External assessment 2024

Multiple choice question book

General Mathematics

Paper 1

General instruction

- Work in this book will not be marked.

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Section 1

- Respond to these questions in the question and response book.

QUESTION 1

A location with coordinates (28° N 16° W) is positioned

(A) 28° north of the prime meridian and 16° west of the equator.

(B) 28° north of the equator and 16° west of the prime meridian.

(C) 28° north of the International Date Line and 16° west of the equator.

(D) 28° north of the equator and 16° west of the International Date Line.

QUESTION 2

In a graph, an open walk with repeated vertices and no repeated edges is called a

(A) bridge.

(B) loop.

(C) path.

(D) trail.

QUESTION 3

The coefficient of determination, R^2, is equal to 0.36 for the linear association between x (explanatory variable) and y (response variable).

Which statement is correct?

(A) 36% of the variation in x can be explained by the variation in y.

(B) 36% of the total variation can be explained by the linear association.

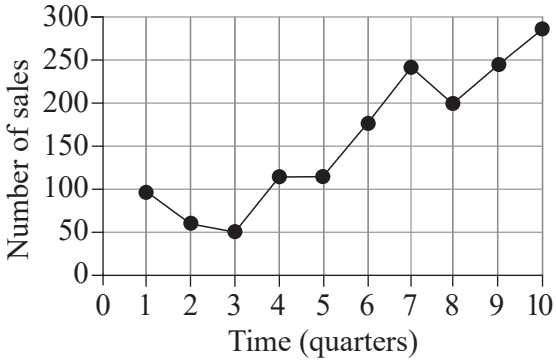
(C) 36% of the predicted outcomes can be explained by the variation in x.

(D) 36% of the variation in x can be predicted by the linear association.

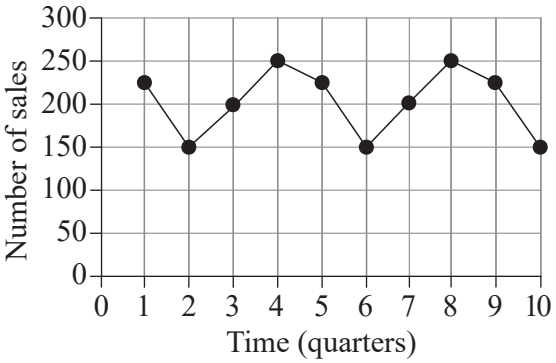
QUESTION 4

Choose the time series plot that could be best described as seasonal and increasing.

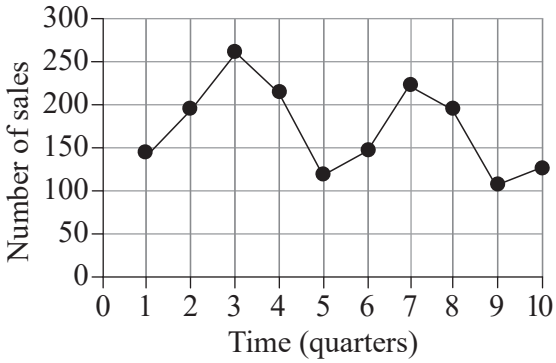
(A)



(B)



(C)



