External assessment 2022

Multiple choice question book

General Mathematics

Paper 1

General instruction

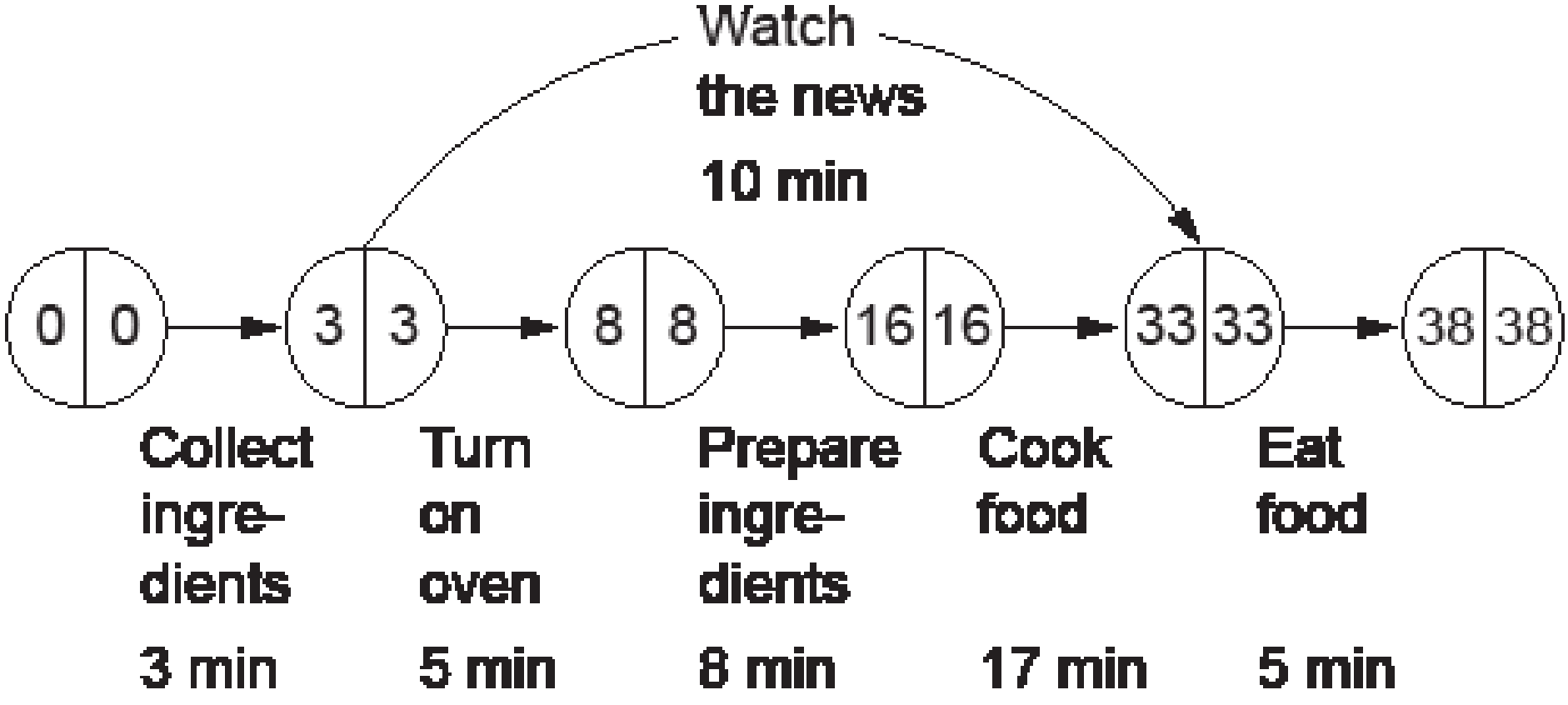
- Work in this book will not be marked.

Queensland Government | QCAA Queensland Curriculum & Assessment Authority

Section 1

Question 1

The float time, in minutes, for the non-critical activity of this project network is



