

External assessment 2022

Multiple choice question book

General Mathematics

Paper 1

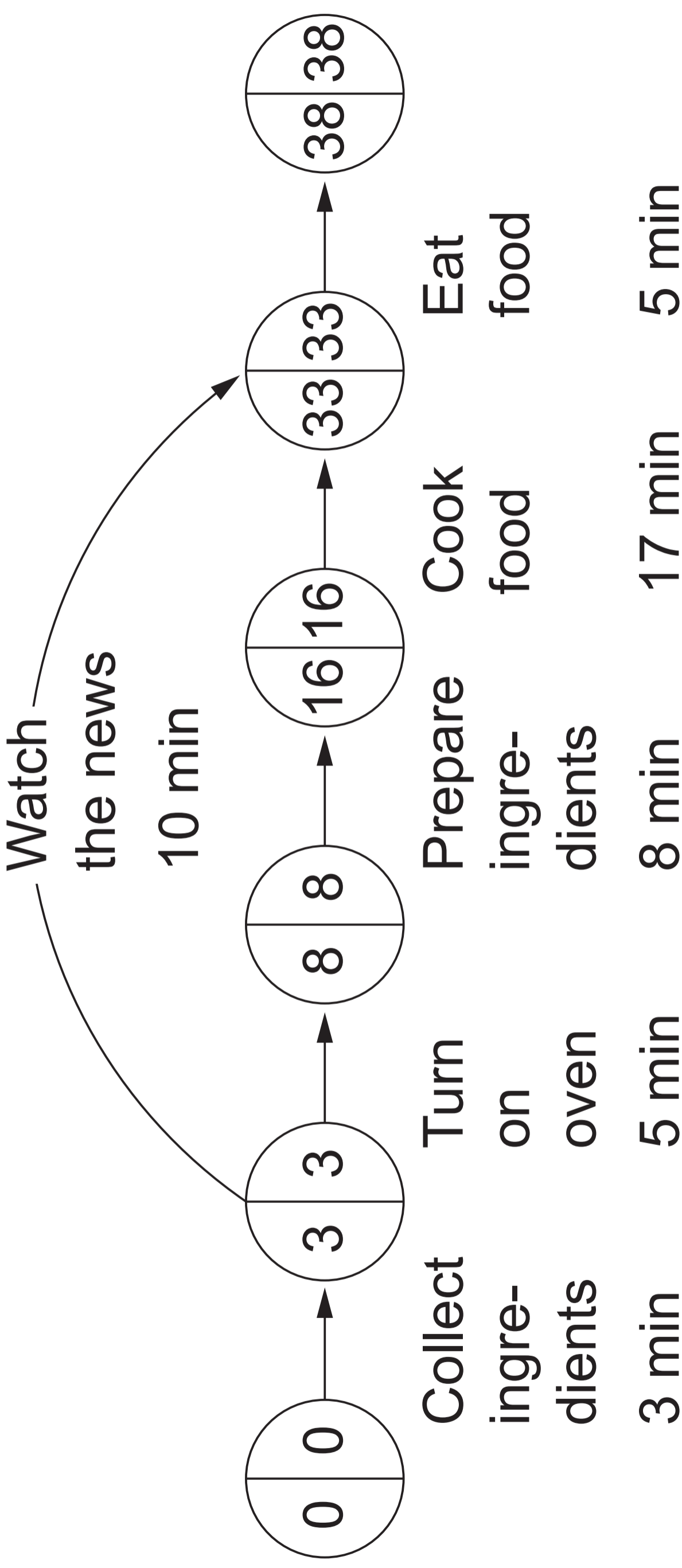
General instruction

- Work in this book will not be marked.

