



Saint Peter's Prep

New Jersey's Jesuit High School Since 1872

Department of Mathematics

Information about the Math Placement Test and Practice Problems

The exam takes 50 minutes to complete. Use of calculators is NOT allowed on any portion of the exam. The required Math Placement Exam tests basic math skills of arithmetic and Algebra I topics. The results of this exam will be used to place each member of the class into the proper math section: Algebra I, Accelerated Algebra or Intermediate Algebra Honors. The Math Department is aware that the incoming students come with a wide range of mathematical abilities based on course offerings at the middle school. Not every student will have been introduced to all the topics that will be tested. Each student is encouraged to do their best on the exam and not to be discouraged if questions are unfamiliar to them.

The Math Placement Test covers the following topics:

- Adding, subtracting, multiplying, and dividing fractions
- Adding, subtracting, multiplying, and dividing decimals
- Adding, subtracting, multiplying, and dividing integers
- Evaluating expressions using the Order of Operations
- Using percents to solve fundamental problems
- Solving linear equations
- Evaluating algebraic expressions
- Adding, subtracting, and multiplying polynomials
- Factoring polynomials
- Simplifying square roots
- Simplifying expressions using properties of exponents
- Knowledge of the coordinate system
- Graphing a linear function
- Finding slope of a linear function
- Writing equations of lines
- Solving a system of equations
- Solving linear inequalities
- Solve quadratic equations by factoring
- Solve quadratic equations by using the quadratic formula

The following are examples of some of the problems with which a student should be familiar with from a Pre-Algebra course. For the exam students should be able to show appropriate steps in the process of solving or responding to the questions.

1. Find the sum, difference, product, or quotient.

- a. $12.7 - 9.4$
- b. $17.8 + 26.3$
- c. $9.64 + 6.36$
- d. $20.24 - 16.5$
- e. 1.3×3
- f. $9.6 \div 6$
- g. $\frac{4}{5} - \frac{2}{3}$
- h. $\frac{3}{4} + \frac{1}{10}$
- i. $2\frac{5}{10} + 5\frac{3}{5}$
- j. $7 - \frac{3}{5}$
- k. $9\frac{7}{10} - 1\frac{2}{3}$
- l. $\frac{1}{2} \times \frac{3}{5}$
- m. $3\frac{1}{2} \times 3\frac{2}{3}$
- n. $\frac{3}{4} \div \frac{4}{5}$
- o. $2\frac{9}{10} \div 3\frac{1}{2}$

2. Evaluate

- a. $(-5)(4)(-1)(6)$
- b. $8 \div 4 \times 3 - 6$
- c. $24 \div (2 \times 4) - 3$
- d. $[10 + (4 \times 2)^3] \div 2$
- e. $10(-4) \cdot |-13|$

3. Simplify

- a. $(3x - 3) - (x + 7)$
- b. $-2x + 7y - 5y + x$
- c. $-9(z - 2) + z$
- d. $-2(2x - 6) + 3(x - 4)$

4. Using the properties of exponents, simplify

- a. $z^5 \cdot z$
- b. $\frac{c^9}{c}$
- c. $\frac{7^9 r^{12}}{7^5 r^8}$
- d. $(3x^2)(-5xy^3)$

5. Solve
- $k - 25 = -9$
 - $-4 = -44x$
 - $\frac{3}{5}x = 9$
 - $8r + 2 = 6r + 10$
 - $4b + 2(b - 4) = 8(b + 3)$
 - $8n - 3 - 9n = 5 + n - 12$
6. Solve the system of Linear Equations
- $3x - 4y = 19$
 $x + y = 4$
 - $y = -2x + 3$
 $y = 3x - 2$
7. Solve each linear inequality
- $-3x + 7 > -8$
 - $x + 5 < x + 1$
 - $-a + 2 \geq -2a + 10$
8. Find the slope of the given points
- A(4,5), B(9,10)
 - A(-5,-3), B(2,-3)
 - A(-2,5), B(-2,-1)
9. Find the slope and y-intercept of each linear function and graph
- $y = \frac{3}{4}x - 1$
 - $4x - 3y = 9$
 - $-3x - 7 = 2$
 - $6 + 2y = 8$
10. Solve each quadratic by factoring
- $x^2 + 9x + 20 = 0$
 - $16m = 35 - 3m^2$
 - $x^2 + 3x = 0$
 - $2x^3 + 5x^2 - 12x = 0$
11. Solve the equation by using the quadratic formula
- $x^2 + 11x + 28 = 0$
 - $y^2 - 3y = -2$
12. Simplify each radical
- $\sqrt{12}$
 - $\sqrt{81} \cdot \sqrt{4}$
 - $\sqrt{5} \cdot \sqrt{11}$
 - $\sqrt{9x^{10}}$

Solutions to Practice Problems

1. a. 3.3

b. 44.1

c. 16

d. 3.74

e. 3.9

f. 1.6

g. $\frac{2}{15}$

h. $\frac{17}{20}$

i. $8\frac{1}{10}$

j. $6\frac{2}{5}$

k. $8\frac{1}{30}$

l. $\frac{3}{10}$

m. $\frac{77}{6}$

n. $\frac{15}{16}$

o. $\frac{29}{35}$

2. a. 120

b. 0

c. 0

d. 261

e. -520

3. a. $2x - 10$

b. $-x + 2y$

c. $-8z + 18$

d. $-x$

4. a. z^6

b. c^8

c. $2401r^4$

d. $-15x^3y^3$

5. a. $k = 16$

b. $x = \frac{1}{11}$

c. $x = 15$

d. $r = 4$

e. $b = -16$

f. $n = 2$

6. a. $(5, -1)$

b. $(1, 1)$

7. a. $x < 5$

b. No solution

c. $a \geq 8$

8. a. $m = 1$

b. $m = 0$

c. $m =$ no slope or undefined

9. a. $m = \frac{3}{4}$, y-intercept: $(0, -1)$
b. $m = \frac{4}{3}$, y-intercept $(0, -3)$
c. $m =$ no slope or undefined, y-intercept: none
d. $m = 0$, y-intercept $(0, 1)$

10. a. $x = -4, -5$
b. $m = \frac{5}{3}, -7$
c. $x = 0, -3$
d. $x = 0, \frac{3}{2}, -4$

11. a. $x = -4, -7$
b. $y = 2, 1$

12. a. $2\sqrt{3}$
b. 18
c. $\sqrt{55}$
d. $3x^5$