Details/Requirements and Sample Questions for the Rutgers – New Brunswick Math Placement Test (2021)
(This is not for Rutgers Camden or Rutgers Newark students)

Rutgers (NB) will be using the ALEKS PPL (McGraw-Hill) placement test. The test 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. 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
Log in with your netid (ie. abc123), not your nine-digit RUID number.
If you have ACCOMMODATIONS do not take this test – contact ODS and testingandplacement@rutgers.edu

During the test, do not use your own calculator. An on-screen calculator will be provided when required.

Topics may include:
- Real numbers (including fractions, integers, and percentages)
- Equations and inequalities (including linear equations, linear inequalities, systems of linear equations, and quadratic equations),
- Linear and quadratic functions (including graphs and functions, linear functions, and parabolas), exponents and polynomials (including integer exponents, polynomial arithmetic, factoring, and polynomial equations), rational expressions (including rational equations and rational functions)
- Radical expressions (including higher roots and rational exponents)
- Exponentials and logarithms (including function compositions and inverse functions, properties of logarithms, and logarithmic equations)
- Geometry and trigonometry (including 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 in high school. 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. After you take your first test, you have the option to review and master additional topics to reassess and take the test one additional time after a 48 hour cool-off period. You’ll need complete 5 hours of prep and learning modules available to you on your ALEKS page prior to being able to retest. If you want to use your 2nd attempt, it must be submitted within 7 days of the first attempt. Each attempt counts, so make sure you feel well before you test.

Sample questions are listed here (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: 
    \[
    \begin{align*}
    y &= -\frac{1}{2}x + 5 \\
    2x + y &= 0
    \end{align*}
    \]

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 $f(g(3)) = \phantom{1}$

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):

\[ \frac{8}{5} \]

\[ \theta \]

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 $\pi$.

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

14)

\[ \text{Graph} \]

15) $2x^2y^3/4x$, 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