

Jawapan

Praktis 9

Praktis Formatif

9.1 Peristiwa Bergabung Combined Events

- 1 (a) $\{(I, K), (A, K), (I, T), (A, T)\}$
 $n(S) = (2) \times (2) = (4)$
- (b) $\{(H, T), (H, H), (T, T), (T, H)\}$
 $n(S) = (2) \times (2) = (4)$
- (c) $\{(J, U), (J, N), (U, J), (U, N), (N, J), (N, U)\}$
 $n(S) = (3) \times (2) = (6)$

9.2 Peristiwa Bersandar dan Peristiwa Tidak Bersandar Dependent Events and Independent Events

- 1 (a) Peristiwa tak bersandar kerana kebarangkalian mendapat nombor 6 bagi dadu pertama tidak mempengaruhi kebarangkalian mendapat nombor 6 bagi dadu kedua.
Independent event because the probability of getting a 6 in the first dice does not affect the probability of getting a 6 in the second dice.
- (b) Peristiwa tak bersandar kerana kebarangkalian hujan lebat pada hari Isnin tidak mempengaruhi kebarangkalian hujan lebat pada hari Selasa.
Independent event because the probability of raining heavily on Monday does not affect the probability of raining heavily on Tuesday.
- (c) Peristiwa tak bersandar kerana kebarangkalian memilih satu perempuan tidak mempengaruhi kebarangkalian memilih satu lelaki.
Independent event because the probability of choosing a girl does not affect the probability of choosing a boy.
- (d) Peristiwa bersandar kerana kebarangkalian mendapat nombor ganjil pada kali pertama mempengaruhi kebarangkalian dadu tersebut dilambung pada kali kedua.
Dependent event because the probability of getting odd number in the first time affects the probability of tossing the dice for the second time.

2 Hukum pendaraban

$$P(\text{Rina akan menghadiri majlis}) = \frac{1}{2}$$

$$P(\text{memilih gaun berwarna cerah}) = \frac{3}{5}$$

$$P(\text{Rina menghadiri majlis memakai gaun berwarna cerah})$$

$$= \frac{1}{2} \times \frac{3}{5} = \frac{3}{10}$$

Menyenaraikan semua kesudahan yang mungkin.

Kesudahan yang mungkin = $\{(H, O), (H, K), (H, M)\}$

$$n(S) = 2 \times 5 = 10$$

$$P(\text{Rina menghadiri majlis memakai gaun berwarna cerah}) = \frac{3}{10}$$

Maka, terbukti bahawa kedua-dua kaedah menghasilkan jawapan yang sama.

Multiplication rule

$$P(\text{Rina will attend the function}) = \frac{1}{2}$$

$$P(\text{choose a bright coloured gown}) = \frac{3}{5}$$

$$P(\text{Rina attended the function with a bright coloured gown})$$

$$= \frac{1}{2} \times \frac{3}{5} = \frac{3}{10}$$

List all the possible outcomes.

Possible outcomes = $\{(H, O), (H, Y), (H, R)\}$

$$n(S) = 2 \times 5 = 10$$

$$P(\text{Rina attended the function with a bright coloured gown}) = \frac{3}{10}$$

Therefore, it is shown that both methods give the same answer.

3 Hukum pendaraban

$$P(\text{Ken akan makan nasi}) = \frac{1}{2}$$

$$P(\text{Ken akan minum kopi}) = \frac{1}{6}$$

$$P(\text{Ken akan makan nasi dan minum kopi})$$

$$= \frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$$

Menyenaraikan semua kesudahan yang mungkin.

Kesudahan yang mungkin = $\{(1, 6), (3, 6), (5, 6)\}$

$$n(S) = 6 \times 6 = 36$$

$$P(\text{Ken akan makan nasi dan minum kopi}) = \frac{3}{36} = \frac{1}{12}$$

Maka, terbukti bahawa kedua-dua kaedah menghasilkan jawapan yang sama.

Multiplication rule

$$P(\text{Ken eats rice}) = \frac{1}{2}$$

$$P(\text{Ken drinks coffee}) = \frac{1}{6}$$

$$P(\text{Ken eats rice and drinks coffee})$$

$$= \frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$$

List all the possible outcomes.

