DeVry University
Keller Graduate School of Management

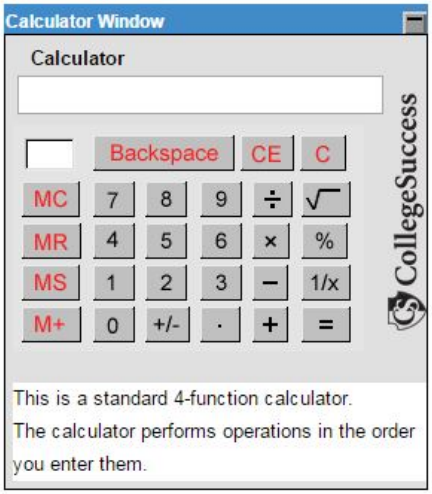
Undergraduate Assessment Test Study Guide

October 2019

DeVry University
Keller Graduate School of Management

Test Taking Tips

- **Prepare**
  Take practice assessments and study areas of weakness. If you need a calculator during practice, use a standard four-function calculator (sample below), which will be available during the assessment.



- **Read the directions carefully**
  When you take the assessments, make sure to take your time and carefully follow the instructions for each question.

- **Use reasoning when answering**
  1. Identify the key phrase in the question.
  2. Try to find the correct answer before you read all the choices.
  3. Eliminate the choices that you know are not correct.
  4. Read all the choices and pick the best answer.

- **Review**
  Be sure to review each answer carefully before submitting. You will not be able to go back to any questions.

DeVry Subject Area Tests

There are three DeVry multiple choice tests. There is also a written essay portion. The content that is covered in the multiple choice tests are listed below by subject:

Arithmetic (*25 questions*):

- Integers, Fractions, Decimals, and Percents—solve numerical and word problems, and compare magnitudes
- Ratios—compute, identify equivalent ratios, and understand and explain ratio and rate reasoning
- Irrational numbers—identify irrational numbers
- Exponents—evaluate numerical expressions with integer bases and exponents

Algebra (*25 questions*):

- Expressions, Equations, and Inequalities—identify, simplify, evaluate, construct, and interpret
- Functions— identify domains, manipulate, and solve
- Order of Operations—simplify and rewrite numerical expressions
- Systems of Equations—construct a system of equations from a word problem
- Coordinates—translate between an equation and a line, including slope
- Polynomials—factor, expand, and perform operations with polynomials

Reading (*30 questions*):

- Determine what the text says explicitly and what can be inferred logically
- Support or challenge assertions about the text
- Discern the most important ideas, events, or information, and summarize them
- Delineate the main ideas or themes and the details that elaborate and support them
- Determine when, where, and why events unfold in the text, and explain how they relate to one another
- Analyze the traits, motivations, and thoughts of individuals
- Determine what is meant by words and phrases in context
- Analyze how specific word choices shape the meaning and tone of the text
- Analyze the text's organizational structure
- Analyze how specific details and larger portions of the text contribute to meaning
- Evaluate the reasoning and rhetoric that support an argument or explanation
- Apply knowledge and concepts gained through reading to expand understanding
- Create a logical progression of ideas or events, and convey the relationships among them
- Choose words and phrases to express ideas precisely and concisely

What should you expect?

The following section provides an overview of the type of information you will need to know to perform well on the math subject area tests. It is not intended to be a comprehensive listing of all content covered.

Arithmetic:

You should review your basic math rules such as order of operations, exponents, irrational numbers, and percents. Here are a few of the rules to review:

Order of Operations

1. work within parentheses
2. simplify exponents
3. multiply and divide
4. add and subtract

Signed Numbers

- $-9 + (-7) = -16$
- $-15 + 20 = 5$
- $4 - (-5) = 9$
- $-6 - (-8) = 2$
- $-3 \bullet (-2) = 6$
- $5 \bullet (-2) = -10$
- $-15 \div 3 = -5$
- $-12 \div (-4) = 3$

