SECTION B: ALEKS PPL MATH SIMULATIONS

Welcome to the second simulation section of Part Two. The next four full-length practice exams are built to mirror the ALEKS PPL assessment — a placement test that is fundamentally different from the ACCUPLACER you just finished practicing. If you worked through Section A, you experienced the rhythm of a multiple-choice, three-subtest placement exam administered by the College Board. The ALEKS PPL is a completely different animal, produced by a completely different company, built around a completely different testing philosophy. Understanding how it works — before you sit down to take these simulations — will make the difference between practicing efficiently and practicing blind.

About the Official ALEKS PPL Assessment

ALEKS stands for **Assessment and LEarning in Knowledge Spaces**. It was originally developed at the University of California, Irvine in the 1990s with support from the National Science Foundation and is now produced by McGraw Hill Education. The "PPL" suffix stands for **Placement, Preparation, and Learning**, a name that reflects the assessment's unique three-part design. The placement assessment measures what you know. The preparation and learning module then helps you review topics you missed. After studying, you can retake the assessment to improve your placement.

ALEKS PPL is used by hundreds of universities across the United States, particularly large state university systems that need a reliable way to place incoming freshmen into the appropriate level of mathematics. Unlike the ACCUPLACER, which is divided into three separate tests, ALEKS PPL is a single integrated assessment that draws questions from across the full mathematics curriculum — from basic arithmetic through precalculus. Depending on your performance, the test may reach into topics you have never formally studied, and that is by design. The assessment is mapping what you know and what you do not know across more than three hundred distinct mathematical topics.

The single most important thing to understand about ALEKS PPL is that it is **not a multiple-choice test**. Every question is **open-response**. You do not pick from A, B, C, or D. Instead, you type numerical answers, drag labels onto coordinate planes, build algebraic expressions using an on-screen math palette, and select points on graphs. This format eliminates guessing entirely. If you do not know the answer, you cannot narrow it down by process of elimination — you either produce the correct value or you do not. This is why ALEKS PPL is considered one of the most accurate placement assessments available: it cannot be gamed.

ALEKS PPL is also **adaptive**. The assessment uses an artificial intelligence engine to map your knowledge across its 314 mathematical topics by selecting each question based on your answers to previous questions. The test typically contains **up to 30 questions** and takes most students between 60 and 120 minutes to complete. There is no official passing score — instead, your placement result is a **percentage from 0 to 100** that represents the share of the 314 topics you have demonstrated mastery of. Each college sets its own cutoffs for each math course in its sequence.

About the Simulations in This Section

Each of the four simulations that follow contains **30 questions**, matching the length of the real ALEKS PPL assessment exactly. The questions cover the same breadth of topics the actual exam covers — arithmetic and basic algebra at the easier tiers, linear and quadratic functions in the middle range, and exponential, logarithmic, trigonometric, and precalculus topics at the higher tiers. Taken together, the four simulations deliver **120 practice questions** that reflect the full range of content you may encounter on test day.

Because these simulations are delivered on paper, they cannot replicate every feature of the real ALEKS PPL. The paper format requires multiple-choice answer options rather than the open-response format used on the real test. To compensate for this, the answer options in these simulations are deliberately built to avoid the kind of obvious elimination that would let you guess your way through a question. Wrong answers look like the kinds of answers a student who almost had it would produce — common algebraic errors, sign mistakes, and formula misapplications — rather than transparently wrong options. Treat the simulations as a content review tool: the goal is to practice the mathematical operations you will need to perform on test day, not to memorize a specific multiple-choice format.

The question selection in each simulation spans the full breadth of topics tested on the real ALEKS PPL, proportioned roughly as the real test does. Expect to see arithmetic with fractions and decimals, linear equations and inequalities, systems, polynomial operations, factoring, quadratic functions, exponential and logarithmic equations, rational expressions, radical simplification, right-triangle trigonometry, coordinate geometry, word problems involving rates and mixtures, basic probability and statistics, and sequences. The content is broader than any single college course because ALEKS PPL is designed to place students across a wide range of possible starting courses, from developmental arithmetic all the way through calculus-ready precalculus.

Each simulation is followed by a complete answer key with a detailed explanation for every question. The explanations identify the correct answer, walk through the reasoning, and point you back to the specific chapter in Part One where the relevant concept was taught. For topics that feel unfamiliar — and there will probably be some, because ALEKS PPL covers so much ground — the explanations serve as focused mini-lessons that fill in the gaps.