Possible outcomes = $\{(1, 6), (3, 6), (5, 6)\}$

$$n(S) = 6 \times 6 = 36$$

$$P(\text{Ken eats rice and drinks coffee}) = \frac{3}{36} = \frac{1}{12}$$

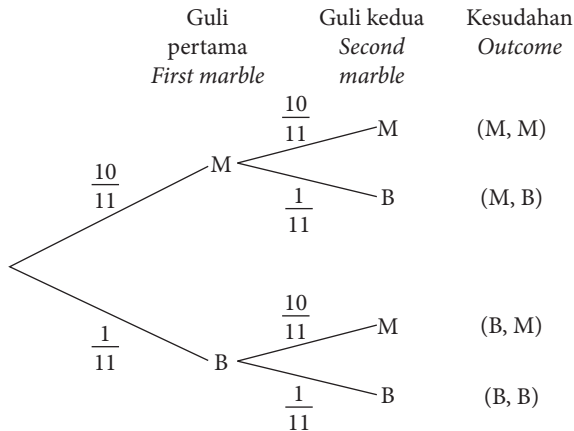
Therefore, it is shown that both methods give the same answer.

- 4 (a) $\{(S, 1), (S, 2), (S, 3), (A, 1), (A, 2), (A, 3), (T, 1), (T, 2), (T, 3), (U, 1), (U, 2), (U, 3)\}$

(b) $P(S, \text{nomor perdana/prime number}) = \left(\frac{1}{4} \times \frac{2}{3}\right) = \frac{1}{6}$

5 $P(R, R') = (1 - 0.67)(0.67) = 0.2211$

6 (a)



(b) (i) $P(M, M) = \left(\frac{10}{11} \times \frac{10}{11}\right) = \frac{100}{121}$

(ii) $P(B, B) = \left(\frac{1}{11} \times \frac{1}{11}\right) = \frac{1}{121}$

9.3 Peristiwa Saling Eksklusif dan Peristiwa Tidak Saling Eksklusif

Mutually Exclusive Events and Non-Mutually Exclusive Events

- 1 (a) Peristiwa P dan Q tidak boleh berlaku bersama, maka P dan Q ialah peristiwa saling eksklusif.
Event P and event Q cannot occur together. Therefore, event P and event Q are mutually exclusive.
- (b) Peristiwa P dan R boleh berlaku bersama, maka P dan R ialah peristiwa tidak saling eksklusif.
Event P and event R can occur together. Therefore, event P and event R are non-mutually exclusive.
- (c) Peristiwa Q dan R tidak boleh berlaku bersama, maka Q dan R ialah peristiwa saling eksklusif.
Event Q and event R cannot occur together. Therefore, event Q and event R are mutually exclusive.
- 2 (a) Peristiwa P dan Q boleh berlaku bersama, maka P dan Q ialah peristiwa tidak saling eksklusif.
Event P and event Q can occur together. Therefore, event P and event Q are non-mutually exclusive.

- (b) Peristiwa Q dan R tidak boleh berlaku bersama, maka Q dan R ialah peristiwa saling eksklusif.
Event Q and event R cannot occur together. Therefore, event Q and event R are mutually exclusive.

- (c) Peristiwa P dan R tidak boleh berlaku bersama, maka P dan R ialah peristiwa saling eksklusif.
Event P and event R cannot occur together. Therefore, event P and event R are mutually exclusive.

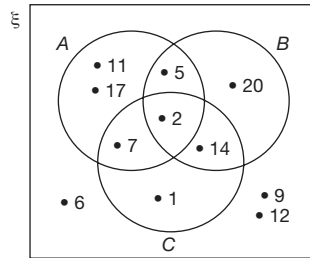
- 3 (a) Peristiwa H dan I boleh berlaku bersama, maka H dan I ialah peristiwa tidak saling eksklusif.

Event H and event I can occur together. Therefore, event H and event I are non-mutually exclusive.

- (b) Peristiwa I dan J tidak boleh berlaku bersama, maka I dan J ialah peristiwa saling eksklusif.
Event I and event J cannot occur together. Therefore, event I and event J are mutually exclusive.

- (c) Peristiwa H dan J tidak boleh berlaku bersama, maka H dan J ialah peristiwa saling eksklusif.
Event H and event J cannot occur together. Therefore, event H and event J are mutually exclusive.

