

# *Algebra 1*

# *Practice Test*

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**Algebra 1 Practice Test– Answer Sheet**

**Part 1: Multiple Choice - Questions are worth 1 point each.**

1. OA  
OB  
OC  
OD

2. OA  
OB  
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OD

3. OA  
OB  
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4. OA  
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5. OA  
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12. OA  
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19. OA  
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20. OA  
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Multiple Choice - Total Correct:

\_\_\_\_\_ (out of 20 points total)

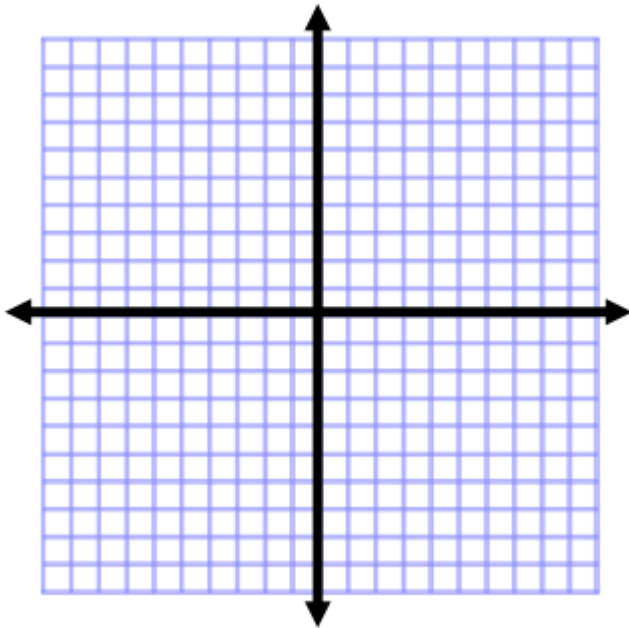
**Algebra 1 Answer Sheet - Continued**

**Part 2: Fill in the blank. Answers are worth 2 points each.**

21. \_\_\_\_\_

22. \_\_\_\_\_

23.



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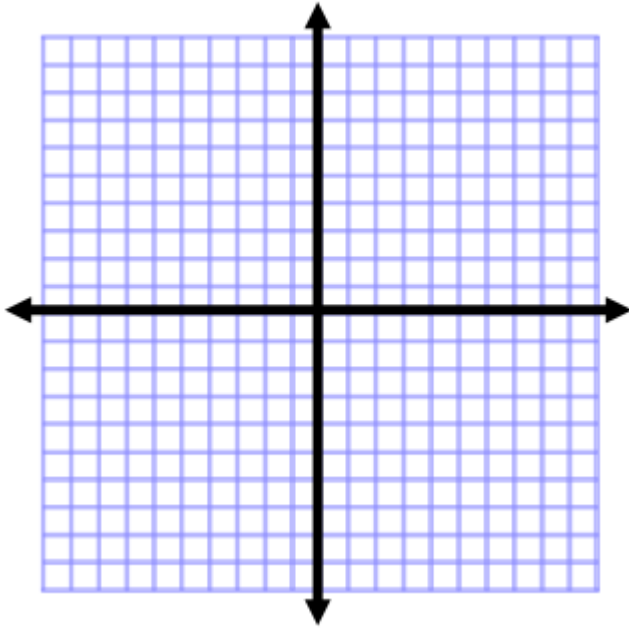
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24. \_\_\_\_\_

25.



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26.

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27.

