

External assessment 2022

Multiple choice question book

General Mathematics 6((□

SEE 2 Paper 1

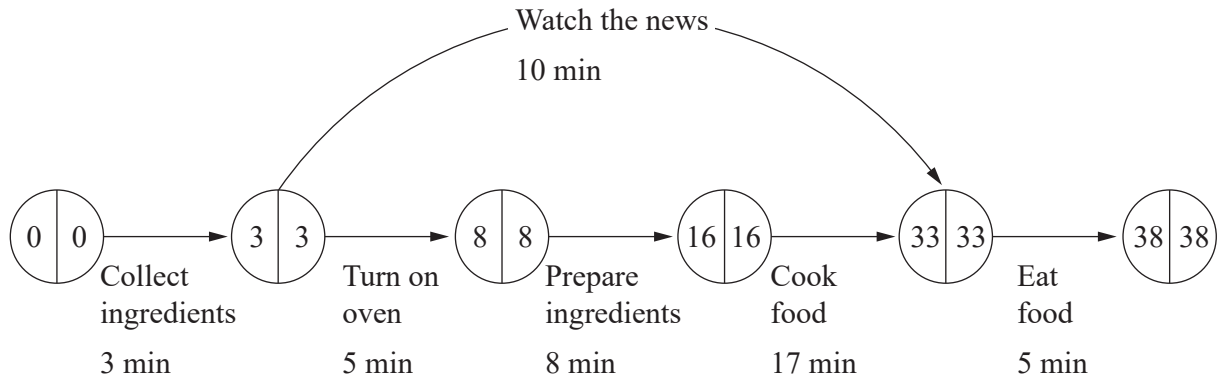
General instruction

- Work in this book will not be marked.

Section 1

QUESTION 1

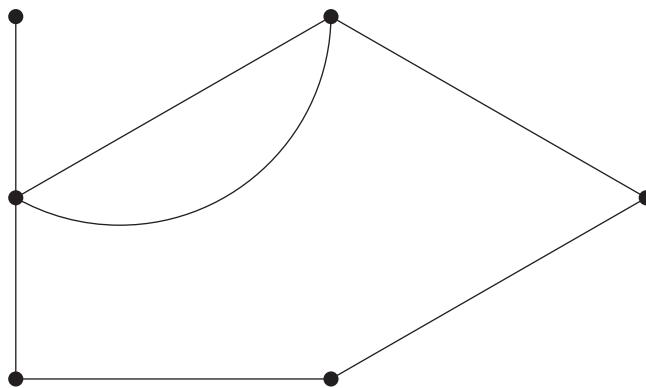
The float time, in minutes, for the non-critical activity of this project network is