(A) 10

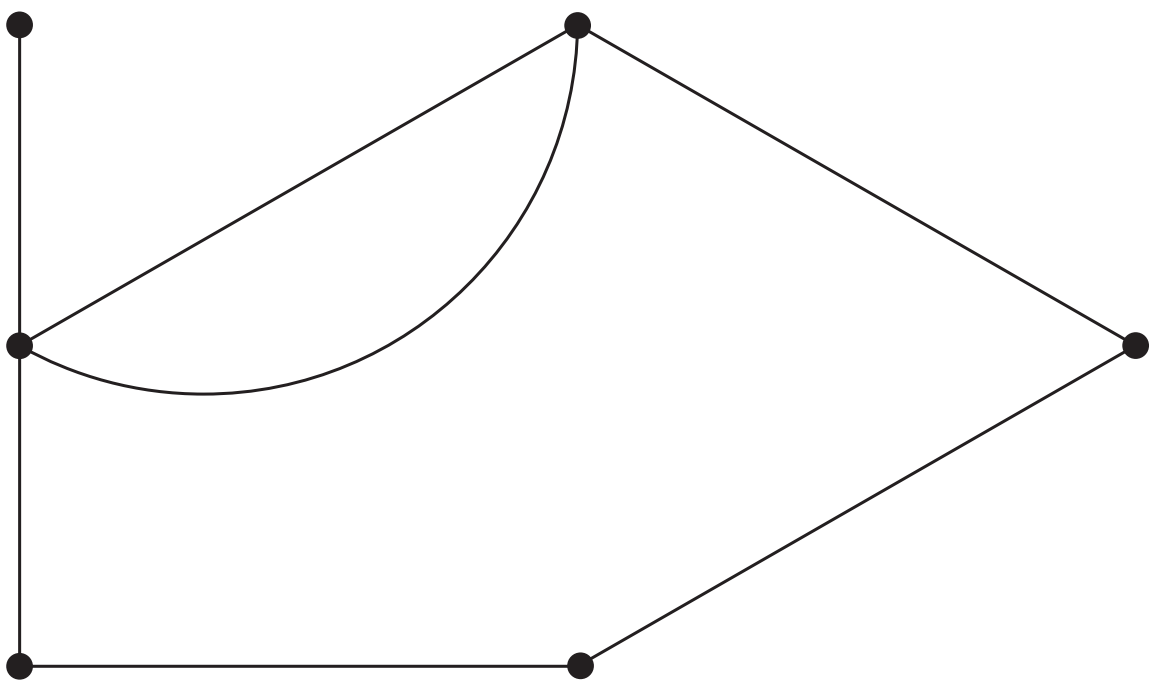
(B) 20

(C) 23

(D) 30

Question 2

The total number of vertices in this graph is



(A) 3

(B) 5

(C) 6

(D) 7

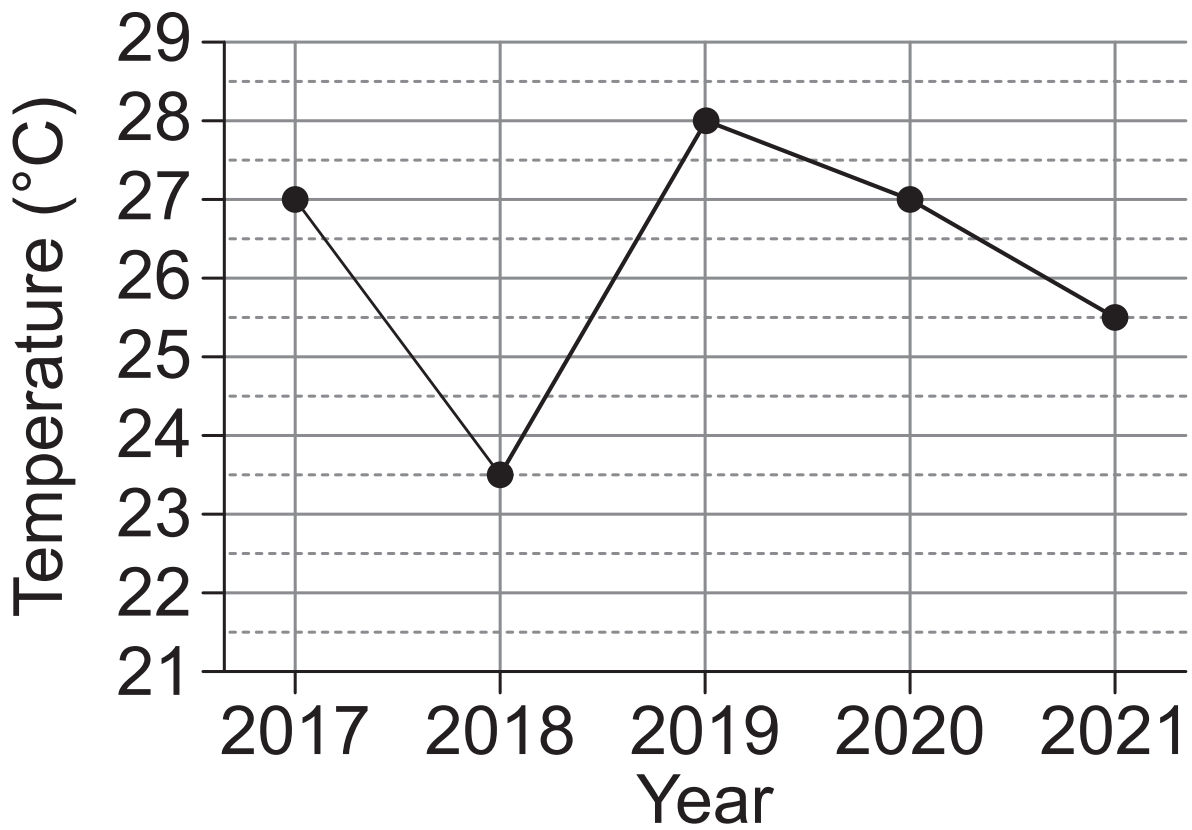
Question 3

The table shows the minimum and maximum temperatures on January 1 each year in Bundaberg.

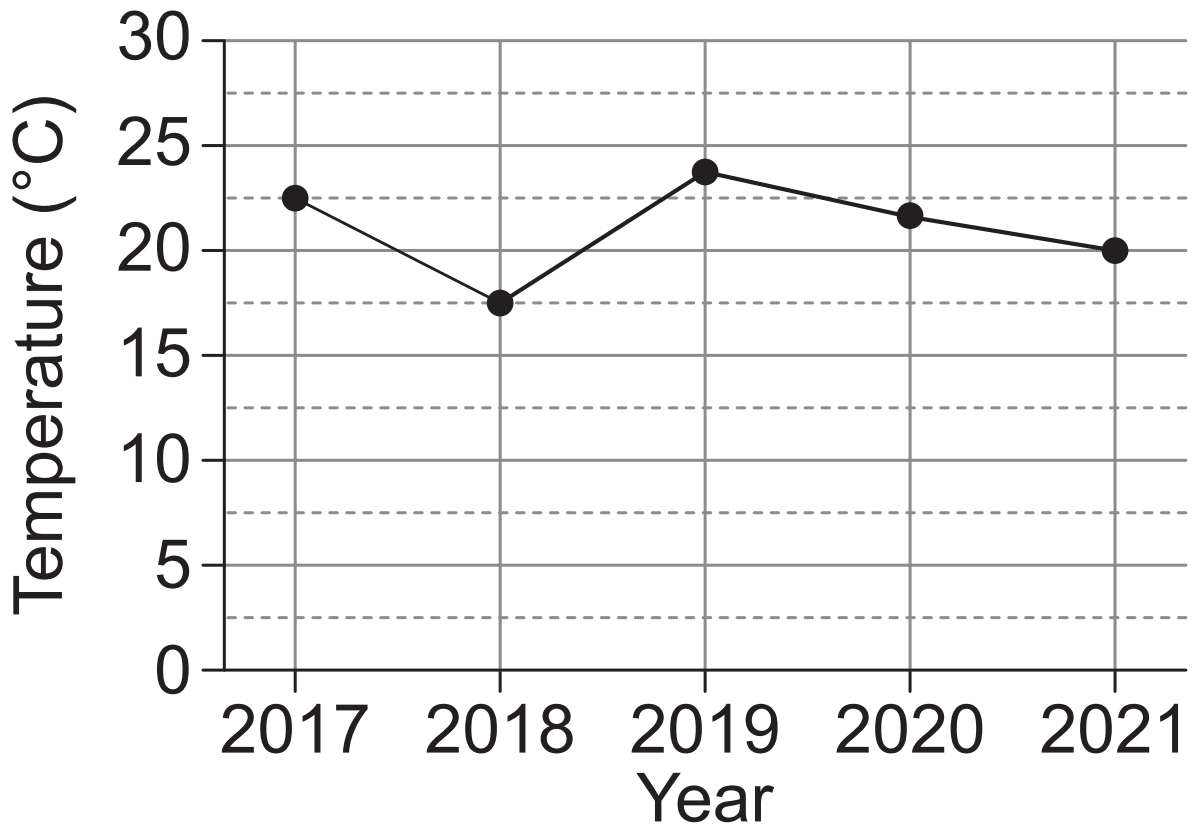
	Min (°C)	Max (°C)
2017	22.1	31.8
2018	17.8	29.6
2019	24.1	32.1
2020	22.1	32.3
2021	19.9	30.9

Which time series plot best represents the mean temperatures?