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Fill In the Blank - Total Correct:

\_\_\_\_\_ (out of 14 points total)

**Part 3: Short Answer - Questions 28-31 are worth 3 points. Question 32 is worth 4 points.**

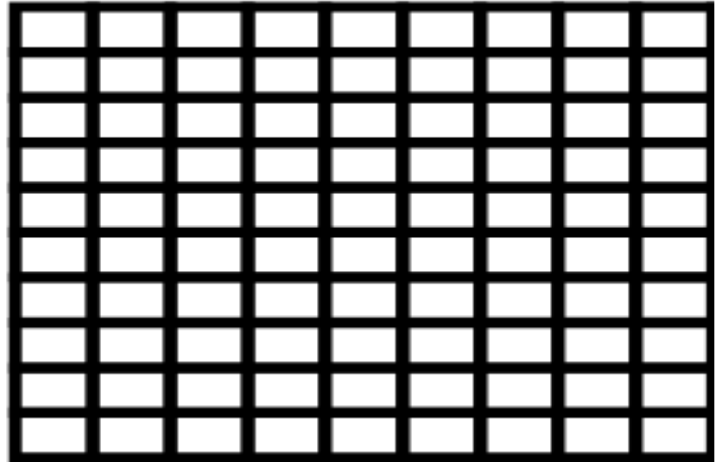
28. \_\_\_\_\_  
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32.



**Algebra 1 Practice Test**

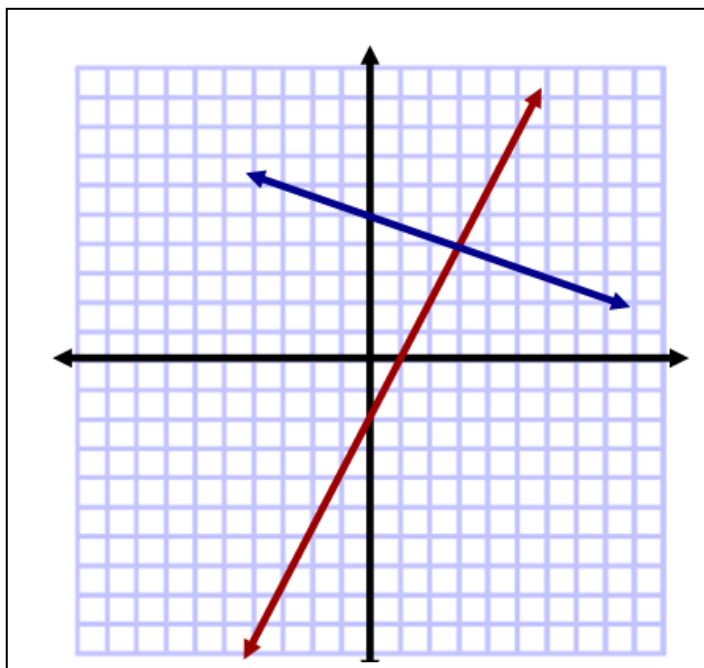
**Part 1: Directions:** For questions 1-20, circle the correct answer on your answer sheet.

1. Solve for x:  $2(x+ 7) - 3(2x-4) = -18$

- A.  $x = 5$
- B.  $x = 11$
- C.  $x = -11$
- D.  $x = -5$

2. Which system of equations is represented on the graph?

- A.  $y = 2x - 2$   
 $y = -1/3x + 5$
- B.  $y = 1/2x - 2$   
 $y = 1/3x + 5$
- C.  $y = 2x - 2$   
 $y = 1/3x + 5$
- D.  $y = -2x - 2$   
 $y = -1/3x + 5$



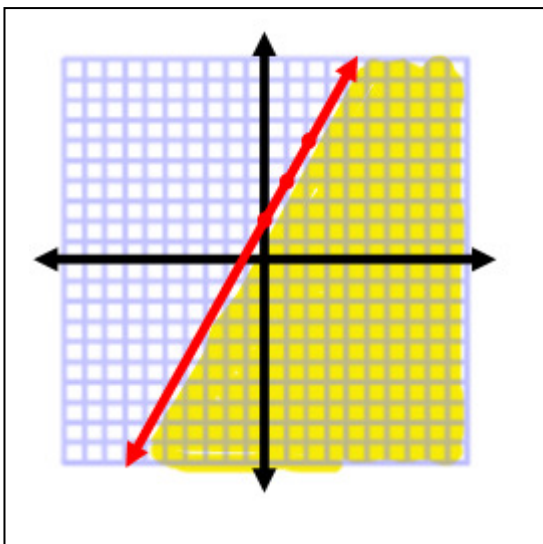
3. Solve the following inequality:  $-20 < 4 - 2x$

