

2. GAC010 Mathematics II: Probability, Statistics and Finance

Starter Quiz ·

GAC Mathematics

Name: _____ Score: _____

1. An investment grows by 4% each year. Which family is it?
 - ☐ Both
 - ☐ Arithmetic
 - ☐ Geometric
 - ☐ Neither
2. Which figure should a personal budget be built on?
 - ☐ Gross pay
 - ☐ Net pay
 - ☐ The advertised salary
 - ☐ Either
3. Under a no-interim-payment model, compare 10000 at 9% compounded annually for 3 years with a nominal 8.7% annual rate compounded monthly for 3 years. Which final amount is higher?
 - ☐ It cannot be compared
 - ☐ They cost the same
 - ☐ The 9% annual-compounding amount
 - ☐ The nominal 8.7% annual rate, compounded monthly
4. A question asks for $P(\text{at least one})$. What is usually the fastest route?
 - ☐ Add the individual probabilities
 - ☐ Find $P(\text{none})$ and subtract from 1
 - ☐ List every favourable case
 - ☐ Multiply the individual probabilities
5. To study canteen preferences across a school, which listed selection plan best covers the full student population?
 - ☐ Your own class
 - ☐ Students who complain
 - ☐ The queue at 12:30
 - ☐ Every tenth name on the roll

6. Nine people earn 30000 and one earns 150000. What is the median?

7. Treat 58, 60, 62 as the complete population. Find its population standard deviation to 2 decimal places.

8. Under a normal model, approximately what percentage lies within two standard deviations of the mean, using the rounded empirical rule?

9. An arithmetic sequence starts at 5 with common difference 3. What is the 10th term?

10. 240 rises by 15%, then the new price falls by 15%. What is the final value, to 2 decimal places?

2. GAC010 Mathematics II: Probability, Statistics and Finance

Answers ·

GAC Mathematics

1. Geometric

A percentage is a factor, not an amount, so each year multiplies by 1.04.

2. Net pay

Net is what actually arrives. A budget built on gross is short by the deductions before it starts.

3. The nominal 8.7% annual rate, compounded monthly

Annual compounding gives 12950.29; monthly compounding gives about 12970.06. The second is higher by about 19.77 under the stated no-payment and no-fee model.

4. Find P(none) and subtract from 1

There is usually one way to get none and many ways to get at least one.

5. Every tenth name on the roll

Selection from the full roll can include nonusers. A systematic every-tenth-name plan needs a random start and a check for patterns; nonresponse remains a limitation, so it does not guarantee perfect representativeness.

6. 30000

Ordered, the middle values are both 30000. The single large value does not move it.

7. 1.63

Use the population divisor 3: $\sqrt[3]{((4 + 0 + 4)/3)} = \sqrt[3]{(8/3)} \approx 1.63$, in the original units.

8. 95

The rounded empirical rule gives about 95%. A cumulative normal table gives a more precise area, so do not treat this rounded value as exact.

9. 32

$u_{10} = 5 + 9 \times 3 = 32$. Nine steps from the first term, not ten.

10. 234.6

$240 \times 1.15 \times 0.85 = 234.60$. The two percentages act on different amounts.