4 (a)



- (b) (i) $A = \{2, 5, 7, 11, 17\}$, $B = \{2, 5, 14, 20\}$,

$$A \cup B = \{2, 5, 7, 11, 14, 17, 20\}$$

$$n(A \cup B)$$

$$= \frac{n(A \cup B)}{n(S)}$$

$$= \frac{7}{11}$$

$$P(A) + P(B) - P(A \cap B)$$

$$= \frac{5}{11} + \frac{4}{11} - \frac{2}{11}$$

$$= \frac{7}{11}$$

Maka, terbukti/ Hence, it is proven that $P(A \cup B) = P(A) + P(B) - P(A \cap B)$.

- (ii) $A = \{2, 5, 7, 11, 17\}$, $C = \{1, 2, 7, 14\}$,

$$A \cup C = \{1, 2, 5, 7, 11, 14, 17\}$$

$$P(A \cup C)$$

$$= \frac{n(A \cup C)}{n(S)}$$

$$= \frac{7}{11}$$

$$P(A) + P(C) - P(A \cap C)$$

$$= \frac{5}{11} + \frac{4}{11} - \frac{2}{11}$$

$$= \frac{7}{11}$$

Maka, terbukti/Hence, it is proven that $P(A \cup C) = P(A) + P(C) - P(A \cap C)$.

(iii) $B = \{2, 5, 14, 20\}$, $C = \{1, 2, 7, 14\}$,

$$B \cup C = \{1, 2, 5, 7, 14, 20\}$$

$$P(B \cup C)$$

$$= \frac{n(B \cup C)}{n(S)}$$

$$= \frac{6}{11}$$

$$P(B) + P(C) - P(B \cap C)$$

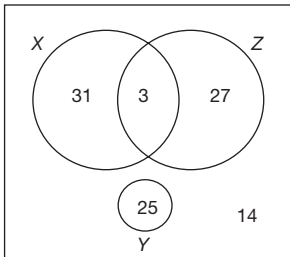
$$= \frac{4}{11} + \frac{4}{11} - \frac{2}{11}$$

$$= \frac{6}{11}$$

Maka, terbukti/ Hence, it is proven that

$$P(B \cup C) = P(B) + P(C) - P(B \cap C).$$

5 (a) ξ



(b) (i) $P(X \cup Y) = \frac{31 + 3 + 25}{100}$

$$= \frac{59}{100}$$

$$P(X) + P(Y)$$

$$= \frac{34}{100} + \frac{25}{100}$$

$$= \frac{59}{100}$$

Maka, terbukti/ Hence, it is proven that

$$P(X \cup Y) = P(X) + P(Y).$$

(ii) $P(Y \cup Z) = \frac{n(Y \cup Z)}{n(S)}$

$$= \frac{3 + 27 + 25}{100}$$

$$= \frac{55}{100}$$

$$= \frac{11}{20}$$

$$P(Y) + P(Z) = \frac{25}{100} + \frac{30}{100}$$

$$= \frac{55}{100}$$

$$= \frac{11}{20}$$

Maka, terbukti/ Hence, it is proven that

$$P(Y \cup Z) = P(Y) + P(Z).$$

(iii) $P(X \cup Z) = \frac{n(X \cup Z)}{n(S)}$

$$= \frac{31 + 3 + 27}{100}$$

$$= \frac{61}{100}$$

$$P(X) + P(Z) - P(X \cap Z) = \frac{34}{100} + \frac{30}{100} - \frac{3}{100}$$

$$= \frac{61}{100}$$

Maka, terbukti/ Hence, it is proven that

$$P(X \cup Z) = P(X) + P(Z) - P(X \cap Z).$$

6 P (sekurang-kurangnya seorang daripada mereka) membeli rumah sebelum usia 30 tahun
 P (at least one of them buy their first home before the age of 30)
 $= P(M, F) + P(M', F) + P(M, F')$
 $= \left(\frac{1}{3} \times \frac{4}{9}\right) + \left(\frac{2}{3} \times \frac{4}{9}\right) + \left(\frac{1}{3} \times \frac{5}{9}\right)$
 $= \frac{17}{27}$

