Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Algebra 1 BC Honors Semester 1 Review Sheet

Solve the following:

1. $6\frac{7}{8} - 4\frac{11}{12} =$

.

2. $31\frac{1}{2} + 5\frac{5}{6} + 21\frac{3}{4} =$

.

3. $6\frac{3}{4} \div 1\frac{1}{8} =$

.

4. $2\frac{2}{3} \times \frac{5}{9} \times 3\frac{3}{5} =$

.

5. $2(5 + 3^2 + 4 \times 2 + 12 \div 6 \times 3) =$

.

6. $\left(5\left(\sqrt{36} - 4 \times 4 \div 8\right)\right)^2 =$

7. Check off all boxes that apply.

	Integer	Whole	Natural	Perfect Square	Rational	Irrational
$3.\overline{42}$						
-2.5						
64						
$\sqrt{3}$						
$\frac{5}{7}$						
$\sqrt{121}$						
-5						
4						
7						
0						

Solve the following percent problems:

8. Find $134\frac{1}{2}\%$ of 80.

9. Write $\frac{17}{32}$ as a percent.

10. 18% of what number is 54?

11. What is $\frac{1}{2}\%$ of 628?

Write an algebraic expression for each verbal expression.

____ 12. 35 less the product of 4 and x

a. $35 + 4x$
c. $35 \div 4x$
b. $4x \times 35$
d. $35 - 4x$

Write a verbal expression for the algebraic expression.

13. 4^5

____ 14. $5x^2 + 2$
a. 5 times x squared less 2
b. five plus x squared plus 2
c. the product of 5 times x squared and 2
d. five times x squared plus 2

15. $\frac{8y^2}{3}$

____ 16. $\frac{3}{5} + 2$
a. the sum of three-fifths and two
b. the difference of three-fifths and two
c. the product of three-fifths and two
d. the quotient of three-fifths and two

Evaluate the expression.

17. $2 + 2(2)^2(5) + 8$

____ 18. Evaluate the following expression if $x = 12$, $y = 8$, and $z = 6$.
$\frac{x^2y - 2z}{4}$
a. 1140
b. 21
c. 285
d. 1296

Write an algebraic expression for the verbal expression. Then simplify.

19. three times the sum of c and d decreased by d

Evaluate the expression. Show each step.

20. $5 + 5(33 - 5^2) + 3$

Simplify the expression.

____ 21. $9x + 8(6x + 2)$
a. $57x + 10$
b. $57x + 2$
c. $57x + 16$
d. $15x + 10$

Use the Distributive Property to find the product. Do not use a calculator. Show your work.

22. $8 \cdot 990$

Simplify the expression. If not possible, write simplified.

____ 23. $4(8n + 10d - 7d)$

a. $32n + 68d$
b. simplified
c. $44nd$
d. $32n + 12d$

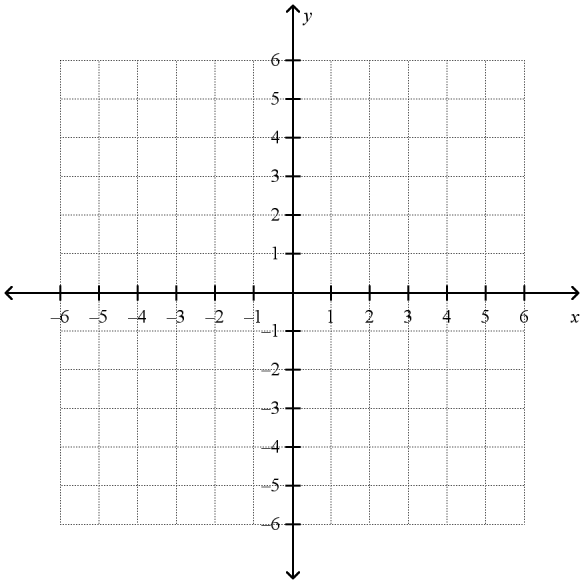
Find the solution set for the inequality using the given replacement set.

____ 24. $x - 2 < 11; \{11, 12, 13, 14, 15\}$

a. {11, 12}
b. {12}
c. {11}
d. {11, 12, 13}

Express each relation as a graph and a mapping. Then determine the domain and range.