- (A) 10
- (B) 20
- (C) 23
- (D) 30

QUESTION 2

The total number of vertices in this graph is



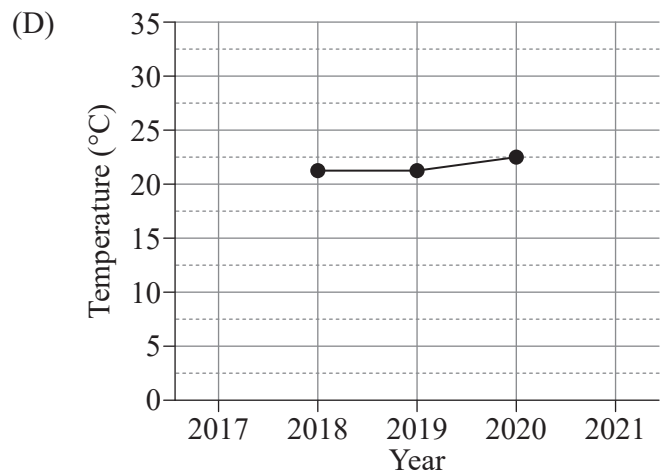
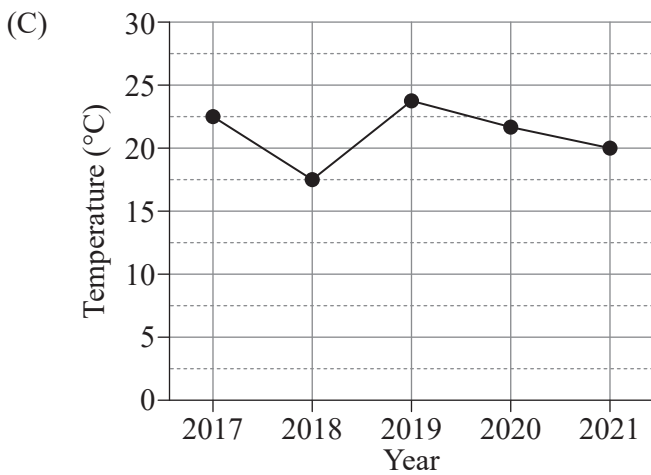
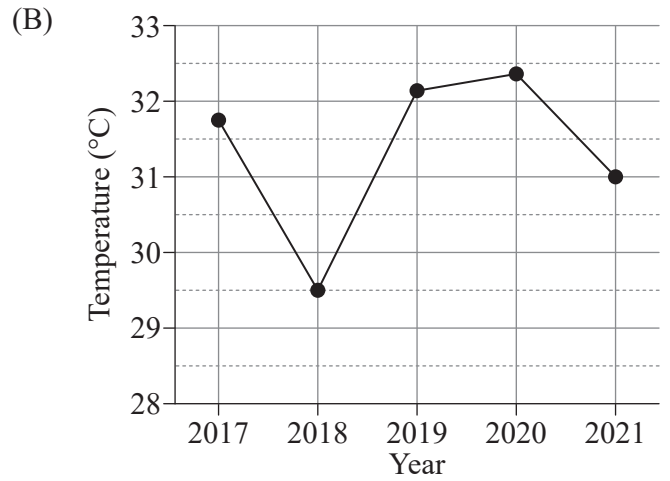
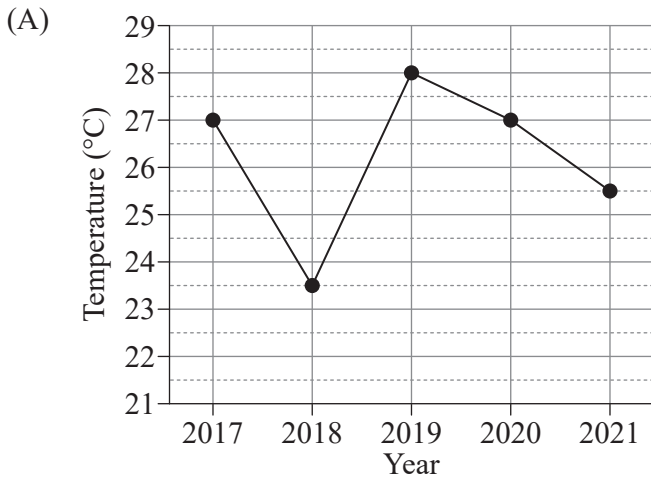
- (A) 3
- (B) 5
- (C) 6
- (D) 7