7 P (permohonan kad kredit kedua-dua orang pemuda tersebut diluluskan)

P (credit card application of two youths get approved)

$$= \frac{1}{5} \times \frac{1}{5} = \frac{1}{25}$$

8 P (sekurang-kurangnya seorang pekerja tidak mendapat tempahan dalam tempoh masa 1 minit)

P (at least one of the workers do not have any order within a period of one minute)

$$= 1 - P(W, W)$$

$$= 1 - \left(\frac{2}{11} \times \frac{2}{11}\right)$$

$$= \frac{117}{121}$$

9 P (Wendy dan Billy tidak menyertai persatuan catur)

P (both Wendy and Billy are not joining chess club)

$$= P(W', B')$$

$$= \frac{16}{19} \times \frac{19}{21}$$

$$= \frac{16}{21}$$

9.4 Aplikasi Kebarangkalian Peristiwa Bergabung Application of Probability of Combined Events

1 P (Hasil darab dua nombor ialah nombor genap)

P (product of two numbers is an even number)

$$= P(\text{genap, ganjil}) + P(\text{genap, genap}) + P(\text{ganjil, genap})$$

$$P(\text{even, odd}) + P(\text{even, even}) + P(\text{odd, even})$$

$$= \left(\frac{1}{2} \times \frac{1}{2}\right) + \left(\frac{1}{2} \times \frac{1}{2}\right) + \left(\frac{1}{2} \times \frac{1}{2}\right)$$

$$= \frac{3}{4}$$

n (sekurang-kurangnya sekali hasil darab dua nombor ialah nombor genap)

n (at least one product of two numbers is an even number)

$$= \frac{3}{4} \times 280$$

$$= 210 \text{ kali/times}$$

$$2 \quad P(H, H, H) + P(T, T, T)$$

$$= \left(\frac{2}{3} \times \frac{2}{3} \times \frac{2}{3}\right) + \left(\frac{1}{3} \times \frac{1}{3} \times \frac{1}{3}\right)$$

$$= \frac{1}{3}$$

3 Sebuah hadiah boleh ditebus dengan setiap 5 mata yang dikumpul.

A gift is redeemable with every 5 points accumulated.

$$n(S) = 66$$

Terdapat 25 kesudahan bagi kes mendapat kurang daripada 2 hadiah.

There are 25 outcomes for the case of getting less than 2 gifts.

Kebarangkalian menebus sekurang-kurangnya dua hadiah

The probability of redeem at least two gifts

= 1 – kebarangkalian menebus kurang daripada dua hadiah/*probability of redeem less than 2 gifts*

= 1 – kebarangkalian menebus satu hadiah/*the probability of redeem 1 gift* – kebarangkalian tidak menebus hadiah/*the probability of redeem 0 gift*

$$= 1 - P(1 \text{ hadiah/gift}) - P(0 \text{ hadiah/gift})$$

$$= 1 - \frac{25}{66}$$

$$= \frac{41}{66}$$

BILANGAN HADIAH NUMBER OF GIFTS	MARKAH MARKS	ROLL LAMBUNG 1	ROLL LAMBUNG 2	ROLL LAMBUNG 3	KESUDAHAN OUTCOME	
0	1	1			1	
	3	3			3	
		2	1		(2, 1)	
1	5	5			5	
		4	1		(4, 1)	
		2	3		(2, 3)	
		2	2	1	(2, 2, 1)	
	6	2	2	2	(2, 2, 2)	
	7	6	6	1		(6, 1)
			4	3		(4, 3)
			4	2	1	(4, 2, 1)
			2	5		(2, 5)
			2	4	1	(2, 4, 1)
			2	2	3	(2, 2, 3)
	8	2	2	2	4	(2, 2, 4)
			2	4	2	(2, 4, 2)
			4	2	2	(4, 2, 2)
	9	6	6	3		(6, 3)
		6	2	1	(6, 2, 1)	
		4	5		(4, 5)	
		4	4	1	(4, 4, 1)	
		4	2	3	(4, 2, 3)	
		2	6	1	(2, 6, 1)	
		2	4	3	(2, 4, 3)	
		2	2	5	(2, 2, 5)	