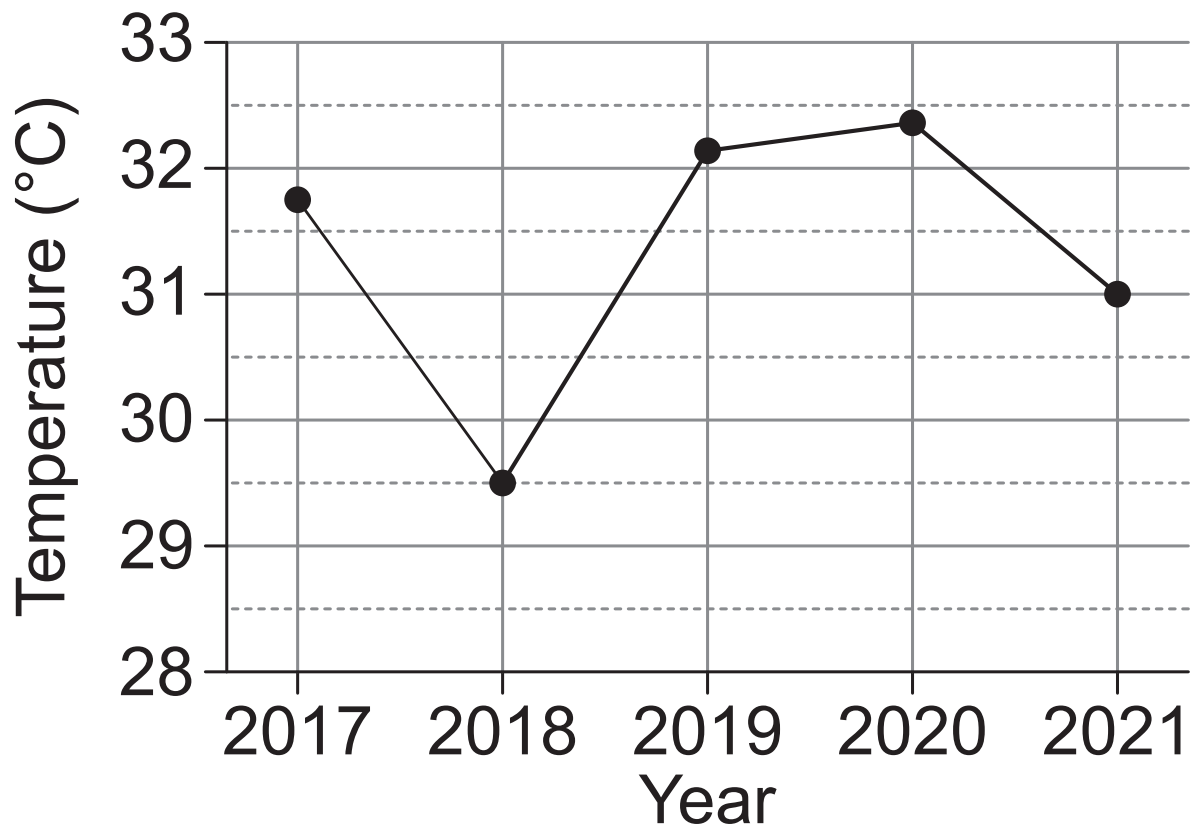
(A)



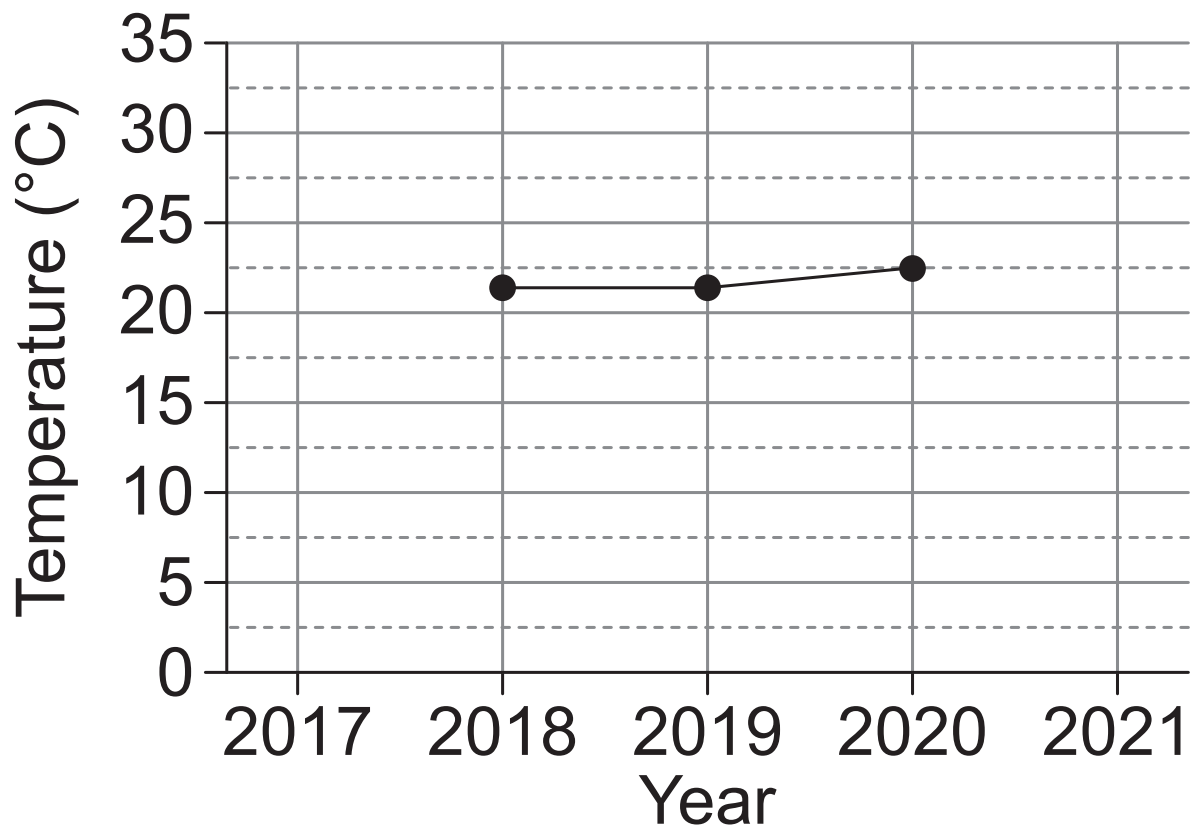
(C)



(B)


