Alexander College

Study Guide for BBA Math Admission Assessment

Overview

The BBA Math Admission Assessment is an admissions assessment designed to determine whether applicants to the Bachelor of Business Administration (BBA) program demonstrate the foundational numeracy skills necessary to support successful study in the program. The assessment is intended to evaluate basic mathematical readiness rather than advanced mathematics knowledge.

The BBA curriculum requires students to engage with quantitative information in areas such as accounting, economics, finance, statistics, business analytics, and other courses involving numerical and analytical reasoning. Applicants are therefore expected to demonstrate a minimum level of competency in fundamental arithmetic, fractions and decimals, basic algebra, percentages, ratios, and proportions before commencing the program.

Assessment Structure and Content

The assessment consists of 30 multiple-choice questions and has a 60-minute time limit. Each question has four possible answers. Calculators are not permitted; however, applicants may use scratch paper to complete calculations. **The minimum passing score is 18 correct answers out of 30, equivalent to 60%.**

The assessment measures five core numeracy domains:

1. **Arithmetic**, including operations with positive and negative integers, order of operations, brackets, and simple exponents;
2. **Fractions and decimals**, including simplifying and performing basic operations with fractions and recognizing equivalent fraction, decimal, and percentage representations;
3. **Basic algebra**, including substitution, combining like terms, solving simple linear equations, working with variables on both sides of an equation, and rearranging simple equations;
4. **Percentages**, including conversions between percentages, decimals, and fractions, percentage calculations, percentage increases and decreases, and determining an unknown whole or percentage; and
5. **Ratios and proportions**, including simplifying and identifying equivalent ratios, expressing ratios as fractions, solving simple proportions, and applying proportional reasoning.

SECTION 1: REVIEW

1. Arithmetic and Order of Operations

You should be able to:

- add and subtract positive and negative integers;
- multiply and divide positive and negative integers;
- use the correct order of operations;
- work with brackets;
- work with simple exponents.

Review

Remember the order of operations:

1. Brackets
2. Exponents
3. Multiplication and division
4. Addition and subtraction

Multiplication and division are completed from left to right.
Addition and subtraction are also completed from left to right.

Example 1

Evaluate:

$$-5 + 12 - 4$$

$$7 - 4 = 3$$

Answer: 3

Example 2

Evaluate:

$$16 - 2 \times 5$$

Multiply first:

$$2 \times 5 = 10$$

Then subtract:

$$16 - 10 = 6$$

Answer: 6

Example 3

Evaluate:

$$3^2 + 2(5 - 2)$$

Brackets:

$$5 - 2 = 3$$

Exponent:

$$3^2 = 9$$

Multiplication:

$$2(3) = 6$$

Addition:

$$9 + 6 = 15$$

Answer: 15

2. Fractions and Decimals

You should be able to:

- reduce fractions to lowest terms;
- add fractions;
- subtract fractions;
- multiply fractions;
- divide fractions;
- convert between common fractions and decimals;
- recognize equivalent fractions, decimals, and percentages.

Reducing Fractions

Divide the numerator and denominator by the same number.

Example

$$\frac{16}{20}$$

Divide both by 4:

$$\frac{16 \div 4}{20 \div 4} = \frac{4}{5}$$

Answer: $\frac{4}{5}$

Adding and Subtracting Fractions

Fractions must have a common denominator before they can be added or subtracted.

Example

$$\frac{1}{2}+\frac{1}{4}$$

Convert $\frac{1}{2}$ to fourths:

$$\frac{1}{2}=\frac{2}{4}$$

Then:

$$\frac{2}{4}+\frac{1}{4}=\frac{3}{4}$$

Answer: $\frac{3}{4}$

Example

$$\frac{7}{8}-\frac{1}{4}$$

Convert $\frac{1}{4}$ to eighths:

$$\frac{1}{4}=\frac{2}{8}$$

Then:

$$\frac{7}{8}-\frac{2}{8}=\frac{5}{8}$$

Answer: $\frac{5}{8}$

Multiplying Fractions

Multiply the numerators and multiply the denominators.

Example

$$\frac{2}{3}\times\frac{3}{4}$$

$$\frac{2\times 3}{3\times 4}=\frac{6}{12}=\frac{1}{2}$$

Answer: $\frac{1}{2}$

Dividing Fractions

To divide by a fraction, multiply by its reciprocal.