BILANGAN HADIAH NUMBER OF GIFTS	MARKAH MARKS	ROLL LAMBUNG 1	ROLL LAMBUNG 2	ROLL LAMBUNG 3	KESUDAHAN OUTCOME
2	10	2	2	6	(2, 2, 6)
		2	6	2	(2, 6, 2)
		6	2	2	(6, 2, 2)
		4	2	4	(4, 2, 4)
		4	4	2	(4, 4, 2)
		2	4	4	(2, 4, 4)
	11	6	5		(6, 5)
		6	4	1	(6, 4, 1)
		6	2	3	(6, 2, 3)
		4	6	1	(4, 6, 1)
		4	4	3	(4, 4, 3)
		4	2	5	(4, 2, 5)
		2	6	3	(2, 6, 3)
		2	4	5	(2, 4, 5)
	12	6	4	2	(6, 4, 2)
		6	2	4	(6, 2, 4)
		2	4	6	(2, 4, 6)
		4	2	6	(4, 2, 6)
		2	6	4	(2, 6, 4)
		4	6	2	(4, 6, 2)
		4	4	4	(4, 4, 4)
	13	6	6	1	(6, 6, 1)
		6	4	3	(6, 4, 3)
		6	2	5	(6, 2, 5)
		4	6	3	(4, 6, 3)
		4	4	5	(4, 4, 5)
		2	6	5	(2, 6, 5)
	14	6	6	2	(6, 6, 2)
6		2	6	(6, 2, 6)	
2		6	6	(2, 6, 6)	
4		6	4	(4, 6, 4)	
4		4	6	(4, 4, 6)	
6		4	4	(6, 4, 4)	
3	15	6	6	3	(6, 6, 3)
		6	4	5	(6, 4, 5)
		4	6	5	(4, 6, 5)
	16	6	4	6	(6, 4, 6)
		6	6	4	(6, 6, 4)

BILANGAN HADIAH NUMBER OF GIFTS	MARKAH MARKS	ROLL LAMBUNG 1	ROLL LAMBUNG 2	ROLL LAMBUNG 3	KESUDAHAN OUTCOME
		4	6	6	(4, 6, 6)
	17	6	6	5	(6, 6, 5)
	18	6	6	6	(6, 6, 6)

- 4 (a) Terdapat 5 huruf vokal dalam kotak P, iaitu, {A, E, I, O U}.

Jadi, kebarangkalian mendapat huruf vokal ialah

$$\frac{5}{26}$$

Oleh itu, kebarangkalian untuk memilih sekeping kad dari kotak Q sebanyak 100 kali berturut-turut

$$\text{ialah } \left(\frac{5}{26}\right)^{100}.$$

There are 5 vowels in Box P, i.e. {A, E, I, O, U}.

So, the probability of getting a vowel is $\frac{5}{26}$.

Therefore, the probability to choose a card from box

$$Q \text{ for 100 times continuously is } \left(\frac{5}{26}\right)^{100}.$$

- (b) Nombor kuasa dua sempurna dalam kotak Q ialah {1, 4, 9, 16, 25, 36, 49, 64, 81, 100}.

Kebarangkalian mendapat nombor kuasa dua

$$\text{sempurna dari kotak Q ialah } \frac{10}{100} = \frac{1}{10}.$$

Kebarangkalian mendapat nombor bukan kuasa

$$\text{dua sempurna dari kotak Q ialah } \frac{90}{100} = \frac{9}{10}.$$

Kebarangkalian mendapat sekurang-kurangnya satu nombor kuasa dua sempurna daripada 5 kali

$$= 1 - \text{Kebarangkalian tidak mendapat nombor}$$

kuasa dua sempurna sebanyak 5 kali

$$= 1 - \left(\frac{9}{10}\right)^5$$

$$= 0.4095$$

The perfect square numbers in box Q are {1, 4, 9, 16,

25, 36, 49, 64, 81, 100}.