Temperature (°C)
33
32
31
30
29
28
2017
2018
2019
2020
2021
Year

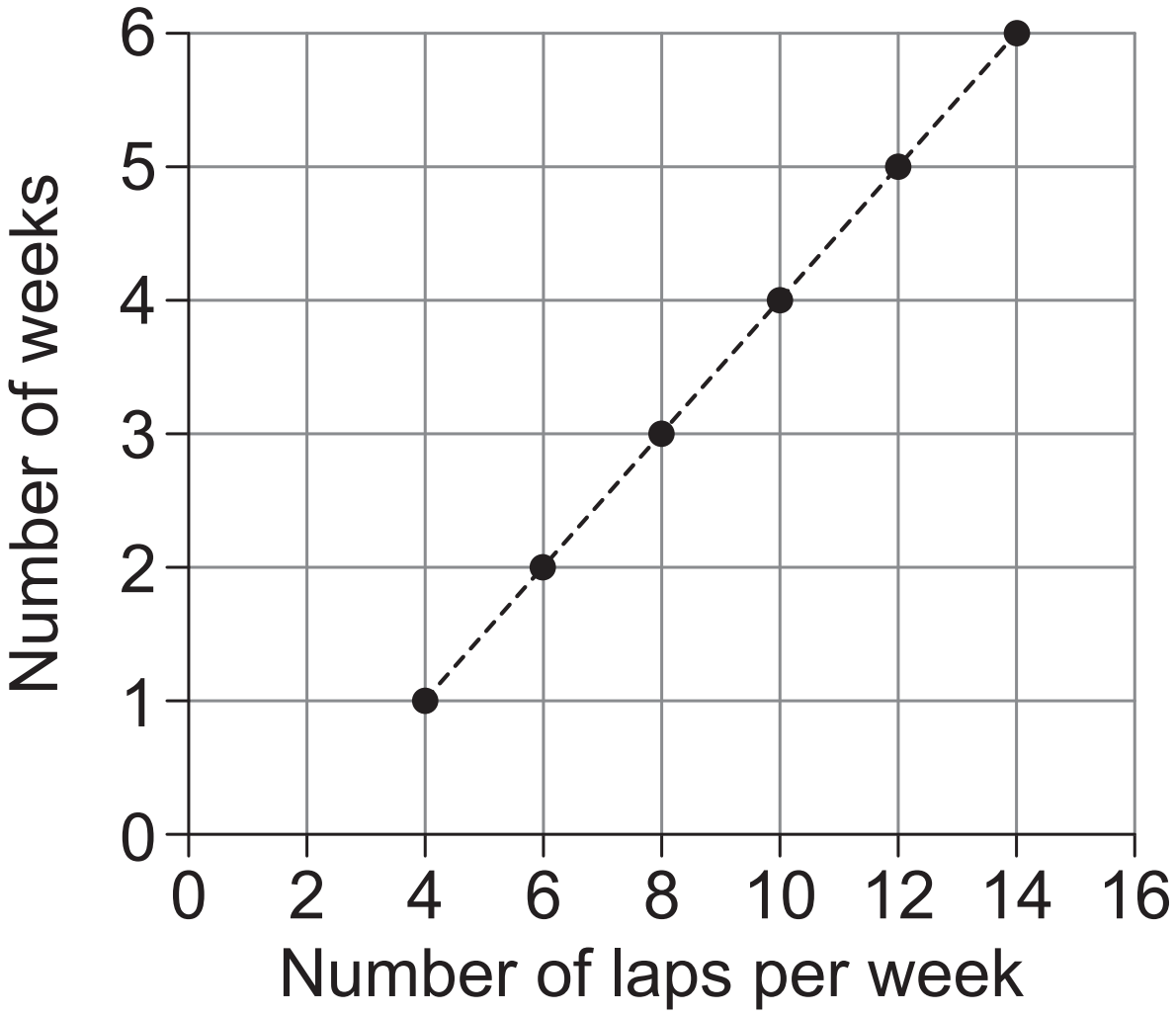
(D)


Temperature (°C)
35
30
25
20
15
10
5
0
2017
2018
2019
2020
2021
Year

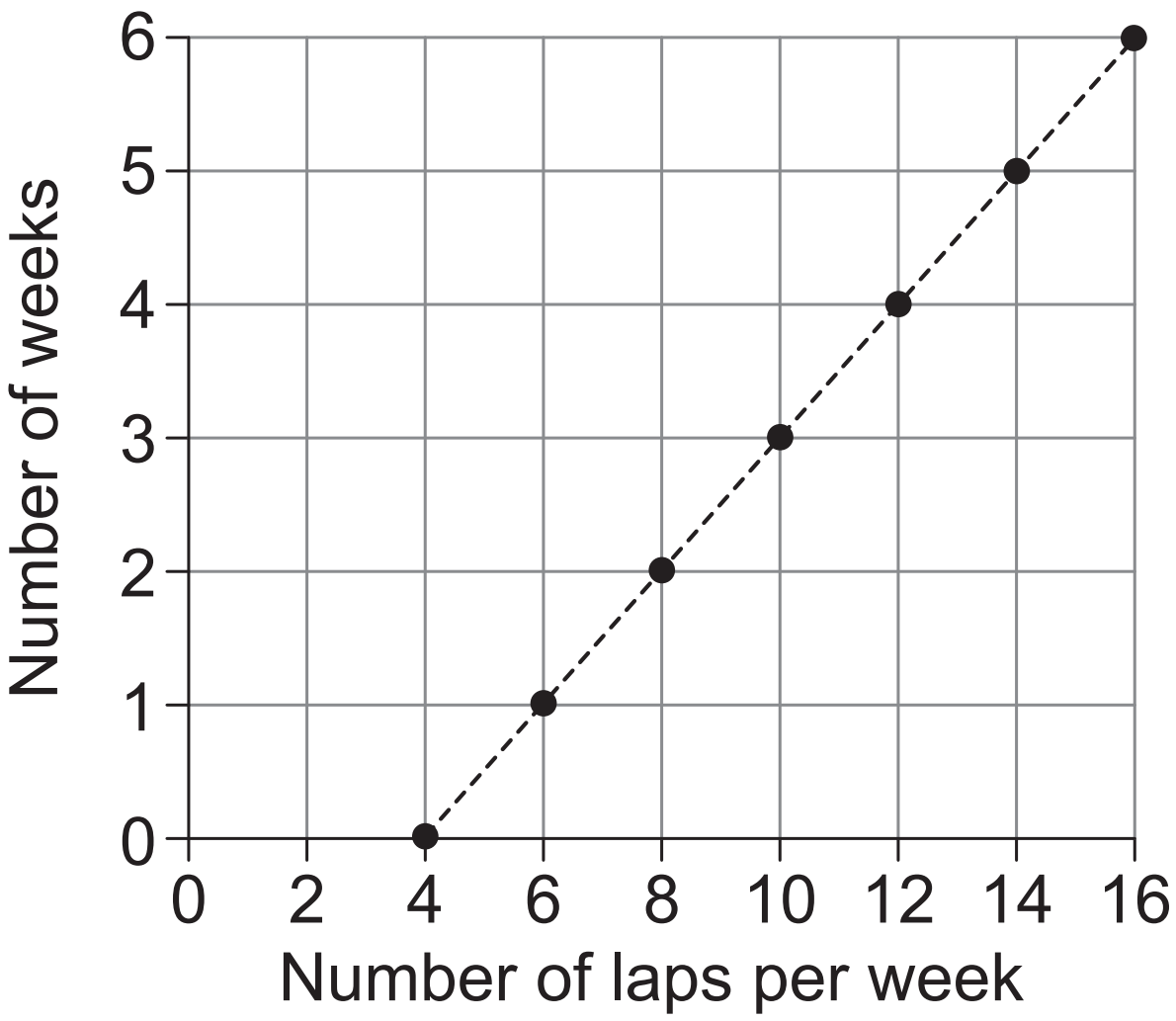
Question 4

A swimmer has a weekly training routine to improve their fitness as modelled by the recursive function $T_{n+1} = T_n + 2$, where T_n is the number of laps they swim in week n and $T_1 = 4$.
Which graph best represents the swimmer's routine?