25. {(3, 1), (2, –5), (2, 4), (3, 3)}



Graph

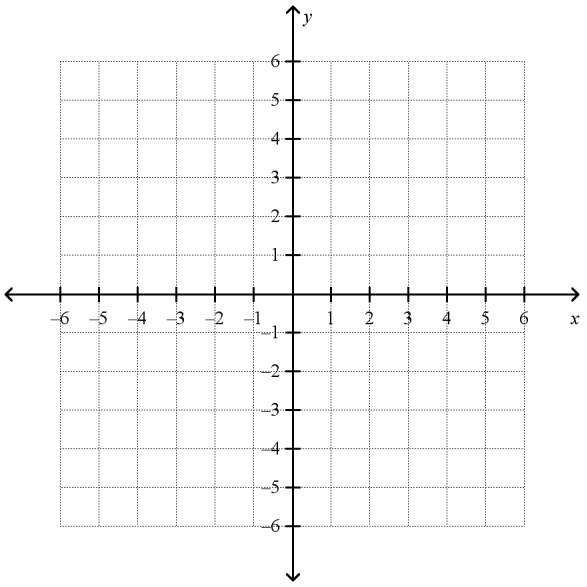
Mapping

Domaine: _____

Range: _____

Express each relation as a graph and a table. Then determine the domain and range.

26. {(0, –1), (3, 4), (–4, –3), (0, –3), (–4, –2)}



Graph Table

Domaine: _____

Range: _____

The following table shows car sales at a local car dealership for the first seven days of October.

Day	1	2	3	4	5	6	7
Sales	3	4	6	7	9	10	12

____ 27. Identify the independent and dependent variables in the October car sales table.

a. independent -- Sales
dependent -- Day

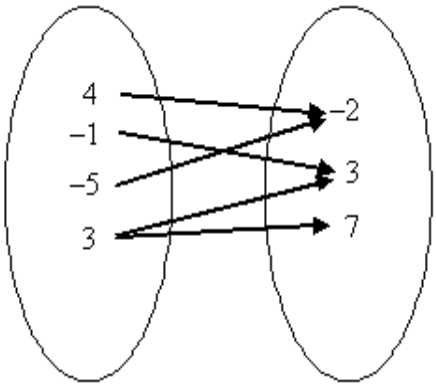
b. independent -- Salesman
dependent -- Time of Day

c. independent -- Sales
dependent -- Day of the Week

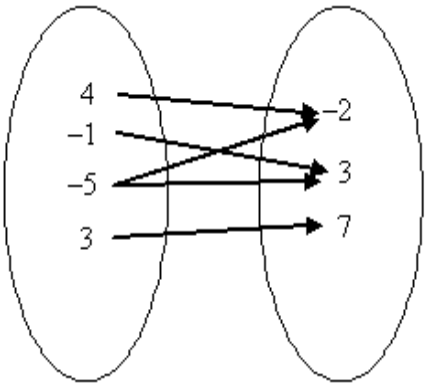
d. independent -- Day
dependent -- Sales

____ 28. Which relation is a function?

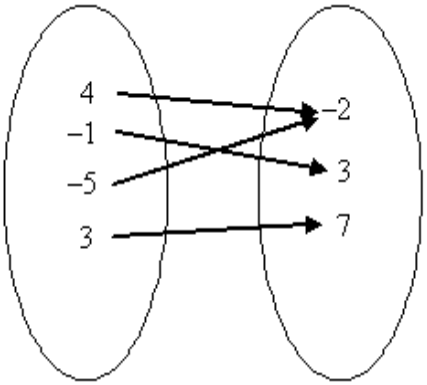
a.



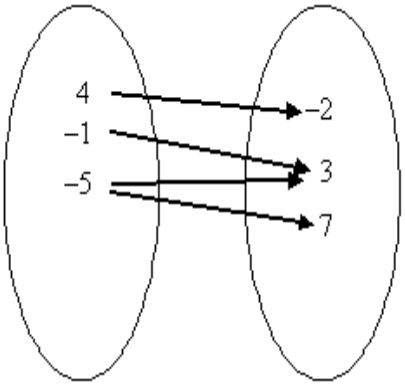
c.



b.



d.



____ 29. Which relation is a function?

a.

x	y
3	8
5	10
6	6
9	–2

c.

x	y
3	8
5	10
6	6
5	–2

b.