Section 1

Question 1

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



(A) 10

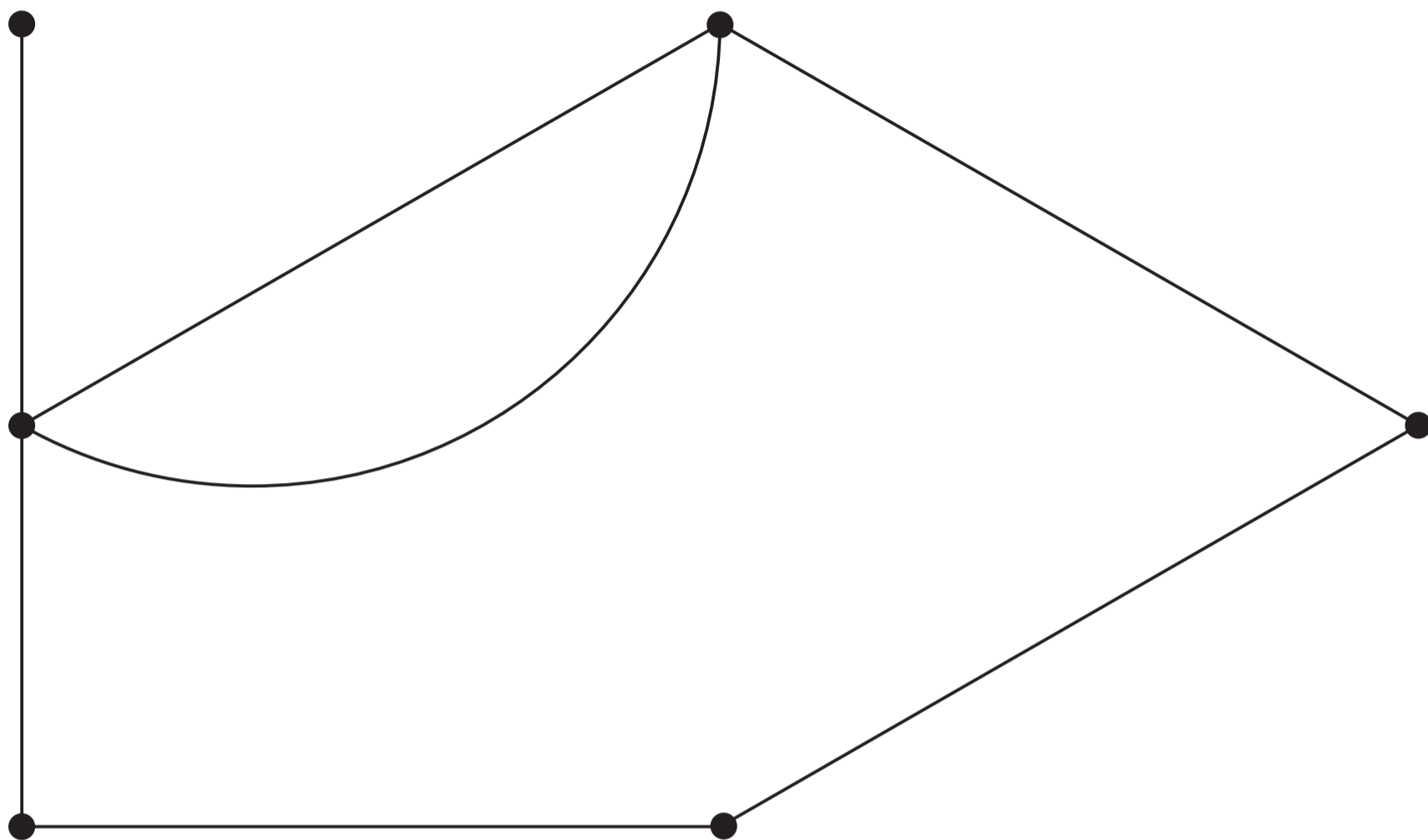
(B) 20

(C) 23

(D) 30

Question 2

The total number of vertices in this graph is



(A) 3

(B) 5

(C) 6

(D) 7

