

Name: _____
Algebra 1

Date: _____
Band: _____

Algebra 1 Fall Practice PBA

Unit 1: Foundations for Algebra

Write an algebraic expression for each word phrase.

1. 9.85 less than the product of 37 and t

Simplify.

2. $(6 - 2)^3 \div 2$
3. $5 \cdot 7 - 4^2 \div 2$
4. $-|-3|$

Evaluate for $x = 5$ and $y = 2$.

5. $x^2 + x - 12 \div y^2$
6. $(xy)^2 \div (xy)$

Evaluate $a = 3$ and $b = 4$.

7. $3b - a^2$
8. $2b^2 - 7a$

To which subset(s) of the real numbers does each number belong?

9. 15
10. -1.4583
11. $\sqrt{57}$
12. $\sqrt{9}$
13. $\frac{3}{10}$
14. -0.45
15. $\sqrt{12}$
16. 0

Unit 2: Solving Equations

1. Solve $2x + 3y = 15$ for x .
2. Solve $10x + 5y = 80$ for y .
3. Solve $4 = 2m - 5n$ for m .

Solve each equation.

4. $5 = \frac{1}{2}t - 3$
5. $6 = \frac{1}{7}m - 3$

6. $-8 = \frac{1}{4}s + 3$
 7. $\frac{1}{3}x - 8 = 4$

Solve each equation.

8. $2a + 3 = \frac{1}{2}(6 + 4a)$
 9. $5y + 2 = \frac{1}{2}(10y + 4)$
 10. $\frac{1}{2}h + \frac{1}{3}(h - 6) = \frac{5}{6}h + 2$

Solve each proportion.

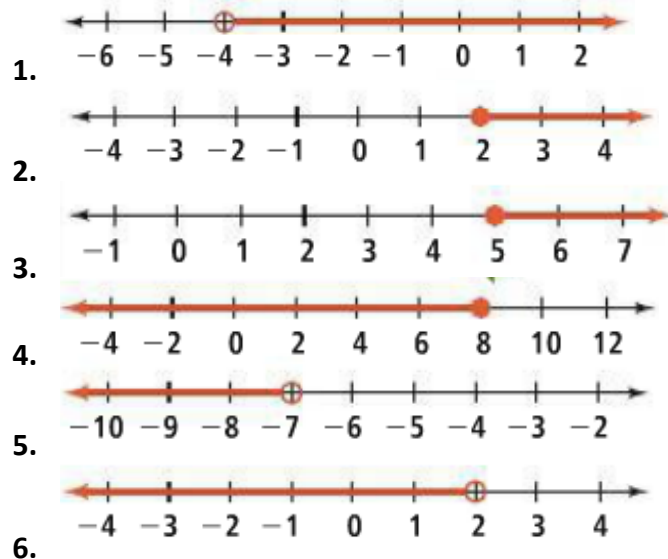
11. $\frac{b-8}{5} = \frac{b+3}{4}$
 12. $\frac{n}{5} = \frac{2n+4}{6}$
 13. $\frac{w+3}{4} = \frac{w}{2}$
 14. $\frac{3}{x+1} = \frac{1}{2}$

15. 17.5 is 125% of what number?

16. 12.5 is 30% of what number?

Unit 3: Solving Inequalities

Write an inequality and interval notation for each graph.



Solve each inequality. If the inequality has no solution, write *no solution*. If the solutions are all real numbers, write *all real numbers*.

7. $7 + 6a > 19$
 8. $2(t + 2) - 3t \geq -1$

9. $6z - 15 < 4z + 11$
 10. $18x - 5 \leq 3(6x - 2)$

Solve and graph the compound inequalities.

11. $-3 \leq m - 4 < -1$
 12. $-2 < -3y - 4 < 14$
 13. $-4 \leq r - 5 < -1$
 14. $8 \leq -5x < 30$

Solve each equation. If there is no solution, write *no solution*.

15. $|3t - 2| + 6 = 2$
 16. $|4f + 1| - 2 = 5$
 17. $|-3n| - 2 = 4$

Solve each inequality.

18. $|x + 3| < 5$
 19. $|y + 8| \geq 3$
 20. $|y - 2| \leq 1$
 21. $|p - 7| \leq 3$

Unit 4: Functions

Identify the domain and range. Is the relation a function? Explain your reasoning.

1.

Input	Output
-2	0.5
0	2.5
4	6.5
5	2.5

2.

Input	Output
6	5
4	3
6	4
5	8

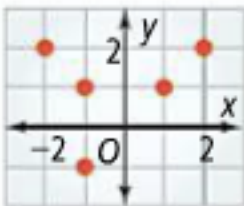
3.