Fractions and Decimals

- $\frac{2}{9} + \frac{3}{9} = \frac{5}{9}$
- $\frac{1}{6} + \frac{3}{4} = \frac{2}{12} + \frac{9}{12} = \frac{11}{12}$
- $\frac{7}{8} - \frac{1}{8} = \frac{6}{8} = \frac{3}{4}$
- $\frac{5}{7} - \frac{2}{5} = \frac{25}{35} - \frac{14}{35} = \frac{11}{35}$
- $\frac{1}{2} \bullet \frac{4}{8} = \frac{1}{1} \bullet \frac{2}{8} = \frac{1}{4}$
- $1\frac{1}{2} \bullet \frac{2}{3} = \frac{3}{2} \bullet \frac{2}{3} = \frac{1}{1} = 1$
- $\frac{1}{2} \div \frac{1}{6} = \frac{1}{2} \bullet \frac{6}{1} = \frac{1}{1} \bullet \frac{3}{1} = 3$
- $2\frac{1}{2} \div 2\frac{1}{3} = \frac{5}{2} \div \frac{7}{3} = \frac{5}{2} \bullet \frac{3}{7} = \frac{15}{14}$
- $\frac{1}{4} = 1 \div 4.00 = 0.25$
- $0.65 = \frac{65}{100} = \frac{13}{20}$

Exponents
The mathematical notation that indicates that a variable is multiplied by itself the number of times specified by the exponent.

- $x^3 = x \cdot x \cdot x$
- $x^5 = x \cdot x \cdot x \cdot x \cdot x$
- $x^5 \cdot x^3 = x^8$
- $(x^5)^3 = x^{15}$

Rational Numbers
A rational number is a number that can be expressed as a simple fraction (or ratio) $\frac{p}{q}$ of two integers, p and q, with $q \neq 0$.

- 0.75, –6, $\sqrt{25}$, $0.\overline{08}$, and 0.33333 ... are rational because they can be written as simple fractions: $\frac{3}{4}, -\frac{6}{1}, \frac{5}{1}, \frac{8}{99}$, and $\frac{1}{3}$, respectively.

Irrational Numbers
An irrational number cannot be expressed as a simple fraction (or ratio) of two integers.

- $\sqrt{2}$, π, and 0.101001000100001 ... are irrational because they cannot be written as simple fractions. The decimal representations continue infinitely without repetition of a fixed sequence of numbers.

Percents
The word *percent* means "hundredths" or a number that is divided by 100.
Converting a number into a percent involves multiplying the number by 100.
A percent can be determined by performing the division of the part by the total and multiplying it by 100:

$$\% = \frac{part}{total} \cdot 100$$

Algebra:
You should know how to construct, simplify, and evaluate expressions, equations, and inequalities; solve systems of equations; identify features of the graph of an equation; and perform operations with polynomials. Here are a few of the rules to review:

Constructing, Simplifying, and Evaluating Expressions, Equations, and Inequalities

- When constructing an expression, equation, or inequality from a word problem, break the problem down piece-by-piece until you have addressed each part.

Solving Systems of Equations

- Two common methods of solving a system of equations in two variables are the Substitution Method (substituting one equation into the other) and the Elimination Method (adding or subtracting the equations to eliminate one variable).

Identifying Features of the Graph of an Equation

- The slope of the line $y = mx + b$ is m. A line that is parallel to this line will also have a slope of m. A line that is perpendicular to this line will have a slope of $-\frac{1}{m}$.
- If given two points along a line, (x_1, y_1) and (x_2, y_2), the slope of the line is given by $m = \frac{y_1 - y_2}{x_1 - x_2}$.
- To find the vertex of a parabola, rewrite the equation $y = ax^2 + bx + c$ in vertex form by completing the square: $y = a(x - h)^2 + k$. The vertex is at the point (h, k).

Operations with Polynomials

- When adding or subtracting polynomials, only like terms can be combined.
- When multiplying polynomials, multiply each term in one polynomial by each term in the other polynomial. Simplify if necessary.
- When dividing polynomials, sometimes the polynomials can be factored, and then the common factors between the numerator and denominator will cancel out. Using long division will always work if the polynomials do not factor evenly.

Arithmetic Sample Questions:

1. Choose the fraction that goes in the blank.

$$\frac{1}{2} < \_\_\_ < \frac{4}{5}$$

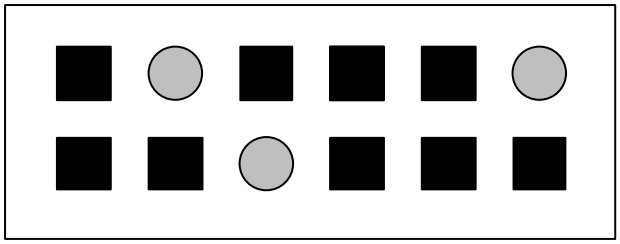
A. $\frac{1}{3}$

B. $\frac{2}{4}$

C. $\frac{2}{3}$

D. $\frac{5}{6}$

2. What is the ratio of circles to squares?



A. 1 to 3
B. 1 to 9
C. 3 to 1
D. 9 to 1

3. A sweater costs $29.99 plus a 6% sales tax. How much will the sweater cost with the tax (rounded to the nearest penny)?