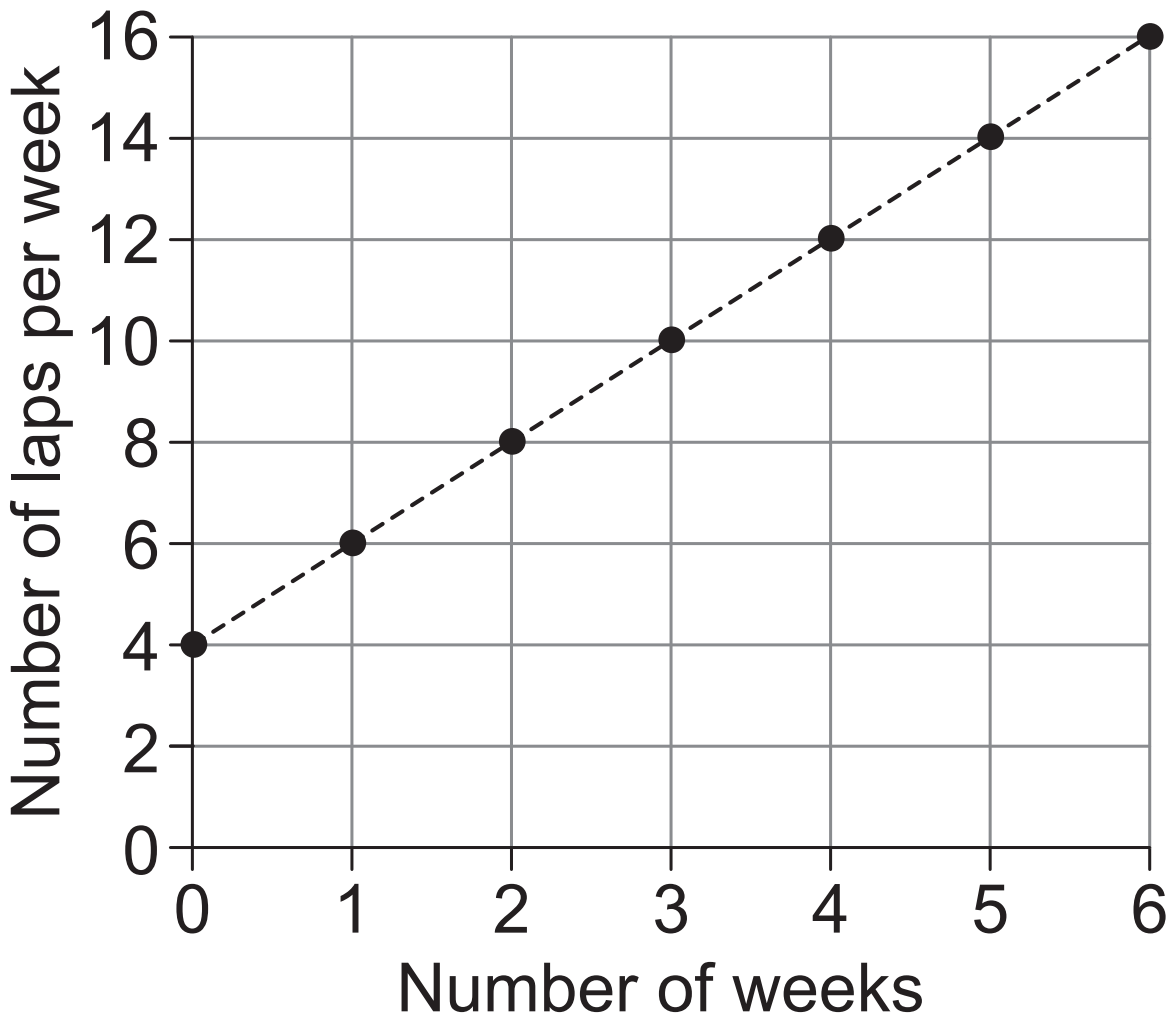
(A)



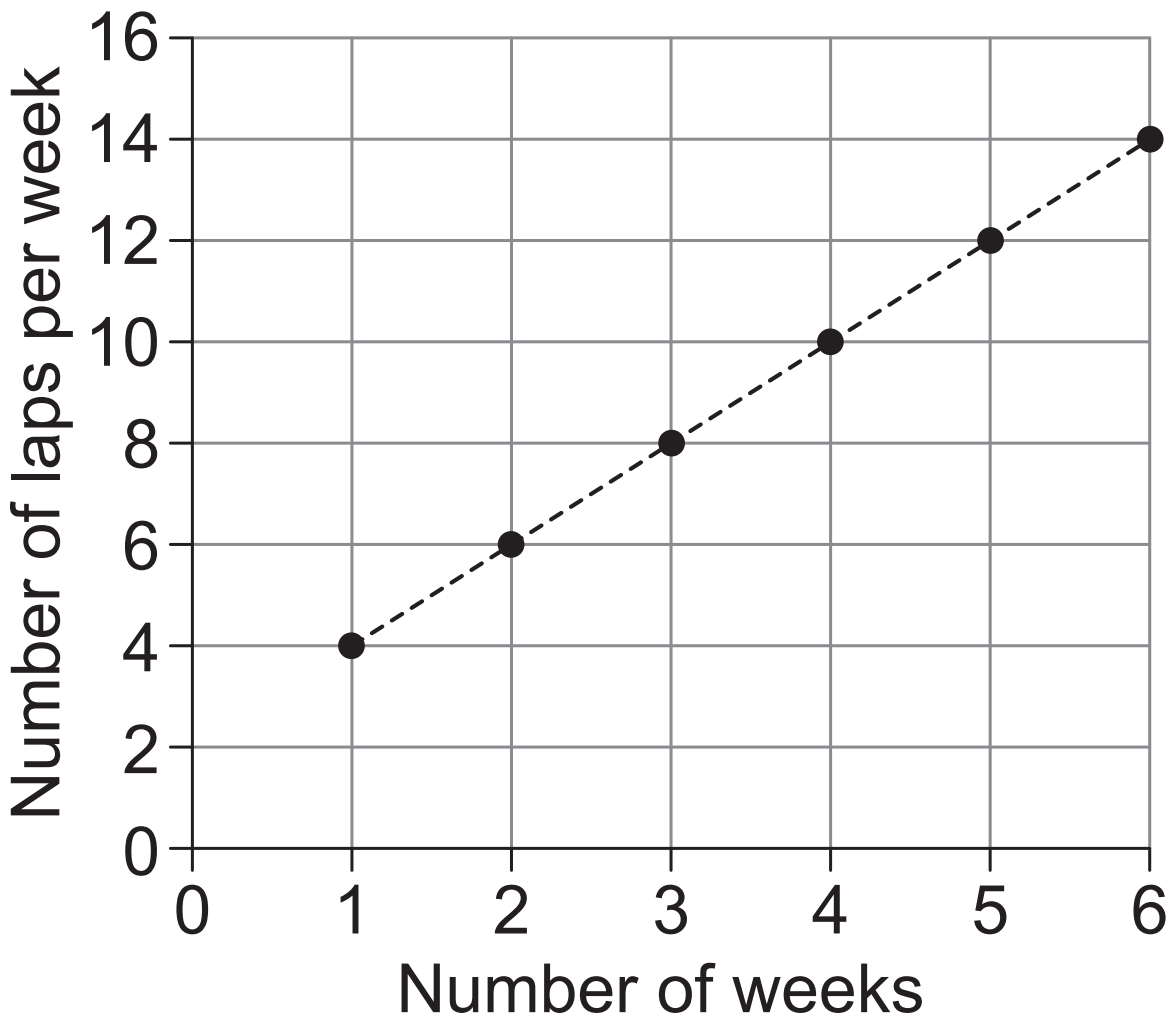
(C)



(B)


Number of laps per week
0
2
4
6
8
10
12
14
16
0
1
2
3
4
5
6
Number of weeks

(D)


Number of laps per week
0
2
4
6
8
10
12
14
16
0
1
2
3
4
5
6
Number of weeks

Question 5

The table lists the number of books sold per month by an online bookstore. If the simple 3-point moving average in October is 54, what is the simple 3-point moving average in May?

