MATH FOR LIBERAL ARTS

EXAM INFORMATION

This exam covers topics such as real number systems; sets and logic; metric system, conversions and geometry; algebra, graphs and functions (as applied to real life applications); linear systems and inequalities; exponents and logarithms including financial literacy and counting, probability theory and statistics

The exam contains 80 questions to be answered in 2 hours. The use of a non-programmable calculator is permitted in this exam.

Form Codes: SS300. ST300. SY300. SZ300

CREDIT RECOMMENDATIONS

The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the DSST test development process and content of this exam. It has made the following recommendations:

Area or Course Equivalent: Math for Liberal Arts
Level: Lower-level baccalaureate
Amount of Credit: 3 Semester Hours
Minimum Score: 400
Source: www.acenet.edu

EXAM CONTENT OUTLINE

The following is an outline of the content areas covered in the examination. The approximate percentage of the examination devoted to each content area is also noted.

I. Real Number Systems – 8%
   a. Real numbers: Natural Numbers, Integers, Rational Numbers, Irrational Numbers, The real number line.
   b. Fractions and reducing fractions; conversion between decimal numbers and fractions; between operations with fractions percentages.
   c. Operations with real numbers and their properties.
   d. Prime and composite numbers; divisibility rules; prime factors of composite numbers
   e. Rules of exponents including rational and negative exponents.
   f. Scientific notation.

II. Sets and Logic – 13%
   a. Introduction to sets (set-builder notation, roster form).
   b. Subsets, Set Operations, Venn Diagrams.
   c. Simple, compound and quantified statements (conjunction and disjunction; conditional and biconditional statements).
   d. Truth Tables (negations, conjunction, disjunction, conditional and biconditional).

III. Metric system, conversions and geometry – 10%
   a. Introduction to metrics and U.S. customary unit systems.
   b. Conversions between metric and U.S. customary unit systems, including Dimensional Analysis.
   c. Properties of lines, angles and pairs of angles.
   d. Perimeter and area of 2D geometric objects.
   e. Surface area and volume of 3D solid objects.

IV. Algebra, graphs and functions – 9%
   a. Order of operations, simplifying expressions; evaluation of formulas.
   b. Problems involving linear equations with one variable and proportions.
   c. Linear functions and their graphs.
   d. Quadratic equations and functions.

V. Linear Systems and Inequalities – 6%
   a. Graph and solve Linear systems of equations in two variables including applications.
   b. Graph and solve Linear inequalities in one or two variables.
   c. Graph and solve systems of linear inequalities in two variables.

VI. Exponents and Logarithms including Financial Literacy – 18%
   a. Properties of Logarithms
   b. Logarithmic and Exponential Functions
   c. Simple Interest
   d. Compound Interest
   e. Installment Buying including Student Loans and Home Buying
   f. Investing in Stocks and Bonds

VII. Counting, Probability Theory and Statistics – 16%
   a. Fundamentals of Probability including the Counting Principle
   b. Permutations and Combinations
   c. Events Involving Not and Or
   d. Odds and Conditional Probability
   e. Mean, Median and Mode
   f. Range, Variance and Standard Deviation
   g. Graphical representation (including Bar graph, pie chart, histogram, line graph, box plot).

REFERENCES
Below is a list of reference publications that were either used as a reference to create the exam, or were used as textbooks in college courses of the same or similar title at the time the test was developed. You may reference either the current edition of these titles or textbooks currently used at a local college or university for the same class title. It is recommended that you reference more than one textbook on the topics outlined in this fact sheet.

You should begin by checking textbook content against the content outline provided before selecting textbooks that cover the test content from which to study.

Sources for study material are suggested but not limited to the following:

1. Sobecki, David (2019): Math in Our World: 4th Edition: McGraw-Hill Education.
2. Blitzer, Robert F (2019) Thinking Mathematically; 7th Edition; Pearson.
3. Angel, Allen R. Abbott, Christine D, Runde, Dennis C. (2017): A Survey of Mathematics with Applications: 10th Edition: Pearson

SAMPLE QUESTIONS

All test questions are in a multiple-choice format, with one correct answer and three incorrect options. The following are samples of the types of questions that may appear on the exam.

1. Heidi and Oliver are planning to buy a bedroom furniture set that costs $4,100 plus 6% taxes. They would like to apply for a 0% APR store credit card on purchases for 10 months. How much money do they need to pay in equal installments monthly for the next 10 months such that they will be able to pay off the bedroom furniture set before the 0% APR offer expires?

(A) $43.46 per month.
(B) $385.40 per month.
(C) $410.00 per month.
(D) $434.60 per month.

2. An electronics store sold 1,500 computers and smartphones in a month. Out of the total number of consumers who purchased these items, 2% bought a computer and a smartphone, while the others bought only a computer or a smartphone. If 1,206 consumers bought smartphones, how many people bought computers?

(A) 324 consumers.
(B) 2.16% of all consumers.
(C) 19.6% of all consumers.
(D) 294 consumers.

3. If the figure below is constructed out of two semicircles and a square, what is the area of the whole figure? (Round to the nearest tenth of a meter squared)

6 m

6 m

3 m
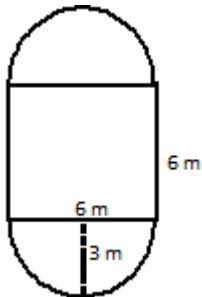
(A) 37.3 m2
(B) 50.1 m2
(C) 64.3 m2
(D) 149.1 m2

4. Write a variable expression for the area of a square whose side length is $(x + 8)$ units.

(A) $x^2 - 16x + 64$ square units
(B) $x^2 + 16x + 64$ square units
(C) $x^2 + 16x - 64$ square units
(D) $x^2 + 64x + 16$ square units

5. The population growth of an animal species is described $F(t) = 320 \log(4t + 4)$, where t is the number of months since the species was introduced. Find the population of this species 8 months after the species is introduced to an area. Round to the nearest whole number.

(A) -1
(B) 320
(C) 498
(D) 1147

6. Find the mode for the following data: 12, 12, 12, 14, 16, 18, 20, 22, 25, 25, 29, 33, 37, 37, 39.

    (A) 12
    (B) 25
    (C) 37
    (D) 39

7. The function $f(x) = 2.4 + 8 \ln x$, given in centimeters, models the height of a certain animal species where x is the number of days the animal has been alive. Determine the height of the animal after it has been alive for 16 days.

    (A) 5.47 cm
    (B) 12.03 cm
    (C) 15.89 cm
    (D) 24.58 cm

8. Determine the logical conclusion for the arguments below:

Some college students join school sponsored clubs.
No school sponsored clubs endorse bullying.

    (A) Some school sponsored clubs have college student members.
    (B) All school sponsored clubs prevent bullying.
    (C) Some college students do not endorse bullying.
    (D) Bullies are able to join school sponsored clubs.

Answers to sample questions:
1-D, 2-A, 3-C, 4-C, 5-A, 6- A, 7-D, 8-C