A. $30.05
B. $30.59
C. $31.79
D. $35.99

4. Solve.

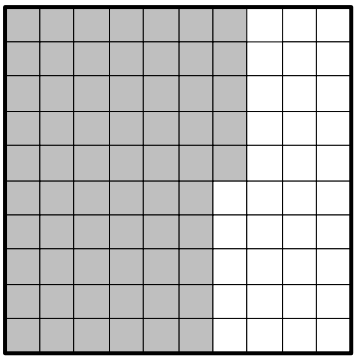
$$8 - 6 \cdot 4 + 10 \div 2 =$$

A. –21
B. –11
C. –3
D. 9

5. Which of the following fractions are equivalent?

A. $\frac{3}{4}$ and $\frac{6}{7}$
B. $\frac{2}{3}$ and $\frac{12}{13}$
C. $\frac{1}{9}$ and $\frac{4}{12}$
D. $\frac{1}{6}$ and $\frac{3}{18}$

6. What percentage of the figure is shaded?



A. 35%
B. 45%
C. 55%
D. 65%

7. Which of the following is an irrational number?

   A. $\frac{5}{4}$
   B. $3\frac{1}{7}$
   C. $\sqrt{12}$
   D. 0.59

8. Which of the following fractions has the greatest value?

   A. $\frac{6}{10}$
   B. $\frac{2}{3}$
   C. $\frac{5}{8}$
   D. $\frac{7}{12}$

9. Solve.

$$\frac{4}{5} \div \frac{1}{2} =$$

   A. $\frac{8}{10}$
   B. $\frac{4}{10}$
   C. $\frac{8}{5}$
   D. $\frac{6}{5}$

10. Solve.

$$\frac{7}{8} - \frac{2}{3} =$$

A. $\frac{5}{24}$
B. $\frac{14}{11}$
C. $\frac{5}{11}$
D. $\frac{37}{24}$

11. Solve.

$$-9 \bullet (-8) =$$

A. -72
B. -17
C. 17
D. 72

12. Solve.

$$15 - (-11) =$$

A. -26
B. -4
C. 4
D. 26

Algebra Sample Questions:

1. Which of the following lines is perpendicular to $3y = 5x - 1$?

   A. $y = 5x + 6$
   B. $y = \frac{5}{3}x - 7$
   C. $y = -3x - 8$
   D. $y = -\frac{3}{5}x + 9$

2. Which of the following is the equation of the line that passes through the points $(-3, 4)$ and $(6, 7)$?

   A. $y = \frac{1}{3}x + 5$
   B. $y = 3x - 11$
   C. $y = -\frac{1}{3}x + 9$
   D. $y = -3x + 25$

3. Simplify.

$$(3x^2 + 9x - 1) + (-5x^2 + 6x - 10)$$

   A. $8x^2 - 3x + 9$
   B. $-2x^2 - 3x + 9$
   C. $8x^2 + 15x - 11$
   D. $-2x^2 + 15x - 11$

4. Solve the following system of equations for x.

$$2x + 3y = -14$$
$$y = 6x + 22$$

   A. $x = -2$
   B. $x = 2$
   C. $x = -4$
   D. $x = 4$

5. The work rates for a local plumber are shown in the table.

Plumber Rates

Hours	Charge (in dollars)
1	66
2	82
3	98
4	114

Which function can be used to determine the charge for h hours of work?

A. $f(h) = 66h$
B. $f(h) = 50h + 16$
C. $f(h) = 16h + 50$
D. $f(h) = \frac{1}{6}h + 50$

6. Evaluate the expression $4x + 6 - y^2$ when $x = -3$ and $y = 4$.

A. –34
B. –22
C. 10
D. 0

7. Which two equations are equivalent?

A. $y = (x + 3)^2$ and $y = x^2 + 6$
B. $y = (x - 5)^2$ and $y = x^2 - 25$
C. $y = (x - 3)^2$ and $y = x^2 - 6x + 9$
D. $y = (x + 5)^2$ and $y = x^2 + 25x + 10$

8. What are the coordinates of the vertex of the parabola with the equation $y = x^2 - 4x + 1$?

A. $(2, -3)$
B. $(-3, 2)$
C. $(-4, 1)$
D. $(1, -4)$

Reading Sample Questions:

Read the selection and answer the question.

