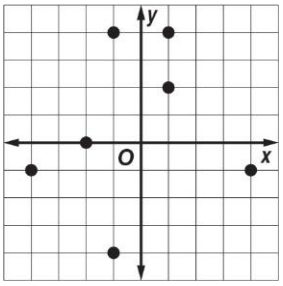
NAME _____

Algebra I Midterm Review

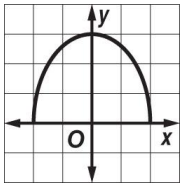
1. What is the domain of the relation shown on the graph?



F {– 4, –1, 0, 2, 4}
H {– 4, –2, –1, 0, 1, 2, 4}
G {– 4, –2, –1, 1, 4}
J {–1, 1}

2. Determine which relation is *not* a function.

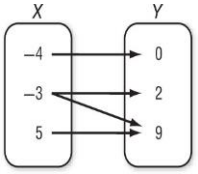
F



G

x	y
–2	0
0	0
1	2
3	1

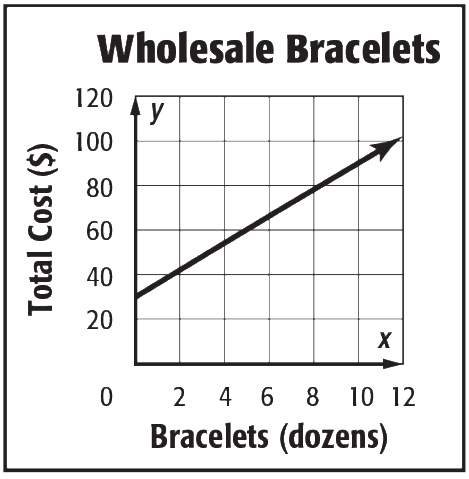
H



J

x	y
–4	0
–3	9
5	2
6	9

For Questions 3 and 4, use the graph.



3. Interpret the *y*-intercept of the graph.

A 0 bracelets cost about $30.
B 1 dozen bracelets cost about $30.
C 28 dozen bracelets cost $0.
D Each dozen bracelets costs about $5.

4. Interpret the end behavior of the function.

F The total cost decreases.
G The cost per dozen decreases.
H The total cost increases.
J The cost per dozen increases.

5. Solve $-\frac{3}{8}y = -24$.

6. Solve $5x + 3 = 23$.

7. Solve $2x + 7 = 5x + 16$.

8. Solve $\frac{2}{3}(6x + 30) = -x + 5(x + 4)$.

A 6 **B** 0 **C** all numbers **D** no solution

9. Solve $2x - y = y$ for x.

A $x = 2y - 2$ **B** $x = y - 2$ **C** $x = y$ **D** $x = 0$

10. In 2005, there were 12,000 students at Beacon High. In 2010, there were 12,250. What is the rate of change in the number of students?

11. Elliot's Electricians advertises his rate using the following table. From the information given, determine Elliot's hourly rate.

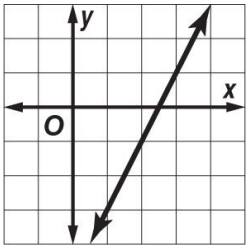
Hours	2	3	4	5
Charge	$40	$60	$80	$100

A $5 per hour **B** $15 per hour **C** $20 per hour **D** $40 per hour

12. What is the slope-intercept form of the equation of a line with a slope of 5 and a y-intercept of –8?

A $y = -8x + 5$ **B** $y = 8x - 5$ **C** $5x - y = -8$ **D** $y = 5x - 8$

13. Which equation below is parallel to the line graphed at the right?



F $y = -2x + 1$ **H** $y = 2x + 1$

G $y = -\frac{1}{2}x + 1$ **J** $y = \frac{1}{2}x + 1$

14. Which is an equation of the line that passes through (2, –5) and (6, 3)?

A $y = \frac{1}{2}x - 6$ **C** $y = 2x + 12$

B $y = \frac{1}{2}x$ **D** $y = 2x - 9$

15. What is the equation of a horizontal line through (–2, –3)?

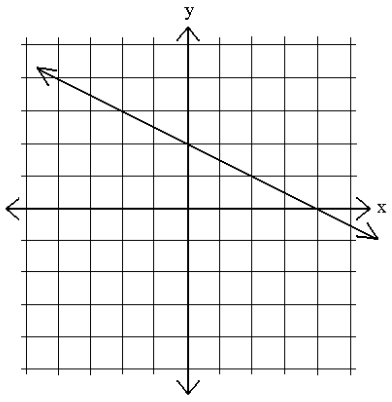
F $x = -2$ **G** $y = -3$ **H** $-2x - 3y = 0$ **J** $-3x + 2y = 0$

16. Find the slope-intercept form of the equation of the line that passes through (–5, 3) and is parallel to $-3y = -12x + 10$.