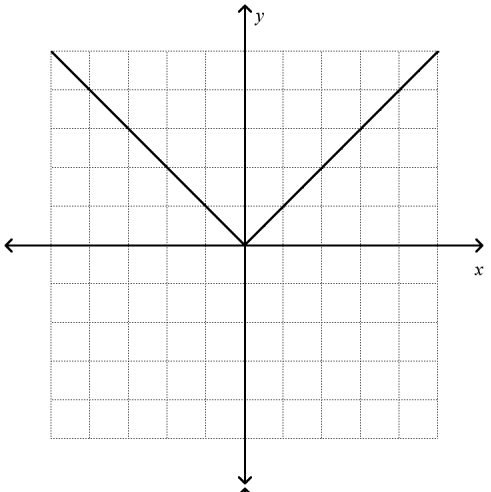
x	y
3	8
5	10
3	6
9	–2

d.

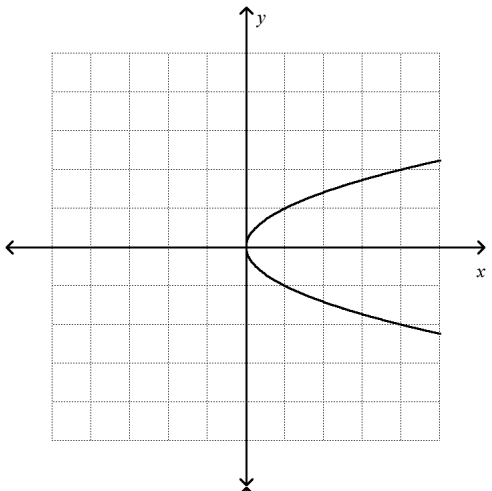
x	y
6	8
5	10
6	6
9	–2

____ 30. Which relation is a function?

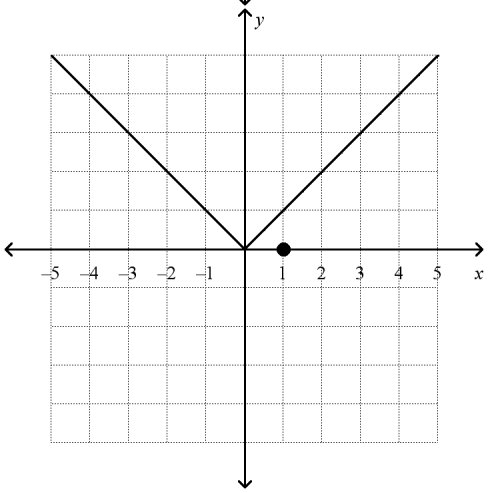
a.



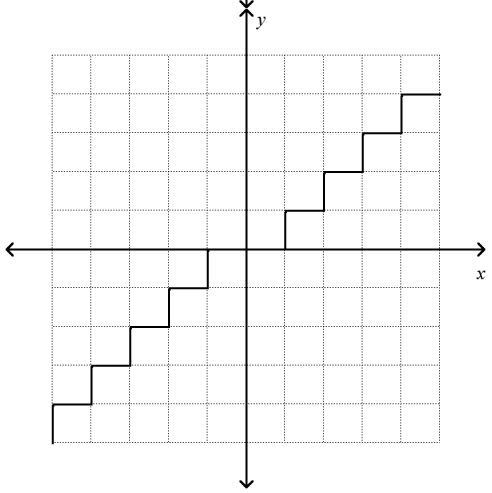
c.



b.

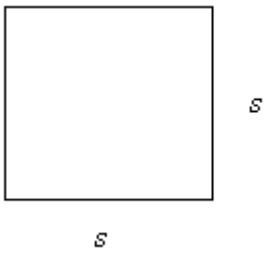


d.



31. If $g(x) = x^2 + 4x - 5$, find $g(-4)$.

32. In the square, A represents the area of the square. Find the value of A such that A is equal to two times the side of the square.



33. At a store, Jack bought a scientific calculator for $22 and four notebooks for $3.75 each. Write and evaluate an expression to find how much money he spent, not including sales tax.

34. A certain type of radioactive element triples every 10 seconds. Suppose 100 grams of it is stored at one place and 160 grams at another place. Write and evaluate an expression to find the total weight of the element at both places after 10 seconds.

.