The Old Juniper Tree
by Robert Fulghum

There is a tree. At the downhill edge of a long, narrow field in the western foothills of the La Sal Mountains—southeastern Utah. A particular tree. A juniper. Large for its species—maybe twenty feet tall and two feet in diameter. For perhaps three hundred years this tree has stood its ground. Flourishing in good seasons, and holding on in bad times. "Beautiful" is not a word that comes to mind when one first sees it. No naturalist would photograph it as exemplary of its kind. Twisted by wind, split and charred by lightning, scarred by brushfires, chewed on by insects, and pecked by birds. Human beings have stripped long strings of bark from its trunk, stapled barbed wire to it in using it as a corner post for a fence line, and nailed signs on it on three sides: NO HUNTING, NO TRESPASSING; PLEASE CLOSE THE GATE. In commandeering this tree as a corner stake for claims of rights and property, miners and ranchers have hacked signs and symbols in its bark, and left Day-Glo™ orange survey tape tied to its branches. Now it serves as one side of a gate between an alfalfa field and open range. No matter what, in drought, flood, heat, and cold it has continued. There is rot and death in it near the ground. But at the greening tips of its upper branches and in its berrylike seed cones, there is yet the outreach of life.

I respect this old juniper tree. For its age, yes. And for its steadfastness in taking whatever is thrown at it. That it has been useful in a practical way beyond itself counts for much, as well. Most of all, I admire its capacity for self-healing beyond all accidents and assaults. There is a will in it—toward continuing to be, come what may.

1. The best definition for the word steadfastness is —

   A. skill.
   B. constancy.
   C. eagerness.
   D. consciousness.

Read the selection and answer the question.

Painting a Window

(1) Decorating a window with a painted scene from nature might be of interest to you. (2) If you like to see nature outside your window, but you don't have a scene of real nature, you may want to try this idea. (3) Before you begin, be sure to ask your parents if it is okay.

(4) The first step you should take is to purchase a paintbrush and powder paints in the colors that you enjoy. (5) When you have your supplies, mix the paints, place newspaper on your windowsill, and make sure your window is clean. (6) On the inside of your window, it is important to do your decorating because rain may wash away outdoor painting.

(7) Use your imagination and begin painting a scene from nature on your window. (8) A sun, grass, trees, and flowers are good things to paint. (9) If you have a big window you may want to paint other things. (10) Painting people, balloons, and playground equipment on a window might be a fun idea. (11) When you are finished, stand back and look at your decorated window. (12) If you like the results, share the idea of window painting with someone else.

Source: Original Work

2. The student explains that a big window may require some extra painting. The student supports this idea by —

A. suggesting painting techniques.
B. describing types of supplies to buy.
C. offering suggestions of pictures to paint.
D. explaining the steps of window painting.

Read the selection and answer the question.

The Magic of Harry

Harry Houdini was a man who astonished and enthralled many people during his life. Whether he was escaping from a padlocked box or making things disappear and reappear, he definitely was entertaining. People thought that he must truly have some supernatural powers, but in fact, what Harry really had was drive.

Harry was born in Budapest, Hungary, in 1874. His real name was Ehrich Weiss and he was the third of five children. His family moved to Wisconsin not long after he was born and by the time he was nine, he was tying ropes all over his backyard and learning amazing trapeze tricks to show his friends and neighbors. He visited the local locksmith, and when he had reached his teens he could pick almost any lock that was made. He also learned how to do card tricks. He and his brother, Theo, would often entertain at local parties and clubs for extra money.

When Ehrich was 16, he came across a book that would literally change his life: the biography of France's greatest magician, Jean Eugene Robert-Houdin. It showed Ehrich that his hobby of magic and tricks could also be a career. Immediately, he changed his name to Harry Houdini. He and Theo headed out to make a living as magicians.

In 1893, they were at the Chicago World's Fair, and after that they traveled around giving magic shows for anyone willing to listen and pay. Theo grew restless, however, as the jobs became scarce, so he left. His timing was perfect since Harry had just fallen in love with a lovely woman named Bess who was just the right size for slipping in and out of the trunk they used in their magic tricks. They married immediately and then off they went, traveling with circuses and other road shows. Harry learned more and more tricks and spent much of his time reading and studying all kinds of locks, especially handcuffs. However, no matter what tricks they did or how hard they tried, Bess and Harry were not doing well. They tried to sell their shows for seven years and finally, in desperation, they went to Europe.

