

## SAMPLE QUESTIONS: ADVANCED MATH SKILLS ASSESSMENT (AMSA)

The Algonquin College Advanced Math Skills Assessment (AMSA) is comprised of 1 Accuplacer placement tests:

- The Accuplacer College-Level Math placement test.

In some cases, applicants may also be administered the following additional Accuplacer tests to verify their math problem solving skills:

- The Accuplacer Arithmetic placement test
- The Accuplacer Elementary Algebra placement test.

Please Note: Examinees are not permitted to use handheld calculators to complete any of the Accuplacer placement tests. A pop-up calculator is made available by Accuplacer to aid in the completion of some questions.

## ACCUPLACER COLLEGE-LEVEL MATHEMATICS TEST

The College-Level Mathematics test measures your ability to solve problems that involve college-level mathematics concepts. There are six content areas measured on this test: (a) Algebraic Operations, (b) Solutions of Equations and Inequalities, (c) Coordinate Geometry, (d) Applications and other Algebra Topics, (e) Functions, and (f) Trigonometry. The Algebraic Operations content area includes the simplification of rational algebraic expressions, factoring and expanding polynomials, and manipulating roots and exponents. The Solutions of Equations and Inequalities content area includes the solution of linear and quadratic equations and inequalities, systems of equations, and other algebraic equations. The Coordinate Geometry content area presents questions involving plane geometry, the coordinate plane, straight lines, conics, sets of points in the plane, and graphs of algebraic functions. The Functions content area includes questions involving polynomial, algebraic, exponential, and logarithmic functions. The Trigonometry content area includes trigonometric functions. The Applications and other Algebra Topics content area contains complex numbers, series and sequences, determinants, permutations and combinations, factorials, and word problems. A total of 20 questions are administered on this test.

## SAMPLE QUESTIONS

1.  $2^{5/2} - 2^{3/2}$ 
  - A.  $2^{1/2}$
  - B. 2
  - C.  $2^{3/2}$
  - D.  $2^{5/3}$
  - E.  $2^2$
2. If  $a \neq b$  and  $1/x + 1/a = 1/b$ , then  $x =$ 
  - A.  $1/b - 1a$
  - B.  $b - a$
  - C.  $1/ab$
  - D.  $a - b / ab$

- E.  $ab/a - b$
3. If  $3x^2 - 2x + 7 = 0$ , then  $(x - 1/3)^2 =$
- A.  $20/9$
  - B.  $7/9$
  - C.  $-7/9$
  - D.  $-8/9$
  - E.  $-20/9$
4. The graph of which of the following equations is a straight line parallel to the graph of  $y = 2x$  ?
- A.  $4x - y = 4$
  - B.  $2x - 2y = 2$
  - C.  $2x - y = 4$
  - D.  $2x + y = 2$
  - E.  $x - 2y = 4$
5. An equation of the line that contains the origin and the point  $(1, 2)$  is
- A.  $y = 2x$
  - B.  $2y = x$
  - C.  $y = x - 1$
  - D.  $y = 2x + 1$
  - E.  $y/2 = x - 1$
6. An apartment building contains 12 units consisting of one- and two-bedroom apartments that rent for \$360 and \$450 per month, respectively. When all units are rented, the total monthly rental is \$4,950. What is the number of two-bedroom apartments?
- A. 3
  - B. 4
  - C. 5
  - D. 6
  - E. 7
7. If  $\log_{10} x = 3$ , then  $x =$
- A.  $3^{10}$
  - B. 1,000
  - C. 30
  - D.  $10/3$
  - E.  $3/10$
8. If  $f(x) = 2x + 1$  and  $g(x) = x - 1/2$ , then  $f(g(x)) =$
- A.  $x$
  - B.  $x - 1/4x + 2$
  - C.  $4x + 2/x - 1$
  - D.  $5x + 1/2$
  - E.  $(2x + 1)(x - 1)/2$
9. If  $\theta$  is an acute angle and  $\sin \theta = 1/2$ , then  $\cos \theta =$
- A. -1
  - B. 0
  - C.  $1/2$

- D.  $\sqrt{3/2}$
- E. 2

COLLEGE-LEVEL MATH ANSWER KEY

- 1. C
- 2. E
- 3. E
- 4. C
- 5. A
- 6. E
- 7. B
- 8. A
- 9. D

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### ACCUPLACER ARITHMETIC TEST

This test measures your ability to perform basic arithmetic operations and to solve problems that involve fundamental arithmetic concepts. There are 17 questions on the Arithmetic tests, divided into three types.