35. Paul bought 14 gifts from a store. Each gift cost $32.65. He got them gift wrapped for $2 each. Write and evaluate an expression to determine the total amount he spent.

.

36. Lisa earns $7.15 per hour working after school. She needs at least $235 to buy a stereo system. Write and solve an inequality to find the minimum number of hours she must work to buy the stereo.

.

Translate the sentence into an equation.

37. Eighty-five minus five times x is equal to ten.

38. The product of five and four more than x is 60.

Translate the equation into a verbal sentence.

39. $3y + 8 = 32$

Solve the equation. Then check your solution.

40. $119 = n - 66$

41. $a - \frac{1}{2} = \frac{3}{5}$

42. $-5.4 = -1.5 + h$

43. $1\frac{1}{4} = a + \frac{3}{8}$

44. $\frac{n}{54} = \frac{4}{9}$

45. $\frac{a}{-7} - 7 = 5$

Write an equation and solve each problem.

46. Five less than one fifth of a number is two. Find the number.

47. Find three consecutive even integers with a sum of 48. **Use variables and algebra to solve this problem.**

Solve the equation. Then check your solution.

48. $-\frac{4}{5}w + \frac{1}{4} = \frac{1}{5} + \frac{1}{3}w$

49. $\frac{1}{2}(15 + 7d) = -\frac{d}{4}$

50. Solve $|x - 4| = 8$.

51. Solve $\left|\frac{1}{2}x + 5\right| = -3$

.

52. Solve $\left|\frac{3}{4}a - 3\right| = 9$

.

____ 53. Use cross products to determine which pair of ratios forms a proportion.

a. $\frac{3.5}{3.9} = \frac{28}{35.1}$

b. $\frac{3.5}{3.9} = \frac{24.5}{27.3}$

c. $\frac{3.5}{3.9} = \frac{28}{23.4}$

d. $\frac{3.5}{3.9} = \frac{21}{27.3}$

State whether the percent of change is a percent of increase or a percent of decrease. Then find the percent of change. Round to the nearest whole percent.

54. original: 11
new: 33

55. Bernardo originally had 48 customers on his paper route. Through a newspaper sales promotion, his customer base increased to 63. What was the percent of increase over the original number of customers?

Find the total price of the item.

56. groceries: $87.23
tax: 6.5%

Find the discounted price of the item.

57. DVD: $19.95
discount: 20%

Solve the equation or formula for the variable specified.

58. $df + 10h = 3$ for d

The formula for the perimeter, P, of a rectangle is $P = 2\ell + 2w$, where ℓ is the length and w is the width.

59. Solve the formula for the perimeter of a rectangle for *w*.

The equation of a line containing the points (a, 0) and (0, b) is given by the formula $\frac{x}{a} + \frac{y}{b} = 1$.

60. Solve the equation for *x*.

61. Jan and David began riding their bicycles in opposite directions. Jan travels at 10 miles per hour and David rides at 12 miles per hour. When will they be 11 miles apart?

Ye Olde Coffee Shop sells Colombian Coffee for $9.25 per pound. Brazilian Coffee sells for $7.75 per pound. The management wishes to mix 6 pounds of Colombian Coffee with an amount of Brazilian Coffee so that the mixture sells for $8.25 per pound.

	Pounds	Price per Pound	Total Price
Columbian			
Brazilian			
Mixture			

62. Write an equation to represent the problem. And solve it.

63. Jack's school is 20 miles from his house. He has already traveled 13 miles. If *d* represents the distance he still needs to travel to reach his school, write an equation to represent this situation. Then use this equation to find the distance Jack still needs to travel to reach his destination.

.

64. The temperature in Springfield at 10:00 a.m. was 78°F. During the day, it dropped to 56°F. Write and solve an equation to find the decrease in temperature.

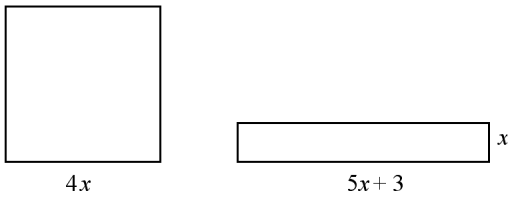
65. At a certain gas station, gas costs $2.85 a gallon. Jason paid $25.50 to fill his tank. Write and solve an equation to find how many gallons of gas he bought?

