Jawapan

Bab 3

1.

Luas *Area*		as		as		as	
Faktor penghubung *Relating factor*	1×1 $= 1$ unit^2		2×2 $= 4$ unit^2		3×3 $= 9$ unit^2		4×4 $= 16$ unit^2

2. (a) $375 = 5 \times 5 \times 5 \times 3$

Faktor perdana tidak boleh dikumpulkan dalam dua kumpulan yang sama. Maka, 375 bukan kuasa dua sempurna.

The prime factors cannot be grouped into two identical groups. Therefore, 375 is a perfect square.

(b) $784 = \underline{2 \times 2 \times 7} \times \underline{2 \times 2 \times 7}$

Faktor perdana boleh dikumpulkan dalam dua kumpulan yang sama. Maka, 784 ialah kuasa dua sempurna.

The prime factors can be grouped into two identical groups. Therefore, 324 is a perfect square.

3.

(1)	5	99	(100)	32	79	8	(25)
50	(4)	7	60	84	(16)	48	15
(49)	10	46	(9)	34	89	66	(36)
65	12	(81)	45	63	(64)	74	40

4. (a) $\sqrt{25} = \sqrt{5 \times 5}$
$= 5$

(b) $\sqrt{\frac{9}{16}} = \sqrt{\frac{3}{4} \times \frac{3}{4}}$
$= \frac{3}{4}$

(c) $\sqrt{0.36} = \sqrt{0.6^2}$
$= 0.6$

(d) $\sqrt{\frac{81}{100}} = \sqrt{\left(\frac{9}{10}\right)^2}$
$= \frac{9}{10}$

5. (a) Palsu / *False*
(b) Benar / *True*
(c) Benar / *True*
(d) Palsu / *False*

6. (a) 4; 25; 81
(b) 100; 169; 196
(c) 576; 676; 784

7. (a) 12^2
$= 12 \times 12$
$= 144$

(b) $(-0.6)^2$
$= -0.6 \times -0.6$
$= 0.36$

(c) $\left(\frac{7}{8}\right)^2$
$= \frac{7}{8} \times \frac{7}{8}$
$= \frac{49}{64}$

(d) $\left(-\frac{11}{13}\right)^2$
$= \left(-\frac{11}{13}\right)^2 \times \left(-\frac{11}{13}\right)$
$= \frac{121}{169}$

(e) $(-9)^2$
$= (-9) \times (-9)$
$= 81$

8. (a) 62.41 (b) 1 225
(c) $54\frac{19}{25}$ (d) 6.1504
(e) $14\frac{11}{25}$

9. (a) $\sqrt{64} =$ $\sqrt{64 \times 64}$ | $\underline{\sqrt{8 \times 8}}$

(b) $\sqrt{\frac{4}{9}} =$ $\underline{\sqrt{(0.3 \times 0.3)}}$ | $\sqrt{(0.03 \times 0.03)}$

(b) $\sqrt{0.09} =$ $\underline{\frac{\sqrt{4}}{\sqrt{9}}}$ | $\sqrt{\frac{2}{3}}$

(d) $\sqrt{9^2} =$ $\sqrt{3 \times 3}$ | $\underline{\sqrt{9 \times 9}}$

10. (a) $\sqrt{400} = \sqrt{20 \times 20}$
$= 20$

(b) $\sqrt{0.64} = \sqrt{0.8 \times 0.8}$
$= 0.8$

(c) $\sqrt{5.76} = \sqrt{2.4 \times 2.4}$
$= 2.4$

(d) $\sqrt{\frac{16}{49}} = \frac{\sqrt{16}}{\sqrt{49}}$
$= \frac{\sqrt{4 \times 4}}{\sqrt{7 \times 7}}$
$= \frac{4}{7}$

(e) $\sqrt{5\frac{19}{25}} = \sqrt{\frac{144}{25}}$
$= \frac{\sqrt{12 \times 12}}{\sqrt{5 \times 5}}$
$= \frac{12}{5}$
$= 2\frac{2}{5}$

11. (a) 0.92 (b) −3.94
(c) 4.03 (d) −14.70
(e) 0.85

12. (a) $36 < 37.7 < 49$

$\sqrt{36} < \sqrt{37.7} < \sqrt{49}$

$6 < \sqrt{37.7} < 7$

$\sqrt{37.7} \approx 6$

(b) $4 < 5.42 < 9$

$\sqrt{4} < \sqrt{5.42} < \sqrt{9}$

$2 < \sqrt{5.42} < 3$

$\sqrt{5.42} \approx 2$

13. (a) $\sqrt{5} \times \sqrt{0.338}$
$= \sqrt{5 \times 0.338}$
$= \sqrt{1.69}$
$= 1.3$

