



Details/Requirements and Sample Questions for the Rutgers – New Brunswick Math Placement Test (2021)

(This is not for Rutgers Camden or Rutgers Newark students) **(TEST CLOSED SEPTEMBER 6 – NOVEMBER 1)**

Rutgers (NB) will be using the ALEKS PPL (McGraw-Hill) placement test, which is part of an adaptive learning platform widely used by our peer universities. Each take of the allows you up to 3 hours to submit up to 30 open-ended (not multiple choice) questions. Most students spend 60-90 minutes on the assessment. This test is adaptive, meaning your answers determine which questions you will be asked subsequently. Because of this, you cannot go back and change your answers to previous questions. Click [here](#) for a brief overview video. Before you start the test, a tools tutorial will show you how to enter the answers.

Respondus Lockdown Browser is required for this test: [Click here to download the required version prior to testing](#). A functioning webcam is required for Respondus Monitor to operate. Chromebooks will not work. [Click here](#) to check system requirements at the bottom of the page. When asked for ID, any photo ID will work (high school ID, license, etc.) If you are under 18, [please obtain the consent of a parent or guardian prior to testing](#).

If you have ACCOMMODATIONS do not take this test – contact [ODS](#) and testingandplacement@rutgers.edu.

LINK TO MATH TEST: [CLICK HERE \(TEST CLOSED SEPTEMBER 6 – NOVEMBER 1\)](#)

Log in with your netid (ie. abc123), not your nine-digit RUID number. If you do not click to submit the test, your score will not be recorded – make sure you submit your work before time is up. During the test, do **not** use your own calculator. An on-screen calculator will be provided when required. Scrap paper is permitted – dispose after testing.

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CLICK [HERE](#) TO SEE THE SCORE GUIDE

Retesting by September 6: In order to get the most accurate placement results, you can take the test a second time. We will use the highest score to place you – most students improve on their second attempt. After you take your first test, you should complete the 5 hours of individually customized learning modules available to you on your [ALEKS page](#) to unlock the 2nd test attempt, which can be completed after a 48 hour cool-off period. While the 30 day/72 hour test deadline is waived for the 2nd attempt, **it is in your best interest to retest as soon as possible**. Beyond these two opportunities to take the test, there are no additional options for retesting.

One of the advantages of the ALEKS placement testing system is that it identifies exactly where the individual student is having trouble and customizes the learning modules specifically to those areas, allowing them to brush up where needed without taking an entire course, and then starting in the right course in the fall semester. Sometimes students have trouble with a particular section simply because they are rusty on that topic. Other times, students may not do well on a particular section because courses taken elsewhere may vary in which topics they emphasize. The ALEKS modules help fill in any gaps. We are especially glad to be able to offer ALEKS tutorials and retakes this year when COVID-19 has disrupted normal course instruction. Being able to work through these modules and then take the test a second time is a great opportunity not just to improve your placement, but more importantly to build your math skills so that you are ready to begin your math studies at Rutgers with an appropriate course.

Topics on the test may include:

- Real numbers (fractions, integers, and percentages)
- Equations and inequalities (linear equations, linear inequalities, systems of linear equations, and quadratic equations),
- Linear and quadratic functions (graphs and functions, linear functions, and parabolas), exponents and polynomials (integer exponents, polynomial arithmetic, factoring, and polynomial equations), rational expressions (rational equations and rational functions)
- Radical expressions (higher roots and rational exponents)
- Exponentials and logarithms (function compositions and inverse functions, properties of logarithms, and logarithmic equations)
- Geometry and trigonometry (perimeter, area, and volume, coordinate geometry, trigonometric functions, and identities and equations).

On the test, you will see some, but not all, of the math you have learned previously. It is a placement test, not a preview of math courses at Rutgers (NB). It is designed to identify if you are prepared for a particular course.

Sample questions are listed below (answers appear after all questions below) – remember, the test is comprised of open-ended questions (not multiple choice). Not all topics will be presented.

1. $\frac{2}{9} + \frac{5}{6} \cdot \frac{1}{2} =$

2. Solve for x : $2(x - 4) = 4x + 5$

3. Factor $x^2 - 36$

4. Solve for a : $-\frac{1}{2}a - \frac{2}{3} = \frac{3}{5}$

5. Factor $3x^2 - 14x + 8$

6. Theater tickets to the Livingston Theater production cost \$18 for students and \$25 for non-students. If 320 tickets were sold, and the total sales of all of the tickets was \$6719, how many student tickets were sold?