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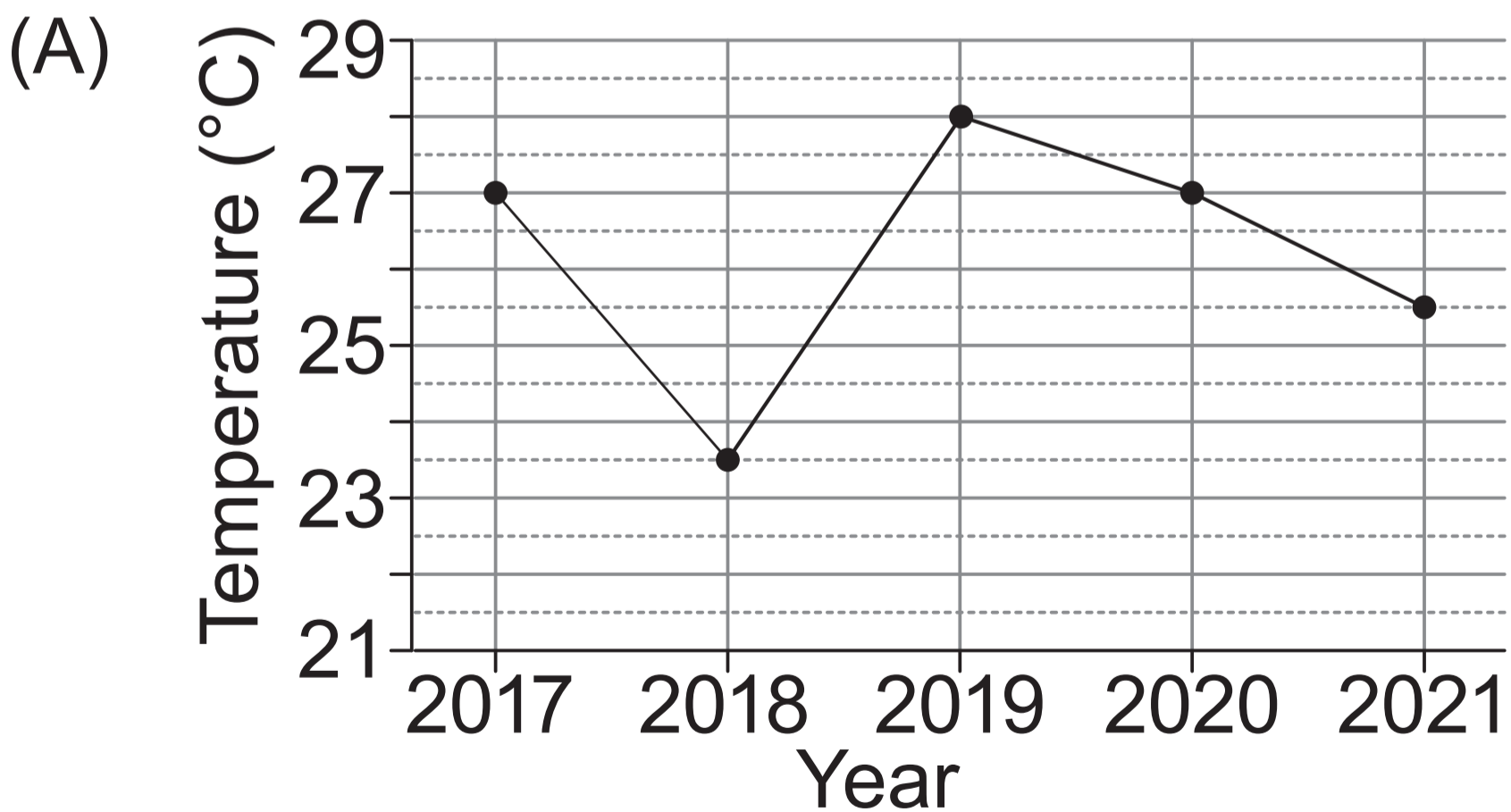
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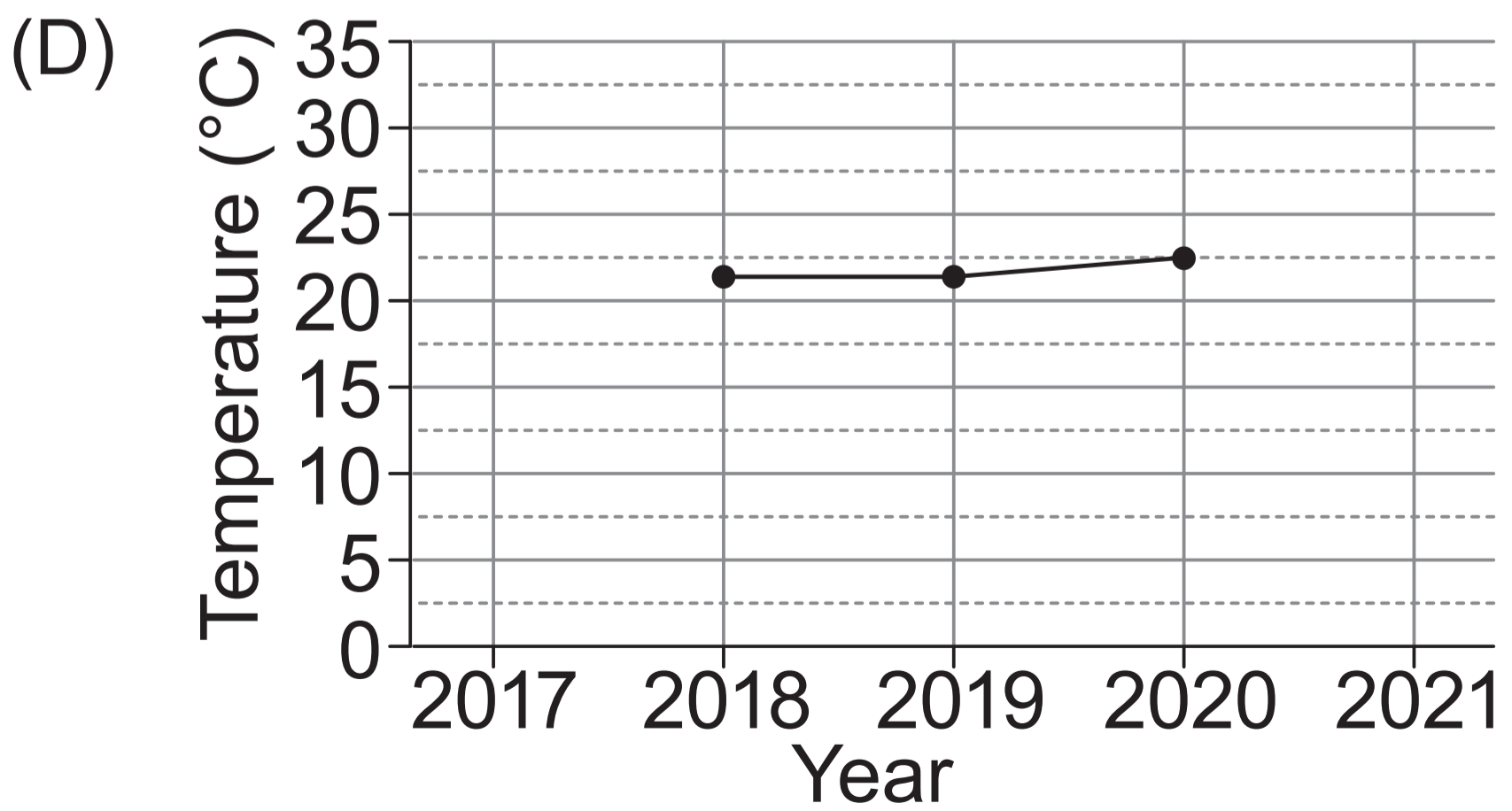
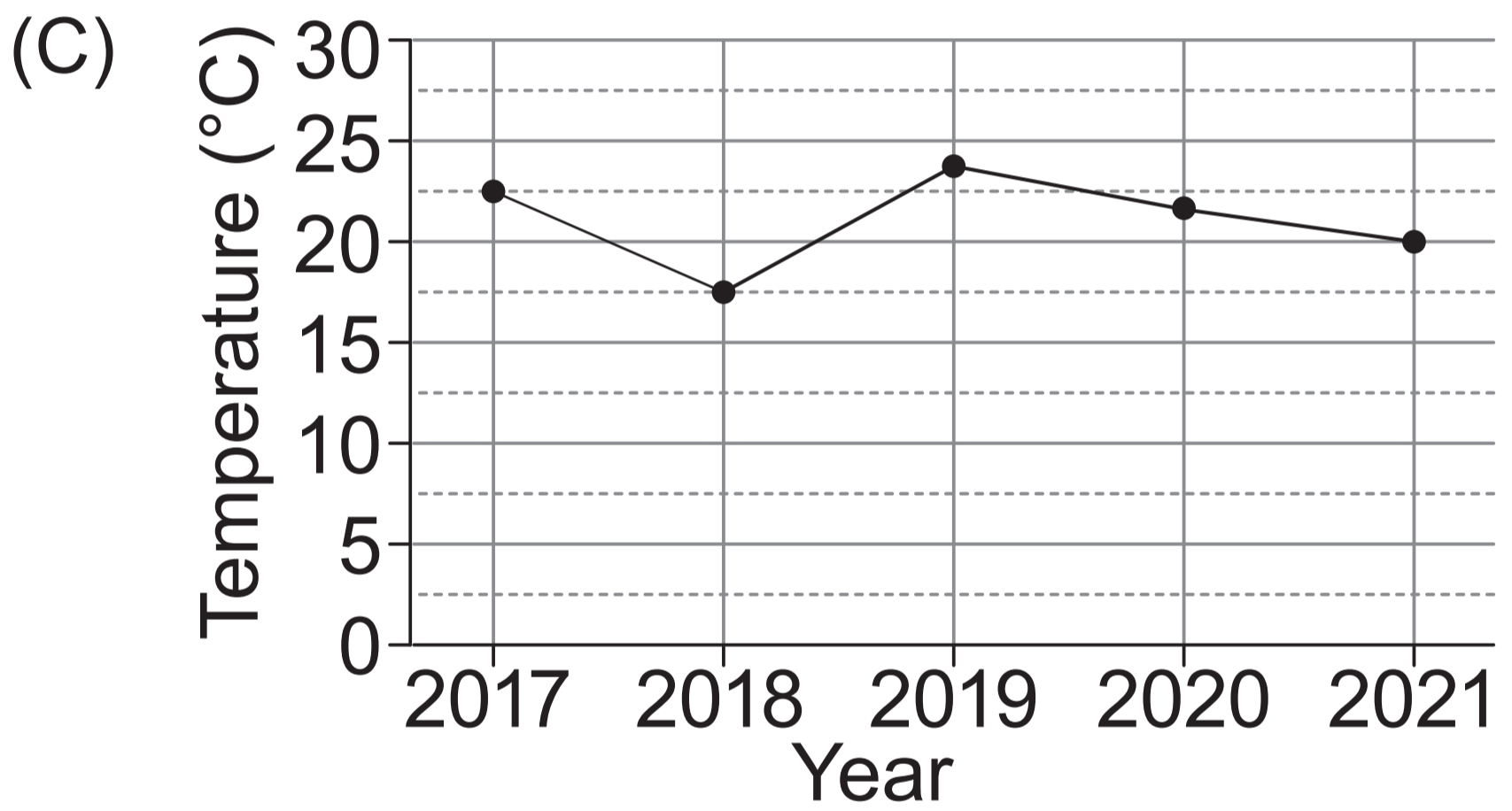
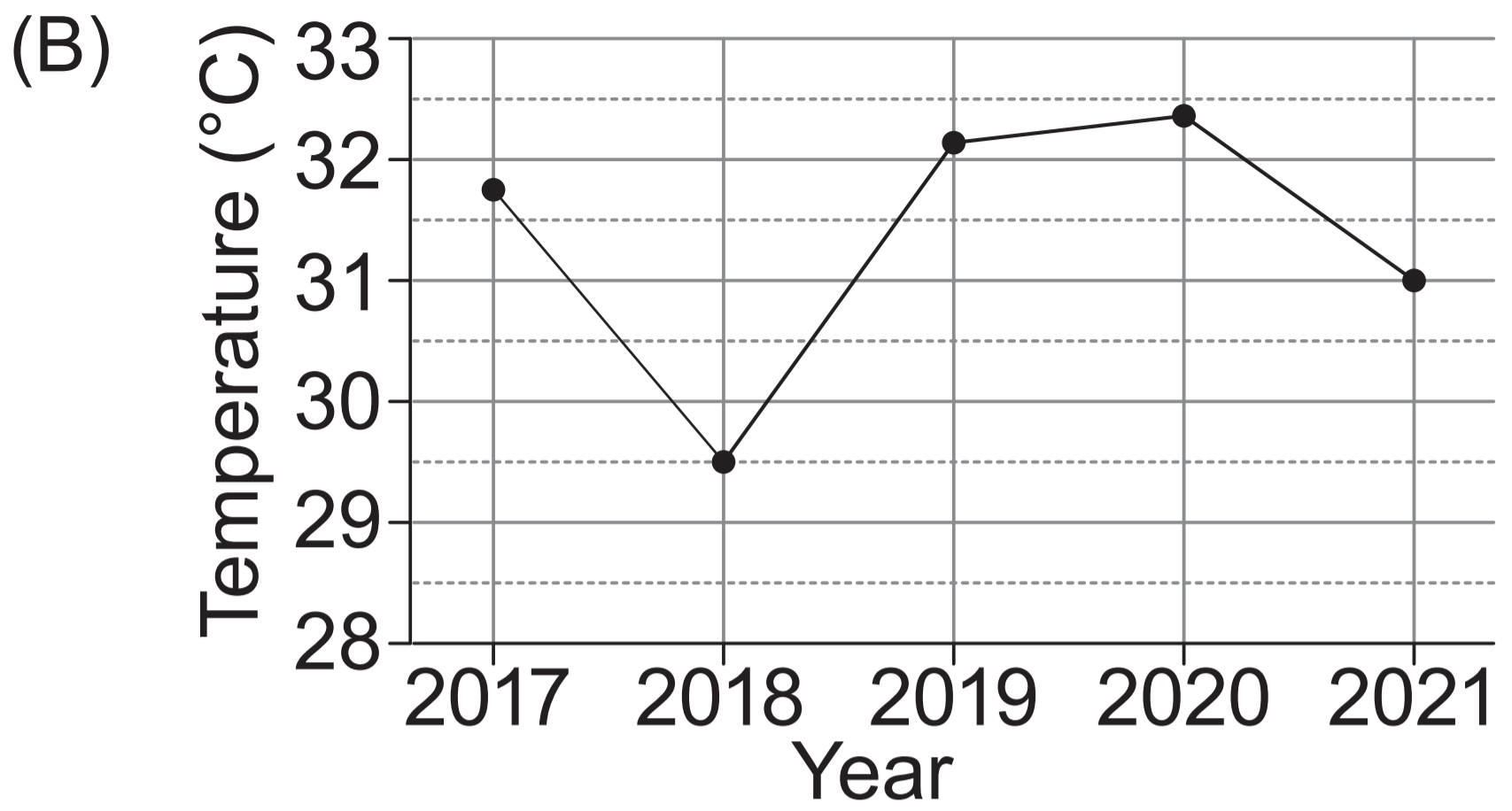
Question 3