- A.  $8 > x$
- B.  $8 < x$
- C.  $12 > x$
- D.  $12 < x$



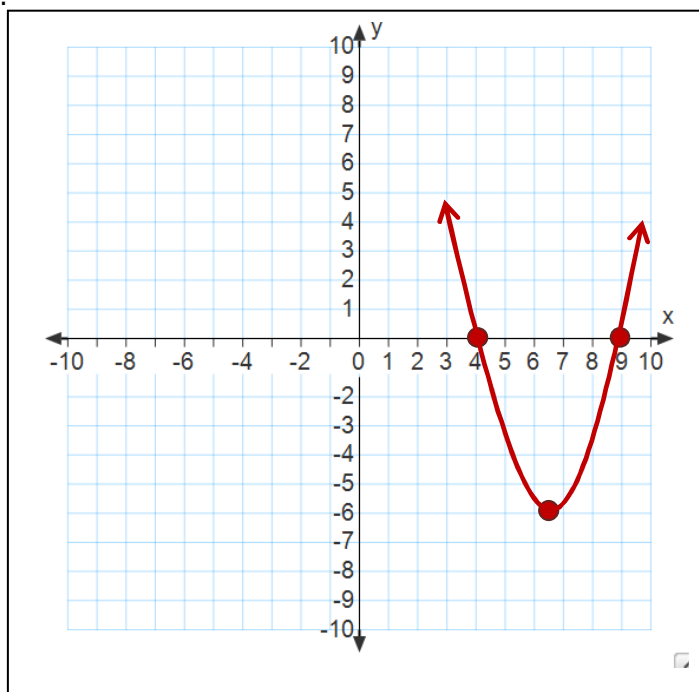
4. Which inequality is graphed ?

- A.  $y \geq 2x+2$
- B.  $y < 2x+2$
- C.  $y \leq 2x+2$
- D.  $y \leq -2x+2$



5. Which equation is represented on the graph?

- A.  $y = x^2 + 13x + 36$
- B.  $y = x^2 - 13x + 36$
- C.  $y = x^2 + 5x - 36$
- D.  $y = x^2 - 5x + 36$



6. John has mowed 3 lawns. If he can mow 2 lawns per hour, which equation describes the number of lawns,  $m$ , he can complete after  $h$ , more hours?