(b) $\sqrt{0.81 \times 0.36}$
$= \sqrt{0.81} \times \sqrt{0.36}$
$= 0.9 \times 0.6$
$= 0.54$

(c) $\sqrt{0.0027} \times \sqrt{12}$
$= \sqrt{0.0027 \times 12}$
$= \sqrt{0.0324}$
$= 0.18$

(d) $\sqrt{\frac{2}{3}} \times \left(-\sqrt{\frac{2}{147}}\right)$
$= -\sqrt{\frac{2}{3} \times \frac{2}{147}}$
$= -\sqrt{\frac{4}{441}}$
$= -\frac{2}{21}$

(e) $\sqrt{3\frac{1}{2}} \times \sqrt{7\frac{7}{8}}$
$= \sqrt{\frac{7}{2} \times \frac{63}{8}}$
$= \sqrt{\frac{441}{16}}$
$= \frac{21}{4}$
$= 5\frac{1}{4}$

14. (a) $\sqrt{144} - (-3)^2$
$= 12 - 9$
$= 3$

(b) $\sqrt{\frac{9}{16}} \div \left(\frac{1}{8}\right)^2$
$= \frac{3}{4} \div \left(\frac{1}{64}\right)$
$= \frac{3}{4} \times 64$
$= 48$

(c) $(-2)^2 \times \sqrt{\frac{25}{64}} - 3$
$= 4 \times \frac{5}{8} - 3$
$= \frac{5}{2} - 3$
$= -\frac{1}{2}$

(d) $\sqrt{4\frac{53}{169}} \div \left[\left(-2\frac{1}{2}\right)^2 + \frac{5}{4}\right]$

$= \sqrt{\frac{729}{169}} \div \left[\left(-\frac{5}{2}\right)^2 + \frac{5}{4}\right]$

$= \frac{27}{13} \div \frac{15}{2}$

$= \frac{\cancel{27}^{9}}{13} \times \frac{2}{\cancel{15}^{5}}$

$= \frac{18}{65}$

(e) $(-4^2) + \sqrt{1\frac{13}{36}} \div \frac{1}{6} \times (-5)$

$= 16 + \sqrt{\frac{49}{36}} \times 6 \times (-5)$

$= 16 + \frac{7}{6} \times 6 \times (-5)$

$= 16 + 7\,(-5)$

$= 16 + (-35)$

$= -19$

15. (a) Panjang sisi jam dinding itu
Length of side of the wall clock
$= \sqrt{600.25}$
$= 24.5$ cm

Jarak perjalanan semut dalam sekali pusingan
Distance travelled of the ant for one round
$= 24.5 \times 4$
$= 98$ cm

(b) Panjang setiap sisi taman permainan
Length of each side of the playground
$= \sqrt{342.25}$
$= 18.5$ cm

Perimeter taman permainan
Perimeter of playground
$= 18.5 \times 4$
$= 74$ cm

(c) Panjang sisi jubin / *Side length of the tile*
$= 10.4 - 6$
$= 4.4$ m

Luas kawasan kolam renang
Area of the swimming pool
$= 10.4^2 - 2(4.4)^2$
$= 108.16 - 2(19.36)$
$= 108.16 - 38.72$
$= 69.44$ m^2

(d) Panjang sisi permukaan meja
Length of side of the table-top
$= 112 \div 4$
$= 28$ cm

Luas permukaan meja
Area of the table-top
$= 28^2$
$= 784$ cm^2

Luas meja iaitu 784 cm^2 adalah lebih besar daripada luas gambar iaitu 625 cm^2. Maka, masih terdapat ruang kosong pada permukaan meja itu.
The area of the table, which is 784 cm^2*, is bigger than the area of the picture, which is* 625 cm^2*. Hence, there is still an empty space on the table-top.*

