



ADP Algebra I End-of-Course Exam Expectations of Knowledge

The ADP Algebra I End-of-Course Exam will assess students across a variety of algebra topics and within various contexts. Unlike some state or classroom assessments, a formula sheet will **not** be provided for students to use on this exam. Therefore, the following topics and formulas are provided here to enable teachers to appropriately prepare students for what is expected of them on the exam.

Algebra I knowledge/topics:

- Substitution
- Order of operations
- Quadratic Formula (Quadratic equations may be solved in multiple ways, however if a student chooses to use this method, the formula will not be provided. For this assessment, solutions will be rational.)
- The squares of the integers 1 through 25, i.e., $1^2 = 1$, $2^2 = 4$, ..., $25^2 = 625$
- Approximate square roots (which two consecutive whole numbers a square root lies between)
- Forms of a linear equation: standard, slope-intercept, point-slope
- Distance = rate x time
- Distance formula (distance between two points on a line)
- For items where a student is required to graph the equation or function, axes and scales should be labeled. If the item is written in a context, the labels and scales must be appropriate within the context of the item, including units (e.g., dollars, seconds, etc). Students are expected to graph the solution set over the set of real numbers to indicate the key characteristics of the graph, unless the domain is restricted by the content of the item.

Assumption for Test Items:

For purposes of this exam, the following assumptions are made about the test items, without being explicitly stated in each item. However, if an assumption is not to be made for a particular item, the item will state the parameters to be considered.

- All algebraic expressions are defined.
- All radical expressions represent real numbers.
- All graphs are graphed over the set of real numbers.
- All spinners, number cubes and coins are fair.
- All events are equally likely and samples are representative of the population.
- All selections from a box, bag, bowl, etc. are considered random selections, without looking.

Use of π :

When specified that an exact answer is required, answers should be expressed in terms of π . If not specified, answers may be expressed in terms of π , or 3.14 or $22/7$ may be used as an approximation for π .

ADP Algebra I End-of-Course Exam Expectations of Knowledge

Prior knowledge/topic:

The following topics are mathematical concepts with which students entering an Algebra I curriculum should be familiar from prior mathematics courses. The high school curriculum or course sequence that a student might follow that leads them to this exam varies by state, district, and sometimes even school. Regardless of the course sequence followed, the mathematical concepts below are typically considered middle school concepts and taught before the Algebra I, or its equivalent, course(s).

- Definition of polygons, through octagon
- Perimeter of polygons
- Area of parallelograms
- Area of trapezoids
- Area and circumference of circles
- Area of triangles (not requiring trigonometry)
- Volume of cylinders and rectangular prisms
- Surface area of cylinders and right prisms with rectangular or triangular bases
- Definitions of basic geometric figures: line, line segment, ray, parabola
- Pythagorean Theorem
- Similar figures
- Scale factors
- Sum of the interior angles of a triangle equals 180°
- Simple and compound interest

Standard measurement conversions

12 inches = 1 foot
3 feet = 1 yard
5,280 feet = 1 mile

8 ounces = 1 cup
2 cups = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon

16 ounces = 1 pound
2,000 pounds = 1 ton

Time

60 seconds = 1 minute
60 minutes = 1 hour
24 hours = 1 day
7 days = 1 week

For purposes of this test, assume 1 year to be 365 days, 52 weeks, or 12 months.

Metric conversions

Using liters, meters, and grams
10 milli = 1 centi
10 centi = 1 deci
10 deci = 1 base
10 base = 1 deca
10 deca = 1 hecto
10 hecto = 1 kilo