NAME_____ DATE_____

Algebra 2 Honors Summer Review

1. Evaluate $3b + 6c$ when $b = 1$ and $c = 3$. [A] 12 [B] 21 [C] 18 [D] 15

2. Evaluate the expression $(5q - 2r)^2$ when $q = 5$ and $r = 2$.

   [A] 841 [B] 641 [C] 29 [D] 441

3. Simplify: $432 \div (4 \cdot 9 \div 3)$ [A] 9 [B] 144 [C] 36 [D] 12

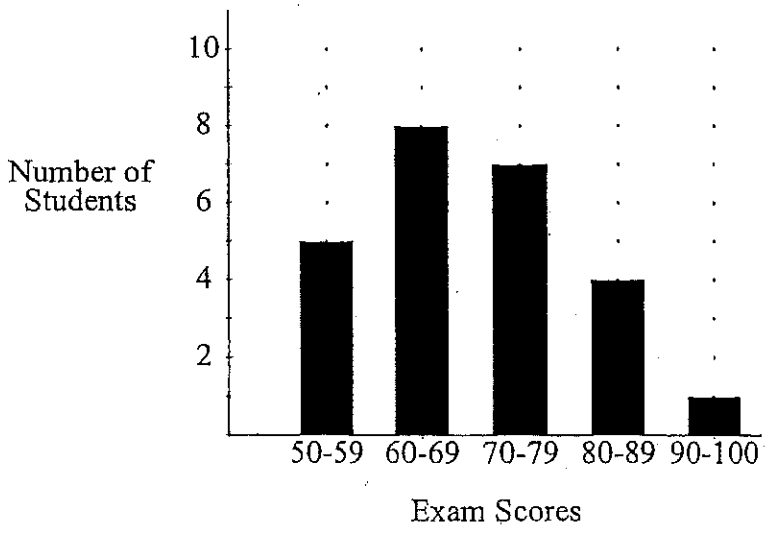
4. Which of the numbers 9, 10, or 11 is the solution of $108 = 118 - x$?

   [A] 10 [B] 9 [C] 11 [D] not given

5. Write an expression to represent the following:
   "the sum of 7 times m and n"

   [A] $7m + 7n$ [B] $(7 + m)n$ [C] $7(m + n)$ [D] $7m + n$

6. Using the bar graph below, determine how many students received a score of 80 or better on an algebra exam.



[A] 12 [B] 1 [C] 20 [D] 5

7. Complete the input-output table for the function $f(x) = 2x - 3$.

Input	Output
2	
	5
3	
	9

[A]

Input	Output
2	1
4	5
3	3
6	9

[B]

Input	Output
2	3
4	5
3	4
6	9

[C]

Input	Output
2	1
4	5
3	3
8	9

[D]

Input	Output
2	1
5	5
3	3
6	9

8. Evaluate the expression $-|-12|$ [A] –11 [B] 11 [C] –12 [D] 12

9. A hot air balloon rises 470 feet. It then descends 140 feet. Find the elevation of the hot air balloon, assuming its journey started at sea level.

[A] 280 ft [B] 610 ft [C] 330 ft [D] –140 ft

10. Find the difference: –34 – 28 [A] 62 [B] –62 [C] 6 [D] –6

11. Simplify: – (–2) – (–8) + (–6) [A] –12 [B] 16 [C] –16 [D] 4

12. Find the product: (–3)(4)(–3) [A] –2 [B] –36 [C] 2 [D] 36

13. Identify the product that will be negative.

[A] $(2)(-3)(-4)(5)$ [B] $(2)(3)(4)(5)$

[C] $(-2)(-3)(-4)(5)$ [D] $(-2)(-3)(-4)(-5)$

14. What is the product of $(3x)(-4y)(-5)$?

[A] $-15xy$ [B] $60xy$ [C] $12xy$ [D] $-60xy$

15. Use the Distributive Property to rewrite the expression. $3(x+4)$

[A] $3x+12$ [B] $5x+4$ [C] $3x+4$ [D] $3x-12$

16. Simplify: $6x-1-3x+3$ [A] $9x-4$ [B] $3x-4$ [C] $9x+2$ [D] $3x+2$

Solve:

