External assessment 2025

Multiple choice question book

Mathematical Methods

Paper 1 — Technology-free

General instruction

- Work in this book will not be marked.

Queensland Government | QCAA Queensland Curriculum & Assessment Authority

Section 1

Instruction

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

QUESTION 1

Determine the value of $\int_1^2 3x^2\,dx$

(A) 9

(B) 7

(C) 6

(D) 5

QUESTION 2

State the domain of the function $y = \ln(x)$

(A) $0 < x < \infty$

(B) $0 \leq x < \infty$

(C) $-\infty < x < 0$

(D) $-\infty < x < \infty$

QUESTION 3

A council wants to survey residents about a new dog park. Which sampling method would best minimise bias in the survey?

(A) Questioning every third resident entering a supermarket near an existing dog park.

(B) Collecting responses from residents who clicked a survey link on the website.

(C) Asking residents visiting a dog park on a randomly selected day.

(D) Selecting residents using a random number generator.

QUESTION 4

Solve for x in the equation $\ln(x) + \ln(2) = \ln(8)$.

(A) 3

(B) 4

(C) 6

(D) 10

QUESTION 5

A box contains 100 balls, each of which is either green, blue or red.

A teacher asks students to select a ball at random, record its colour and return it to the box. This process is repeated until each student has selected and recorded the colours of a sample of balls. Each student chooses their own sample size.

The sample size, n, and sample proportion of green balls, $\hat{p}$, are shown for four students.

n	$\hat{p}$
10	$\frac{1}{2}$
15	$\frac{1}{3}$
20	$\frac{1}{4}$
80	$\frac{1}{5}$

Which sample proportion is expected to best approximate the proportion of green balls in the box?

(A) $\frac{1}{2}$

(B) $\frac{1}{3}$

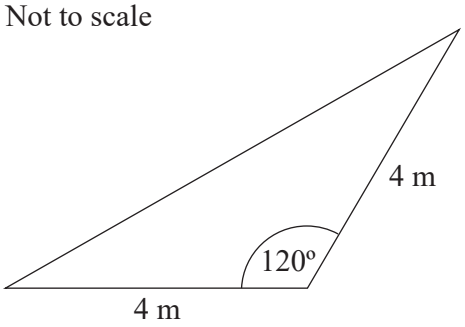
(C) $\frac{1}{4}$

(D) $\frac{1}{5}$

QUESTION 6

Calculate the area (m^2) of the triangle.

Not to scale



(A) 8

(B) 4

(C) $8\sqrt{3}$

(D) $4\sqrt{3}$

QUESTION 7

Determine $\frac{d}{dx}e^{(4x+3)}$

(A) $e^{(4x+3)}$

(B) $\frac{1}{4}e^{(4x+3)}$

(C) $4e^{(4x+3)}$

(D) $(4x+3)e^{(4x+3)}$

QUESTION 8

Determine the area (units^2) between the graph of $y = 4x^3$ and the x-axis from $x = -1$ to $x = 2$

(A) 12

(B) 15

(C) 17

(D) 20

QUESTION 9

Determine $\int \frac{1}{(7x-4)} dx$, where $x > \frac{4}{7}$

(A) $\frac{1}{7}\ln(7x-4)+c$

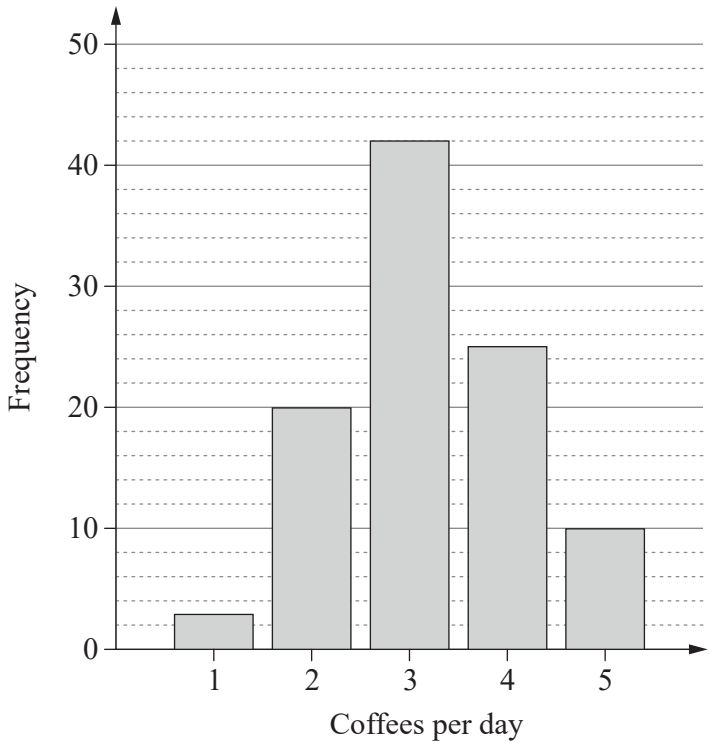
(B) $\frac{4}{7}\ln(7x-4)+c$

(C) $7\ln(7x-4)+c$

(D) $\ln(7x-4)+c$

QUESTION 10

Researchers asked 100 customers at a cafe about their daily coffee consumption. The results are shown.



Determine the probability that a randomly selected customer from this group drinks more than three coffees a day.

(A) $\frac{77}{100}$

(B) $\frac{21}{50}$

(C) $\frac{7}{20}$

(D) $\frac{1}{4}$