- A.  $m + h = 5$
- B.  $h = 2m + 3$
- C.  $m = 2h + 3$
- D.  $m = 3h + 2$

7. Simplify:  $(-3a^2b^2)(4a^5b^3)^3$

A.  $-192a^8b^5$

B.  $-12a^{17}b^{11}$

C.  $-12a^8b^5$

D.  $-192a^{17}b^{11}$

8. Multiply:  $(2x+5)(3x^2 - 2x - 4)$

A.  $6x^3 + 11x^2 - 18x - 20$

B.  $6x^3 + 19x^2 + 18x + 20$

C.  $21x^2 + 22x - 20$

D.  $6x^3 + 15x^2 + 6x + 12$

9. Which polynomial cannot be factored?

A.  $3x^2 - 14x - 8$

B.  $3x^2 - 10x - 8$

C.  $3x^2 - 14x + 8$

D.  $3x^2 + 10x - 8$

10. What is the greatest common factor of:  $12a^4b^2 - 3a^2b^5$ ?

A.  $12a^2b^2$

B.  $3a^4b^5$

C.  $3a^2b^2$

D.  $12a^4b^5$

11. Given  $f(x) = 5x - 4$ , find the value of  $x$  if  $f(x) = 31$

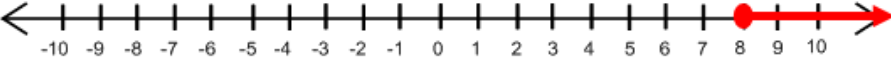
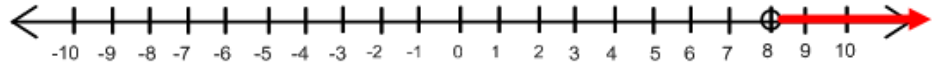
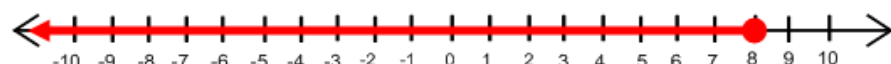
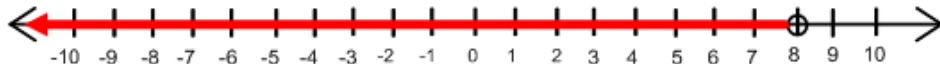
- A. 7
- B.  $27/5$
- C. 151
- D. -7

12. Which answer best describes the number of solutions for the following system of equations?

$$\begin{aligned} 4x + y &= 5 \\ 8x + 2y &= -6 \end{aligned}$$

- A. 1 solution
- B. 2 solutions
- C. no solutions
- D. infinitely many solutions

13. Which graph best represents the solution set of:  $15 - 2(x+3) < -7$ ?

- A. 
- B. 
- C. 
- D. 

14. Simplify:

$$\frac{2a^2b^4}{a^3b^2} \cdot \left(\frac{2a^2b}{3a^4b^5}\right)^{-2}$$

A.  $\frac{8}{9a^5b^6}$

C.  $3a^3b^{10}$

B.  $\frac{9a^3b^{10}}{2}$

D.  $9a^3b^{10}$

15. Judy had \$35 in her savings account in January. By November she had \$2500 in her account. What is Judy's rate of change between January and November?

A. \$253.50 per month

C. \$ 211.25 per month

B. \$ 246.50 per month

D. None of the Above

16. Simplify:  $(3x^4 + 3x^2 - x + 5) - 3(x^4 + x^3 - 2x^2 - 6)$

A.  $6x^4 + 3x^3 + 5x^2 - x - 13$

C.  $3x^4 - 3x^3 + 9x^2 - x + 23$

B.  $3x^3 + 3x^2 - x - 13$

D.  $-3x^3 + 9x^2 - x + 23$

17. Which is not a related fact of the equation:  $x - 4 = -12$

A.  $x - 12 = -4$

C.  $x = -12 + 4$

B.  $x + 12 = 4$

D.  $12 + x = 4$

18. Simplify:  $\frac{x^2 - x - 6}{x^2 - 2x - 8}$

A.  $\frac{x+3}{x+4}$

C.  $\frac{x-3}{x-4}$

B.  $\frac{-x-6}{-2x-8}$

D.  $\frac{x+2}{x-4}$

19. Terri has \$60 to spend at the carnival. It will cost her \$5 to enter the carnival and \$1.25 per ride. The solution to which inequality represents the number of possible rides,  $r$  that Terri can ride?

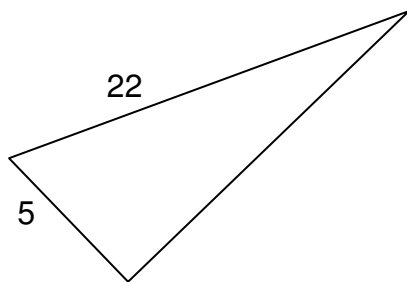
A.  $5r + 1.25 \leq 60$

C.  $1.25r + 5 \leq 60$

B.  $60 - 1.25r = 5$

D.  $5r + 1.25 \geq 60$

20. Given the following right triangle, find the length of the missing side.



A. 21.4

C. 27

B. 22.6

D. None of the Above

**Part 2: Directions:** For problems 21-27, write the correct answer on your answer sheet.

21. If you were to graph the following function, identify the point at which the vertex would be located. Identify whether this point would be a minimum point or a maximum point.