How to Take These Simulations

Treat every simulation like the real exam. Set aside 90 to 120 minutes of uninterrupted time. Turn off your phone. Work in a quiet space. Keep scratch paper and a pencil ready, and use only the on-screen calculator that the real ALEKS PPL provides — a basic scientific calculator, not a graphing calculator, and not your personal calculator from math class. The real ALEKS PPL explicitly prohibits outside calculators.

Work each question carefully and honestly. Do not skip ahead to the answer key when a question feels hard. The value of a simulation comes entirely from committing to your own answer before checking the correct one, and the hardest questions are the ones you will learn the most from. If a question stumps you completely, mark it, make your best guess, and move on. Review it carefully when you reach the answer key.

After completing each simulation, review every question — correct and incorrect alike. For every wrong answer, return to the relevant chapter in Part One, reread the section, and rework the example problems before moving on to the next simulation. Between Simulations 1 and 2, plan to spend at least a few hours on targeted review. Between Simulations 2 and 3, and between 3 and 4, continue the same pattern. Your goal across the four simulations is measurable improvement in percent correct from one attempt to the next.

Scoring Yourself

Track your **percent correct** on each simulation and watch it rise across Simulations 1, 2, 3, and 4. A percent correct of 60% or higher suggests you are approaching the threshold most universities require for college-level math placement. A percent correct of 75% or higher suggests you are well-prepared for any college algebra or precalculus cutoff. A percent correct of 85% or higher puts you in strong contention for calculus-ready placement at almost any institution.

Keep in mind that the real ALEKS PPL reports scores from 0 to 100 as a measure of topic mastery, and the two scales are not directly comparable. What matters in practice is whether your scores are trending upward — that upward trajectory is the strongest signal that your preparation is working.

A Final Word Before You Begin

Four full ALEKS PPL simulations lie ahead — 120 questions spanning the full range of mathematics tested on the real exam. Every question is a rehearsal for test day. Every wrong answer you review is a wrong answer you will not make when it counts. Take these simulations seriously, work honestly, and let the pattern of your scores tell you when you are ready for the real assessment.

Turn the page when you are ready. Practice Exam 4 begins with the first full ALEKS PPL Math Simulation — 30 questions drawn from arithmetic through precalculus, organized in the mixed order the real exam uses.

