

# Mathematics Exam Examples

## Math Diagnostic Testing Project (MDTP)

*revised 8-2010*

There are four math exam levels. You'll be asked to choose one level that is at your skills and abilities that you feel will best challenge your math competency. The results will be used for prerequisite clearance and will not be part of your permanent record. Calculators are not needed and will not be allowed during the test.

### Level 1 - Pre - Algebra Competency

This exam measures how well you understand basic math principles. Examples include addition, subtraction, multiplication, and division of fractions, signed numbers and decimals, as well as solutions of basic algebraic equations. **(50 questions - 45 minutes)**. Possible placements are Math 251 or 351.

#### Integers

- (1) Jim wrote a check for \$318.00. If his balance was then \$2126.00, what was his balance before he wrote this check?  
 A) \$808      B) \$1808      C) \$2444      D) 5306
- (2) What number multiplied by 6 gives -18 as a result?  
 A) -12      B) -3      C) 3      D) -54

#### Decimals

- (3)  $\frac{7.20}{2.4} =$   
 A) 0.03    B) 0.30    C) 3.00    D) 30.0
- (4) Which of the following best approximates  $1.147 - 114.7$   
 A) -100      B) -10      C) 10      D) 100

#### Fractions

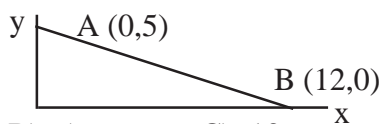
- (5) The ratio of winning tickets to tickets sold in the California Lottery is 2 to 5. If 3,500,000 tickets are sold, how many are "winners"?  
 A) 700,000    B) 750,000    C) 1,400,000    D) 150
- (6)  $\frac{1 + 1/2}{1 - 3/4} =$   
 A) -6    B) -2    C) 2    D) 6

#### Operations

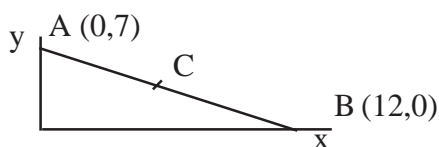
- (7) If in the formula  $p=kt$ ,  $k=36$ , and  $p=144$ , then  $t=$   
 A) 1/4      B) 4      C) 12      D) 108
- (8)  $4(b + 2) =$   
 A)  $4b + 2$     B)  $b + 6$       C)  $b + 8$       D)  $4b + 8$

#### Geometry

- (9) In the figure shown, what is the length of segment AB?



- A) -5      B) 5      C) 13      D) 19
- (10) If C is the midpoint of segment AB in the figure shown, then the coordinates of C are  
 A)  $(7/2 * 7/2)$   
 B)  $(6 * 7/2)$   
 C)  $(19/2 * 7/2)$   
 D)  $(19 * 7/2)$



### Level 2 - Elementary Algebra Competency

This exam measures how well you understand the material covered in an elementary algebra course. **(50 questions - 45 minutes)**. Possible placements are Math 253, 205, 251 or take lower test.

#### Arithmetic

- (1)  $(0.12)^2 =$   
 A) 0.00144    B) 0.0144    C) 0.144    D) 0.24

#### Polynomials

- (2) One of the factors of  $x^2 - x - 6$  is  
 A)  $x + 3$       B)  $x + 2$       C)  $x - 1$       D)  $x - 2$

#### Linear Equations and Inequalities

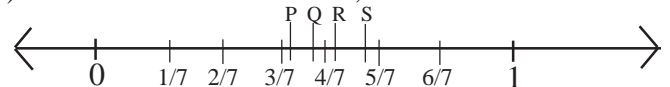
- (3) If  $6x - 3 = 8x - 9$ , then  $x =$   
 A) -6      B) -3      C) 3      D) -6/7

#### Quadratic Equations

- (4) What are the possible values of  $x$  such that  $3x^2 - 2x = 0$   
 A) -2/3 Only    B) 0 Only      C) 2/3 Only    D) 0 and 2/3

#### Graphing

- (5) On the number line below, which letter best locates 5/9



- A) P      B) Q      C) R      D) S

#### Rational Expressions

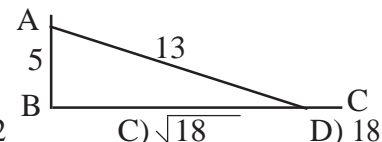
- (6)  $\frac{2}{W+1} - \frac{1}{W-1} =$   
 A)  $1/W+2$     B)  $1/W^2 - 1$     C)  $W - 3/W^2 - 1$

#### Exponents and Square Root

- (7) If  $X > 0$ , then  $\sqrt{64x^{16}} =$   
 A)  $8x^4$       B)  $8x^8$       C)  $16x^4$       D)  $32x^4$

#### Geometry and Measurement

- (8) In the right triangle shown to the right, what is the length of BC?