17. If line q has a slope of $-\frac{3}{8}$, what is the slope of any line perpendicular to q?

Use the graph to the right for questions 18 and 19.

18. What is the equation, in slope-intercept form, of the line graphed?



19. Fill out the table:

Domain:	
Range:	
x-intercept:	
y-intercept:	
End Behavior:	

20. Find the slope-intercept form of the equation that passes through (2, 3) and is perpendicular to $y = -\frac{1}{3}x - 5$

21. Find the inverse of {(4, –1), (3, –2), (6, 9), (8, 5)}.

F {(8, 5), (6, 9), (3, –2), (4, –1)} **H** {(–1, 4), (–2, 3), (9, 6), (5, 8)}
G {(–4, 1), (–3, 2), (–6, –9), (–8, -5)} **J** {(–1, –2), (9, 5), (4, 3), (6, 8)}

22. If $f(x) = 3x - 4$, find $f^{-1}(x)$.

A $f^{-1}(x) = 4x - 3$ **B** $f^{-1}(x) = \frac{x+4}{3}$
C $f^{-1}(x) = \frac{x-4}{3}$ **D** $f^{-1}(x) = -4 - 3x$

23. The table of values represents all points in the function $f(x)$. What is the value of $f^{-1}(2)$?

x	$f(x)$
0	2
1	4
2	6

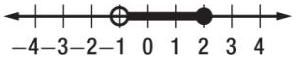
A. 0 **B.** 1 **C.** 4 **D.** 6

24. Solve: $-51 \leq x + 38$

25. Solve: $\frac{t}{-2} > 4$

26. Solve: $4w - 6 > 6w - 20$

27. Which compound inequality has the solution set shown in the graph?



A $-1 < n < 2$
B $-1 \leq n < 2$
C $n \geq -1$ or $n < 2$
D $-1 < n \leq 2$

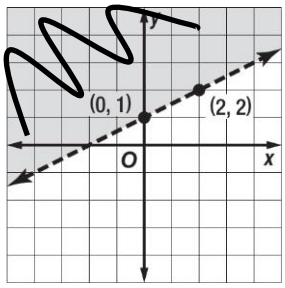
28. Which of the following is the solution set of $-4 < 3t + 5 \leq 20$?

F $-3 < t \leq 5$
G $-3 > t \geq 5$
H $t < -3$
J $t < -3$ or $t \geq 5$

29. Which of the following is the solution set of $| 2x - 3 | > 4$?

A $x < -0.5$ or $x > 3.5$
B $x < -1$ or $x > 7$
C $-0.5 < x < 3.5$
D $x < 0.5$ or $x > 3.5$

30. Which inequality is graphed at the right?



F $y < 2x + 1$
G $y > 2x + 1$
H $y < \frac{1}{2}x + 1$
J $y > \frac{1}{2}x + 1$

31. Determine which of the ordered pairs are a part of the solution of $y + 1 > \frac{1}{2}x + 3$.

F (2, 3) **G** (–4, 0) **H** (1, 2) **J** (–3, 1)

32. Laurie and Maya sold at most $50 worth of get-well and friendship cards. The friendship cards, *x*, were sold for $2 each and the get-well cards, *y*, were sold for $1.50 each. Which point represents a reasonable number of cards sold?

F (20, 10) **G** (15, 10) **H** (18, 20) **J** (10, 30)

33. Which statement is true about the solution to the system of equations?

$$y + 4 = -\frac{1}{2}x$$
$$x + 2y = -8$$

A. The two lines intersect at exactly one point.
B. The two lines do not intersect.
C. The two lines intersect at exactly 2 points.
D. The two lines coincide.