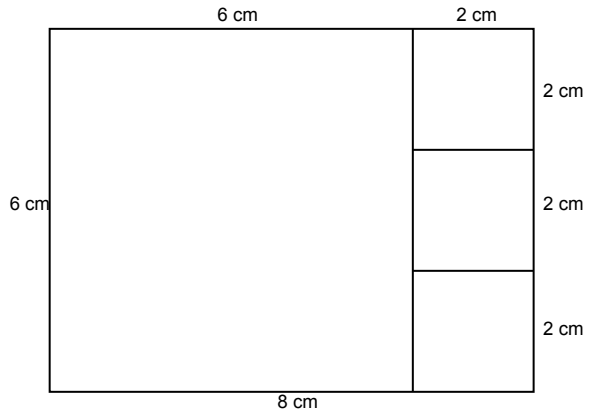
(e) Luas satu permukaan kubus
Area of one face of the cube
$= \frac{384}{6}$
$= 64$ cm^2

Panjang sisi kubus
The length of side of the cube
$= \sqrt{64}$
$= 8$ cm

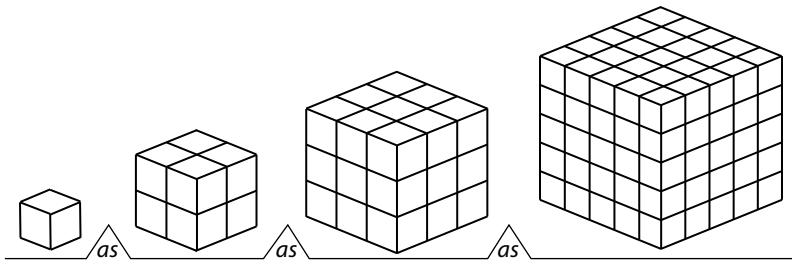
Isi padu kubus
Volume of the cube
$= 8^3$
$= 512$ cm^3

Isi padu sebuah kubus kecil
The volume of a small cube
$= 512 \div 64$
$= 8$ cm^3

(f)



16.



Kubus unit *Unit cubes*		as	as	as
Faktor penghubung *Relating factor*	1^3	2^3	3^3	5^3

17. (a) $7 \times 7 \times 7 \; ; 7^3$

(b) $(-0.3) \times (-0.3) \times (-0.3) \; ; (-0.3)^3$

(c) $2\frac{1}{4} \times 2\frac{1}{4} \times 2\frac{1}{4} \; ; \left(2\frac{1}{4}\right)^3$

(d) $\left(-\frac{1}{5}\right) \times \left(-\frac{1}{5}\right) \times \left(-\frac{1}{5}\right) ; \left(-\frac{1}{5}\right)^3$

(e) $4.6 \times 4.6 \times 4.6 \; ; 4.6^3$

18. 512, 8, 729, 1, 125, 64

19. (a) $\sqrt[3]{-0.064}$

$= \sqrt[3]{\boxed{(-0.4)} \times \boxed{(-0.4)} \times \boxed{(-0.4)}}$

$= \boxed{-0.4}$

(b) $\sqrt[3]{\frac{1\,000}{27}} = \sqrt[3]{\boxed{\frac{10}{3}} \times \boxed{\frac{10}{3}} \times \boxed{\frac{10}{3}}}$

$= \boxed{\frac{10}{3}}$

20. (a) $3^3 = 3 \times 3 \times 3$

$= 27$

(b) $(-0.4)^3 = (-0.4) \times (-0.4) \times (-0.4)$

$= -0.064$

(c) $0.8^3 = 0.8 \times 0.8 \times 0.8$

$= 0.512$

(d) $\left(-\frac{1}{2}\right)^3 = \left(-\frac{1}{2}\right) \times \left(-\frac{1}{2}\right) \times \left(-\frac{1}{2}\right)$

$= -\frac{1}{8}$

(e) $\left(2\frac{1}{3}\right)^3 = \left(\frac{7}{3}\right)^3$

$= \left(\frac{7}{3}\right) \times \left(\frac{7}{3}\right) \times \left(\frac{7}{3}\right)$

$= \frac{343}{27}$

$= 12\frac{19}{27}$

21. (a) 941.192 (b) −2 744

(c) 0.012167 (d) $\frac{1}{125}$

(e) $49\frac{8}{27}$

22. (a)

13	2 197
13	169
13	13
	1

$\sqrt[3]{2\,197} = \sqrt[3]{13 \times 13 \times 13}$

$= 13$

(b)

7	9 261
7	1 323
7	189
3	27
3	9
3	3
	1

$\sqrt[3]{9\,261} = \sqrt[3]{7 \times 7 \times 7 \times 3 \times 3 \times 3}$

$= \sqrt[3]{7 \times 3 \times 7 \times 3 \times 7 \times 3}$

$= \sqrt[3]{21 \times 21 \times 21}$

$= 21$

(c)