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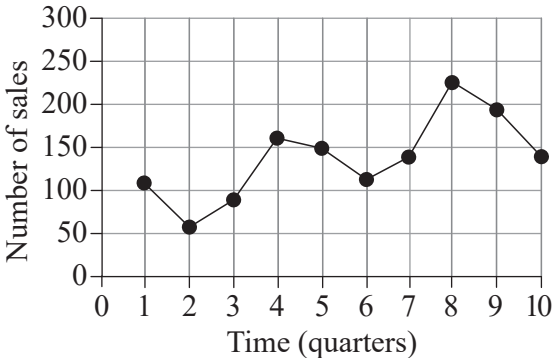
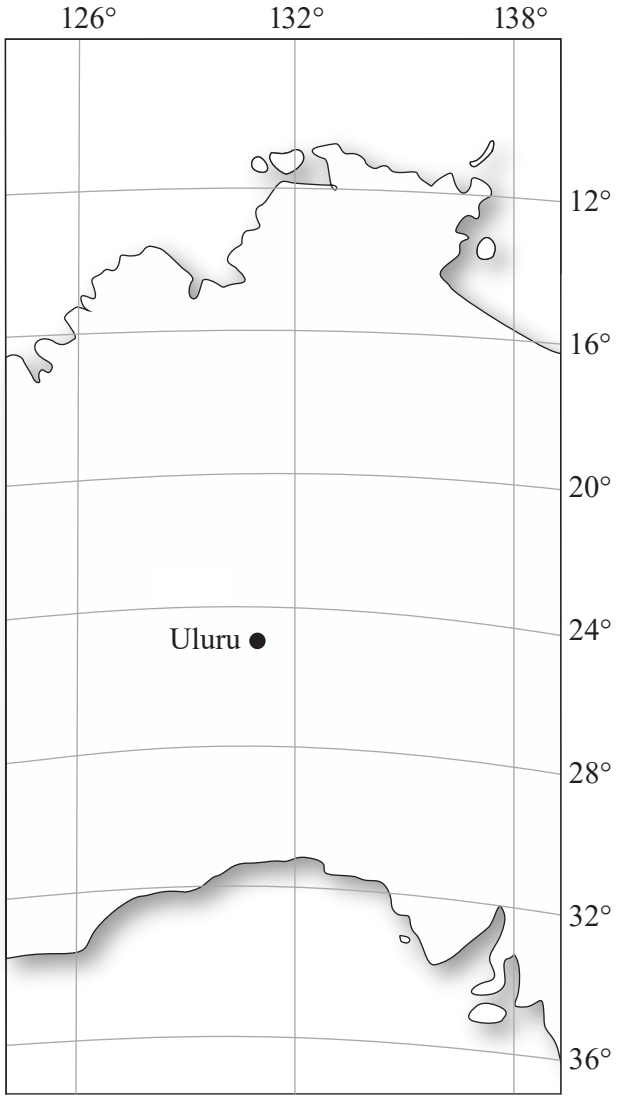


QUESTION 5

A map of central Australia is shown.



Identify the coordinates of Uluru.

(A) 25° N 131° E

(B) 25° N 131° W

(C) 25° S 131° E

(D) 25° S 131° W

QUESTION 6

The table shows the maximum daily temperature (°C) for a week.

Mon	Tue	Wed	Thu	Fri	Sat	Sun
24.4	25.2	24.6	25.2	25.6	25.7	25.9

If the simple 5-point moving average for Wednesday is 25.0 °C, what is the simple 5-point moving average (°C) for Friday?

(A) 25.4

(B) 25.5

(C) 25.6

(D) 26.0

QUESTION 7

The table shows information for a project with four activities.

Activity	Duration (min)	Prerequisite	Earliest starting time	Latest starting time
W	1	—	0	4
X	2	—	0	0
Y	3	X	2	2
Z	4	W, Y	5	5

What is the float time for activity W, in minutes?

(A) 0

(B) 1

(C) 4

(D) 5

QUESTION 8

After n bounces, the rebound height (cm) of a ball, t_n, is modelled by the rule $t_n = 240 \times 0.5^{(n-1)}$.
Calculate the difference in rebound height (cm) between the first bounce and the third bounce.

(A) 90

(B) 120

(C) 180

(D) 210

QUESTION 9

Determine the 4th term for the geometric sequence that begins 1000, −900, …

(A) 729

(B) 700

(C) −700

(D) −729

QUESTION 10

The local time in Osaka (35° N 135° E) is two hours ahead of the local time in Phnom Penh. What is the most likely longitude for Phnom Penh?

(A) 5° N

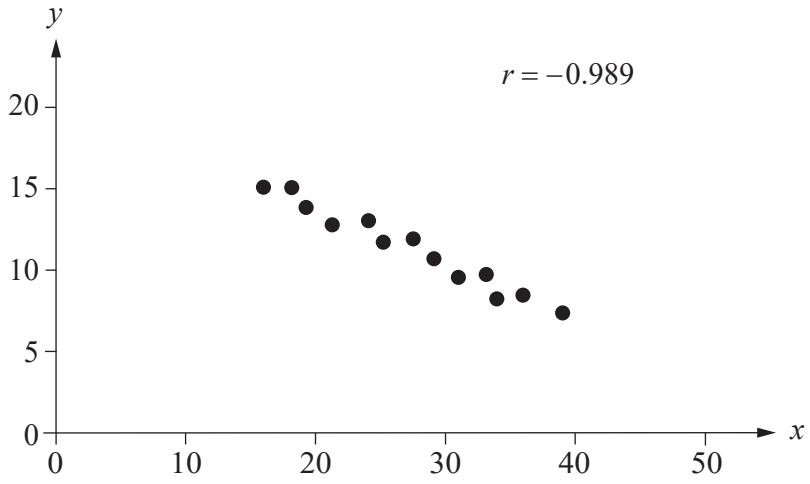
(B) 65° N

(C) 105° E

(D) 165° E

QUESTION 11

The scatterplot shows an association between two numerical variables.