Input	Output
4.2	1.5
5	2.2
7	4.8
4.2	0

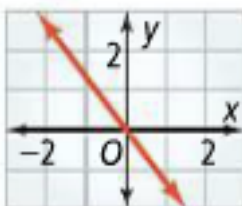
4.

Input	Output
-1	1
-2	2
4	-4
7	-7

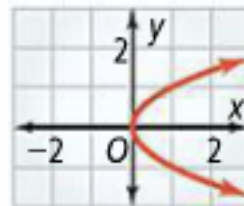
5.



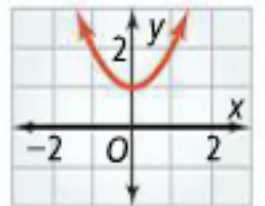
6.



7.



8.



Unit 5: Linear Functions

1. What is the slope of the line that is parallel to a horizontal line? A vertical line?
 2. What is the slope of the line that is perpendicular to a horizontal line? A vertical line?

3. What is the slope of the line through $(-1,0)$ and $(3,-2)$?
4. What is the slope of the line through $(1,3)$ and $(4,-1)$?

5. What is the graph of $y = 2x - 1$?
6. What is the graph of $y = -3x + 4$?
7. What is the graph of $y = 4x - 8$?

8. What is $f(2)$ for the function $f(x) = 4x + 1$?
9. If $f(x) = 6x - 4$ and $f(a) = 26$, what is the value of a ?
10. What are the x - and y -intercepts and slope of the graph $3x + 4y = 24$?
11. What are the x - and y -intercepts and slope of the graph $5x - 6y = 60$?
12. What are the x - and y -intercepts and slope of the graph $3x + 8y = 12$?

13. A plumber charges a \$65 fee for a repair plus \$35 per hour. Write an equation to model the total cost y of a repair that takes x hours. Write an equation that models the total fee as a function of the number of hours. If a customer was charged \$170, how many hours did the plumber work?
14. Suppose you have a \$5-off coupon at a fabric store. You buy fabric that costs \$7.50 per yard. Write an equation that models the total amount of money you pay as a function of yards of fabric. If you spend \$10, how many yards of fabric did you buy?

15. What equation represents the line perpendicular to $y = \frac{1}{2}x - 1$ and passes through $(-2,3)$?
16. What equation represents the line parallel to $y = 5x + 4$ and passes through $(1,-2)$?

Unit 6: Systems of Equations and Inequalities

1. What is the graph of $y > x - 2$?
2. What is the graph of $y \leq \frac{1}{2}x + 1$?
3. What is the graph of $y < -2x + 3$?

4. Solve the system of equations by graphing: $y = x + 2$
 $y = 3x - 2$
5. Solve the system of equations by graphing: $y = 2x + 4$
 $y = x + 2$
6. Solve the system of equations by graphing: $x = -3$
 $y = 5$

7. Solve the system of equations using substitution: $y = 3x$
 $x + y = -32$
8. Solve the system of equations using substitution: $y = 2x + 7$
 $y = x - 1$
9. Solve the system of equations using substitution: $4y = x$
 $3x - y = 70$

10. Solve the system of equations using elimination: $-2x + 15y = -32$
 $7x - 5y = 17$
11. Solve the system of equations using elimination: $-5x - 2y = 6$
 $3x + 6y = 6$
12. Solve the system of equations using elimination: $3p + q = 7$
 $2p - 2q = -6$
13. In a talent show of singing and comedy acts, singing acts are 5 min long and comedy acts are 3 min long. The show has 12 acts and lasts 50 min. How many singing acts and how many comedy acts are in the show? Write and solve a system of equations.
14. Adult tickets to a play cost \$22. Tickets for children cost \$15. Tickets for a group of 11 people cost a total of \$228. Write and solve a system of equations to find how many children and how many adults were in the group.
15. A school is planning a field trip for 142 people. The trip will use six drivers and two types of vehicles: buses and vans. A bus can seat 51 passengers. A van can seat 10 passengers. Write and solve a system of equations to find how many buses and how many vans will be needed.
16. Solve the system of inequalities by graphing: $y < 2x - 3$
 $y > -2x + 2$
 Is $(0, -1)$ a solution of the system? Justify your answer.
17. Solve the system of inequalities by graphing: $y \geq -x + 5$
 $y \leq 3x - 4$
 Is $(5, 3)$ a solution of the system? Justify your answer.
18. Solve the system of inequalities by graphing: $y > 3x - 2$
 $y \leq \frac{1}{2}x + 6$
 Is $(1, 6)$ a solution of the system? Justify your answer.