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?

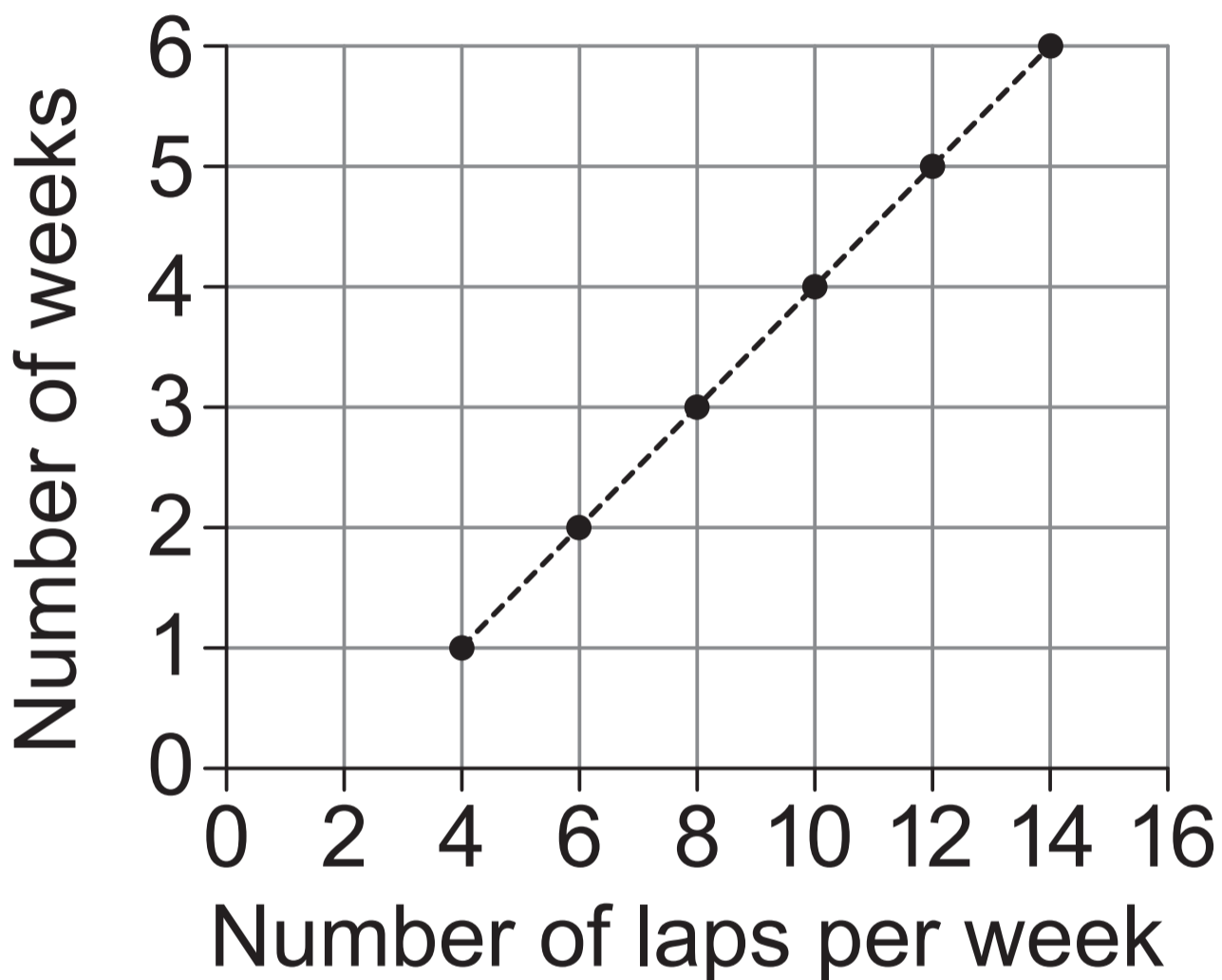




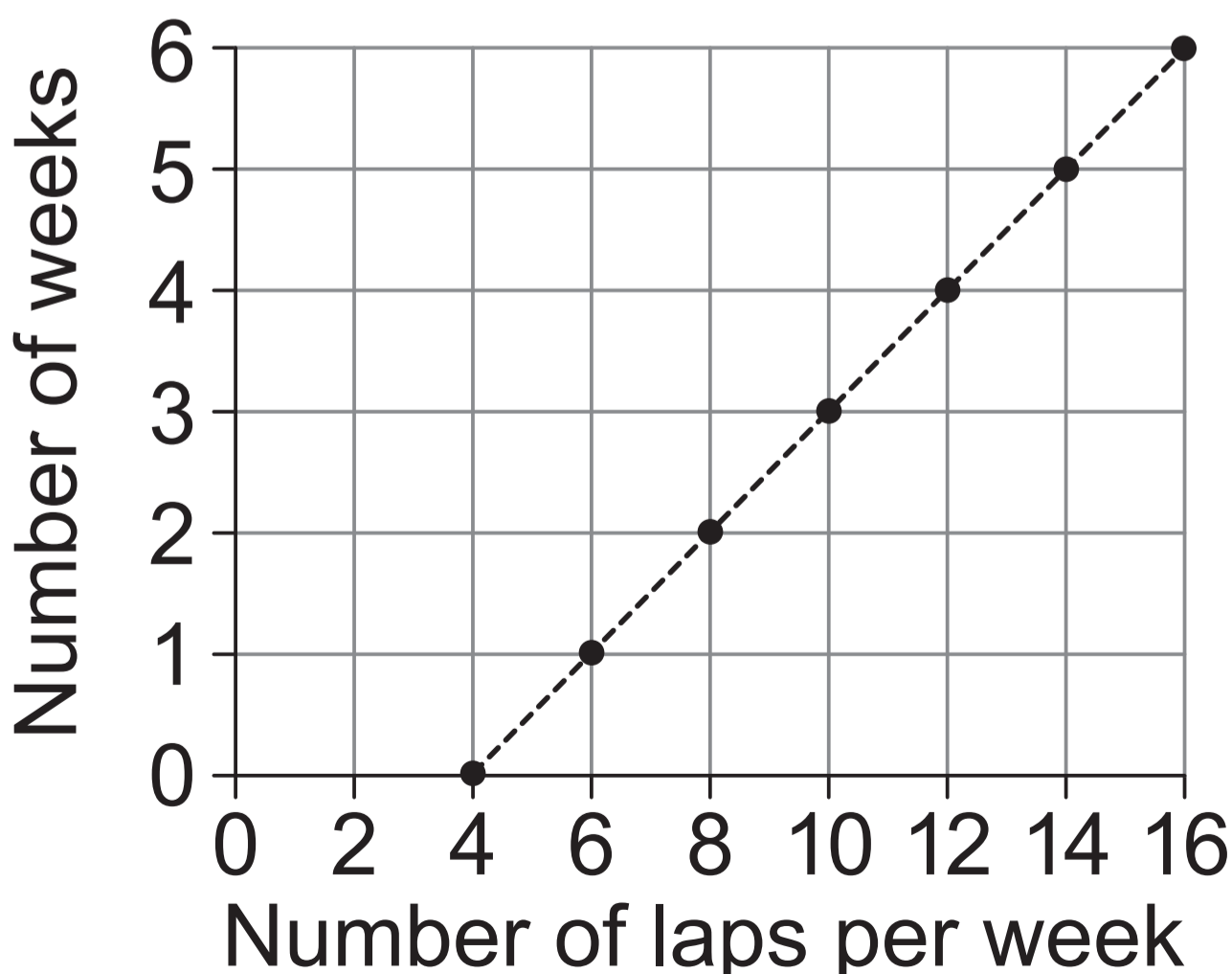
Question 4

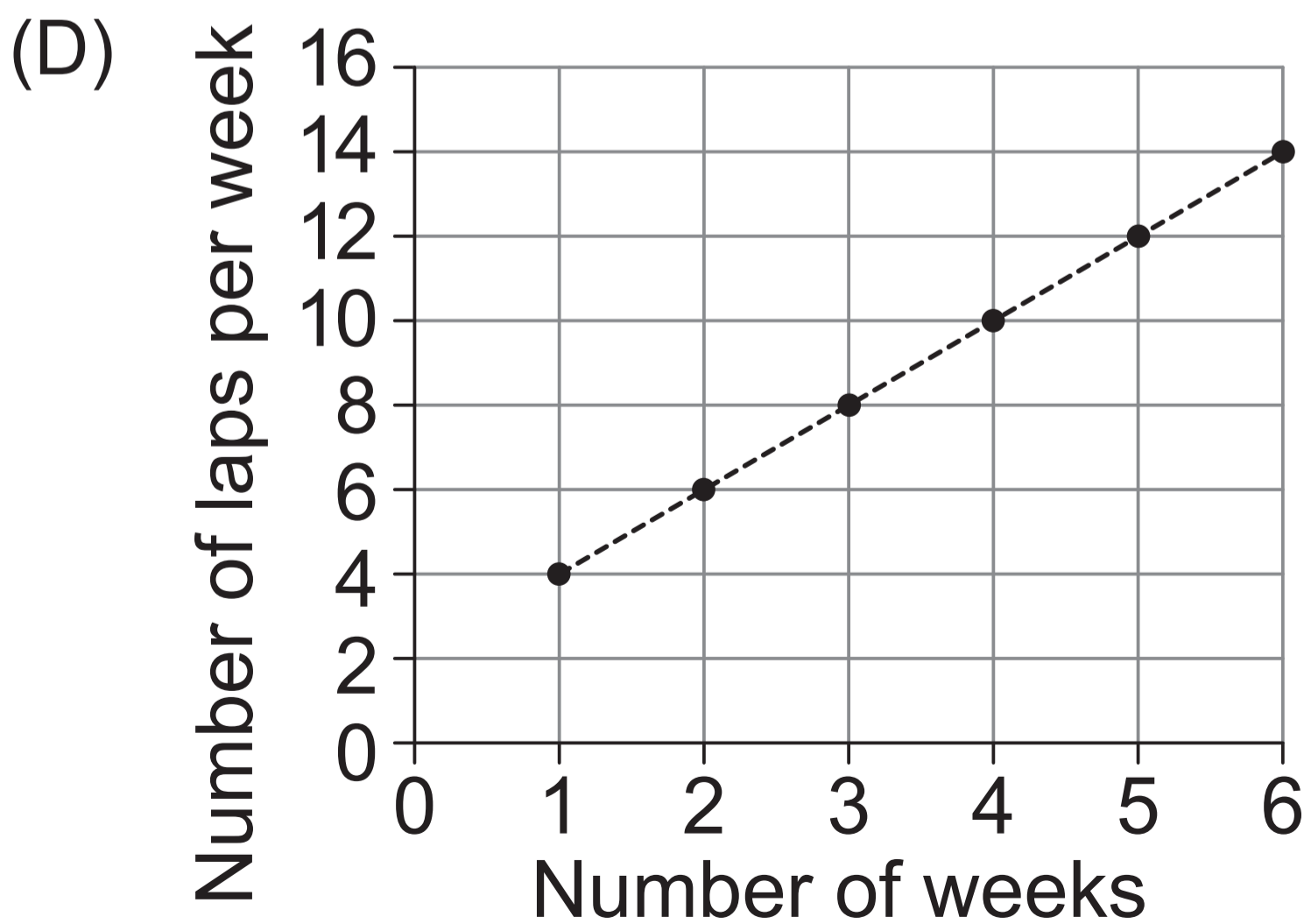
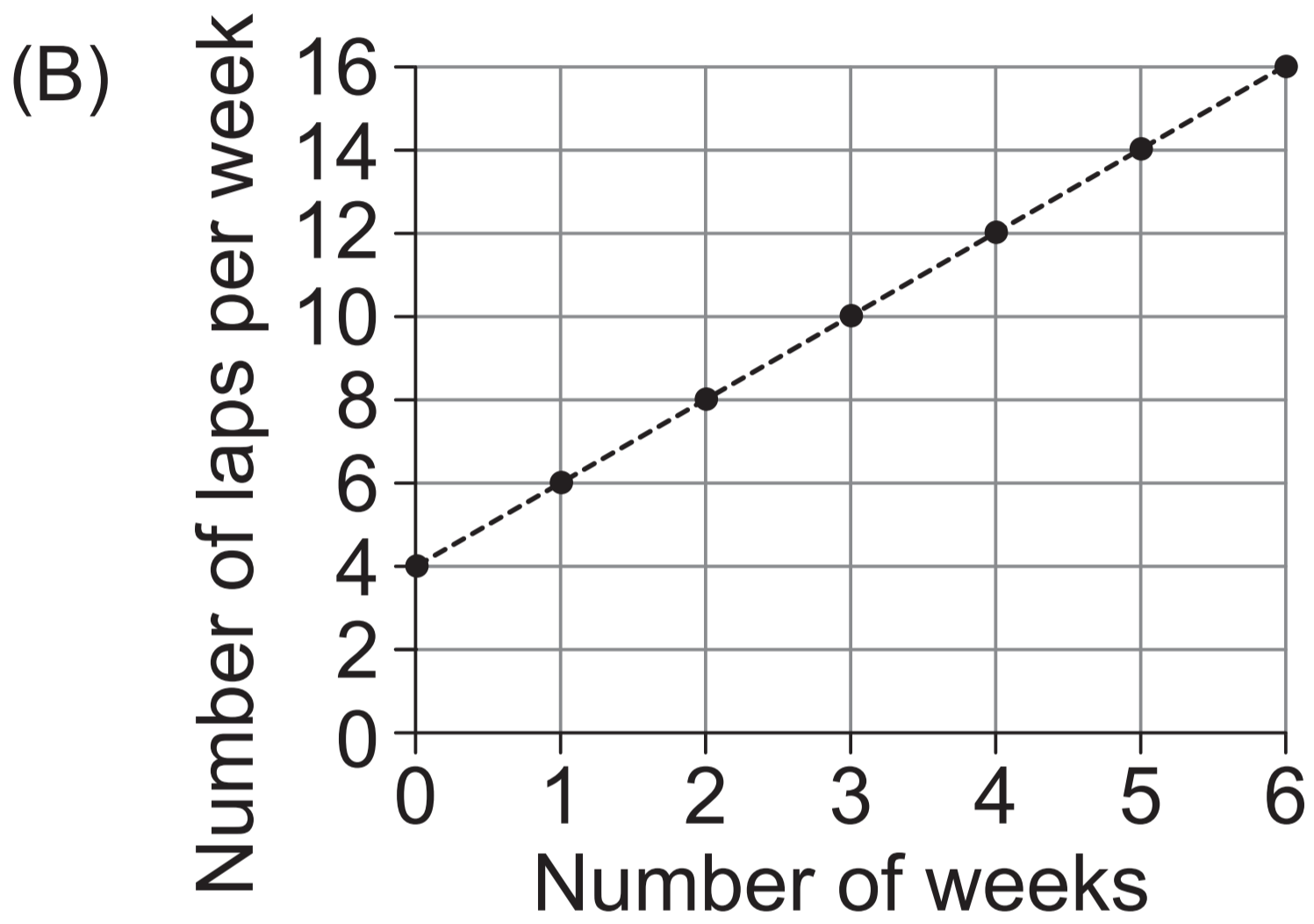
A swimmer has a weekly training routine to improve their fitness as modelled by the recursive function $T_{n+1} = T_n + 2$, where T_n is the number of laps they swim in week n and $T_1 = 4$. Which graph best represents the swimmer's routine?