$$F(x) = -2x^2 - 8x - 10$$

22. Factor the following trinomial:  $8x^2 - 10x - 3$

23. Graph the following system of equations on the grid. Identify the solution to the system.

$$y = 3x + 6$$

$$2x + y = -9$$

24. Use quadratic formula to solve the equation:  $x^2 + 4x = 9$

25. Graph the following equation and identify the x-intercepts, and vertex of the parabola.

$$Y = x^2 - 4$$

**v**

26. Simplify  $(7 - x)^2$ . Express your answer in standard form.

27. What is the value of the discriminant for the following equation? What does it tell you about the solutions?

$$3x^2 - 7x + 4 = 0$$

**Part 3: Directions: For problems 28 – 32, write your answer on the answer sheet. Be sure to answer all of the bullets for each problem!**

28. Liam is choosing a new cell phone plan. Wireless Plus offers \$65 a month plus \$0.10 per gigabyte over the monthly limit. New Age Phones has a monthly fee of \$35 per month, plus \$0.20 per gigabyte over the monthly limit.
- Write a system of equations that describes this situation.
  - For how many gigabytes over the monthly limit, will the two plans charge the same amount?
  - If you were to average 200 gigabytes over the monthly limit, which company would be the better value?
29. An ice cream store made a profit of \$35700 in 1990 and a profit of \$85360 in 2008. Write an equation that can be used to predict the profit,  $y$ , in terms of the year,  $x$ . Let  $x=0$  represent the year 1990.
- Predict the profit for the year 2011.
  - What does the  $y$ -intercept represent in the context of this problem?
30. A candy store finds that it can make a profit of  $P$  dollars each month by selling  $x$  boxes of candy. Using the formula:  $P(x) = -.0013x^2 + 5.5x - 800$ , how many boxes of candy must the store sell in order to maximize their profits? What is the maximum profit?
31. A rectangle has a length of  $3x + 9$  and a width of  $5x - 4$ . The perimeter of the rectangle is 106 units. Find the width of the rectangle.
32. The boy's soccer team is holding a fundraiser. They are selling cheese pizzas for \$12 and supreme pizzas for \$15. They would like to raise at least \$1000. The boys estimate that at most they will be able to sell 120 pizzas.
- Write a system of inequalities to represent this situation.
  - Graph each inequality on the grid.
  - 75 cheese pizzas have been sold. Use your graph to determine a reasonable number of supreme pizzas that must be sold in order for the girls to reach their goal of at least \$1000. Justify your answer.

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**Answer Key****Part 1: Multiple Choice**

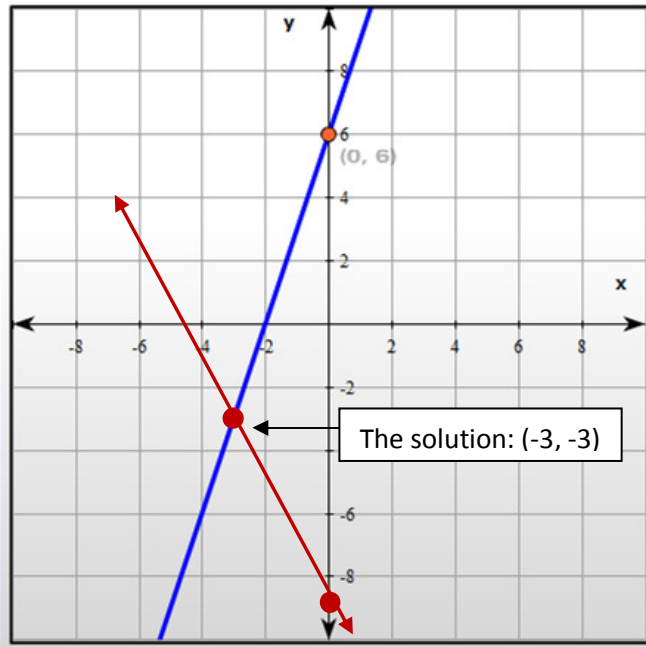
1. B
2. A
3. C
4. C
5. B
6. C
7. D
8. A
9. A
10. C
11. A
12. C
13. B
14. B
15. B
16. D
17. A
18. C
19. C
20. A

