrt{4}} = \frac{42}{\sqrt{y}}$$

$$y = 49$$

3 (a) $z = kxy$

$$18 = k(2)(3)$$

$$k = 3$$

$$z = 3xy$$

(b) $m = 3(4)(6)$

$$m = 72$$

4 (a) $p = km^2n^3\sqrt{r}$

$$36 = k(3)^2(2)^3\sqrt{9}$$

$$36 = 216k$$

$$k = \frac{1}{6}$$

$$p = \frac{1}{6}m^2n^3\sqrt{r}$$

(b) $p = 360, n = 3$ dan/and $r = 25$.

$$360 = \frac{1}{6}m^2(3)^3\sqrt{25}$$

$$m^2 = 16$$

$$m = \pm 4$$

$$5 \quad c \propto \frac{a}{b^2}$$

$$c = \frac{ka}{b^2}$$

$$15 = \frac{k(3)}{2^2}$$

$$k = 20$$

Apabila/When $a = 5$ dan/and $b = 1$,

$$c = \frac{20a}{b^2}$$

$$x = \frac{20(5)}{1^2}$$

$$x = 100$$

Apabila/When $a = 8$, $b = y$ dan/and $c = 25$,

$$c = \frac{20a}{b^2}$$

$$25 = \frac{20(8)}{y^2}$$

$$y^2 = 6.4$$

$$y = \pm 2.530$$

6 (a) $H \propto N$

$$H = kN$$

$$H = k(2j - 3)$$

Apabila/When $H = 0.15$ dan/and $j = 6$,

$$0.15 = k(2(6) - 3)$$

$$k = \frac{1}{60}$$

$$H = \frac{2j - 3}{60}$$

(b) Apabila/When $H = 4$,

$$H = \frac{2j - 3}{60}$$

$$4 = \frac{2j - 3}{60}$$

$$2j - 3 = 240$$

$$N = 240$$