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
45	52	68	65	89	65	53	33	40	45	77	92

(A) 69

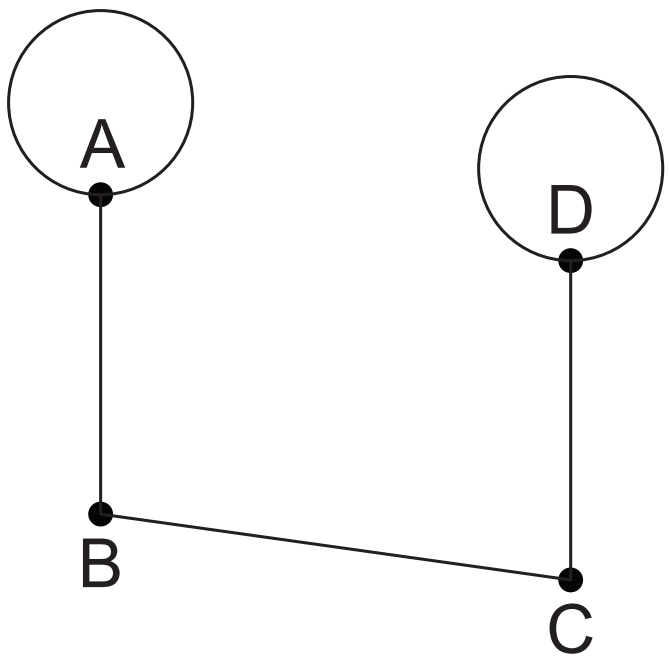
(B) 73

(C) 74

(D) 89

Question 6

This semi-Eulerian graph can be changed to an Eulerian graph by



(A) adding a loop to vertex B.

(B) removing the loop at vertex A.

(C) adding an edge between vertices A and D.

(D) removing the edge between vertices B and C.

Question 7

This matrix was obtained after applying the Hungarian algorithm to determine the optimal allocation of three people, Elandra (E), Farid (F) and Grace (G), to three tasks: legal (L), monitoring (M) and verification (V).

	L	M	V
E	0	0	7
F	0	3	8
G	1	0	0

The optimal allocation is

(A) E to V, F to M and G to L.

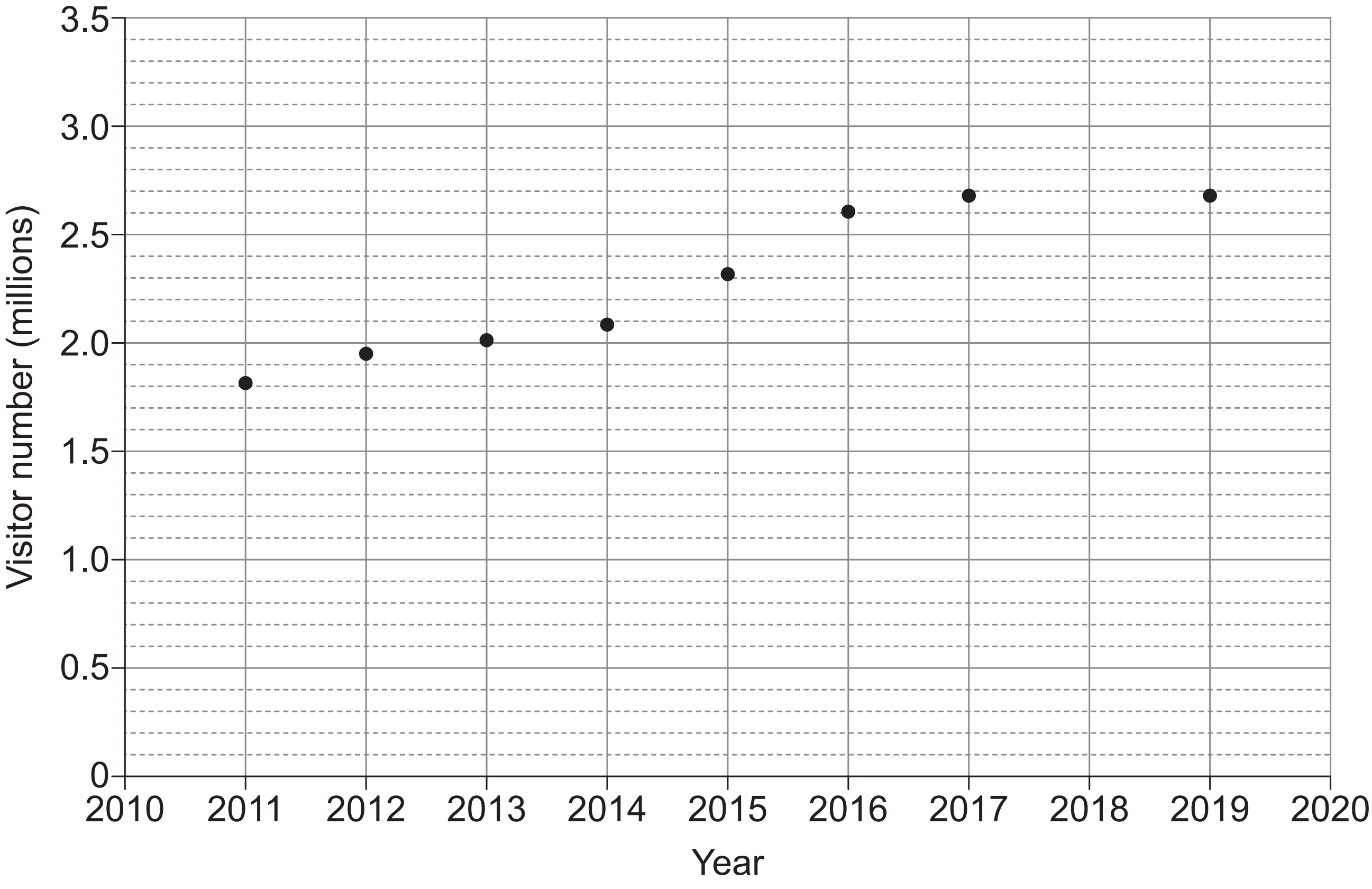
(B) E to V, F to L and G to M.

(C) E to M, F to L and G to V.

(D) E to M, F to V and G to L.

Question 8

The scatterplot shows the annual number of visitors to the Great Barrier Reef Marine Park.



For 2018, the annual number of visitors could best be

(A) interpolated as 2.7 million.

(B) extrapolated as 2.7 million.

