PreAP

ALGEBRA FINAL EXAM REVIEW

NAME: Key

DATE: _____ PERIOD: _____

1. A container is shaped like a box with dimensions of 9 inches long, 8 inches wide and 10 inches high. If *w* represents the height of the water, in inches, and *V* represents the volume, in cubic inches, using the formula $V = 72w$, which quantity is the independent variable?

V in the eq.

A. The height of the container
B. The volume of the container
C. The height of the water in the container
D. The volume of the water in the container

2. Jane wants to take a course in carpentry. The course, including materials, costs $50.00. Jane currently has $24.00 and earns $6.00 per hour. Which of the following inequalities could be used to find *h*, the number of hours Jane must work in order to meet her goal?

A. $24 + 6h \geq 50$ needs at least $50
B. $24 + 6h \leq 50$
C. ~~$24h + 6 \geq 50$~~
D. ~~$24h + 6 \leq 50$~~

3. Simplify the expression: $\frac{x^4y^2}{xy^2}$

A. x^4y
B. x^5y^4
C. x^3y
D. x^3

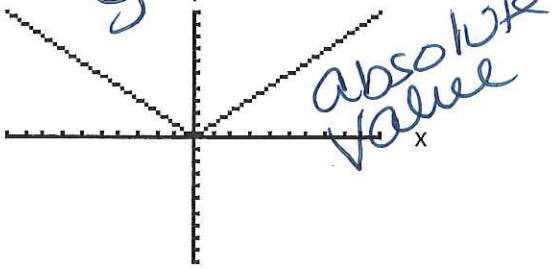
4. Simplify the expression: $\frac{18x^5y^6}{6xy^2}$

E. $3x^4y^4$
~~F. $12x^4y^4$~~
G. $3x^5y^3$
~~H. $12x^5y^3$~~

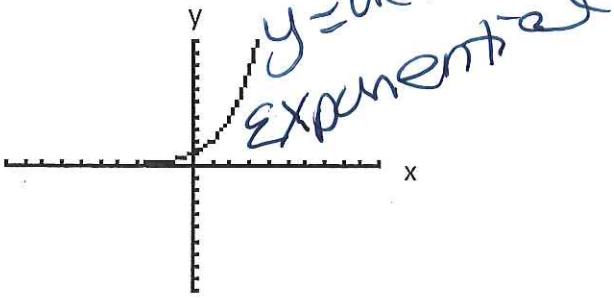
$\frac{18}{6} = 3$

5. Which of these graphs represents the parent function $y = x^2$? Quadratic

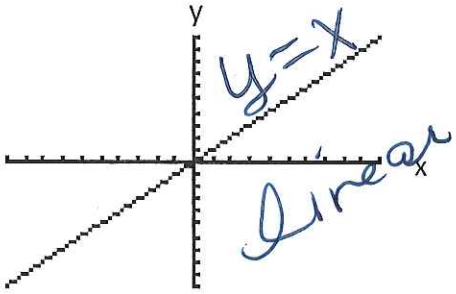
A.



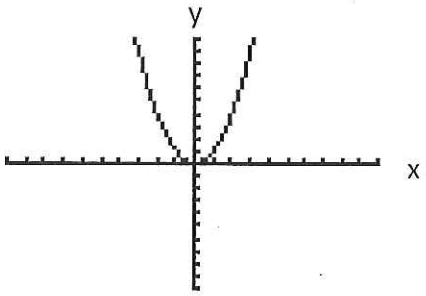
B.



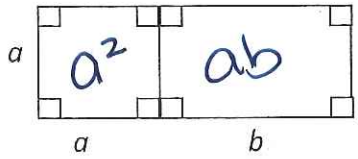
C.



D.