1. Operations with whole numbers and fractions: Topics included in this category are addition, subtraction, multiplication, division, recognizing equivalent fractions and mixed numbers, and estimating.
2. Operations with decimals and percents: Topics include addition, subtraction, multiplication, and division with decimals. Percent problems, recognition of decimals, fraction and percent equivalencies, and problems involving estimation are also given.
3. Applications and problem solving: Topics include rate, percent, and measurement problems; simple geometry problems; and distribution of a quantity into its fractional parts.

### ARITHMETIC SAMPLE QUESTIONS

*Solve the following problems and select your answer from the choices given.*

1.  $2.75 + .003 + .158 =$   
A. 4.36  
B. 2.911  
C. 0.436  
D. 2.938
2.  $7.86 \times 4.6 =$   
A. 36.156  
B. 36.216  
C. 351.56  
D. 361.56
3.  $7/20 =$   
A. 0.035  
B. 0.858  
C. 0.35  
D. 3.5
4. Which of the following is the least?  
A. 0.105  
B. 0.501  
C. 0.015  
D. 0.15
5. All of the following are ways to write 25 percent of N EXCEPT  
A. 0.25 N  
B.  $25N/100$   
C.  $\frac{1}{4} N$   
D. 25 N
6. Which of the following is closest to  $27.8 \times 9.6$ ?

- A. 280
  - B. 300
  - C. 2,800
  - D. 3,000
7. A soccer team played 160 games and won 65 percent of them. How many games did it win?
- A. 94
  - B. 104
  - C. 114
  - D. 124
8. Three people who work full-time are to work together on a project, but their total time on the project is to be equivalent to that of only one person working full-time. If one of the people is budgeted for one-half of his time to the project and a second person for one-third of her time, what part of the third worker's time should be budgeted to this project?
- A. 13.3%
  - B. 35.1%
  - C. 16.7%
  - D. 18.7%
9. 32 is 40 percent of what number?
- A. 12.8
  - B. 128
  - C. 80
  - D. 800
10.  $313 - 225 =$
- A. 112
  - B. 115
  - C. 88
  - D. 1115

ARTITHMETIC ANSWER KEY

- 1. B
- 2. A
- 3. C
- 4. C
- 5. D
- 6. A
- 7. B
- 8. C
- 9. C
- 10. C

## ACCUPLACER ELEMENTARY ALGEBRA TEST

A total of 12 questions of three types are administered in this test.

1. The first type involves operations with integers and rational numbers, and includes computation with integers and negative rationals, the use of absolute values, and ordering.
2. The second type involves operations with algebraic expressions using evaluation of simple formulas and expressions, and adding and subtracting monomials and polynomials. Questions involve multiplying and dividing monomials and polynomials, the evaluation of positive rational roots and exponents, simplifying algebraic fractions, and factoring.
3. The third type of question involves translating written phrases into algebraic expressions and solving equations, inequalities, word problems, linear equations and inequalities, quadratic equations (by factoring), and verbal problems presented in an algebraic context.

## ELEMENTARY ALGEBRA SAMPLE QUESTIONS

*Solve the following problems and select your answer from the choices given. You may use the paper you have been given for scratch paper.*

1. If A represents the number of apples purchased at 15 cents each, and B represents the number of bananas purchased at 10 cents each, which of the following represents the total value of the purchases in cents?
  - A.  $A + B$
  - B.  $25(A + B)$
  - C.  $10A + 15B$
  - D.  $15A + 10B$
2.  $\sqrt{2} \times \sqrt{15} = ?$ 
  - A. 17
  - B. 30
  - C.  $\sqrt{30}$
  - D.  $\sqrt{17}$
3. What is the value of the expression  $2x^2 + 3xy - 4y^2$  when  $x = 2$  and  $y = -4$ ?
  - A. -80
  - B. 80
  - C. -32
  - D. 32
4.  $(3x - 2y)^2 =$ 
  - A.  $9x^2 - 4y^2$
  - B.  $9x^2 + 4y^2$
  - C.  $9x^2 + 4y^2 - 6xy$
  - D.  $9x^2 + 4y^2 - 12xy$
5. If  $2x - 3(x + 4) = -5$ , then  $x =$ 
  - A. 7
  - B. -7

- C. 17
- D. -17

6.  $-3(5 - 6) - 4(2 - 3) =$

- A. -7
- B. 7
- C. -1
- D. 1

7. Which of the following expressions is equivalent to  $20 - 4/5 x \geq 16$ ?

- A.  $x \leq 5$
- B.  $x \geq 5$
- C.  $x \geq 32\frac{1}{2}$
- D.  $x \leq 32\frac{1}{2}$

#### ELEMENTARY ALGEBRA ANSWER KEY

- 1. D
- 2. C
- 3. A
- 4. D
- 5. B
- 6. B
- 7. A