.

66. The sum of three consecutive integers is 18. Write an equation for this situation and then find the three integers.

.

67. The rectangle and square shown below have the same perimeter. Find the dimensions of each figure.



68. In a purse containing only nickels and dimes, four out of every five coins is a nickel. If there are 25 coins altogether, how many nickels are there?

.

69. Samantha earned a grade of 83 on her first math exam and a 62 on her second math exam. What was the percent of decrease in Samantha's grade? Round to the nearest whole percent.

.

Write an equation and solve for the variable specified.

70. One sixth of a number, p, is 5 more than two thirds another number, q. Solve for p.

.

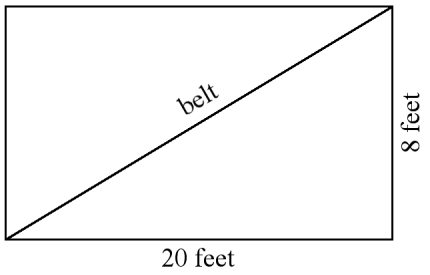
71. Two travelers were 250 miles apart at 2:00 p.m. and were headed towards each other. If they met at 4:30 p.m. and one was traveling 10 miles per hour faster than the other, what was the speed of each traveler?

.

Solve the equation.

72. $-9x + 8 = -10$

73. A conveyor belt runs between floors of a building as pictured below. Find the slope of the belt as a positive number.



Find the slope of the line that passes through the pair of points.

74. $(-3, -2), (5, 4)$

Write a direct variation equation that relates x and y. Assume that y varies directly as x. Then solve.

75. If $y = -15$ when $x = -5$, find x when $y = 12$.

Determine whether the sequence is an arithmetic sequence. If it is, state the common difference.

76. $5, 0, -5, -10, \ldots$

77. $2.6, 4.2, 3.1, 2.4, \ldots$

Find the next three terms of the arithmetic sequence.

78. $1\frac{4}{9}, 2\frac{1}{9}, 2\frac{7}{9}, 3\frac{4}{9}, \ldots$

79. Find the x- and y-intercepts of the graph of $2x - 3y = 6$.

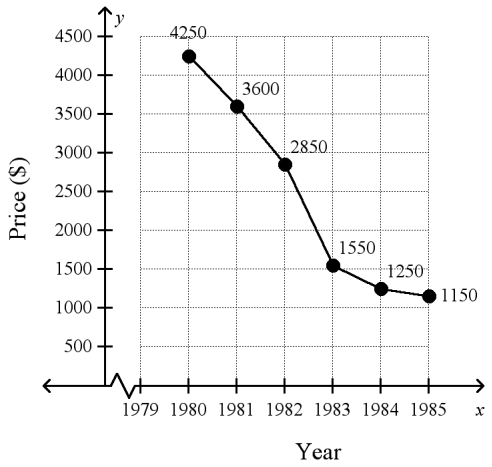
.

80. Find the x- and y-intercepts of the graph of $\frac{1}{4}x - 2y = 3$.

.

81. At a ski resort there were 10 feet of snow on the ground. A blizzard blew in and dumped 3 inches of snow per hour. The function $y = \frac{1}{4}x + 10$ represents the total feet of snow y after snowing for x hours. If the blizzard started at 12:00 noon, at what time would there be $11\frac{3}{4}$ feet of snow on the ground?

Use the graph of computer prices for 1980–1987 to answer the following questions.



Source: http://oldcomputers.net/appleiicp.html

82. Find the rate of change for prices from 1980 to 1982. Explain the meaning of the rate of change.

Suppose y varies directly as x. Write a direct variation equation that relates x and y. Then solve.

83. If $y = 8$ when $x = 6$, find y when $x = 9$.

.

84. What is the slope of a line that contains the point $(2, -3)$ and has the same x-intercept as $x + 5y = 8$?

.

85. What is the slope of a line that contains the point $\left(-\frac{4}{5}, \frac{3}{2}\right)$ and has the same y-intercept as $2x - 5y = 6$?

.

86. Kate pays $203 in advance on her account at the athletic club. Each time she uses the club, $9 is deducted from the account. Find the value remaining in the account after 12 visits.

Write the equation in standard form.

87. $y + 3 = \frac{2}{5}(x + 9)$