5	15 625
5	3 125
5	625
5	125
5	25
5	5
	1

$\sqrt[3]{15\,625} = \sqrt[3]{5 \times 5 \times 5 \times 5 \times 5 \times 5}$

$= \sqrt[3]{25 \times 25 \times 25}$

$= 25$

(d)

3	729
3	243
3	81
3	27
3	9
3	3
	1

$\sqrt[3]{729} = \sqrt[3]{3 \times 3 \times 3 \times 3 \times 3 \times 3}$

$= \sqrt[3]{9 \times 9 \times 9}$

$= 9$

(e)
5	1 000
5	200
5	40
2	8
2	4
2	2
	1

$\sqrt[3]{1\,000} = \sqrt[3]{5 \times 5 \times 5 \times 2 \times 2 \times 2}$
$= \sqrt[3]{5 \times 2 \times 5 \times 2 \times 5 \times 2}$
$= \sqrt[3]{10 \times 10 \times 10}$
$= 10$

23. (a) $\sqrt[3]{0.027} = \sqrt[3]{0.3 \times 0.3 \times 0.3}$
$= 0.3$

(b) $\sqrt[3]{-0.001} = \sqrt[3]{-0.1 \times -0.1 \times -0.1}$
$= -0.1$

(c) $\sqrt[3]{\frac{64}{125}} = \sqrt[3]{\frac{4}{5} \times \frac{4}{5} \times \frac{4}{5}}$
$= \frac{4}{5}$

(d) $\sqrt[3]{3\frac{3}{8}} = \sqrt[3]{\frac{27}{8}}$
$= \sqrt[3]{\frac{3}{2} \times \frac{3}{2} \times \frac{3}{2}}$
$= \frac{3}{2}$

(e) $\sqrt[3]{-\frac{1}{27}} = \sqrt[3]{\left(-\frac{1}{3}\right) \times \left(-\frac{1}{3}\right) \times \left(-\frac{1}{3}\right)}$
$= -\frac{1}{3}$

24. (a) −0.90 (b) 2.88
(c) −0.58 (d) 3.92
(e) 0.17

25. (a) $343 < 500 < 512$
$\sqrt[3]{343} < \sqrt[3]{500} < \sqrt[3]{512}$
$7 < \sqrt[3]{500} < 8$
$\sqrt[3]{500} \approx 8$

(b) $1\,331 < 1\,360 < 1\,728$
$\sqrt[3]{1\,331} < \sqrt[3]{1\,360} < \sqrt[3]{1\,728}$
$11 < \sqrt[3]{1\,360} < 12$
$\sqrt[3]{1\,360} \approx 11$

26. (a) $0.5^2 + \sqrt[3]{\frac{1}{64}} - \sqrt{0.04} = 0.25 + \frac{1}{4} - 0.2$
$= 0.3$

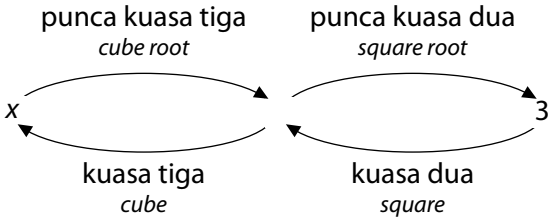
(b) $\sqrt[3]{0.729} - \left(\frac{1}{4}\right)^2 + \sqrt{\frac{441}{16}} = 0.9 - \frac{1}{16} + \frac{21}{4}$
$= 6.0875$

(c) $\sqrt[3]{1\,000} - \left(-3 + \frac{1}{2}\right)^2 = 10 - \left(-\frac{5}{2}\right)^2$
$= 10 - \frac{25}{4}$
$= 9\frac{4}{4} - 6\frac{1}{4}$
$= 3\frac{3}{4}$

(d) $\left[\sqrt[3]{512} \div (-4)\right]^2 = [8 \div (-4)]^2$
$= (-2)^2$
$= 4$

(e) $\frac{\sqrt[3]{-343} \times 2^2}{\sqrt{4}} = \frac{-7 \times 4}{2}$
$= -14$

27. (a) Katakan *x* ialah nombor itu. / *Let x be the number.*



$x = (3^2)^3$
$= 9^3$
$= 729$

(b) Panjang sisi bekas itu
Length of the side of the container
$= \sqrt{4.41}$
$= 2.1$ m