(A)



(C)





Question 5

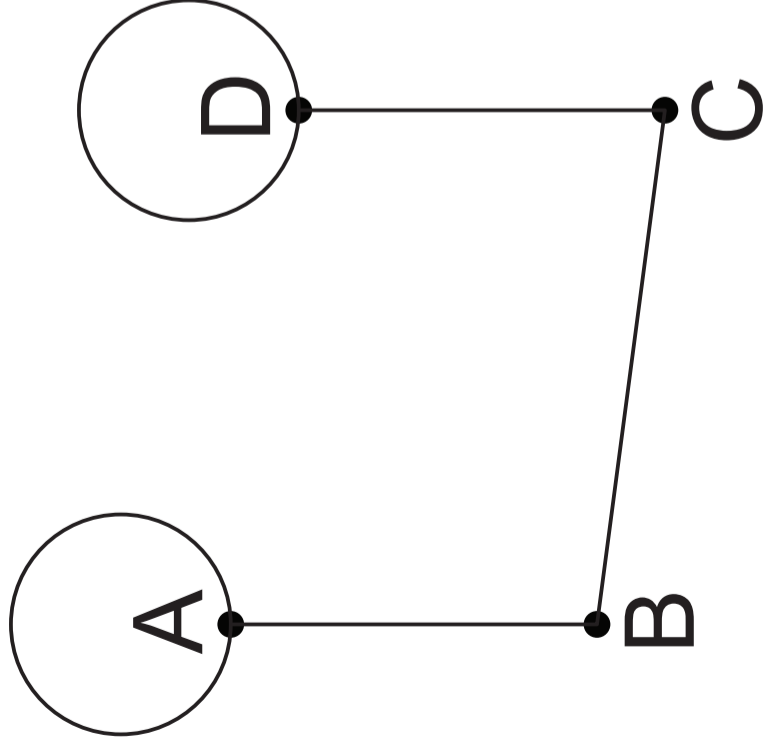
The table lists the number of books sold per month by an online bookstore. If the simple 3-point moving average in October is 54, what is the simple 3-point moving average in May?

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).

$$\begin{array}{c} \\ \\ \end{array} \begin{array}{ccc} L & M & V \\ \left[\begin{array}{ccc} 0 & 0 & 7 \\ 0 & 3 & 8 \\ 1 & 0 & 0 \end{array} \right] \end{array}$$