It was the right move. Harry's persistence and constant practice were about to pay off. To get people's attention, he walked into police stations and offered to be handcuffed by all the policemen. They were shocked when he was loose only seconds later. Soon, everyone in Europe was talking about Houdini's astounding feats. He was in high demand and found himself doing more and more dangerous acts. He escaped from a straitjacket hanging upside down over the street; he escaped from locked boxes of all kinds; and, of course, he got out of any kind of handcuffs put on him.

After several years in Europe, Bess and Harry returned to the United States in triumph. Harry was doing such amazing tricks that people felt he must have special powers. However, few realized how much time he spent practicing and studying. He would do special exercises to keep his body strong, and he would do tricks with his fingers to keep them nimble and flexible. He would spend large amounts of time tying and untying knots—with his toes! For his underwater tricks, he would get in the bathtub and practice holding his breath for longer and longer times. Since many of his tricks involved being plunged into icy water, he would pour buckets of ice in the tub to get accustomed to working in the cold.

The reason that Harry Houdini was such a success was that he practiced and prepared for whatever might happen. When a college student punched him in the abdomen in 1926, however, he wasn't prepared. The punch did internal damage that not even this magician could get out of. Harry died in 1926 at 52 years of age—a master of his trade and a true legend.

Source: Original Work

3. Houdini decided to become a magician after he —

A. learned to pick a lock.
B. learned to do card tricks.
C. started entertaining at local parties.
D. read a book about a famous magician.

Read the selection and answer the question.

"The Railway Train"
by Emily Dickinson

I like to see it lap the miles,
And lick the valleys up,
And stop to feed itself at tanks;
And then, prodigious, step

Around a pile of mountains,
And, supercilious, peer
In shanties by the sides of roads;
And then a quarry pare

To fit its sides, and crawl between,
Complaining all the while
In horrid, hooting stanza;
Then chase itself down hill

And neigh like Boanerges;
Then, punctual as a star,
Stop—docile and omnipotent—
At its own stable door.

Source: Dickinson, Emily. "The Railway Train." The Compete Poems of Emily Dickinson. Boston: Little, Brown, 1960. (1893)

4. Which of the following best describes the tone of the poem?

A. Playful
B. Ardent
C. Sinister
D. Indifferent

The following sample question is NOT associated with a passage.

5. Read the sentence and choose the word that best fits in the blank.

   The long walk from the parking lot may have caused some to complain, but it did not _____ Carla at all; in fact, she enjoyed it.

A. blister
B. bother
C. bolster
D. blunder

Answer Keys

Arithmetic:

Sequence	Description	Key
1	Compare numbers and make sense of their magnitude.	C
2	Quantities can be compared using division, yielding rates and ratios.	A
3	Solve multi-step problems involving fractions and percentages.	C
4	Use mental strategies and technology to formulate, represent and solve problems.	B
5	Compare numbers and make sense of their magnitude.	D
6	Compare numbers and make sense of their magnitude.	D
7	A fraction can represent the result of dividing the numerator by the denominator; equivalent fractions have the same value.	C
8	Compare numbers and make sense of their magnitude.	B
9	Solve multi-step problems involving fractions and percentages.	C
10	Solve multi-step problems involving fractions and percentages.	A
11	Know when and how to use standard algorithms, and perform them flexibly, accurately and efficiently.	D
12	Know when and how to use standard algorithms, and perform them flexibly, accurately and efficiently.	D

Algebra:

Sequence	Description	Key
1	Understand a problem and formulate an equation to solve it.	D
2	Understand a problem and formulate an equation to solve it.	A
3	Manipulate simple expressions.	D
4	Solve systems of equations.	C
5	Describe the qualitative behavior of common types of functions using graphs and tables.	C
6	Manipulate simple expressions.	B
7	The steps in solving an equation are guided by understanding and justified by logical reasoning.	C
8	Analyze functions using symbolic manipulation.	A

Reading:

Sequence	Description	Key
1	Determine what is meant by words and phrases in context, including connotative meanings and figurative language.	B
2	Evaluate the reasoning and rhetoric that support an argument or explanation, including assessing whether the evidence provided is relevant and sufficient.	C
3	Determine both what the text says explicitly and what can be inferred logically from the text.	D
4	Analyze how specific word choices shape the meaning and tone of the text.	A
5	Choose words and phrases to express ideas precisely and concisely.	B