QUESTION 3

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

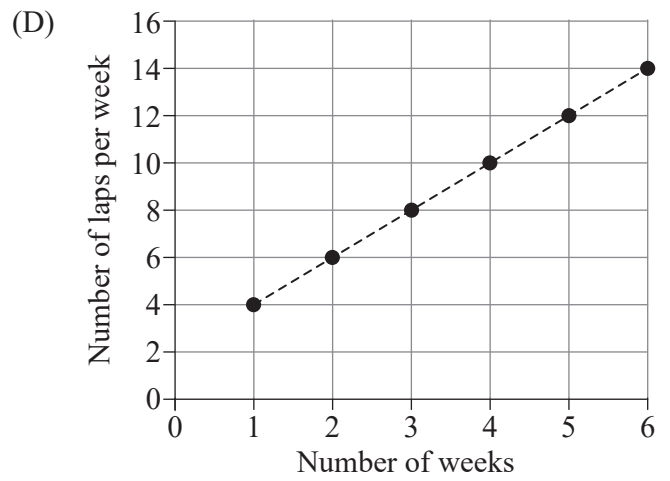
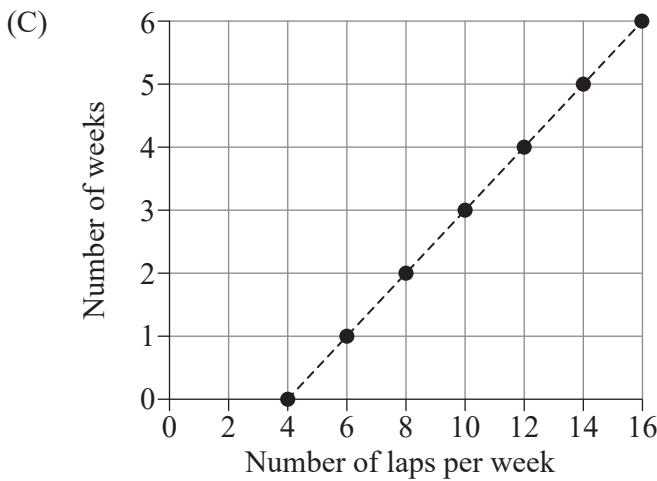
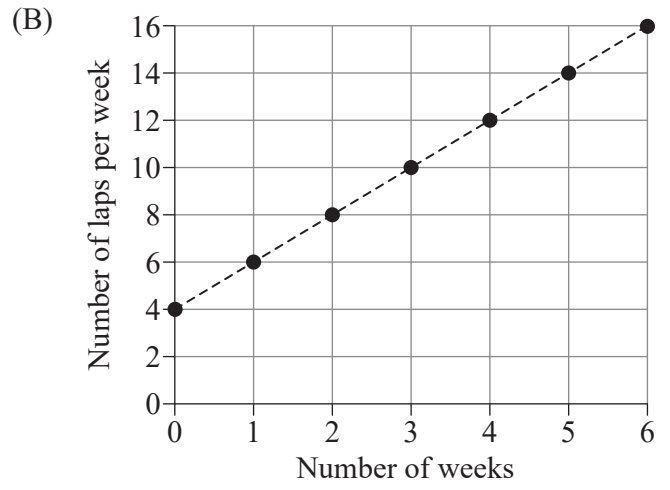
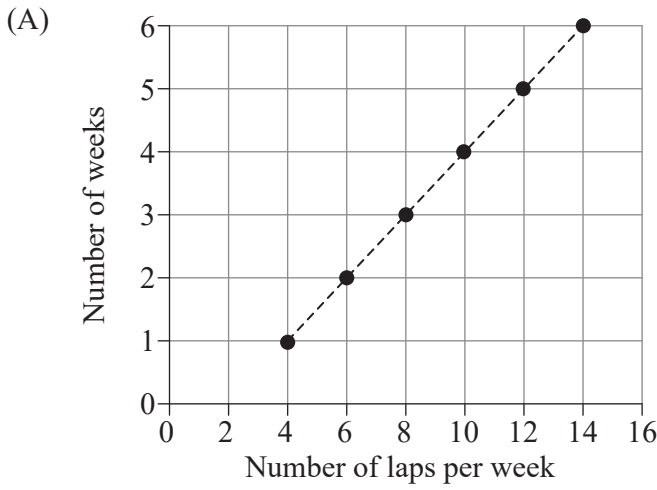
| | Min (°C) | Max (°C) |
|------|----------|----------|
| 2017 | 22.1 | 31.8 |
| 2018 | 17.8 | 29.6 |
| 2019 | 24.1 | 32.1 |
| 2020 | 22.1 | 32.3 |
| 2021 | 19.9 | 30.9 |

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?



