



**Test Papers
Hub.**

VCE General Mathematics Practice Paper 1

Units 3 & 4 — Practice Examinations 1 & 2

Exam 1: 40 multiple-choice (A–D) · Exam 2: 15 extended-response questions (60 marks) · technology-active · 100 marks in all

How to use this booklet

- This paper contains BOTH examinations for a complete practice sitting. Examination 1 has 40 multiple-choice questions covering the four areas of study; Examination 2 has 15 extended-response questions (60 marks). An approved CAS calculator and one bound reference are permitted.
- A formula sheet is assumed to be provided, as in the real examination. In Exam 2, show appropriate working where more than one mark is available.
- Worked solutions follow the paper: every question has step-by-step working and a key takeaway.

EXAMINATION 1 (MULTIPLE CHOICE)

40 marks · 1 hour 30 minutes

Attempt Questions 1 – 40. Choose the response that is correct for each question. Each question is worth 1 mark. A CAS calculator and one bound reference are permitted.

1. Monthly sales are 54, 65, 84, 31, 47, 61. Calculate the 3-point moving average centred on month 3, correct to one decimal place.

- A 84.0
- B 74.5
- C 63.0
- D 60.0

2. The seasonal index for a quarter is 0.75. The actual sales figure for that quarter is 360. What is the deseasonalised sales figure, correct to one decimal place?

- A 480.0
- B 1440.0
- C 270.0
- D 359.2

3. A five-number summary is: minimum 9, Q1 32, median 60, Q3 67, maximum 76. What is the interquartile range?

- A 38
- B 28
- C 35
- D 67

4. Each week 70% of customers who used shop A stay with A, and 20% of customers of shop B move to A. This week A has 100 customers and B has 100. How many customers will A have next week?

- A 110
- B 50
- C 90
- D 70

5. The ordered data set 6, 11, 15, 18, 21, 28, 31, 37, 76 has $Q1 = 13$ and $Q3 = 34$. What is the upper fence for outliers, using the $1.5 \times IQR$ rule?

- A $\frac{-37}{2}$
- B $\frac{131}{2}$
- C $\frac{63}{2}$
- D 55

6. The values of x are 1, 2, 3, 4, 5, 6, 7 and the matching values of y are 20, 27, 28, 31, 36, 37, 41. Describe the correlation using the correlation coefficient r .

- A strong negative
- B moderate positive
- C moderate negative
- D strong positive

7. Find the determinant of the matrix $\begin{bmatrix} 4 & 3 \\ 6 & -1 \end{bmatrix}$.

- A 14
- B -22
- C -21
- D 22

8. A least-squares line is fitted to the data (x : 1, 3, 10, 11, 13, 19; y : 13, 9, -15, -18, -23, -40). Use it to predict y when $x = 21$, correct to one decimal place.

- A -47.1
- B -63.5
- C -42.1
- D 16.4

9. Matrix A has order 1×2 and matrix B has order 2×4 . What is the order of the product AB ?

- A 2×2
- B The product does not exist
- C 1×4
- D 4×1

WORKED SOLUTIONS

Answers & worked solutions

Multiple-choice answer key

1	D	2	A	3	C	4	C	5	B	6	D
7	B	8	A	9	C	10	B	11	B	12	A
13	A	14	B	15	B	16	A	17	A	18	D
19	D	20	A	21	A	22	C	23	B	24	D
25	B	26	C	27	A	28	C	29	D	30	D
31	C	32	D	33	C	34	A	35	C	36	D
37	B	38	B	39	D	40	C				

EXAMINATION 1 (MULTIPLE CHOICE)

1. Monthly sales are 54, 65, 84, 31, 47, 61. Calculate the 3-point moving average centred on month 3, correct to one decimal place. [Moving averages]

Correct answer: D — 60.0

- Average months 2, 3 and 4: $\frac{65 + 84 + 31}{3}$.
- = 60.0.
- Why the other options are wrong:
- A (84.0): That is the centre value alone.
- B (74.5): Use three values, not two.
- C (63.0): This is the correct answer (60.0) plus 3: an extra 3 was added at the end of the calculation (an off-by-3 error).

LOS: Data analysis

KEY TAKEAWAY

A 3-point moving average averages the value and its two neighbours; it smooths a time series.

2. The seasonal index for a quarter is 0.75. The actual sales figure for that quarter is 360. What is the deseasonalised sales figure, correct to one decimal place? [Seasonal indices]

Correct answer: A — 480.0

- Deseasonalised value = actual value $\div$ seasonal index.
- $360 \div 0.75 = 480.0$.
- Why the other options are wrong:
- B (1440.0): divide by the index itself, not by 1 minus the index
- C (270.0): deseasonalising divides by the seasonal index; multiplying re-seasonalises
- D (359.2): the seasonal index is a ratio, not an amount to subtract