17. $20=5y$ [A] 25 [B] 4 [C] 15 [D] $\frac{1}{15}$

18. $-\frac{x}{4}=20$ [A] –5 [B] –80 [C] 80 [D] 5

19. $-2x+23+4x+23=6$ [A] 26 [B] –20 [C] 20 [D] –26

20. $\frac{9}{15}y-45=0$ [A] 6075 [B] 75 [C] –6075 [D] –75

21. $2x-6=x+8$ [A] $\frac{1}{14}$ [B] –14 [C] –2 [D] 14

22. You swam for 30 minutes and burned 170 calories. How many calories did you burn per minute?

[A] 6.66667 calories per minute [B] 200.053 calories per minute

[C] 5.66667 calories per minute [D] 200 calories per minute

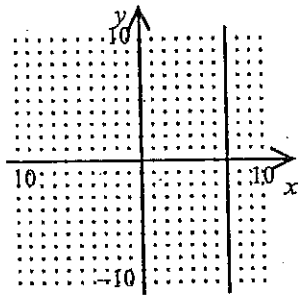
23. Jamie and Mica had dinner at The Safari Club. The bill totaled $15.15 with tax. The service was excellent, so they decided to leave a 20% tip. What is 20% of $15.15, to the nearest cent?

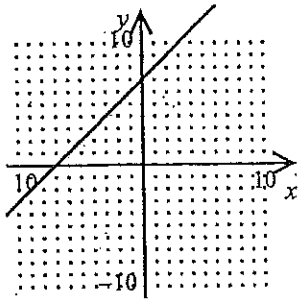
[A] $0.96 [B] $0.76 [C] $3.03 [D] $3.23

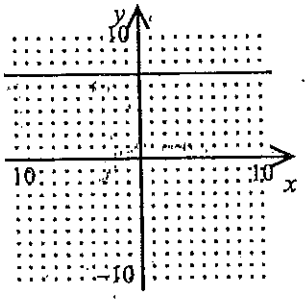
24. What is the salesperson's commission on a $400 sale if the commission rate is 5%?

[A] $20 [B] $2000 [C] $402 [D] $2

25. Graph: $x = 7$

[A] 

[B] 

[C] 

[D] none of these

26. State the x- and y-intercepts of $y = -2x + 4$.

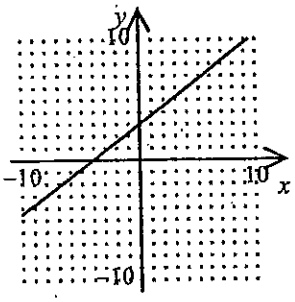
[A] x-intercept: 4; y-intercept: –2

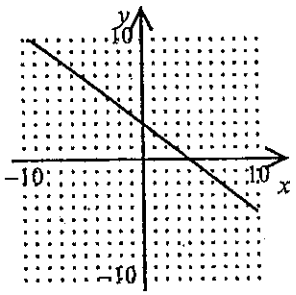
[B] x-intercept: –2; y-intercept: 4

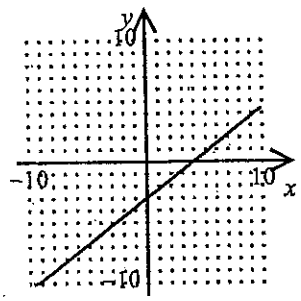
[C] x-intercept: 4; y-intercept: 2

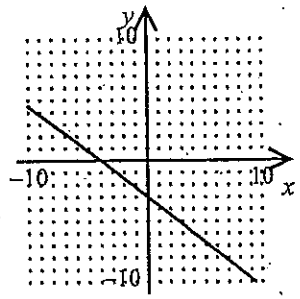
[D] x-intercept: 2; y-intercept: 4

27. Graph the linear equation by finding x- and y-intercepts. $3x - 4y = -12$

[A] 

[B] 

[C] 

[D] 

28. Find the slope of the line passing through the points $A(4, 2)$ and $B(-8, 4)$.

[A] 3 [B] -6 [C] $-\frac{3}{2}$ [D] $-\frac{1}{6}$

29. Find the slope of the line that contains $(-1, 2)$ and $(2, 2)$.

[A] undefined [B] 0 [C] 3 [D] $\frac{4}{3}$

30. Find the slope and y-intercept of the line $9x - 3y = 81$.

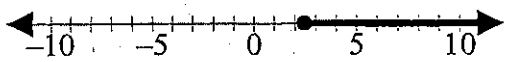
[A] $m = 3, y = -27$ [B] $m = -27, y = \frac{1}{3}$

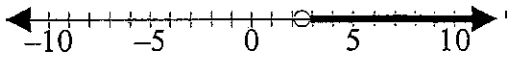
[C] $m = 27, y = -\frac{1}{3}$ [D] $m = -3, y = 27$

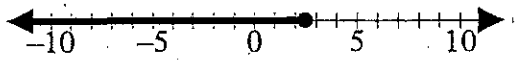
31. Solve, then check algebraically and graphically: $4x + 5 = 13$