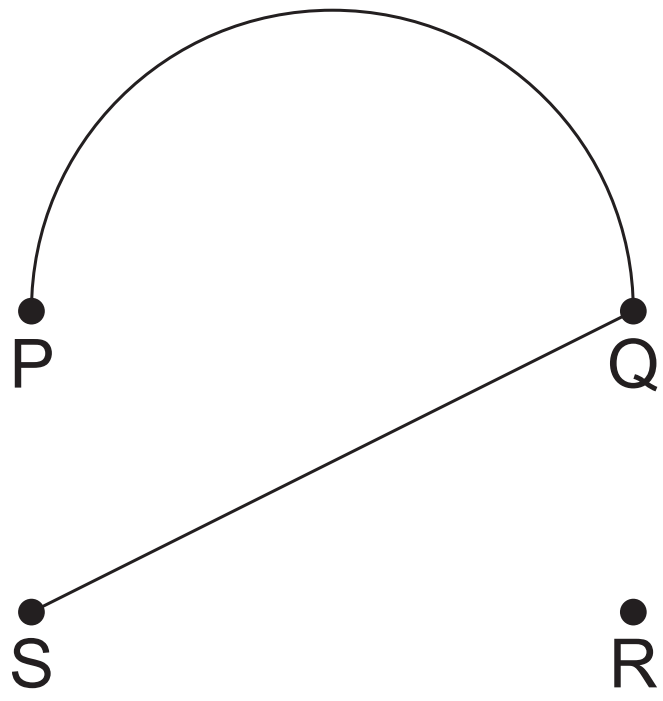
(C) interpolated as 3.2 million.

(D) extrapolated as 3.2 million.

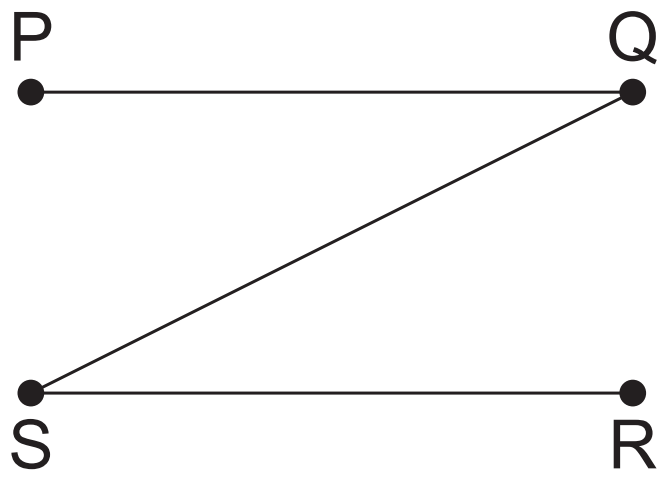
Question 9

Identify the graph that is a spanning tree.

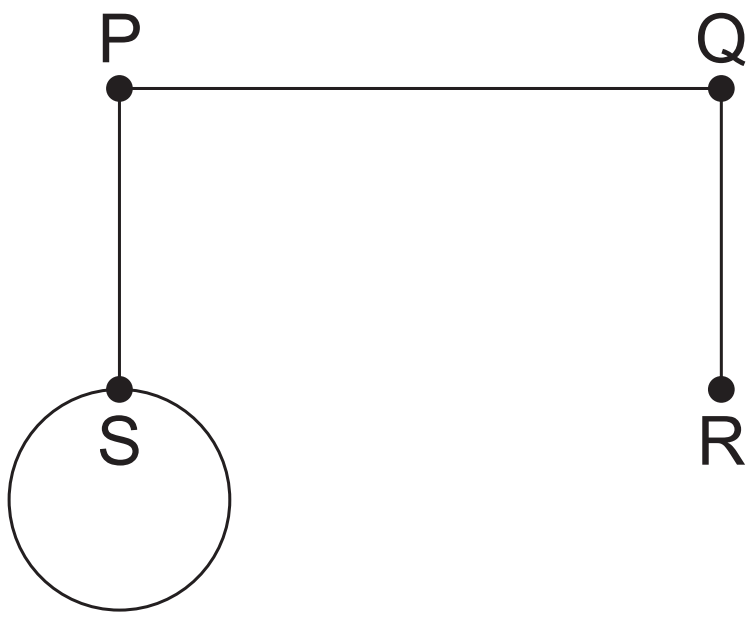
(A)



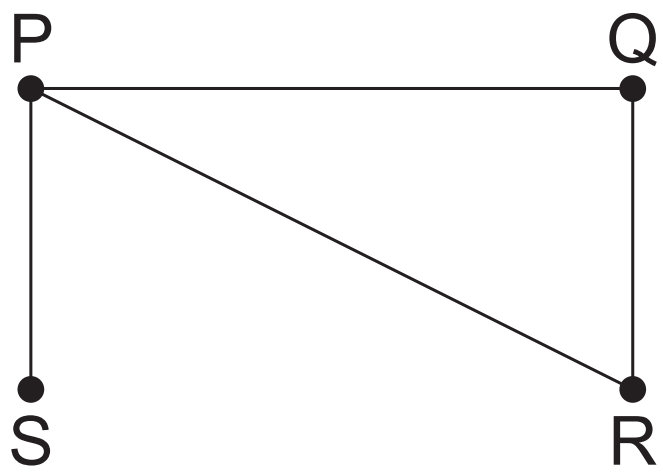
(B)



(C)



(D)



Question 10

Which example states an explanatory variable followed by a response variable?

(A) car manufacturers and car colours

(B) dog breeds and frequency of names

(C) plant growth and amount of fertiliser used

(D) daily temperatures and daily ice cream sales

Question 11

The equation of a fitted line for the number of free throws in basketball, t, and the number of hours in a training session, h, is $t = 26.781 + 12.974\ h$

The predicted number of free throws for a 5-hour training session, when rounded to the nearest whole number, is