PRACTICE EXAM 4: ALEKS PPL MATH SIMULATION

1. A car travels 174 miles in 3 hours. What is its average speed in miles per hour?

A. 56 mph average speed

B. 58 mph average speed

C. 60 mph average speed

D. 62 mph average speed

2. Solve for x: $5x - 12 = 3x + 8$.

A. 4

B. 8

C. 6

D. 10

3. Factor completely: $x^2 - 9x + 20$.

A. $(x - 4)(x - 5)$

B. $(x - 10)(x + 2)$

C. $(x - 4)(x + 5)$

D. $(x + 4)(x + 5)$

4. What is 3/4 + 2/5 expressed as a single fraction?

A. 5/9 as a sum

B. 11/20 as a sum

C. 23/20 as a sum

D. 5/20 as a sum

5. The line passing through (1, 4) and (3, 10) has what slope?

A. 2 as its slope

B. 3 as its slope

C. 4 as its slope

D. 6 as its slope

6. Simplify: $(2x^2y)(3xy^3)$.

A. $5x^2y^3$

B. $5x^3y^4$

C. $6x^2y^3$

D. $6x^3y^4$

7. Solve the inequality: $3(x - 2) \leq 9$.

A. $x \leq 1$

B. $x \geq 5$

C. $x \leq 5$

D. $x \geq 1$

8. What is the value of $\log_4(64)$?

A. 3

B. 4

C. 16

D. 256

9. A triangle has a base of 14 cm and a height of 9 cm. What is its area?

A. 126 cm^2

B. 46 cm^2

C. 252 cm^2

D. 63 cm^2

10. Solve: $\sqrt{(x + 7)} = 5$.

A. 12

B. 18

C. 25

D. 32

11. The equation of a circle centered at (2, −3) with radius 4 is:

A. $(x + 2)^2 + (y - 3)^2 = 4$

B. $(x - 2)^2 + (y + 3)^2 = 4$

C. $(x + 2)^2 + (y - 3)^2 = 16$

D. $(x - 2)^2 + (y + 3)^2 = 16$

12. If $f(x) = 3x - 5$, what is $f(-2)$?

A. −11

B. −1

C. 1

D. 11

13. Simplify: $(x^2 - 16)/(x - 4)$.

A. $x - 4$ as the quotient

B. $x^2 - 4$ as the quotient

C. $x + 4$ as the quotient

D. $x - 16$ as the quotient

14. The mean of {6, 10, 14, 18, 22} is:

A. 10

B. 14

C. 16

D. 18

15. In a right triangle, one leg is 8 and the hypotenuse is 17. What is the other leg?

A. 9

B. 12

C. 13

D. 15

16. Solve the system: $2x + y = 7$ and $x - y = -1$.

A. (2, 3)

B. (3, 1)

C. (1, 5)

D. (4, −1)

17. What is 40% of 85?

A. 30

B. 32

C. 34

D. 36

18. The 5th term of the geometric sequence 2, 6, 18, 54, … is:

A. 108

B. 162

C. 216

D. 324

19. Simplify: $4\sqrt{12}$.

A. $8\sqrt{3}$

B. $16\sqrt{3}$

C. $12\sqrt{3}$

D. $4\sqrt{3}$

20. The vertex of the parabola $y = x^2 + 4x + 1$ is:

A. (−4, 1)

B. (2, −3)

C. (4, 1)

D. (−2, −3)

21. What is the probability of drawing a king from a standard deck of 52 cards?

A. 1/52

B. 1/13

C. 1/26

D. 4/13

22. Solve: $2^x = 1/16$.

A. 4

B. 2

C. −2

D. −4

23. The distance between (1, 2) and (4, 6) is:

A. 5

B. 6

C. 7

D. $\sqrt{13}$

24. Simplify: $\log(1000)$.

A. 10

B. 1

C. 3

D. 100

25. A rectangle has a perimeter of 36 meters and a length of 10 meters. What is its width?

A. 18 meters

B. 26 meters

C. 6 meters

D. 8 meters

26. Factor: $4x^2 - 25$.

A. $(2x - 5)(2x + 5)$

B. $(2x - 5)^2$

C. $(4x - 5)(x + 5)$

D. $(2x + 5)^2$

27. The solution to $|x + 3| = 7$ is:

A. $x = 4$ or $x = 10$

B. $x = 4$ or $x = -10$

C. $x = -4$ or $x = 10$

D. $x = -4$ or $x = -10$

28. In a 30-60-90 triangle, if the hypotenuse is 12, the side opposite the 30° angle is:

A. $4\sqrt{3}$

B. $6\sqrt{3}$

C. 6

D. $12\sqrt{3}$

29. The median of {3, 8, 11, 14, 17, 20, 25} is:

A. 14

B. 11

C. 17

D. 13

30. A line has slope $-1/2$ and passes through (4, 3). What is its y-intercept?

A. 4

B. 3

C. 2

D. 5

PRACTICE EXAM 4: ANSWER KEY AND EXPLANATIONS

1. B — 58 mph. Dividing total distance by total time gives $174 \div 3 = 58$ miles per hour. Average speed is always calculated as distance divided by the time elapsed.
2. D — 10. Subtracting 3x from both sides gives $2x - 12 = 8$, then adding 12 gives $2x = 20$, so $x = 10$. Linear equations with variables on both sides are solved by isolating the variable on one side.
3. A — $(x - 4)(x - 5)$. Finding two numbers that multiply to 20 and add to −9 gives −4 and −5. The factored form is $(x - 4)(x - 5)$, which expands back to the original trinomial.
4. C — 23/20. The common denominator of 4 and 5 is 20, giving $15/20 + 8/20 = 23/20$. Fraction addition requires a common denominator before numerators are added.
5. B — 3. Slope is calculated as $(y_2 - y_1)/(x_2 - x_1)$, giving $(10 - 4)/(3 - 1) = 6/2 = 3$. Positive slope indicates the line rises from left to right.
6. D — $6x^3y^4$. Multiplying coefficients gives $2 \times 3 = 6$, and exponent rules give $x^2 \cdot x = x^3$ and $y \cdot y^3 = y^4$. The product is $6x^3y^4$.
7. C — $x \leq 5$. Distributing gives $3x - 6 \leq 9$, then adding 6 gives $3x \leq 15$, so $x \leq 5$. The inequality sign does not flip because division is by a positive number.
8. A — 3. The equation $\log_4(64) = x$ is equivalent to $4^x = 64$, and since $4^3 = 64$, $x = 3$. Logarithms always convert to exponential form for evaluation.
9. D — 63 cm². The triangle area formula is $A = \frac{1}{2}bh$, giving $A = \frac{1}{2}(14)(9) = 63$ cm². Half the product of base and height always yields triangle area.
10. B — 18. Squaring both sides gives $x + 7 = 25$, then subtracting 7 gives $x = 18$. Radical equations are solved by isolating and squaring to eliminate the radical.
11. D — $(x - 2)^2 + (y + 3)^2 = 16$. The standard form $(x - h)^2 + (y - k)^2 = r^2$ with center $(2, -3)$ gives $(x - 2)^2 + (y + 3)^2 = 4^2 = 16$. The radius is squared in the equation.
12. A — −11. Substituting $x = -2$ gives $f(-2) = 3(-2) - 5 = -6 - 5 = -11$. Function evaluation replaces the variable with the input value.
13. C — $x + 4$. Factoring the numerator as a difference of squares gives $(x + 4)(x - 4)$, and canceling $(x - 4)$ leaves $x + 4$. This simplification is valid for all $x \neq 4$.