Example

$$\frac{3}{4} \div \frac{1}{2}$$

Change division to multiplication and invert the second fraction:

$$\frac{3}{4} \times \frac{2}{1}$$
$$\frac{6}{4} = \frac{3}{2}$$

Answer: $\frac{3}{2}$

Common Fraction and Decimal Equivalents

You should recognize common values such as:

Fraction	Decimal	Percent
$\frac{1}{2}$	0.50	50%
$\frac{1}{4}$	0.25	25%
$\frac{3}{4}$	0.75	75%
$\frac{1}{5}$	0.20	20%
$\frac{2}{5}$	0.40	40%

3. Basic Algebra

You should be able to:

- substitute a number for a variable;
- combine like terms;
- solve simple linear equations;
- solve equations with the variable on both sides;
- find one variable when another variable is known;
- rearrange a simple equation to isolate a variable.

Substitution

Example

If $x = 4$, evaluate:

$$3x + 2$$

Substitute 4 for x:

$$3(4) + 2$$
$$12 + 2 = 14$$

Answer: 14

Combining Like Terms
Example
Simplify:

$$4x + 3x - 2$$

Combine the x-terms:

$$4x + 3x = 7x$$

So:

$$7x - 2$$

Answer: $7x - 2$

Solving a One-Step Equation
Example

$$5x = 30$$

Divide both sides by 5:

$$x = 6$$

Answer: $x = 6$

Solving a Two-Step Equation
Example

$$4x + 3 = 19$$

Subtract 3 from both sides:

$$4x = 16$$

Divide by 4:

$$x = 4$$

Answer: $x = 4$

Variable on Both Sides
Example

$$4x + 2 = 2x + 10$$

Subtract $2x$ from both sides:

$$2x + 2 = 10$$

Subtract 2:

$$2x = 8$$

Divide by 2:

$$x = 4$$

Answer: $x = 4$

Using a Relationship Between Two Variables

Example

Given:

$$y = 3x + 2$$

If $y = 14$, find x.

Substitute 14 for y:

$$14 = 3x + 2$$

Subtract 2:

$$12 = 3x$$

Divide by 3:

$$x = 4$$

Answer: $x = 4$

Rearranging an Equation

Example

Rearrange:

$$y = 4x + 8$$

to solve for x.

Subtract 8:

$$y - 8 = 4x$$

Divide by 4:

$$x = \frac{y - 8}{4}$$

4. Percent

You should be able to:

- convert a percent to a decimal;
- convert a decimal to a percent;
- convert a common fraction to a percent;
- find a percentage of a number;
- determine what percent one number is of another;
- find the whole when a percentage and part are known;
- increase or decrease a value by a simple percentage.

Percent to Decimal

Divide by 100.

Example

$$40\% = 0.40$$

Decimal to Percent
Multiply by 100.

Example

$$0.35 = 35\%$$

Fraction to Percent
Example

$$\frac{1}{2} = 0.5 = 50\%$$

Finding a Percentage of a Number
Example
What is 25% of 60?

Since:

$$25\% = \frac{1}{4}$$

find one quarter of 60:

$$60 \div 4 = 15$$

Answer: 15

Determining What Percent One Number Is of Another
Example
8 is what percent of 40?

Write:

$$\frac{8}{40}$$

Simplify:

$$\frac{1}{5}$$

$$\frac{1}{5} = 20\%$$

Answer: 20%

Finding the Whole

Example

12 is 20% of what number?

Since:

$$20\% = \frac{1}{5}$$

if 12 is one fifth of the whole:

$$12 \times 5 = 60$$

Answer: 60

Increasing a Value by a Percentage

Example

Increase 60 by 10%.

First find 10% of 60:

$$6$$

Then add:

$$60 + 6 = 66$$

Answer: 66

Decreasing a Value by a Percentage

Example

Decrease 80 by 25%.

Since 25% is one quarter:

$$\frac{1}{4} \times 80 = 20$$

Then subtract:

$$80 - 20 = 60$$

Answer: 60

5. Ratios and Proportions

You should be able to:

- simplify ratios;
- recognize equivalent ratios;
- express a ratio as a fraction;
- solve a simple proportion;
- use proportional reasoning with simple values.

Simplifying Ratios

Example

Simplify:

$$15:25$$

Divide both numbers by 5:

$$3:5$$

Answer: $3:5$

Equivalent Ratios

Example

Which ratio is equivalent to:

$$2:3$$

Multiplying both numbers by 4 gives:

$$8:12$$

So:

$$2:3 = 8:12$$

Ratio as a Fraction

The ratio:

$$3:7$$

can be written:

$$\frac{3}{7}$$

Solving a Proportion

Example

Solve for x:

$$\frac{x}{16} = \frac{3}{4}$$

Multiply:

$$x = 16 \times \frac{3}{4}$$

$$x = 12$$

Answer: $x = 12$

Simple Proportional Reasoning

If:

$$2 \rightarrow 8$$

then each group has a value of:

$$8 \div 2 = 4$$

Therefore:

$$5 \rightarrow 5 \times 4 = 20$$

SECTION 2: PRACTICE QUESTIONS

Try these questions without using a calculator.