7. Express as a single fraction: $1 + \frac{y-3x}{3x} + \frac{5x-2y}{4x}$

8. Write in simplified form: $\sqrt{32} - \sqrt{2}$

9. Write in simplified form with positive exponents only: $\frac{x^{-2}x^3}{x^4}$ Assume x is a positive real number.

10. Solve the system:
$$\begin{cases} y = -\frac{1}{2}x + 5 \\ 2x + y = 0 \end{cases}$$

11. Solve for x : $|3 - 2x| > 4$

12. Simplify: express your answer with positive exponents only: $x^{-3/2}x^3x^{1/3}$
Assume x is a positive real number.

13. Find the center and radius of the circle: $x^2 + y^2 - 6x + 8y = 8$

14. Sketch the graph of $y = -2(x + 1)^2 - 2$

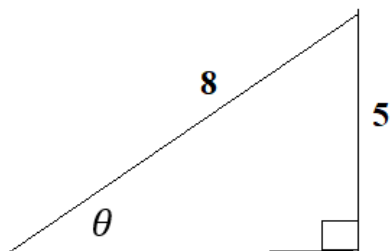
15. Put in simplest radical form: $\sqrt[3]{32x^7y^{18}}$

16. If $f(x) = 2x^2 - 3x + 5$ and $g(x) = \frac{2x}{5-x}$, then $f(g(3)) =$

17. Solve for x : $\log_x 64 = 3$

18. Solve for x exact using base 10: $9^{x-4} = 7^{-3x}$

19. For the right triangle below, find $\sec \theta$ exact (not decimal approximations):



20. Solve for x : $2\cos^2 x = 1 + \sin x$ for x in the interval $[0, 2\pi)$. Express your answer in radians in terms of π .

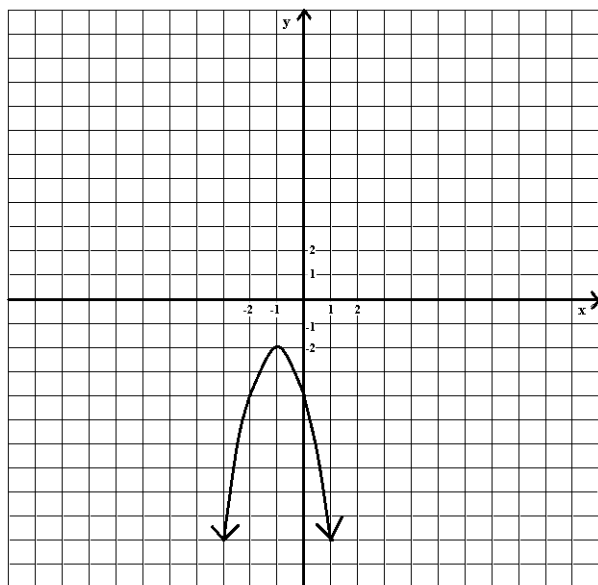
ANSWERS:

1) $\frac{23}{36}$, 2) $x = -\frac{13}{2}$, 3) $(x - 6)(x + 6)$, 4) $-\frac{38}{15}$, 5) $(3x - 2)(x - 4)$, 6) 183,

7) $\frac{15x-2y}{12x}$, 8) $3\sqrt{2}$, 9) $\frac{1}{x^3}$, 10) $x = -\frac{10}{3}$, $y = \frac{20}{3}$, 11) $x < -\frac{1}{2}$ or $x > \frac{7}{2}$,

12) $x^{11/6}$ 13) Center = $(3, -4)$, radius = $\sqrt{33}$,

14)



$$15) 2x^2y^6\sqrt[3]{4x}, 16) 14, 17) x = 4, 18) x = \frac{4 \log 9}{\log 9 + 3 \log 7},$$

$$19) \frac{8\sqrt{39}}{39}, 20) x = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{3\pi}{2}$$

For additional practice, see final exam review exercises for each course:

- [Elementary Algebra](#)
- [Intermediate Algebra](#)
- [Precalculus](#)