The optimal allocation is

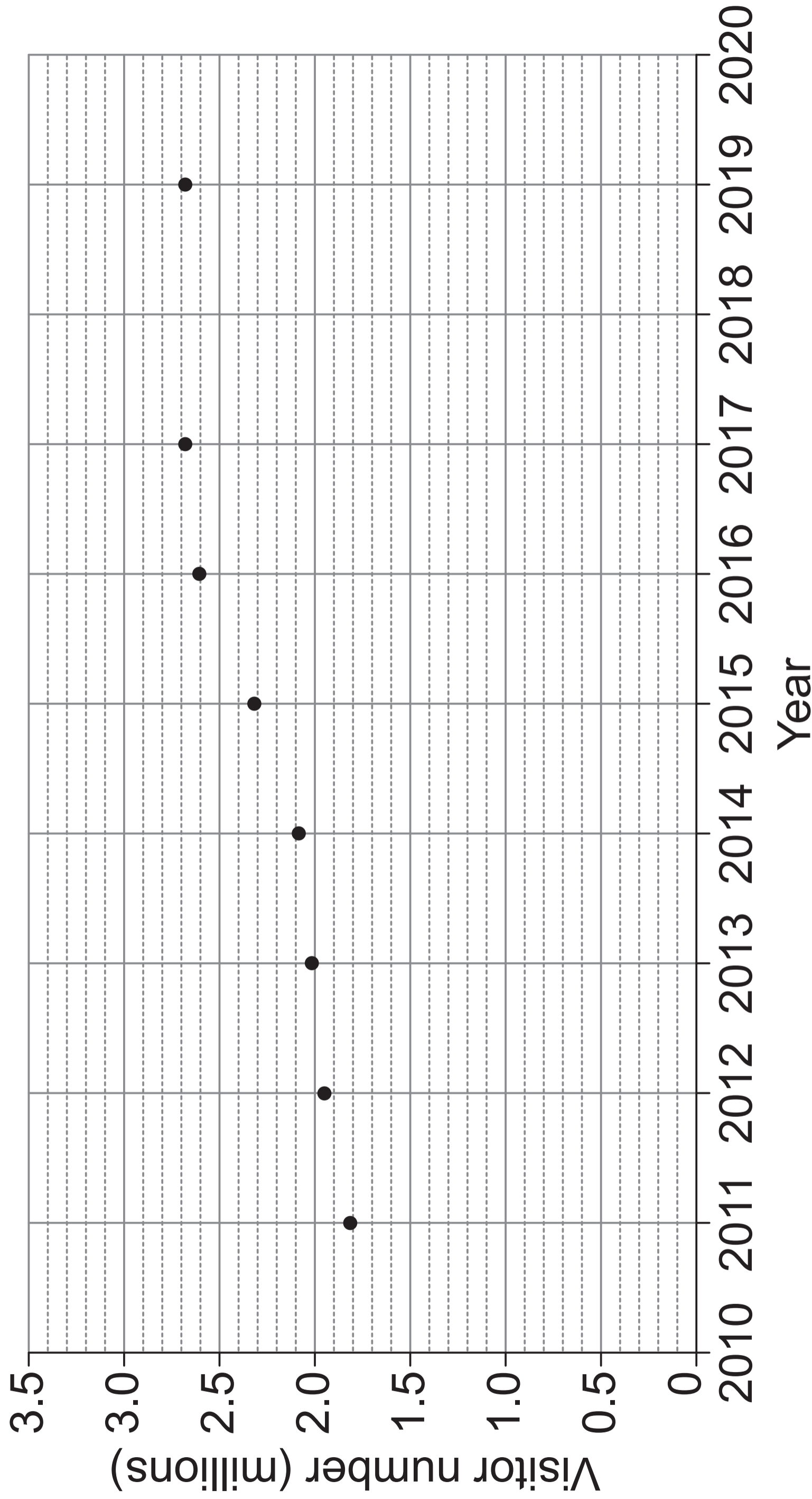
- (A) E to V, F to M and G to L.
- (B) E to V, F to L and G to M.
- (C) E to M, F to L and G to V.
- (D) E to M, F to V and G to L.

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Question 8

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



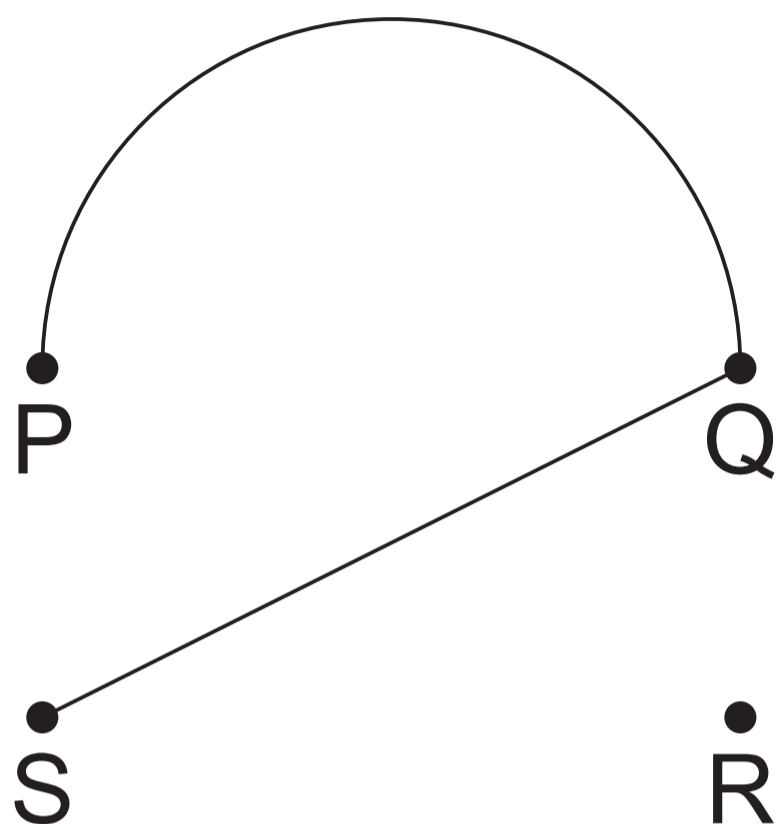
For 2018, the annual number of visitors could best be

- (A) interpolated as 2.7 million.
- (B) extrapolated as 2.7 million.
- (C) interpolated as 3.2 million.
- (D) extrapolated as 3.2 million.

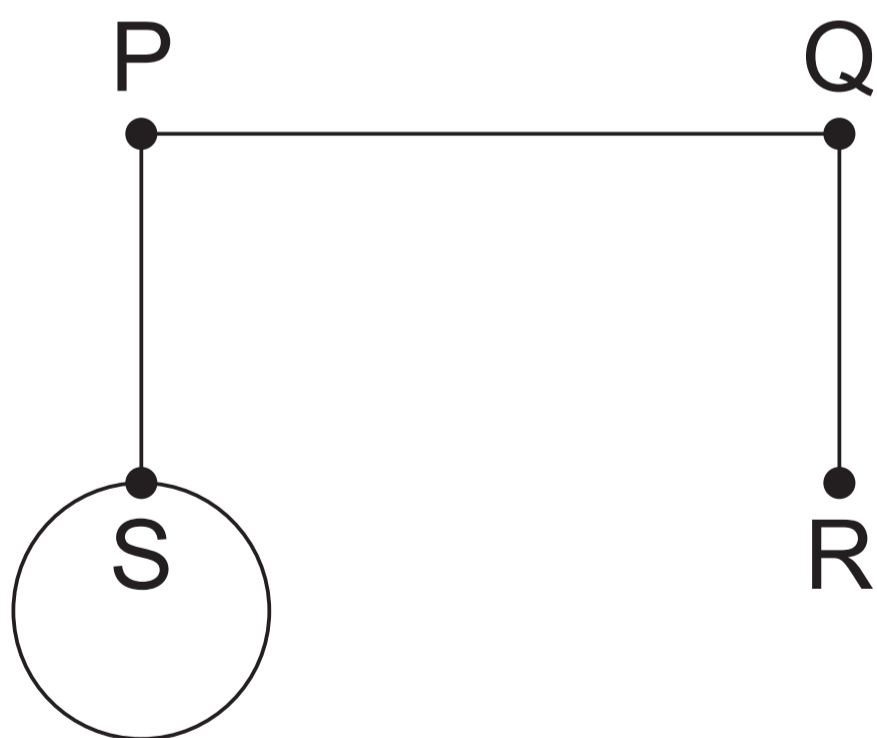
Question 9

Identify the graph that is a spanning tree.

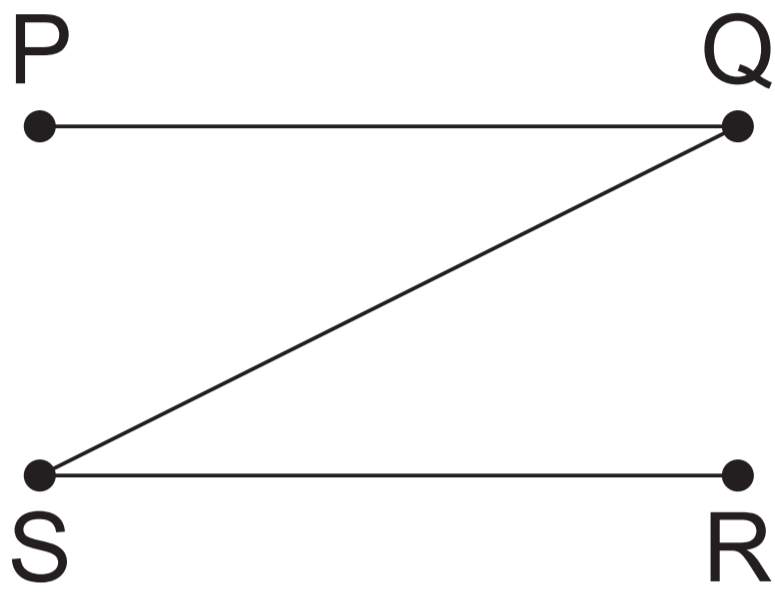
(A)