**Part 2: Short Answer**

21. There is a maximum point. The vertex is (-2, -2)
  
22. The factors are:  $(4x+1)(2x-3)$

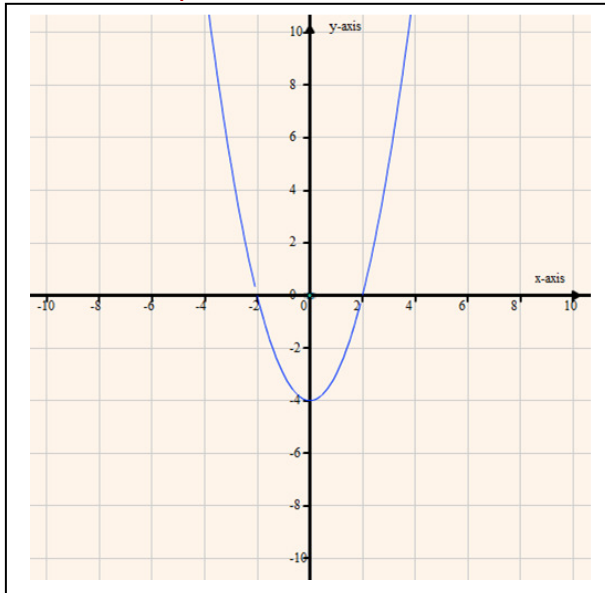


23. The solution is (-3,-3)



24.  $x = 1.6$  and  $x = -5.6$

25. x intercepts:  $x=2$  and  $x = -2$       vertex:  $(0,-4)$



26.  $x^2 - 14x + 49$

27. The discriminant is 1. There are 2 rational solutions.

**Part 3: Extended Response**

28. Wireless Plus:  $y = .10x + 65$

New Age Phone:  $y = .20x + 35$

For 300 gigabytes over the monthly limit, the 2 plans will charge the same amount (\$95)

For 200 gigabytes over the monthly limit, New Age Phones is the better value. They only charge \$75 versus Wireless Plus who charges \$85.

29. The equation that can be used to predict the profit is:  
 $Y = 2758.89 + 35700$ . In the year 2011, the profit will be \$93636.69. The y-intercept represents the profit for year 0, which in this case is 1990.

30. The candy store must sell 2115 boxes of candy in order to maximize its profit. The maximum profit would be \$5017.31

31. The width of the rectangle is 26 units.

32. The system of inequalities that represents this situation is:

Let  $x$  = number of cheese pizzas

Let  $y$  = number of supreme pizzas

$12x + 15y \geq 1000$  (purple line and shading)

$x + y \leq 120$  (orange line and shading)



If 75 cheese pizzas were sold, then up to 45 supreme pizzas could be sold in order to make at least \$1000.

**Algebra Practice Test Analysis Sheet**

**Directions:** For any problems, that you got wrong on the answer sheet, circle the number of the problem in the first column. When you are finished, you will be able to see which Algebra units you need to review before moving on. (If you have more than 2 circles for any unit, you should go back and review the examples and practice problems for that particular unit!)

| <b>Problem Number</b>       | <b>Algebra Unit</b>             |
|-----------------------------|---------------------------------|
| 1,17                        | Unit 1: Solving Equations       |
| 2, 15                       | Unit 2: Graphing Equations      |
| 6,19, 29                    | Unit 3: Writing Equations       |
| 2, 12, 23, 28               | Unit 4: Systems of Equations    |
| 3, 4, 13, 32                | Unit 5: Inequalities            |
| 11, 21                      | Unit 6: Relations & Functions   |
| 7, 14                       | Unit 7: Exponents & Monomials   |
| 8, 16, 26,31                | Unit 8: Polynomials             |
| 10, 18, 22                  | Unit 9: Factoring (Polynomials) |
| 5, 9, 20, 24, 25,<br>27, 30 | Unit 10: Quadratic Equations    |