6. Which of the following expressions does not represent the area of the entire figure shown below?



A. $a^2 + ab$ ✓

B. $a(a + b)$ ✓

C. $a^2 + b$

D. $(a + b)a$ ✓

7. Kathleen is t years old. Which expression represents David's age if he is 4 less than two times as old as Kathleen?

-4 $2t$

A. 2t-4

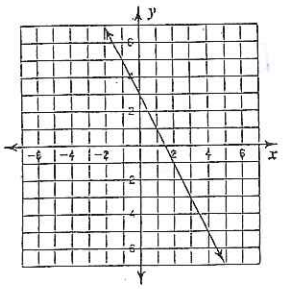
B. $4 - 2t$

C. 4t - 2

D. t/4

8. The graph of the function f(x)=-2x+3 is shown.

-4
$-2x-1$



If the graph of f(x) is shifted down 4 units, what would be the equation of the resulting function?

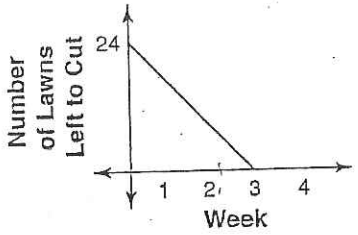
F. f(x) = -2x+1

G. f(x) = -2x-1

H. f(x)=-2x+7

J. f(x)=-8x+3

9. Bob agreed to cut 24 lawns during 4 weeks in April. The graph shows how many lawns he had left to cut at the end of each week over the 4-week time period.



Which statement is the best interpretation of the *x*-intercept?

F Bob finished cutting all the lawns by the end of the third week.

G Bob had 3 lawns left to cut at the end of the 4 weeks.

H It took Bob 3 months to cut all the lawns.

J Bob cut 3 lawns per week.

10. At a college bookstore, Carla purchased a math textbook and a novel that cost a total of $54, not including tax. If the price of the math textbook, *m*, is $8 more than 3 times the price of the novel, *n*, which system of linear equations could be used to determine the price of each book?

$m = 3n + 8$

F ~~$m + n = 8$~~ $m = 3n + 54$

G ~~$m + n = 8$~~ $m = 3n - 8$

H $m + n = 54$ ✓ $m = 3n + 8$ ✓

J $m + n = 54$ ✓ $m = 3n - 8$

1x + 1.50y

11. The Spanish Club purchased 34 tacos for $40 to sell for a fundraiser. They purchased chicken tacos for $1 each and beef tacos for $1.50 each. Write two equations that would be used to solve the system. Let x represent the chicken tacos and y represent the beef tacos.