14. B — 14. Adding the five values gives $6 + 10 + 14 + 18 + 22 = 70$, and dividing by 5 gives 14. The mean is the sum divided by the count.

15. D — 15. Using the Pythagorean theorem, $8^2 + b^2 = 17^2$ gives $64 + b^2 = 289$, so $b^2 = 225$ and $b = 15$. This is a scaled version of the 8-15-17 Pythagorean triple.

16. A — (2, 3). Adding the two equations eliminates y: $3x = 6$, so $x = 2$. Substituting into $x - y = -1$ gives $y = 3$, and the solution (2, 3) checks in both equations.

17. C — 34. Calculating 40% of 85 means multiplying $0.40 \times 85 = 34$. Percent-of calculations convert the percent to a decimal before multiplying.

18. B — 162. Using $a_n = a_1 \cdot r^{n-1}$ with $a_1 = 2$, $r = 3$, and $n = 5$: $a_5 = 2 \times 3^4 = 2 \times 81 = 162$. Geometric sequences multiply by the common ratio at each step.

19. A — $8\sqrt{3}$. Simplifying $\sqrt{12}$ gives $2\sqrt{3}$ (since $12 = 4 \times 3$), and multiplying by 4 gives $4 \times 2\sqrt{3} = 8\sqrt{3}$. Simplifying radicals pulls out perfect square factors.

20. D — (−2, −3). The x-coordinate of the vertex is $-b/(2a) = -4/2 = -2$, and substituting gives $y = 4 - 8 + 1 = -3$. The vertex is (−2, −3).

21. B — 1/13. A standard deck contains 4 kings and 52 cards total, so the probability is $4/52 = 1/13$. Probability is the favorable count over the total count.

22. D — −4. Rewriting 1/16 as 2^{-4} gives $2^x = 2^{-4}$, so $x = -4$. Negative exponents represent reciprocals of positive powers.

23. A — 5. Using the distance formula, $d = \sqrt{[(4 - 1)^2 + (6 - 2)^2]} = \sqrt{[9 + 16]} = \sqrt{25} = 5$. This is the Pythagorean theorem applied to coordinate differences.

24. C — 3. The common logarithm log(1000) equals the exponent to which 10 is raised to get 1000. Since $10^3 = 1000$, $\log(1000) = 3$.

25. D — 8 meters. The perimeter formula $P = 2l + 2w$ gives $36 = 20 + 2w$, so $2w = 16$ and $w = 8$. Perimeter problems substitute known values and solve for the unknown dimension.

26. A — $(2x - 5)(2x + 5)$. The expression $4x^2 - 25$ is a difference of squares where $4x^2 = (2x)^2$ and $25 = 5^2$. The factored form follows the pattern $a^2 - b^2 = (a - b)(a + b)$.

27. B — $x = 4$ or $x = -10$. The absolute value equation splits into $x + 3 = 7$ and $x + 3 = -7$, giving $x = 4$ and $x = -10$ respectively. Both solutions must be considered.

28. C — 6. In a 30-60-90 triangle, the side opposite the 30° angle is half the hypotenuse. Half of 12 is 6.

29. A — 14. For an odd number of values, the median is the single middle value. With seven values, the fourth value (14) is in the middle position.

30. D — 5. Using point-slope form $y - 3 = -1/2(x - 4)$, distributing gives $y = 3 - x/2 + 2 = -x/2 + 5$. The y-intercept is 5.