QUESTION 5

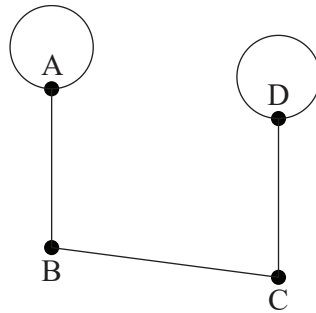
The table lists the number of books sold per month by an online bookstore. If the simple 3-point moving average in October is 54, what is the simple 3-point moving average in May?

| 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).

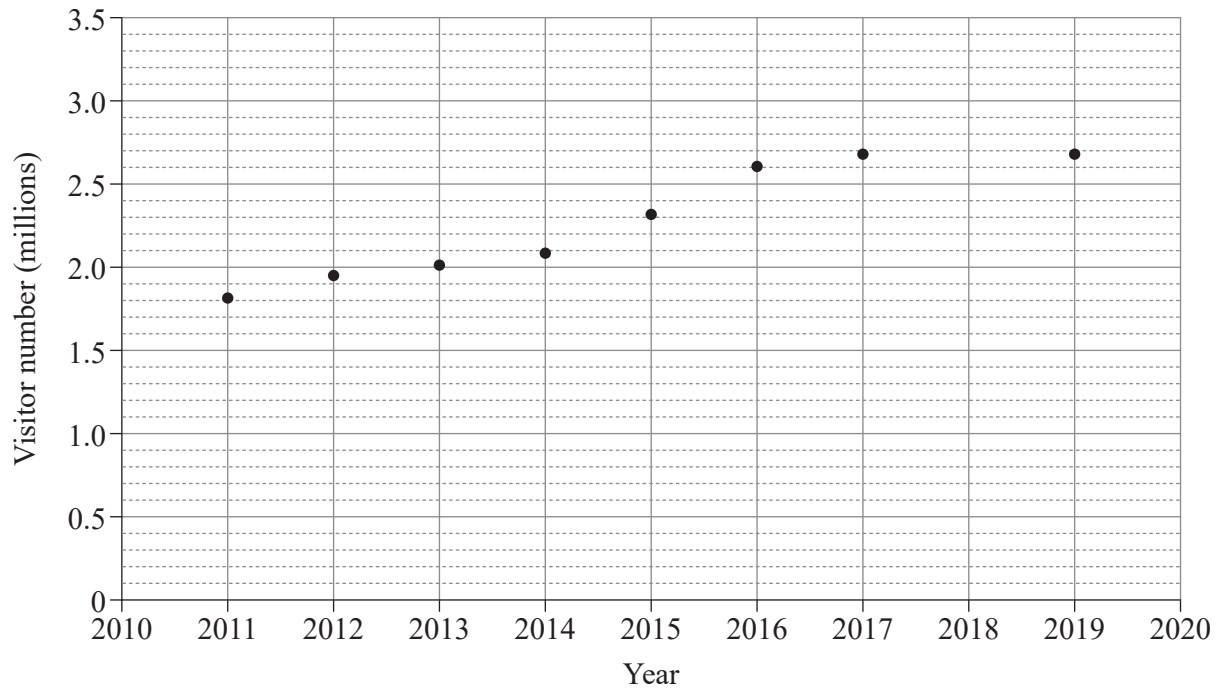
| | L | M | V |
|---|---|---|---|
| E | 0 | 0 | 7 |
| F | 0 | 3 | 8 |
| G | 1 | 0 | 0 |

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.



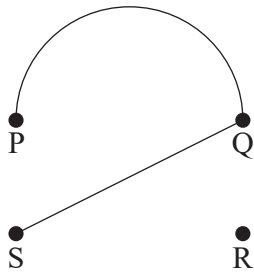
For 2018, the annual number of visitors could best be

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

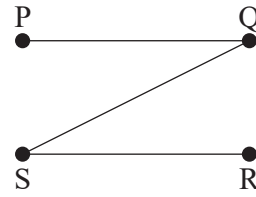
QUESTION 9

Identify the graph that is a spanning tree.