Isi padu air / *Volume of the water*
$= \frac{3}{4} \times 2.1^3$
$= 6.95$ m^3

(c) Panjang sisi tangki air
Length of the side of the water tank
$= \sqrt[3]{571\frac{4}{5}}$
$= \sqrt[3]{571.8}$
$= 8.3$ m

Isi padu air dalam tangki
Volume of the water in the tank
$= \frac{70}{100} \times 571.8$
$= 400.26$ m^3

$\therefore$ Tinggi paras air / *Height of the water level*
$= 400.26 \div 8.3^2$
$= 5.81$ m

(d) (i) Panjang sisi kotak
Length of the side of the box
$= \sqrt[3]{8\,000}$
$= 20$ cm

Bilangan bongkah kubus yang boleh disusun
Number of cubical blocks that can be arranged
$= (20 \div 4)^3$
$= 125$ bongkah / *blocks*

(ii) Bilangan bongkah kubus yang selebihnya
Remainder of the cubical blocks
$= 152 - 125$
$= 27$

Panjang sisi kotak
Length of the side of the box
$= \sqrt[3]{27} \times 4$
$= 3 \times 4$
$= 12$ cm

Isi padu kotak / *Volume of the box*
$= 12^3$
$= 1\,728$ cm^3

28. Aktiviti PAK-21

Praktis Masteri 3

BAHAGIAN A

1. Jawapan / *Answer*: **B**

2. I: $\sqrt{8} = 2.83$
II: $\sqrt{27} = 5.196$
III: $\sqrt{64} = 8$
IV: $\sqrt{100} = 10$

Jawapan / *Answer*: **C**

3. $\sqrt[3]{-64} = \sqrt[3]{-4 \times -4 \times -4}$

Jawapan / *Answer*: **D**

4. Panjang sisi segi empat itu
The length of a side of the square
$= \sqrt{64}$
$= 8$ cm

Perimeter segi empat sama itu
The perimeter of the square
$= 8 \times 4$
$= 32$ cm

Jawapan / *Answer*: **D**

5. $0.76^2 = 0.5776$
0.5776 adalah antara 0.49 dan 0.64.
0.5776 *is between* 0.49 *and* 0.64.

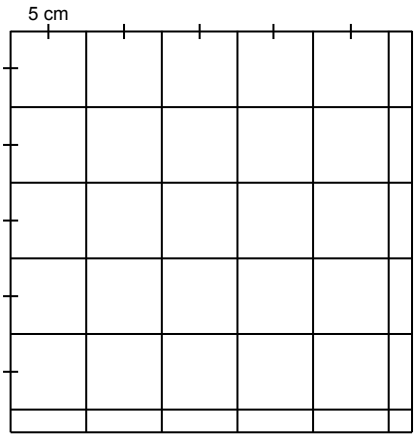
Jawapan / *Answer*: **C**

6. Panjang kadbod / *Length of cardboard*:

$\sqrt{702.25} = 26.5$ cm

Diberi panjang segi empat sama yang perlu dipotong ialah 5 cm.
Given the length of square that need to be cut is 5 cm.
$26.5 \div 5 = 5.3$

Panjang dan lebar kadbod masing-masing boleh dibahagi kepada 5 bahagian segi empat sama dengan panjang 5 cm.
Length and width of the cardboard can be divided into 5 *part of square with length* 5 cm *respectively.*



Bilangan segi empat sama dengan panjang 5 cm yang boleh dipotong
The number of squares with length 5 cm *that can be cut*
$= 5 \times 5$
$= 25$

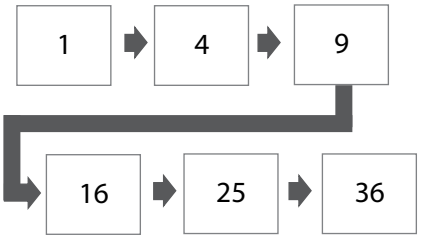
Jawapan / *Answer* : **B**

BAHAGIAN B

7. (a)

$\sqrt{4} + \sqrt{4} = \sqrt{8}$	✗
$\sqrt{4} \times \sqrt{4} = \sqrt{16}$	✓

(b)



8. (a) $\sqrt[3]{64} = \sqrt[3]{4 \times 4 \times \boxed{4}}$

$= \sqrt[3]{\boxed{4}^{\boxed{3}}}$

$= \boxed{4}$

(b)