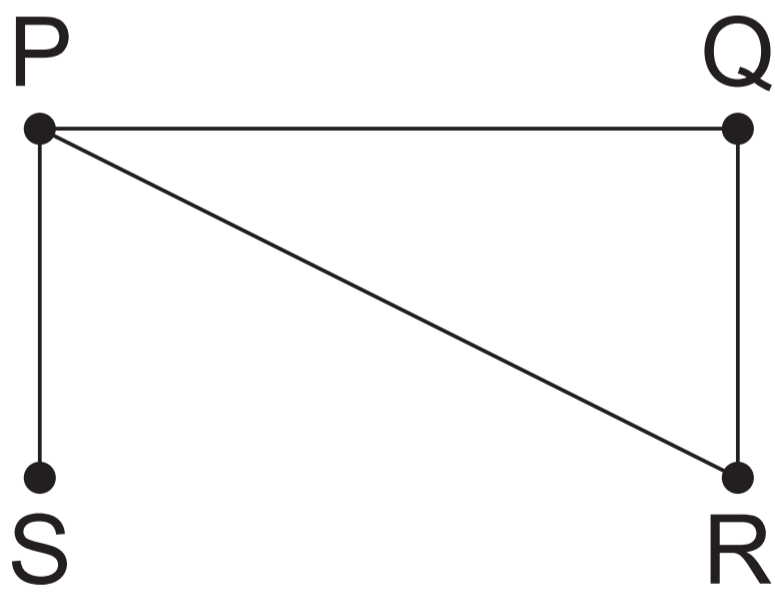
(C)



(B)



(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

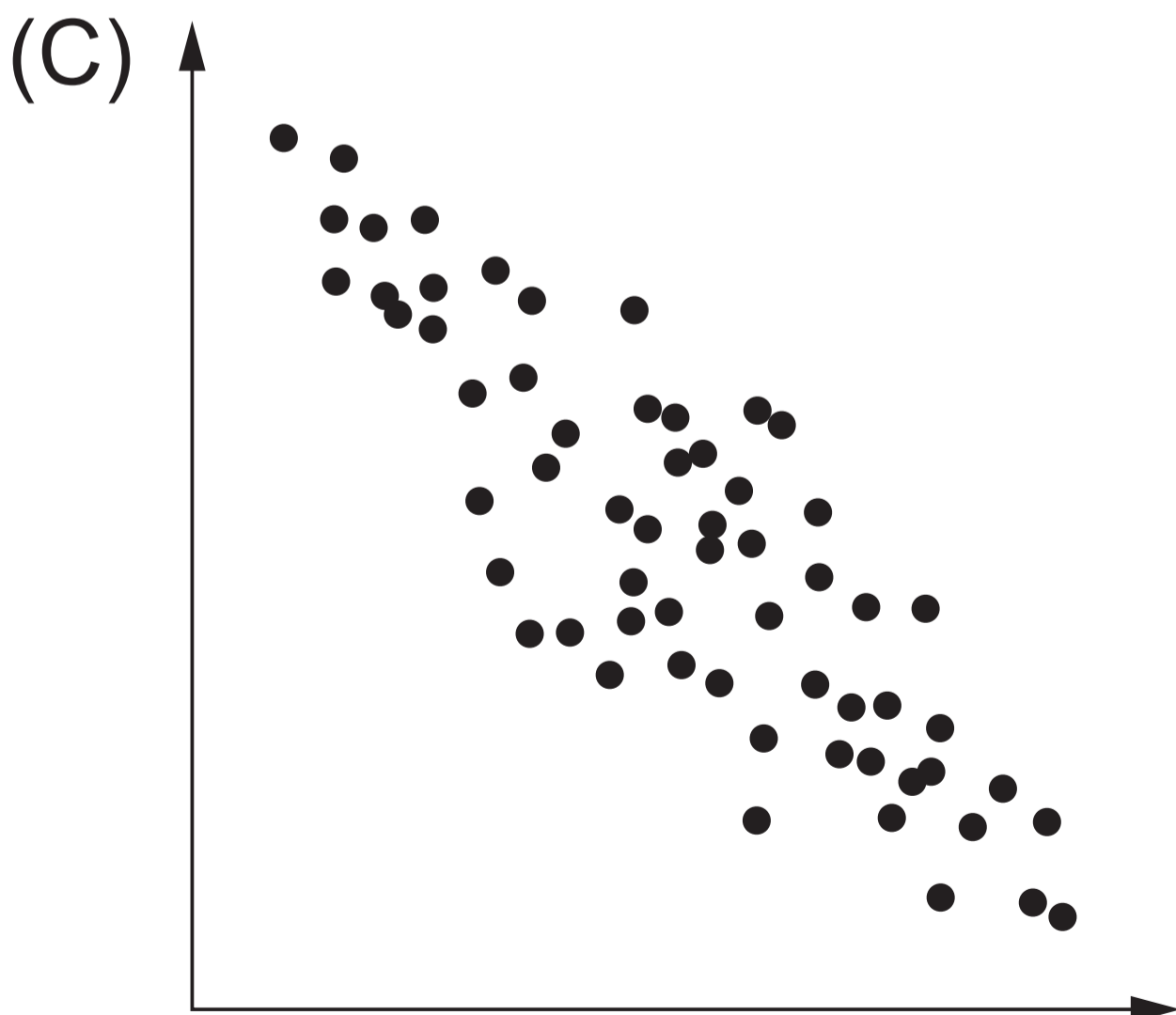
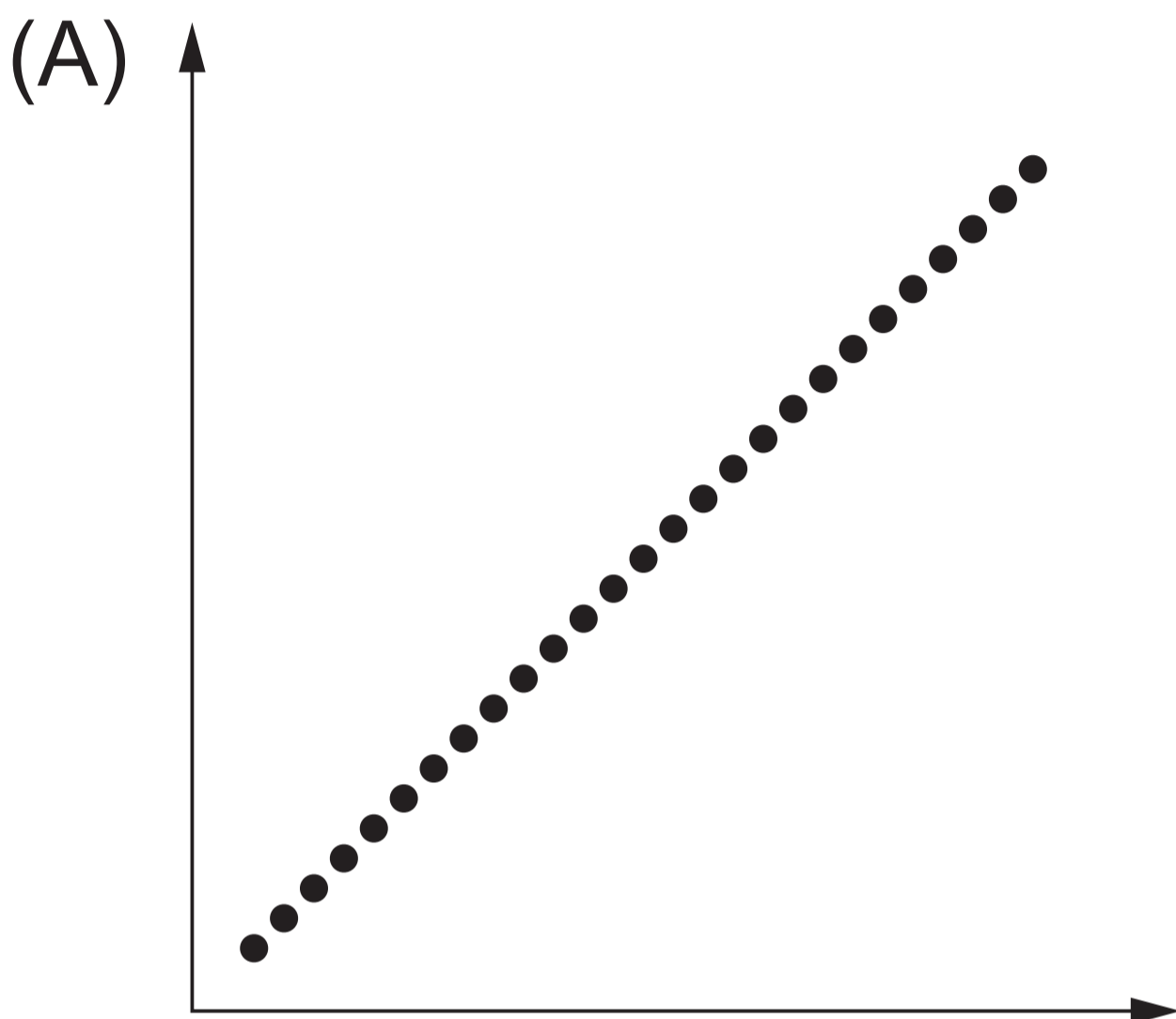
The equation of a fitted line for the number of free throws in basketball, t , and the number of hours in a training session, h , is $t = 26.781 + 12.974 h$