1. Evaluate:

$$-7 + 15 - 3$$

A. 5
B. -5
C. 11
D. 19

2. Evaluate:

$$20 - 4 \times 3$$

A. 48
B. 8
C. 16
D. 12

3. Evaluate:

$$2^2 + 2(6 - 3)$$

A. 16
B. 10
C. 12
D. 8

4. Reduce:

$$\frac{15}{20}$$

A. $\frac{2}{3}$
B. $\frac{4}{5}$
C. $\frac{3}{4}$
D. $\frac{3}{5}$

5. Calculate:

$$\frac{1}{2} + \frac{1}{8}$$

A. $\frac{5}{8}$
B. $\frac{2}{8}$
C. $\frac{3}{4}$
D. $\frac{5}{9}$

6. Calculate:

$$\frac{3}{4} - \frac{1}{8}$$

A. $\frac{2}{8}$
B. $\frac{5}{8}$
C. $\frac{1}{2}$
D. $\frac{7}{8}$

7. Calculate:

$$\frac{1}{2} \times \frac{3}{4}$$

A. $\frac{3}{8}$
B. $\frac{3}{7}$
C. $\frac{4}{7}$
D. $\frac{3}{4}$

8. Which decimal is equal to:

$$\frac{1}{5}$$

A. 0.50
B. 0.15
C. 0.20
D. 0.25

9. If $x = 5$, evaluate:

$$2x + 3$$

A. 10
B. 13
C. 15
D. 8

10. Simplify:

$$2x + 5x - 3$$

A. $7x - 3$
B. $10x - 3$
C. $7x$
D. $3x - 3$

11. Solve:

$$6x = 24$$

A. $x = 18$
B. $x = 30$
C. $x = 4$
D. $x = 6$

12. Solve:

$$2x + 5 = 15$$

A. $x = 10$
B. $x = 5$
C. $x = 7$
D. $x = 20$

13. Solve:

$$4x + 1 = 2x + 9$$

A. $x = 5$
B. $x = 3$
C. $x = 4$
D. $x = 8$

14. Given:

$$y = 2x + 3$$

If $y = 11$, find x.
A. $x = 7$
B. $x = 5$
C. $x = 4$
D. $x = 8$

15. Convert 40% to a decimal.
A. 4.0
B. 0.04
C. 40
D. 0.40

16. Convert 0.25 to a percent.
A. 2.5%
B. 25%
C. 0.25%
D. 250%

17. What is 25% of 40?

A. 5

B. 20

C. 10

D. 15

18. 6 is what percent of 30?

A. 20%

B. 30%

C. 10%

D. 5%

19. Simplify:

$$18:24$$

A. $6:8$

B. $3:4$

C. $4:3$

D. $9:12$

20. Solve:

$$\frac{x}{12}=\frac{2}{3}$$

A. $x=6$

B. $x=18$

C. $x=8$

D. $x=4$

Practice Answer Key

Question	Answer
1	A
2	B
3	B
4	C
5	A
6	B
7	A
8	C
9	B
10	A
11	C
12	B
13	C
14	C
15	D
16	B
17	C
18	A
19	B
20	C

SECTION 3: READINESS CHECKLIST

Before taking the assessment, you should be able to answer **Yes** to most of the following:

- ☐ I can work with positive and negative numbers.
- ☐ I can use the correct order of operations.
- ☐ I can simplify fractions.
- ☐ I can add and subtract simple fractions.
- ☐ I can multiply and divide simple fractions.
- ☐ I recognize common fraction and decimal equivalents.
- ☐ I can substitute a value into an algebraic expression.
- ☐ I can combine like terms.
- ☐ I can solve a simple linear equation.
- ☐ I can solve an equation with the variable on both sides.
- ☐ I can rearrange a simple equation to solve for a variable.
- ☐ I can convert between fractions, decimals, and percentages.
- ☐ I can find a simple percentage of a number without a calculator.
- ☐ I can determine what percent one number is of another.
- ☐ I can increase or decrease a number by a simple percentage.
- ☐ I can simplify ratios.
- ☐ I can recognize equivalent ratios.
- ☐ I can solve a simple proportion.

If several of these skills are difficult, review them before attempting the BBA Math Admission Assessment. The exact questions on the assessment will differ from the examples and practice questions in this guide.