(A) 64

(B) 65

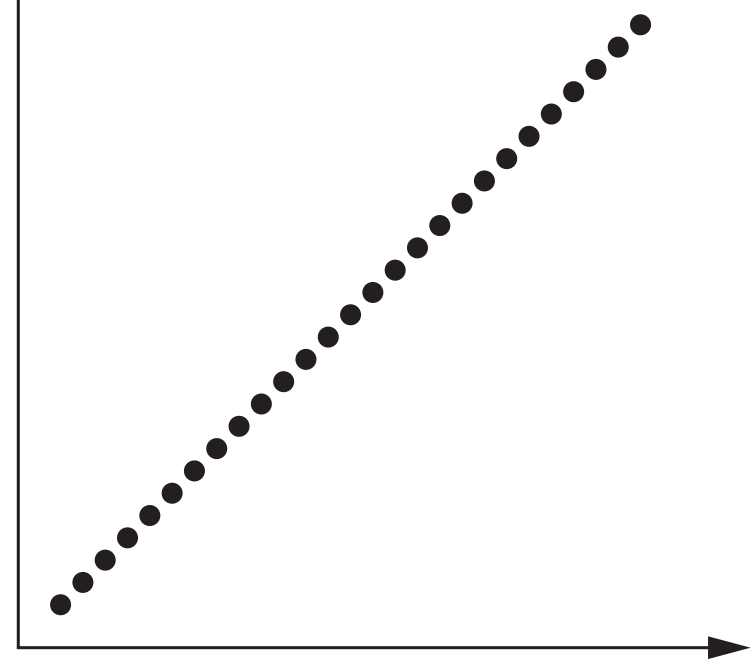
(C) 91

(D) 92

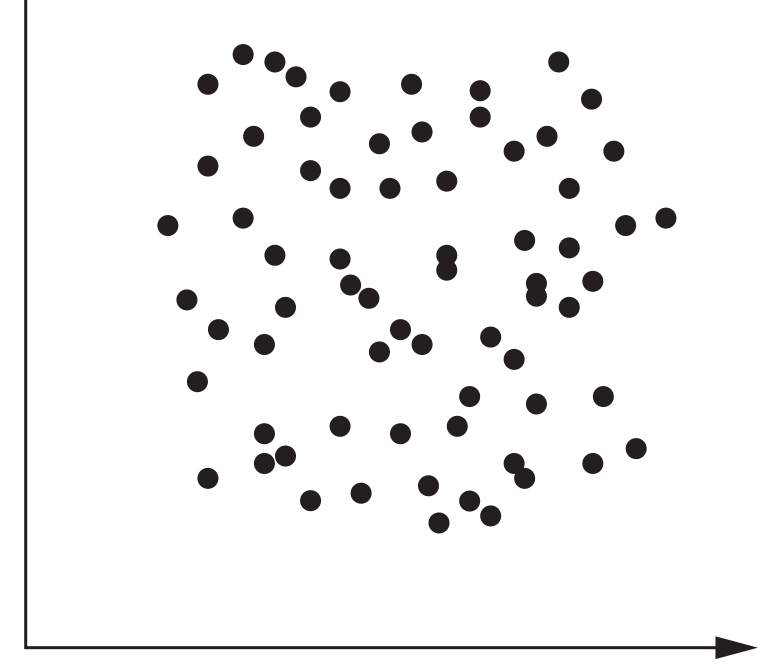
Question 12

Identify the scatterplot that best demonstrates a strong negative association.

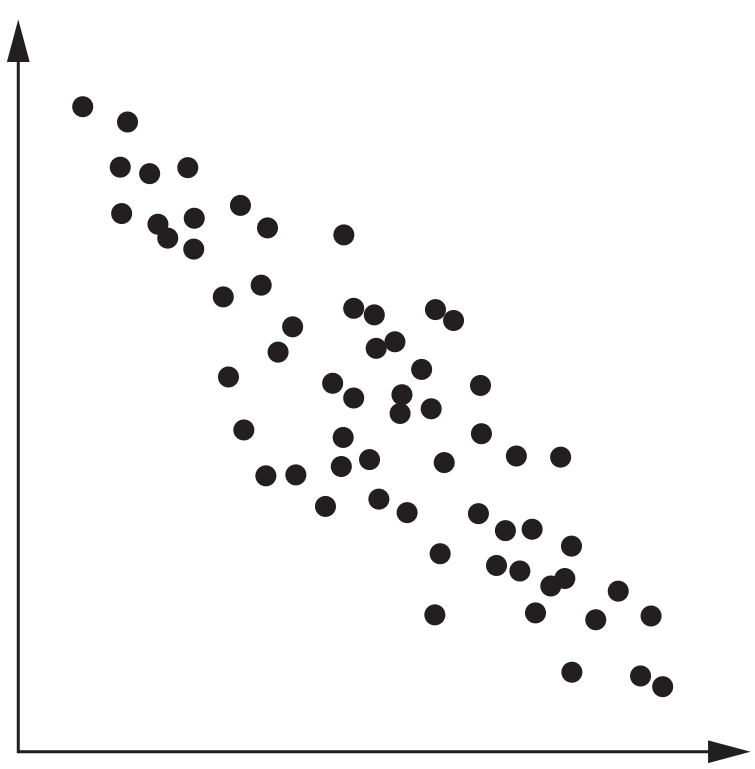
(A)



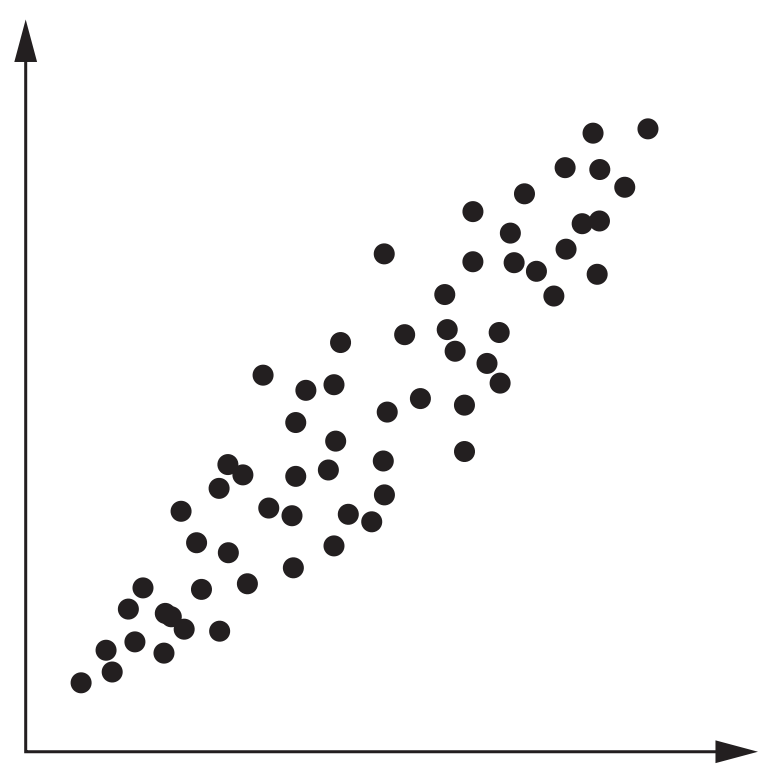
(B)



(C)



(D)



Question 13

The two-way table summarises the semester 1 results for students enrolled in two courses, Machinery and Electrical. Students achieved either satisfactory (**S**) or unsatisfactory (**U**).

		Machinery	
		S	**U**
Electrical	**S**	80%	10%
	U	20%	90%

The 10% cell in the table indicates that

(A) 10% of all students achieved satisfactory in Electrical.

(B) 10% of all students achieved unsatisfactory in Machinery.

(C) 10% of the students who achieved satisfactory in Electrical achieved unsatisfactory in Machinery.

(D) 10% of the students who achieved unsatisfactory in Machinery achieved satisfactory in Electrical.

Question 14

A rugby fan in Perth (Australia) plans to watch a live match played in New Zealand next winter. The time zone for Perth is UTC +8. The time zone for New Zealand is UTC +13 in winter and UTC +12 in summer.

If the match is played at 6:30 pm New Zealand time, what time will the match be viewed in Perth?

(A) 1:30 pm

(B) 2:30 pm

(C) 10:30 pm

(D) 11:30 pm

Question 15

The actual distance between two cities has been correctly calculated as 556 km. The latitude and longitude respectively of these two cities could be

(A) 2° N 104° W and 3° S 104° W.

(B) 2° N 104° W and 3° N 104° W.

(C) 25° N 150° E and 30° S 150° E.

(D) 25° N 145° E and 25° N 150° E.

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