

CAAP



Collegiate Assessment of Academic Proficiency

Mathematics

Sample Test Questions Booklet

©2009 by ACT, Inc. All rights reserved.

NOTE: This booklet is covered by Federal copyright laws that prohibit the reproduction of the test questions without the express, written permission of ACT, Inc.

ACT[®]

Note to Users

Welcome to the CAAP Sample Mathematics Test!

You are about to look at some sample test questions as you prepare to take the actual CAAP test. The examples in this booklet are similar to the kinds of test questions you will see when you take the actual CAAP test. Since this is a practice exercise, you won't receive a real test score. The aim of this booklet is to give a sense of the kinds of questions examinees will face and their levels of difficulty. An answer key is provided at the end of the booklet.

We hope you benefit from these sample questions, and we wish you success as you pursue your education and career goals!

CAAP Mathematics Test

The CAAP Mathematics Test is a 35-item, 40-minute test that measures students' mathematical reasoning ability. The test assesses students' proficiency in solving the types of mathematics problems typically encountered in many college-level mathematics courses and upper-division courses in mathematics and other disciplines. The CAAP Mathematics Test emphasizes quantitative reasoning rather than the memorization of formulas. The content areas in the test are described below:

- **Prealgebra.** Items in this category involve operations with whole numbers, decimals, and fractions; order concepts; percentages; averages; exponents; scientific notation; and similar concepts.
- **Elementary Algebra.** Items in this category involve basic operations with polynomials, setting up equations, and substituting values into algebraic expressions. They may also require the solution of linear equations in one variable and other related topics.
- **Intermediate Algebra.** Items in this category assess students' understanding of exponents, rational expressions, and systems of linear equations. Other concepts such as the quadratic formula and absolute value inequalities may also be tested.
- **Coordinate Geometry.** Knowledge and skills assessed in this category may include graphing in the standard coordinate plane or the real number line, graphing conics, linear equations in two variables, graphing systems of equations, and similar skills.
- **College Algebra.** Items in this category are based on advanced algebra concepts, including rational exponents, exponential and logarithmic functions, complex numbers, matrices, inverses of functions, and domains and ranges.
- **Trigonometry.** Items in this category include concepts such as right triangle trigonometry, graphs of trigonometric functions, basic trigonometric identities, and trigonometric equations and inequalities.

Samples of test questions in the CAAP Mathematics Test are provided on the following pages.

MATHEMATICS TEST

40 Minutes—35 Questions

DIRECTIONS: Solve each problem, then choose the correct answer by circling the corresponding answer option.

Do not linger over problems that take too much time. Solve as many as you can; then return to the others in the time you have left for this test.

You may use a calculator for any of the problems on this test. However, all problems can be solved without using

a calculator, and some of the problems may in fact be simpler if done without a calculator.

Note: Unless otherwise stated, all of the following should be assumed.

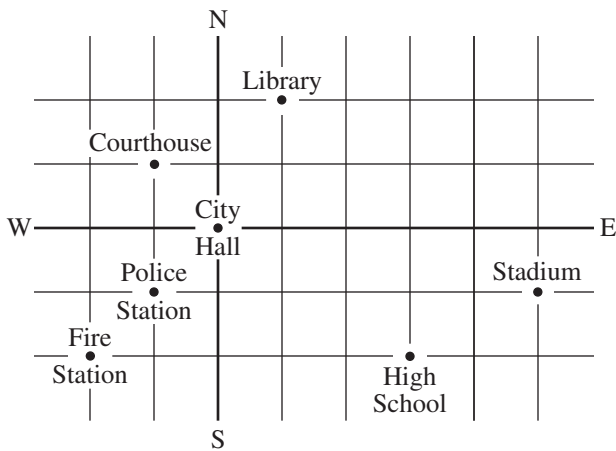
1. Illustrative figures are NOT necessarily drawn to scale.
 2. Geometric figures lie in a plane.
 3. The word *line* indicates a straight line.
 4. The word *average* indicates arithmetic mean.
-

1. $4^3 + (5 \times 3)^2 = ?$

- A. 42
- B. 128
- C. 289
- D. 337
- E. 481

DO YOUR FIGURING HERE.

2. City Hall, the hub of the city, is placed at the origin of a standard (x,y) coordinate grid as shown below. Grid lines 1 unit apart are used to locate other important buildings.



Which landmark building is located by the coordinates $(-1,1)$?

- F. Stadium
 - G. Courthouse
 - H. Fire station
 - J. Library
 - K. Police station
3. At 1:00 p.m. a car leaves St. Louis for Chicago, traveling at a constant speed of 65 miles per hour. At 2:00 p.m. a truck leaves Chicago for St. Louis, traveling at a constant speed of 55 miles per hour. If it is a 305-mile drive between St. Louis and Chicago, at what time will the car and truck pass each other?
- A. 2:30 p.m.
 - B. 3:00 p.m.
 - C. 4:00 p.m.
 - D. 4:30 p.m.
 - E. 5:00 p.m.

DO YOUR FIGURING HERE.

4. For all $x \neq 0$ and $y \neq 0$, $\frac{(2x^{-3}y^4)^3}{(4xy)^2} = ?$

F. $\frac{y^{10}}{2}$

G. $\frac{2y^{10}}{x^{10}}$

H. $\frac{y^{10}}{2x^{11}}$

J. $\frac{y^3}{2x^2}$

K. $\frac{y^9}{4x^4}$

5. If 0.00005893 is expressed in the form 5.893×10^n , what is the value of n ?

A. -5

B. -4

C. 4

D. 5

E. 8

6. What is the value of $3 + 6 \div 2 - 4 \times 3$?

F. -13.5

G. -6.0

H. 0.0

J. 1.5

K. 2.0

7. What is the sum of $(x + 2y)^2$ and $(x - y)^2$?

A. $2x^2 + 3y^2$

B. $2x^2 + 5y^2$

C. $2x^2 + 2xy + 5y^2$

D. $4x^2 + y^2$

E. $4x^2 + 4xy + y^2$