A. $x + y = 34$ ✓
$1.5x + y = 40$

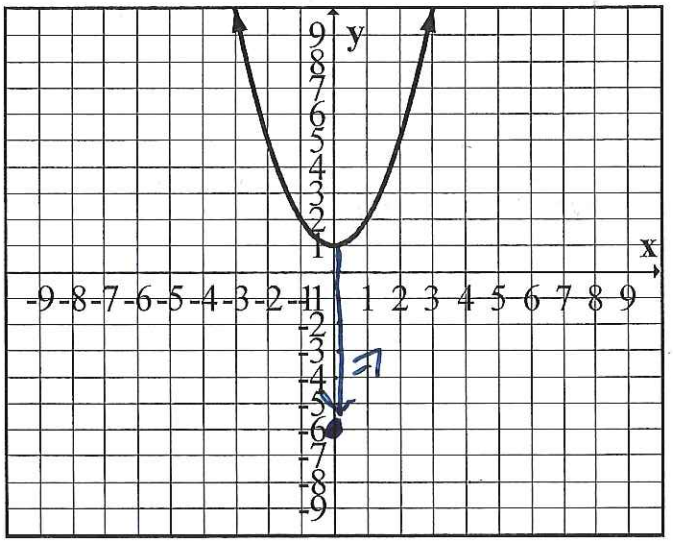
B. ~~$x + 1.5y = 34$~~
$x + y = 40$

C. $x + y = 34$ ✓
$x + 1.5y = 40$

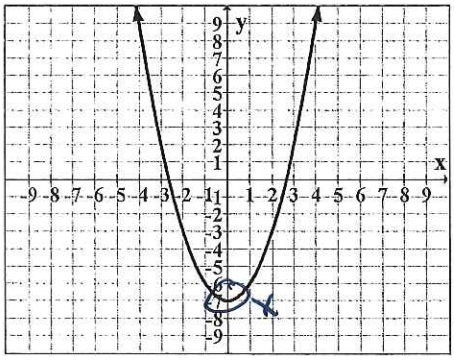
D. ~~$x + y = 40$~~
$x + y = 1.50$

12. The graph of a function is shown to the right.

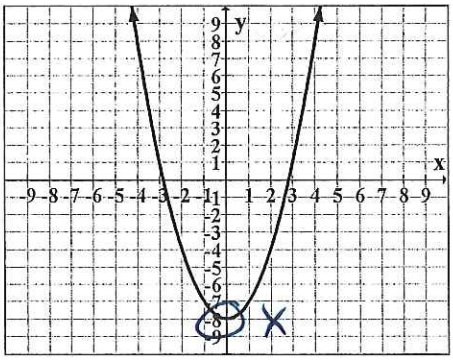
If the graph is translated 7 units down, which of the following best represents the resulting graph?



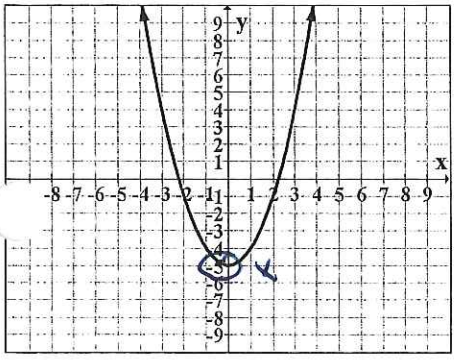
A.



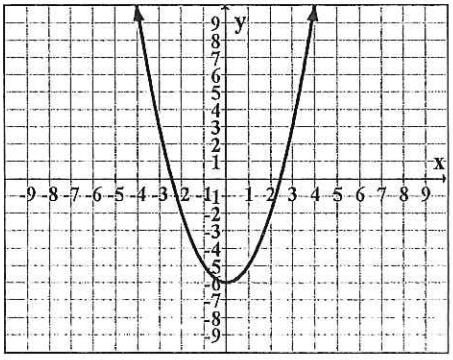
C.



B.



D.



13. Which of the following equations represents the graph of $y = x^2 + 3$ shifted down five units?

A. $y = 5x^2 + 3$

C. $y = x^2 - 2$ (-5)

B. $y = x^2 + 5$

D. $y = x^2 - 5$

14. Identify each equation as linear, quadratic, exponential growth or exponential decay.

a. $y = 3x^2 + 9$ Quadratic

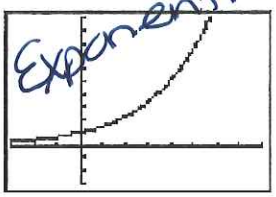
b. $y = 5x - 9$ Linear

c. $y = 12(.2)^x$ Exp. decay

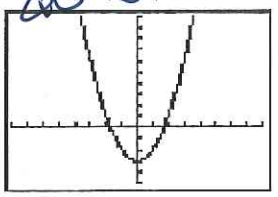
d. $y = 2(4)^x$ Exp. growth

15. Identify each function as linear, quadratic, or exponential.

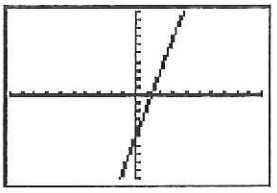
a. Exponential



b. Quadratic



c. Linear



16 Which of these is a quadratic function?

a. $f(x) = 2$

b. $f(x) = 2x$

c. $f(x) = 2x^4$

d. $f(x) = 2x^2$

17. Sam is traveling at a rate at 60 miles per hour. Which parent function best describes the distance he has traveled after x hours. Linear

