

# CCNY MATH PLACEMENT TEST

## *Sample Problems*

**The CCNY Math Placement Test** is administered to all incoming freshman and is used for placement into mathematics and mathematics related courses. All incoming freshman who have met [CUNY's proficiency requirement](#) in math are required to take the CCNY Math Placement Test.

This test does not affect your acceptance into the college. However, it does affect which course you will be eligible to take based on your major requirements and/or major entry criteria.

The CCNY Math Placement Test is **in-person**, timed, multiple choice, and computer-based. There are 5 sections, each with 10 questions: Arithmetic, Algebra Part I, Algebra Part II, Trigonometry, and Pre-calculus. You have 30 minutes to complete each section.

***You are not permitted to use Calculators while taking the test.***

Scores on the CCNY Math Placement Test are valid only for City College and you may only take this test once.

***Please note that the following*** test sample is designed to give you a preview of the types of questions you will see on the CCNY Math Placement Test. It is NOT an exact copy of the test.

1) Perform the indicated operations  $\frac{\frac{1}{10}}{\frac{1}{14} - \frac{1}{15}}$

- (a) 21
- (b) 20
- (c) 25
- (d) 18
- (e) 23

2) Express the repeating decimal  $1.\overline{16}$  as a fraction

- (a)  $1\frac{16}{99}$
- (b)  $1\frac{17}{99}$
- (c)  $1\frac{15}{99}$
- (d)  $\frac{16}{100}$
- (e)  $1\frac{16}{100}$

3) Find the distance between the numbers  $-6$  and  $5$

- (a) 5.5
- (b)  $-1$
- (c) 1
- (d)  $-11$
- (e) 11

4) Write the number 0.003352 in scientific notation

- (a)  $3.352 \times 10^{-1}$
- (b)  $3.352 \times 10^2$
- (c)  $3.352 \times 10^{-2}$
- (d)  $3.352 \times 10^{-3}$
- (e)  $-3.352 \times 10^2$

5) Evaluate the expression  $\left(\frac{2}{5}\right)^{-2}$

(a)  $-\frac{25}{4}$

(b)  $\frac{25}{4}$

(c)  $\frac{1}{4}$

(d)  $-\frac{4}{25}$

(e)  $\frac{4}{25}$

6) Evaluate the number  $7^{\frac{2}{7}} \cdot 7^{\frac{5}{7}}$

(a) 1

(b) 7

(c)  $7^{\frac{10}{49}}$

(d)  $\sqrt{7}$

(e)  $14^{\frac{10}{49}}$

7) Perform the indicated operations and simplify.

$$(x^2 + x - 2)(x^3 - x + 8)$$

(a)  $x^5 + 3x^4 - x^3 + 7x^2 - 10x + 16$

(b)  $x^5 - x^4 + 3x^3 - 7x^2 + 10x - 16$

(c)  $x^5 + x^4 + 3x^3 - 7x^2 - x - 8$

(d)  $x^5 - 7x^4 - 3x^2 + x^2 - 10x + 2$

(e)  $x^5 + x^4 - 3x^3 + 7x^2 + 10x - 16$

8) Factor completely  $(x - 9)(x + 6)^2 - (x - 9)^2(x + 6)$

(a)  $(15x + 90)(x - 9)$

(b)  $15(x + 6)(x + 9)$

(c)  $15(x + 6)(x - 9)$

(d)  $15(x - 6)(x + 9)$

(e)  $(x + 6)(15x - 135)$

9) Simplify the expression  $\frac{3x^2}{6x+x^2}$

(a)  $\frac{3x^2}{6+x}$

(b)  $\frac{3x}{6+x^2}$

(c)  $\frac{x^2}{3+x}$

(d)  $\frac{x}{3+x}$

(e)  $\frac{3x}{6+x}$

10) Solve the equation  $-7w + 16 = -15w$

(a) 2

(b) 3

(c) -2

(d) 16

(e) -3

11) Solve the nonlinear inequality. Express the solution using interval notation

$$49x \leq x^3$$

(a)  $[-7, -1] \cup [7, \infty)$

(b)  $[-9, 0] \cup [9, \infty)$

(c)  $[-10, 0] \cup [10, \infty)$

(d)  $[-8, 0] \cup [8, \infty)$

(e)  $[-7, 0] \cup [7, \infty)$

12) Find the distance between the points  $(3, -4)$  and  $(9, 4)$

- (a) a) 64
- (b) b) 6
- (c) c)  $\sqrt{10}$
- (d) d) 10
- (e) e) 100

13) Find the slope of the line through  $P(-4, -3)$  and  $Q(3, 4)$

- (a) a)  $m = -4$
- (b) b)  $m = 1$
- (c) c)  $m = 2$
- (d) d)  $m = 4$
- (e) e)  $m = 7$

14) Express the function in the form  $f \circ g$

$$G(x) = \frac{x^3}{x^3 + 2}$$

- (a)  $f(x) = x^3, g(x) = \frac{x}{x-2}$
- (b)  $f(x) = x^3, g(x) = \frac{x}{x+2}$
- (c)  $f(x) = \frac{x}{x+2}, g(x) = x^3$
- (d)  $f(x) = x^3 + 2, g(x) = \frac{x}{x+2}$
- (e)  $f(x) = \frac{x}{x-2}, g(x) = x^3$

15) Assume  $g$  is a one to one function. If  $g(x) = x^2 + 4x$  with  $x \geq -2$ , find  $g^{-1}(2)$

- (a)  $-2$
- (b)  $4$
- (c)  $4 + \sqrt{4}$
- (d)  $-4$
- (e)  $-2 + \sqrt{6}$

16) Evaluate the expression  $\log_7 343$

- (a)  $343$
- (b)  $7$
- (c) none of these
- (d)  $3$
- (e)  $49$

17) Write  $\cos\theta$  in terms of  $\sin\theta$ , for  $\theta$  in quadrant III

- (a)  $\cos\theta = -\sqrt{1 - \sin\theta}$
- (b)  $\cos\theta = -\sqrt{1 - \sin^2 \theta}$
- (c)  $\cos\theta = \sqrt{1 - \sin^2 \theta}$
- (d) No correct answer

18) The terminal point determined by  $t$  is  $(\frac{3}{4}, \frac{\sqrt{7}}{4})$ . Find  $\sin t$ ,  $\cos t$  and  $\tan t$ .

- (a)  $\sin t = \frac{7}{4}$ ,  $\cos t = \frac{3}{4}$ ,  $\tan t = \frac{7}{3}$
- (b)  $\sin t = \frac{\sqrt{7}}{4}$ ,  $\cos t = \frac{3}{4}$ ,  $\tan t = \frac{\sqrt{7}}{3}$
- (c)  $\sin t = \frac{\sqrt{3}}{4}$ ,  $\cos t = \frac{7}{4}$ ,  $\tan t = \frac{\sqrt{7}}{3}$

## CCNY Math Placement Practice Problems - Answer key

1. a
2. a
3. e
4. d
5. b
6. b
7. e
8. c
9. e
10. c
11. e
12. d
13. b
14. c
15. e
16. d
17. b
18. b