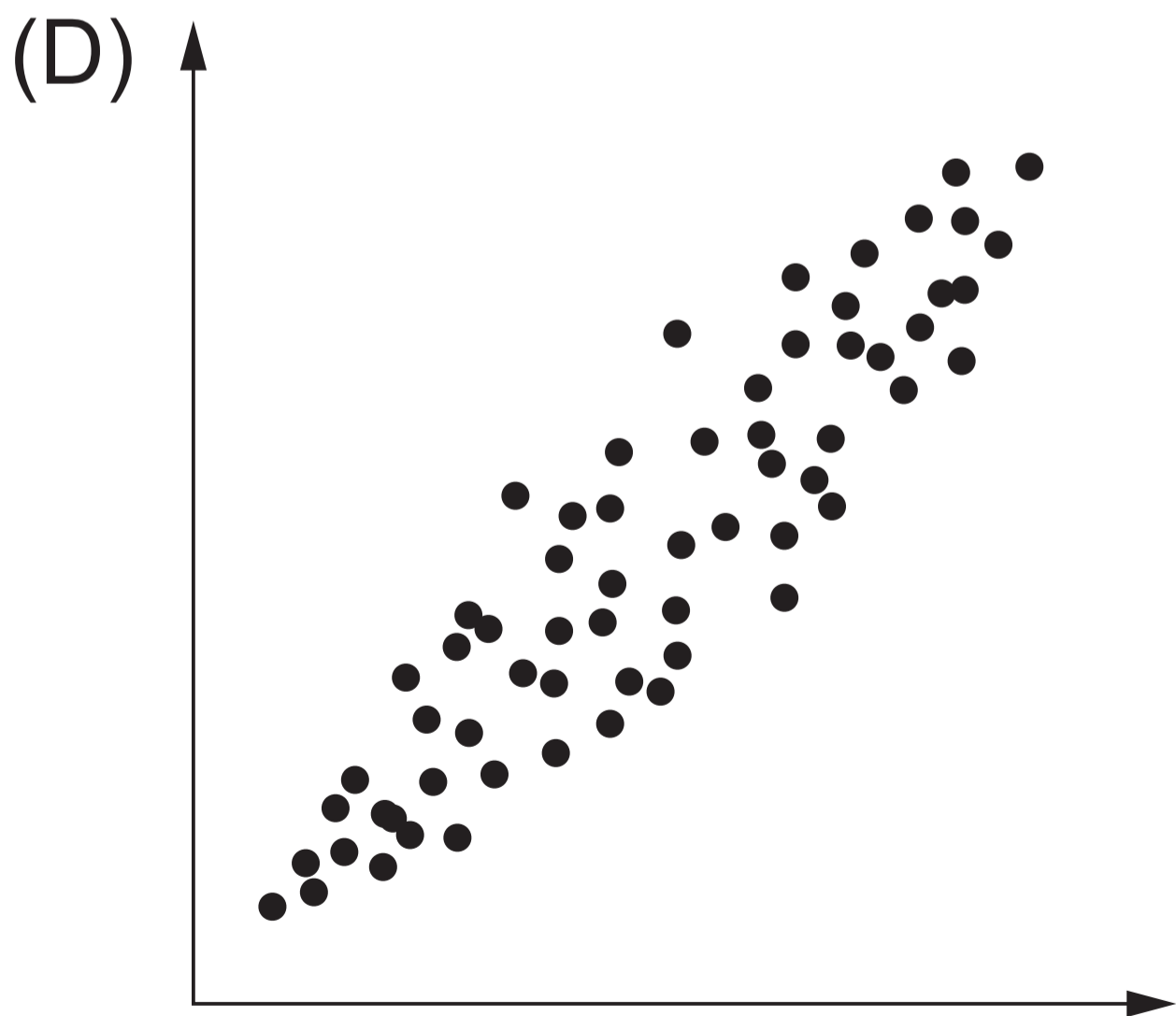
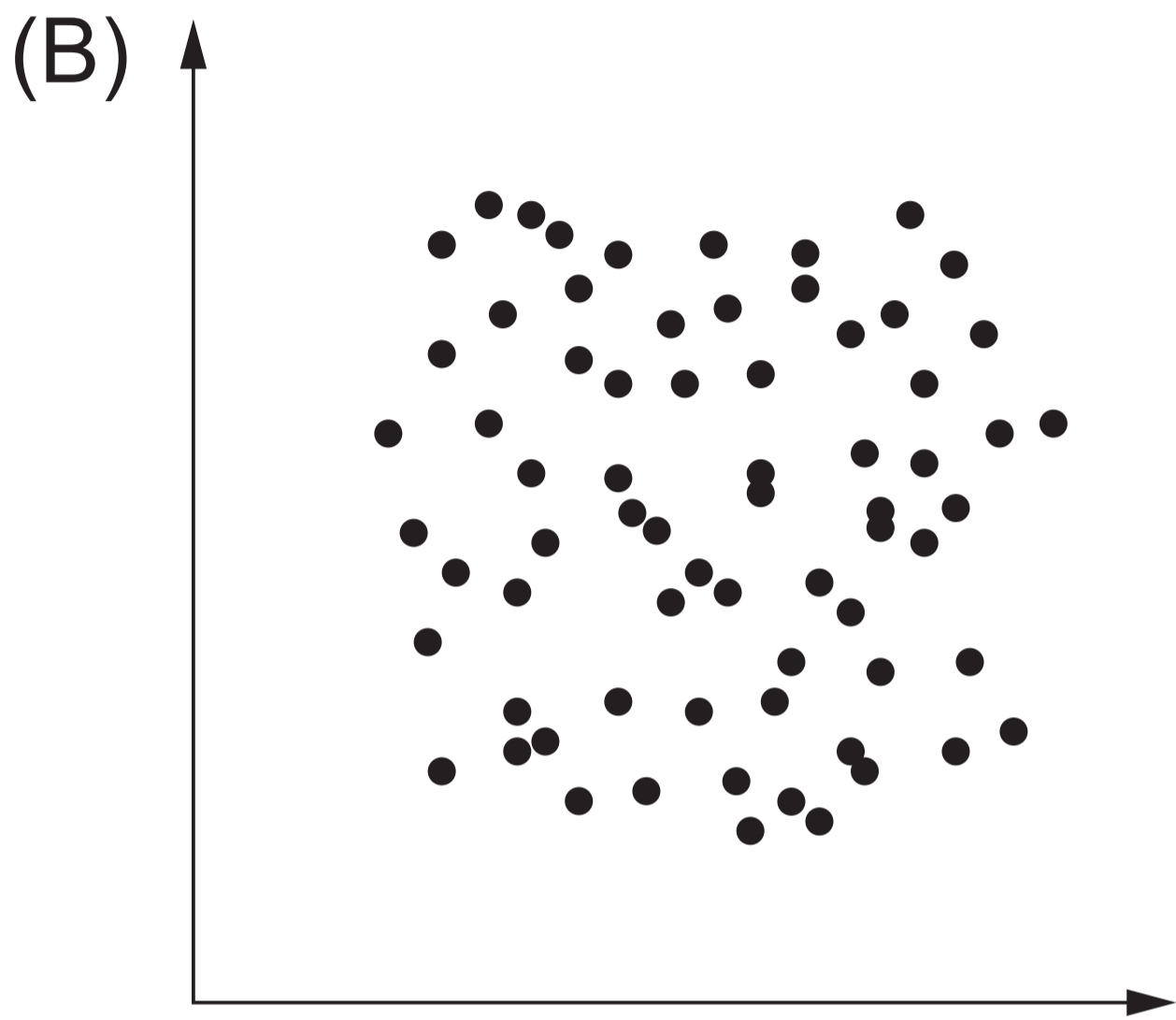
The predicted number of free throws for a 5-hour training session, when rounded to the nearest whole number, is

- (A) 64
- (B) 65
- (C) 91
- (D) 92

Question 12

Identify the scatterplot that best demonstrates a strong negative association.





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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