34. Solve the system if $x = 2y + 3$ and $4x - 5y = 9$.

35. Solve the system if $x - 5y = 20$ and $x + 3y = -4$.

36. Your teacher is giving a test that has 4-point questions (x) and 6-point questions (y). The test has 25 total questions and is worth 120 points. Which system represents this information?

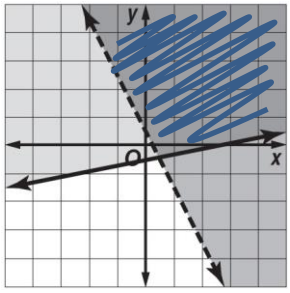
A $x + y = 120$
$4x + 6y = 25$

B $x + y = 25$
$6x + 4y = 120$

C $x - y = 25$
$6x + 4y = 120$

D $x + y = 25$
$4x + 6y = 120$

37. What system of inequalities is represented in the graph?



F $y < -2x + ½$
$y \leq \frac{1}{5}x - ½$

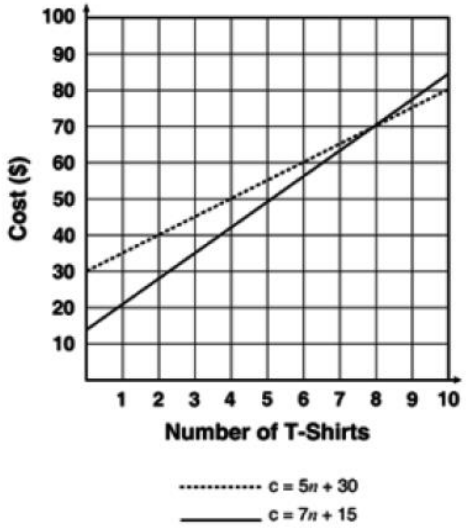
G $y > -2x + ½$
$y \leq \frac{1}{5}x - ½$

H $y < -2x + ½$
$y \geq \frac{1}{5}x - ½$

J $y > -2x + ½$
$y \geq \frac{1}{5}x - ½$

38. A club will create t-shirts for a fundraiser. The club members need to compare the cost of creating the t-shirts between two companies. Company A charges \$30 for setup, plus \$5 per t-shirt. Company B charges \$15 for setup, plus \$7 per t-shirt. The situation is shown on the graph to the right.

How many t-shirts are manufactured for the cost to be equal?



39. Simplify $(x^3)^8$.

40. Simplify $(-2hk)^4(4h^3k^5)^2$.

41. Simplify $\frac{36b^4c^2}{9b^{-1}c^5}$. Assume the denominator is not equal to zero.

42. Simplify $\frac{(3y^4n^6)^2}{(y^2n^{-3})^4}$. Assume the denominator is not equal to zero.

F $\frac{9}{y^{16}}$ **G** $\frac{9}{n^{24}}$ **H** $9y^{16}$ **J** $9n^{24}$

43. Write $10y^{\frac{1}{2}}$ in radical form.

A $\sqrt{10y}$ **B** $10\sqrt{y}$ **C** $10\sqrt{10y}$ **D** $y\sqrt{10}$

44. Evaluate $81^{\frac{3}{4}}$.

45. Which equation represents exponential growth?

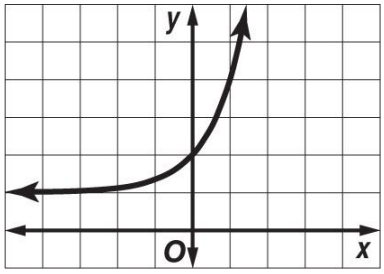
A $y = 5(0.84)^x$ **B** $y = 5x$ **C** $y = 0.3x^3$ **D** $y = 5\ (1.06)^x$

Use the graph shown to the right to answer questions 46 – 47.

46. Which equation corresponds to the graph shown?

F $y = (3)^x + 1$ **H** $y = 2(3^x)$

G $y = 2(3^x + 1)$ **J** $y = (2 \cdot 3)^x + 1$



47. Find the domain and range

48. Solve: $2^{5x+4} = 512$

49. A certain fast-growing bacteria increases 6% per minute. If there are 100 bacteria now, about how many will there be 12 minutes later?

F 172 **G** 201 **H** 48 **J** 190

50. A city's population is about 954,000 and is decreasing at an annual rate of 0.1%. Predict the population in 50 years.

A 577,176 **B** 906,300 **C** 1,002,888 **D** 907,450