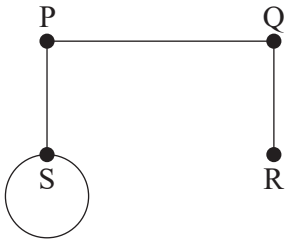
(A)



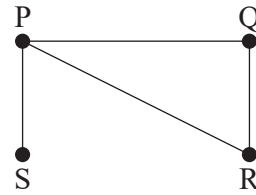
(B)



(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

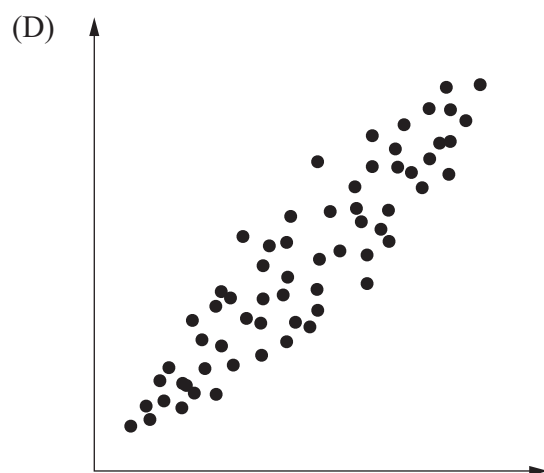
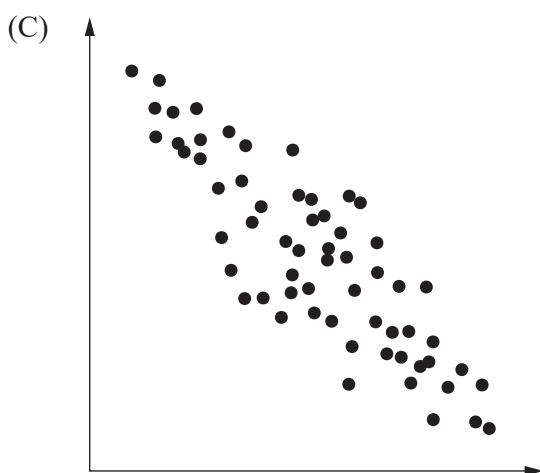
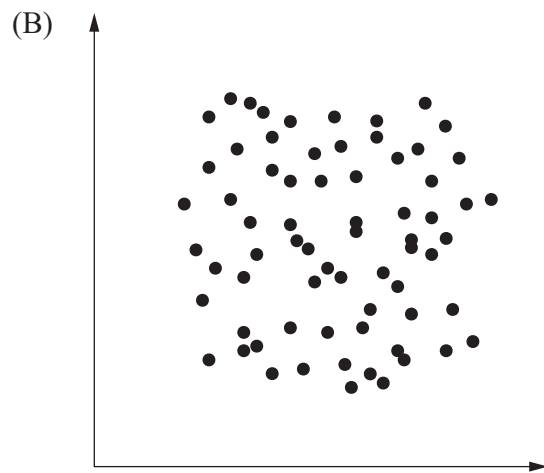
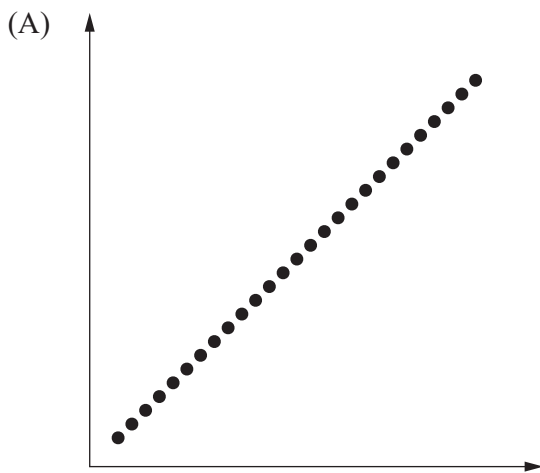
The equation of a fitted line for the number of free throws in basketball, t , and the number of hours in a training session, h , is $t = 26.781 + 12.974 h$

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.



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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