

Algebra 1 Practice Test & Answer Key

Instructions:

- 1. Show all work in the test booklet to receive partial credit.
- 2. Write the final answer in the box.
- 3. No calculators.
- 4. 60 Minutes for 14 problems and 1-2 extra credit problems.

THIS IS ONLY A PRACTICE TEST. SUBMISSION IS NOT REQUIRED. If you have questions, please reach out to your Math Teacher for help.



Mathematics Topics That May be Assessed by This Test

Skill/Topic	Standard	
Numerical Fluency	N.RN.B 6.NS.B 7.NS.A 6.NS	
Ratio and Percents	7.RP.A 6.RP.A	
Order of operations and operations with real numbers [including integers and rational numbers]	N.RN.B 6.NS.B 7.NS.A 6.NS	
Writing algebraic expressions from words [using words like squares, sum, difference, etc.]	6.EE.A 7.EE.B	
Evaluate and simplify expressions [including laws of exponents (positive and negative powers), distributive property, combining like terms]	A.SSE.B.3 8.EE.A 7.EE.A 7.EE.B 6.EE.A	
Solving equations and inequalities [including equations with variables on each side]	A.REI.B 8.EE.C 6.EE.B	
Graphing and writing linear equations [including going between forms] - Slope Intercept Form - Standard Form	A.CED.A A.REI.D	
Solving systems of equations	A.REI.C 8.EE.C	
Knowing/using basic geometry area and perimeter formulas and finding area of a composite figures	7.G.B 6.G.A	



Problem #	Points	Practice Problems
1.	7	Simplify the Expression: $5^2 + (-24) \div \frac{4}{5}$
2.	7	Evaluate and simplify. Express your answer as a mixed fraction: $\frac{2}{3}(2a-b), a = 6, b = -\frac{3}{4}$
3.	8	 a) Solve the inequality. -6x - 3 < 7 + 4x b) Graph the solution to the inequality on the number line. c) Write the smallest positive integer which satisfies the inequality



Problem #	Points	Practice Problems
4.	7	Find the x and y-intercept of the following equation: 2x - 3y = 6 x intercept (,) (,)
5.	7	Solve the equation: 5(x-1) + 4 = 3x - 9
6.	7	The measures of the three angles of a triangle are in the ratio 4:5:9. Find the measure of the largest angle. <i>Hint: The sum of the angles of a triangle is</i> 180°.



Problem #	Points	Practice Problems
7.	7	The perimeter of a rectangle is 60 cm. The length of the rectangle is 10 cm longer than the width. Find the area of the rectangle in cm ² .
8.	7	Given the lines $5x + 4y = 8$ and $y = -4$, find the point of intersection.



Problem #	Points	Practice Problems
9.	8	 Given the equations of the line x - 2y = 6; complete the following: a) write the equation of the line in slope intercept form y = mx + b b) Identify the slope and y-intercept. c) Graph the equation of the line.



Problem	Points	Practice Problems
10.	7	Solve the system of equations:
		5x - 2y = 11 3x + 2y = 5
		Write the solution as an ordered pair.
11.	7	Given $f(x) = 3x^2 - 2x - 7$; find $f(-1)$
12.	7	There are 30 students in the class. 60% of them wear glasses. How many students do not wear glasses?
13.	7	Write the sentence as an algebraic expression "seven less than twice the sum of a number and three".







Answer Key





3. Answer (Continued):

Part B:

- (1) Student draws number line correctly
- (1) Student places open circle at -1
- (1) Student draws an arrow going to the right from -1

Part C:

(1) Student gets the correct positive integer

4. Answer: x-intercept (3,0); y-intercept (0,-2)

(1) Student displays understanding of what an "intercept" is (even if x and y intercept are mixed up)

- (1) Student displays understanding that x-intercept is when the y value is 0
- (1) Student correctly solves for x when y=0
- (1) Student displays understanding that y-intercept is when the x value is 0
- (1) Student correctly solves for y when x=0
- (1) Student has the correct x-intercept coordinate
- (1) Student has the correct y-intercept coordinate

5. Answer: x=-4

- (2) Student distributes the 5 to (x-1) accurately
- (1) Student combines like terms on the same side accurately
- (1) Student moves all non-x terms to one side accurately
- (1) Student moves all x-terms to other side accurately
- (1) Student isolates the variable by dividing by the coefficient accurately
- (1) Student correctly solves for the value of x

6. Answer: 90 degrees

- (1) Student displays understanding of ratio to not be the actual values of each angle
- (2) Student displays relationship between the ratio of angles and the sum of the angles accurately
- (1) Student writes an equation to calculate the value of "x"
- (1) Student finds the value of "x" correctly
- (1) Student uses the value of x to calculate the measures of the largest angle correctly
- (1) Student displays answer with units (Either "degrees" or the degrees symbol)



7. Answer: 200 cm²

- (1) Student displays understanding of the perimeter of a rectangle
- (1) Student displays understanding of the relationship between length and width
- (1) Student finds the length of the rectangle
- (1) Student finds the width of the rectangle
- (1) Student displays understanding of how to find the area of a rectangle
- (1) Student calculates the correct area of the rectangle
- (1) Student writes correct units with answer

8. Answer: (24/5,-4) OR $(4\frac{4}{5},-4)$ OR (4.8,-4)

(2) Student shows understanding of what "intersection" means (either graphically or by substituting the y=-4 into the first equation)

(1) Student writes -4 for the y value of the point of intersection

(3) Student solves the expression for x

(1) Student expresses the point of intersection correctly (with x and y values in the right place)

9. Answer:





9. Answer (Continued):

Answer: Part B:

(1) Student correctly identifies the slope

(1) Student correctly identifies the y-intercept

Answer: Part C:

(1) Student correctly identifies a point on the graph (y-intercept or another point)

(1) Student draws a line with the correct slope

10. Answer: (2, -1/2)

(1) Student displays an understanding of how to solve a system of equations (substitution, elimination, or graphing)

- (2) Student utilizes a strategy to find the value of x
- (1) Student calculates the correct x value
- (1) Student substitutes the x value to solve for y
- (1) Student solves for the correct y value
- (1) Student writes answer as an ordered pair

11. Answer: -2

(2) Student shows understanding that f(-1) means that x is equal to -1 and substitutes -1 for every time f(x) displays the variable "x"

(1) Student writes that (-1)²=1

(1) Student multiplies 1 and 3

(1) Student writes that -2*-1= 2

(2) Student accurately performs integer addition/subtraction to get -2 as the final answer

12. Answer: 12 students

(2) Student displays understanding that 60% is the percentage of students who WEAR glasses (i.e. does calculations with 40% or subtracts the number of students who wear glasses to get the students who do not)

- (1) Student displays understanding that a percent means out of 100
- (3) Student multiplies the percentage and whole number accurately
- (1) Student gets 12 students as an answer



13. Answer: 2(x+3)-7

- (1) Student utilizes a variable or symbol to express the unknown number
- (1) Student displays understanding that "sum of a number and three" means x+3
- (1) Student displays understanding that "twice" means multiplication of 2
- (1) Student multiplies 2 to the quantity x+3
- (1) Student understands that "seven less" means subtraction of 7
- (1) Student displays understanding that "seven less" is the last operation in the expression
- (1) Correct expression

14. Answer: 49.5 cm²

- (1) Student displays understanding that the figure is a composite figure
- (4) Student calculates the area of the pieces accurately
- (1) Student adds the areas together accurately.
- (1) Student writes answer with correct units

Bonus Question Answer: $2^{(m+n)-3}$