a. $y = x^2$

b. $y = x$

c. $y = a^x$

d. none of these

18. Which of the following equations represents exponential decay? $0 < b < 1$

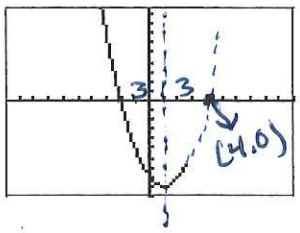
a. $y = 100(1.01)^x$

b. $y = 100(0.01)^x$

c. $y = 0.5(2)^x$

d. $y = 0.5(1.01)^x$

19. For the graph of $y = x^2 - 2x - 8$ shown below, what would the other x-intercept be?

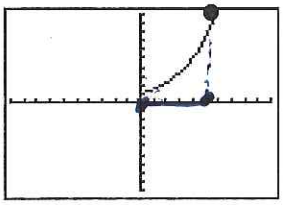


a. 2

b. 4

c. 3

20. Give the domain for the graph below.

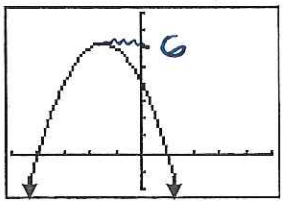


a. $0 \le x \le 5$

b. $0 \le x \le 10$

~~c. $0 \le y \le 5$~~

21. Give the range for the graph below.



a. $-4 \le x \le 1$

b. all real numbers

c. $y \le 6$

22. Page has started saving for a new television. She saved $75 last month. She plans to add $50 each month until she has saved at least $400. Which inequality can be used to find m, number of months it will take Page to save for her television?

$75 + 50m \ge 400$

a. $50m - 75 \ge 400$

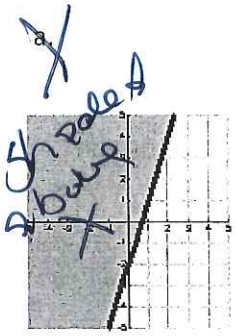
b. $75 + 50m \ge 400$

c. $50m - 75 \le 400$

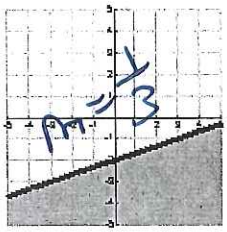
d. $75m + 50 \ge 400$

e. $75 + 50m \le 400$

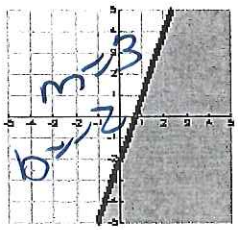
23. Which graph represents the inequality $y \le 3x - 2$?



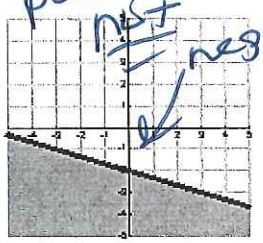
b.



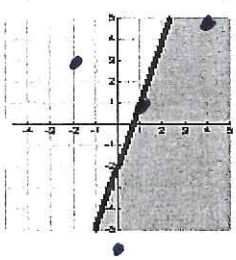
c.



d.



24. Which of the following points is not a solution to the inequality shown below?



a) (0,-6) b) (1,1) c) (4,5) d) -2, 3)

25. Which graph represents the solution to $2x + 4 < 2$?

$2x < -2$, $x < -1$

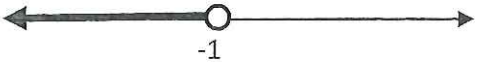
a.

b.

c.

d.

e.



26. Find the solution for the following inequality. $2x + 3(x - 4) \geq 15 - 4x$

$2x + 3x - 12 \geq 15 - 4x$

$5x - 12 \geq 15 - 4x$

$+4x \quad +12 \quad +12 \quad +4x$

$9x \geq 27$, $x \geq 3$

a. $x \geq -3$ b. $x \leq -3$ c. $x \geq 3$ d. $x \leq 3$

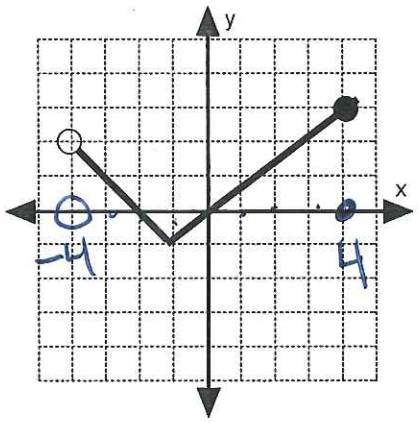
Check: Let $x = 5$

$2(5) + 3(5-4) \geq 5-4$

$13 \geq -5$ ✓

27. What is the domain of the function graphed?

x



a. $-1 \leq y \leq 3$

b. $-4 < x \leq 4$

c. $-1 \leq x \leq 3$

d. $-4 \leq x < 4$

28. An automobile repair shop charges a service fee of \$50 plus \$20 per hour for the mechanic's time. A customer receives an estimate of at least \$150 for repairing his car. Which inequality can be used to represent this situation?