- A) 8      B) 12      C)  $\sqrt{18}$       D) 18

#### Word Problems

- (9) If  $x$  is to 5 as  $y$  is to 8, what is the value of  $x$  when  $y = 2$ ?  
 A) 5/16      B) 4/5      C) 5/4      D) 16/5

Answers to Level 1  
 1) C, 2) B, 3) C, 4) A, 5) C, 6) D, 7) B, 8) D, 9) C, 10) B  
 Answers to Level 2  
 1) B, 2) B, 3) C, 4) D, 5) B, 6) C, 7) B, 8) B, 9) C

# Math Diagnostic Testing Project (MDTP)

## Level 3 - Intermediate Algebra Competency

This exam measures how well you understand the material covered in an intermediate algebra course (**45 questions - 45 minutes**). Possible placements are Math 11, 124, 7, 8, 9, 10, 253, 205 or take lower test.

### Elementary Numeric and Algebraic Operations

(1)  $\frac{c}{d} + 2 =$

- A)  $\frac{c+2d}{d}$     B)  $\frac{c+2}{d+2}$     C)  $\frac{c+2}{d}$     D)  $c+2d$

### Rational Expressions

(2)  $\frac{c-d}{1/d - 1/c} =$

- A)  $c - d/dc$     B)  $dc/c - d$     C)  $cd$     D)  $-cd$

### Exponents and Radicals

(3)  $\sqrt{3} + \sqrt{27} =$

- A) 6    B)  $3\sqrt{3}$     C)  $4\sqrt{3}$     D)  $10\sqrt{3}$

### Linear Equations; Inequalities; Absolute Value

(4) If  $3x + 2y = 8$  and  $y = x - 1$ , then  $x =$

- A) -6    B) 6/5    C) 7/5    D) 2

### Polynomials; Quadratic Equations

(5) One of the roots of  $(x - 2)(3x + 4) = 0$  is

- A) -2    B) -4/3    C) -3/4    D) 3/4

### The Coordinate Plane and Graphing

(6) Which of the following is an equation of a line slope 3 and a y-intercept -4?  $y =$

- A)  $1/3x - 4$     B)  $3x - 4$     C)  $3x + 4$     D)  $4x + 3$

### Functions and Logarithms

(7) if  $\log_{10} x + \log_{10} y = 3$ , then  $xy =$

- A) 0.001    B) 1.0    C) 10    D) 1000

### Word Problems

(8) A student who correctly answered 72 questions on a test received a score of 75%. How many question were on the test?

- A) 54    B) 72    C) 75    D) 96

## Level 4 - Pre - Calculus Competency

This exam measures how well you understand the material covered in a precalculus course (**40 questions - 60 minutes**). Possible placements are Math 3A, 2 or take lower test.

### Elementary Operations with Numerical and Algebraic Fractions

(1)  $\frac{3x-2}{x+2} - \frac{2}{x-2} =$

- A)  $\frac{3}{x+2}$     B)  $\frac{3x-4}{x^2-4}$     C)  $\frac{3x}{x^2-4}$     D)  $\frac{x(3x-10)}{x^2-4}$

### Operations with Exponents and Radicals

(2)  $\frac{x^{3a+2}}{x^{2a-1}} =$

- A)  $x^{a+3}$     B)  $x^{a-3}$     C)  $x^{5a-1}$     D)  $x^{a+1}$

### Linear Equations and Inequalities

(3) For what value of  $t$  does  $\frac{2t-1}{3t+4} = 2$ ?

- A) -6    B) -9/4    C) 3/2    D) 9/4

### Polynomials and Polynomial Equations

(4) if  $(x - 1)(x^2 - 4) + 2(x - 1)(x + 2) = (x - 1)P$ , then  $P =$

- A)  $x^2 - 2$     B)  $x^2$     C)  $x(x + 2)$     D)  $x^2 + 2$

### Functions

(5) If  $f(x) = 2x + 5$  and  $g(x) = 1 - x^2$ , then  $f(g(2)) =$

- A) -3    B) -1    C) 1    D) 2    E) 9

### Trigonometry

(6) if  $\sin \theta = 3/5$  and  $0 \leq \theta \leq \pi/2$ , then  $\tan \theta =$

- A) 3/2    B) 4/3    C) 5/4    D) 4/5    E) 3/4

### Logarithmic and Exponential Functions

(7)  $\log_3 27 =$

- A) 81    B) 9    C) 3    D) 1/3    E) 1/9

### Word Problems

(8) if  $2/3$  is  $1/2$  of  $4/5$  of a certain number, then that number is

- A)  $15/4$     B)  $5/3$     C)  $5/6$     D)  $5/12$     E)  $4/15$

**Although this is a placement test, to give the student a current reflection of their abilities, no preparation is expected.**

Students may take the same math level to challenge placement after **3 months**.

You may take a different level test with no time restrictions. Read College's catalog for more information.

### Additional suggestions to review math problems

- \* Review math books used for a specific level in the college bookstore.
- \* Look at GED, CBEST or GRE review books at public bookstores
- \* Ask L.A.P. for help to review, if currently in courses.
- \* **Web Site:** [www.saddleback.edu/matriculation/](http://www.saddleback.edu/matriculation/)

Answers to Level 3  
1)A, 2)C, 3)C, 4)D, 5)B, 6)B, 7)D, 8)D

Answers to Level 4  
1)D, 2)A, 3)B, 4)C, 5)B, 6)E, 7)C, 8)B