Pernyataan ***Statement***	**Benar / Palsu** ***True / False***
$\left(\frac{3}{11}\right)^3 \times \left(\frac{11}{3}\right)^2 = \frac{11}{3}$	Palsu *False*

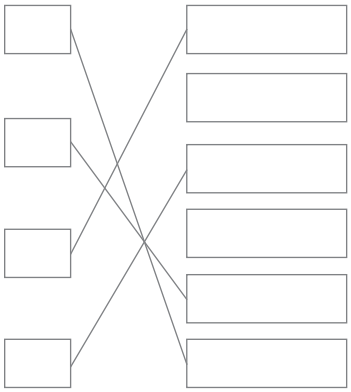
9. (a) ✗

(b) ✗

(c) ✗

(d) ✓

10.



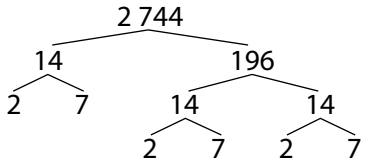
BAHAGIAN C

11. (a) $\sqrt[3]{-\frac{1}{64}} \div \sqrt{\frac{9}{64}} \times 4^2 = \boxed{-\frac{1}{4}} \div \frac{3}{8} \times 16$

$= \boxed{-\frac{1}{4}} \times \boxed{\frac{8}{3}} \times 16$

$= \boxed{-\frac{32}{3}}$

(b) (i)



$2\,744 = (2 \times 7) \times (2 \times 7) \times (2 \times 7)$

$= 14 \times 14 \times 14$

Maka / *Therefore*,

$\sqrt[3]{2\,744} = \sqrt[3]{14 \times 14 \times 14}$

$\sqrt[3]{2\,744} = 14$

(ii) 40 bukan kuasa dua sempurna.
40 *is not a perfect square.*

(c) Luas satu permukaan kubus
Area of a surface of a cube

$= 384 \div 6$

$= 64 \text{ cm}^2$

Panjang sisi kubus / *Length of a side of a cube*

$= \sqrt{64}$

$= 8 \text{ cm}$

Isi padu kubus / *Volume of a cube*

$= 8^3$

$= 512 \text{ cm}^3$

Isi padu kubus kecil / *Volume of a small cube*

$= 512 \div 16$

$= 32 \text{ cm}^3$

12. (a) 216, 343, 512

(b) (i) $8^2 \times p^2 = 5\,184$

$64 \times p^2 = 5184$

$p^2 = \frac{5\,184}{64}$

$p^2 = 81$

$p = \sqrt{81}$

$p = 9$

(ii) $\left(\sqrt{\frac{72}{32}}\right)^2 = \sqrt{\frac{72}{32}} \times \sqrt{\frac{72}{32}}$

$= \frac{72}{32}$

$= \frac{9}{4}$

(c) Tukarkan cm kepada mm
Convert cm *into* mm

7.2 cm = 72 mm, 1.6 cm = 16 mm,
4 cm = 40 mm

2	16	40	72
2	8	20	36
2	4	10	18
	2	5	9

FSTB / *HCF* $= 2 \times 2 \times 2$

$= 8 \text{ mm}$

$8 \text{ mm} = 0.8 \text{ cm}$

Bilangan kubus kecil / *Number of small cubes*

$= (7.2 \times 4 \times 1.6) \div 0.8^3$

$= 46.08 \div 0.512$

$= 90$

Fokus KBAT

Panjang laman belakang
The length of the backyard
= 450 cm ÷ 100
= 4.5 m

Panjang tapak kolam
The length of the pond
= $\sqrt{4.41}$
= $\sqrt{2.1 \times 2.1}$
= 2.1 m

Beza panjang antara laman belakang dengan tapak kolam
The difference in length between the backyard and the base of the pond
= 4.5 m – 2.1 m
= 2.4 m

Jarak di antara kolam dengan setiap sisi laman belakang
Distance between the pond and each side of the backyard
= 2.4 m ÷ 2
= 1.2 m

Bagi memastikan kedudukan kolam ikan berada di tengah-tengah laman belakang, jarak antara kolam dengan setiap sisi laman belakang mestilah 1.2 m.
To make sure the fish pond is in the middle of the backyard, the distance between the pond and each side of the backyard must be 1.2 m.

Semak Semula
Panjang laman belakang
The length of the backyard
= 2.1 + 2(1.2)
= 2.1 + 2.4
= 4.5 m
= 450 cm ☑