The association is best described as

(A) negative and weak.

(B) negative and linear.

(C) positive and strong.

(D) non-linear and weak.

QUESTION 12

For a dataset with 10 points, the value of $\sum\left(\frac{x_i-\overline{x}}{s_x}\right)\left(\frac{y_i-\overline{y}}{s_y}\right)$ is equal to -4.5.
Calculate the correlation coefficient.

(A) -0.50

(B) -0.45

(C) 0.45

(D) 0.50

QUESTION 13

The table shows time series data for a company's quarterly sales.

Quarter	**1**	**2**	**3**	**4**
Sales ($)	2700	3600	4500	7200
Seasonal index	0.6	0.8	1.0	—

Determine the seasonally adjusted sales ($) for the fourth quarter.

(A) 4500

(B) 6000

(C) 8640

(D) 11 520

QUESTION 14

Which option will **not** change the effective annual rate of interest for a loan?

(A) changing the nominal annual rate of interest

(B) changing the period when interest is charged

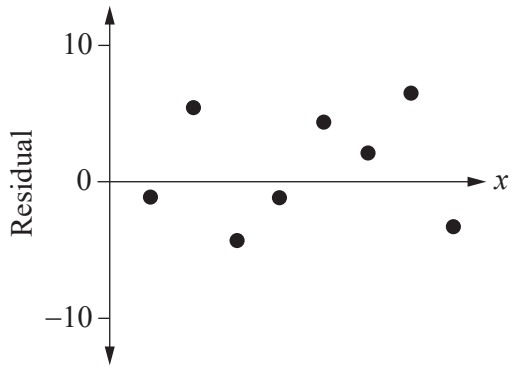
(C) changing the repayment amount for each period

(D) changing the number of compounding periods per year

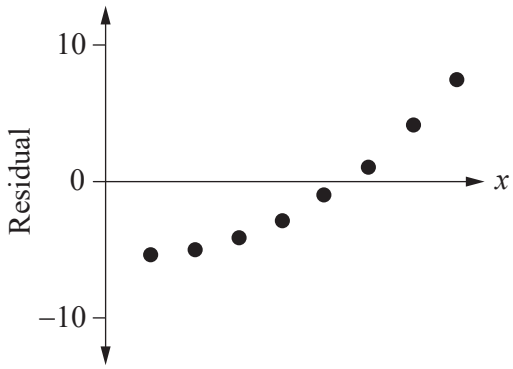
QUESTION 15

Which residual plot best supports fitting a linear model to a dataset?

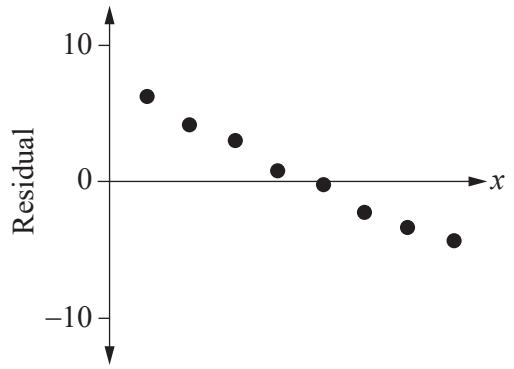
(A)



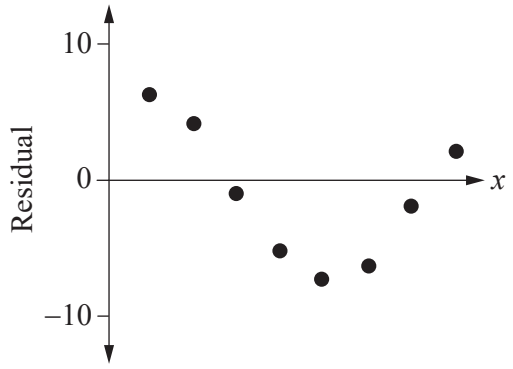
(B)



(C)



(D)



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