The probability of getting a perfect square from box

$$Q \text{ is } \frac{10}{100} = \frac{1}{10}.$$

The probability of getting a non perfect square from

$$\text{box Q is } \frac{90}{100} = \frac{9}{10}.$$

The probability of getting at least a perfect square

$$\text{number out of 5 times}$$

$$= 1 - \text{The probability of not getting a perfect square}$$

$$\text{for 5 times}$$

$$= 1 - \left(\frac{9}{10}\right)^5$$

$$= 0.4095$$

Praktis Sumatif

Kertas 1

1 B 2 D 3 C 4 B 5 B

6 A

Kertas 2

Bahagian/Section A

- 1 (a) $A = \{21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39\}$

Nombor dengan beza digit lebih daripada 5

The number with difference in digits more than 5

$$= \{28, 29, 39\}$$

Nombor gandaan 2/Multiples of 2

$$= \{22, 24, 26, 28, 30, 32, 34, 36, 38\}$$

$P(\text{Nombor dengan beza digit lebih daripada 5 atau nombor gandaan 2})$

P(The number with difference in digits more than 5 or a multiple of 2)

$$= \frac{3}{19} + \frac{9}{19} - \frac{1}{19}$$

$$= \frac{11}{19}$$

- (b) $A = \{21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39\}$

Nombor kurang daripada 31

Number less than 31

$$= \{21, 22, 23, 24, 25, 26, 27, 28, 29, 30\}$$

Nombor faktor bagi 100/Factors of 100 = {25}

$P(\text{Nombor kurang daripada 31 atau faktor bagi 100})$

P(Number less than 31 or factors of 100)

$$= \frac{10}{19}$$

Bahagian/Section B

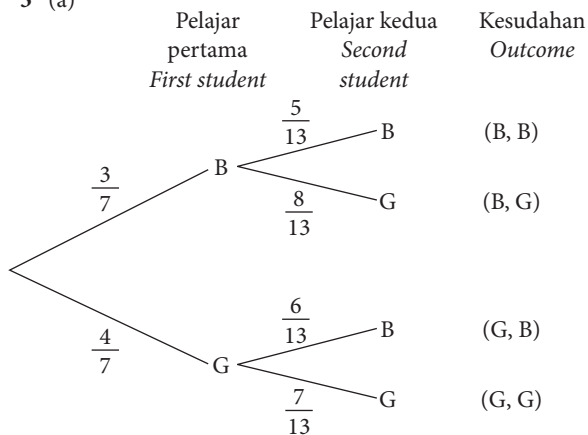
- 2 (a)

Kotak X Box X	Kotak Y Box Y		
	1	2	3
A	(A, 1)	(A, 2)	(A, 3)
B	(B, 1)	(B, 2)	(B, 3)
C	(C, 1)	(C, 2)	(C, 3)
D	(D, 1)	(D, 2)	(D, 3)
E	(E, 1)	(E, 2)	(E, 3)

- (b) (i) Kesudahan mungkin/*Possible outcomes*
 $= \{(A, 1), (A, 2), (A, 3), (B, 1), (C, 1), (D, 1), (E, 1)\}$
P(Murid itu menjadi ketua kumpulan atau menjadi ahli kumpulan A)
P(the student is a group leader or a member of group A)
 $\frac{5}{15} + \frac{3}{15} - \frac{1}{15} = \frac{7}{15}$

- (ii) Kesudahan mungkin/*Possible outcomes*
 $= \{(A, 2), (A, 3), (B, 2), (B, 3), (C, 2), (C, 3), (D, 2), (D, 3)\}$
P(murid itu menyertai kumpulan selain kumpulan E dan tidak menjadi ketua kumpulan)
P(the student is not from group E and not a group leader)
 $= \frac{8}{15}$

3 (a)



- (b) *P*(sekurang-kurangnya seorang perempuan)
P(at least one girl)
 $= 1 - P(B, B)$
 $= 1 - \left(\frac{3}{7}\right)\left(\frac{5}{13}\right)$
 $= \frac{76}{91}$

- 4 (a) *P*(hasil daripada sekurang-kurangnya satu pokok tersebut dikutip/*collecting fruits from any of the two trees*)
 $= P(P, R) + P(P', R) + P(P, R')$
 $= (0.26)(0.39) + (1 - 0.26)(0.39) + (0.26)(1 - 0.39)$
 $= 0.5486$
- (b) *P*(hasil daripada kedua-dua pokok tersebut dikutip/*collecting fruits from both trees*)
 $= (0.26)(0.39) = 0.1014$
- (c) *P*(tidak mempunyai hasil daripada kedua-dua pokok/*no collection from both trees*)
 $= (1 - 0.26)(1 - 0.39) = 0.4514$