a) $50 + 20x \leq 150$

b) $50 + 20x \geq 150$

c) $50x + 20 \leq 150$

d) $50x + 20 \geq 150$

29. The sides of a rectangle are $4x + 8$ and $2x - 4$. Find the area of the rectangle.

$A = lw$

$A = (4x+8)(2x-4)$

$A = 8x^2 - 32$

	$4x$	$+8$
$2x$	$8x^2$	$16x$
-4	$-16x$	-32

30. Find the area of a square, in terms of x and y, if its side measure is $3x^2y$.

$A = s^2$

$A = (3x^2y)^2$

$A = 9x^4y^2$

31. Find the volume of a square box, in terms of x and y, if its side measure is $3x^2y$.

$V = s^3$

$V = (3x^2y)^3$

$V = 27x^6y^3$

$n = Q - 5$ $\quad .05n + .25Q = 3.65$

$5 + n = Q$

32. Tyrone has 5 more quarters than nickels. He has $3.65 total. How many nickels does Tyrone have?

a. 8 b. 14 c. 13 d. 11 e. 10

$.05(Q-5) + .25Q = 3.65$

$.05Q - .25 + .25Q = 3.65$

$+.25 \quad +.25$

$\frac{.30Q}{.30} = \frac{3.90}{.30}$

$Q = 13$

$n = 13 - 5$

$n = 8$

33. What are the factors of the trinomial $x^2 + 10x + 21$?

a. (x-3) (x-7) $x^2 - 10x + 21$ b. (x+3) (x+7)

(x+10) (x+21) 210 (x+21) (x+1) $= x^2 + 22x + 21$

34. What are the factors of the trinomial $\frac{2x^2}{2} + \frac{8x}{2} + \frac{6}{2}$? $x^2 + 4x + 3$ $2(x+1)(x+3)$

a. (2x+3) (x+2) b. (x+3) (x+2)

c. (2x+2) (x+3) d. (x+6) (x+1) $(2x+2)$

35. Factor $6xy^2 + 12x$ completely. $6x$ $6x(y^2+2)$

a. $6(xy^2 + 2x)$ b. $6xy(y + 2)$

c. $2x(3y^2 + 6)$ d. $6x(y^2 + 2)$

36. Find the solutions (x-int) for the following quadratic equation. $x^2 - 7x + 10 = 0$ $(x-5)(x-2) = 0$

a) 10 and 7 c) 2 and 5

b) -2 and -5 d) -2 and 5

10, -5×-2, -7

37. Find the roots (x-int) for the following quadratic equation $y = x^2 + 14x + 40$ $(x+4)(x+10)$

a) 10 and 4 c) 8 and 5

b) -10 and -4 d) -8 and -5

40: 2 | 20, 4 | 10

40, 4×10, 14

38. Which of the following is the point of intersection for the system of equations given below?

y=3x-4 and y = -2x + 1

a) (1,-1) c) (-1, -1)

b) (-1, 1) d) (1,1)

y=

2nd trace 5

Enter (x3) (1, -1)

39. The amount of money spent at the Frisco Mall continues to increase. The total T(x) in millions of dollars can be estimated by the function $T(x) = 12(1.12)^x$, where x is the number of years after it opened in 2000. Now that it is ten years after it opened, find the total amount of sales expected for the mall in the year 2010.

$12(1.12)^{10}$

37.27 million

a) $37.27 million b) $74.3 million

c) $80.73 million d) $41.74 million

40. The cost of tuition at a college is $12,000 and is increasing at a rate of 7% per year. Find the expected cost of tuition 8 years from now.

$y = 12000(1.07)^8$

$y = 20618.23$

Growth rate model is $y=a(1+r)^x$

a = initial amount, r = the interest rate as a decimal, and x = number of years

a) $20,618 b) $837,091

c) $83,709 d) $2,062