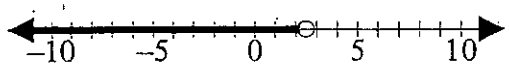
[A] 72 [B] 2 [C] 18 [D] 8

32. Graph: $5x + 1 \geq 3(x + 2)$

[A] 

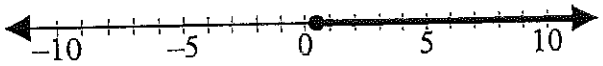
[B] 

[C] 

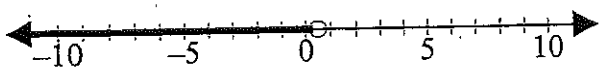
[D] 

33. Solve and graph the inequality: $5x-4 < 3(x-1)$

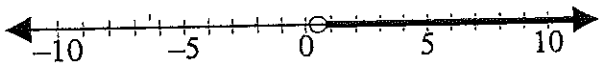
[A]



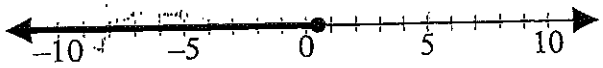
[B]



[C]



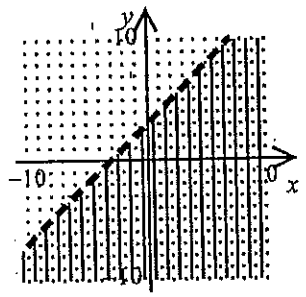
[D]



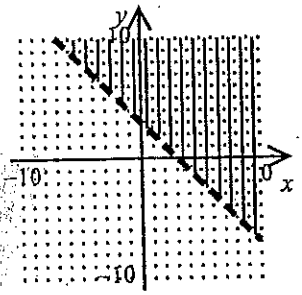
Graph:

34. $-y < x-3$

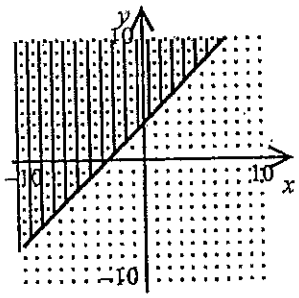
[A]



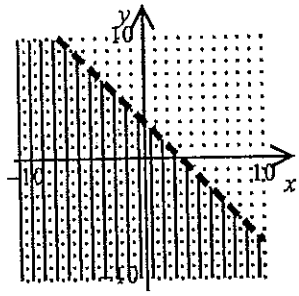
[B]



[C]



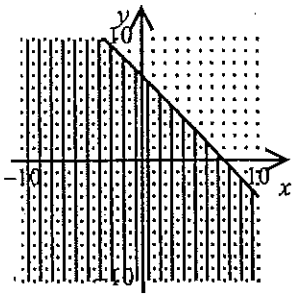
[D]



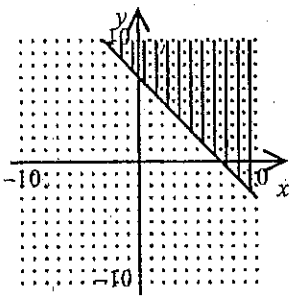
Graph:

35. $-y \geq x - 7$

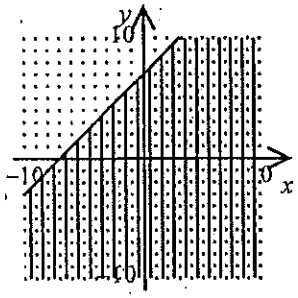
[A]



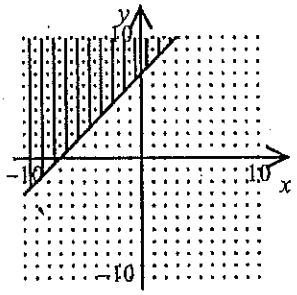
[B]



[C]



[D]



36. Which of the following is the stem-and-leaf plot for the data?
30, 22, 26, 24, 45, 41, 28, 27, 33, 29, 39, 33, 30, 34, 32

[A]

2	2 4 6 7 8 9
3	0 0 2 3 3 4 9
4	1 5
5	

[B]

20	
30	1 5
40	0 0 2 3 3 4 9
50	2 4 6 7 8 9

[C]

20	2 4 6 7 8 9
30	0 0 2 3 3 4 9
40	1 5
50	

[D]

2	
3	1 5
4	0 0 2 3 3 4 9
5	2 4 6 7 8 9

37. What is the mean of the following sample? [A] 3 [B] 19 [C] 13.5 [D] 10
17, 5, 4, 10, 20, 24, 2, 7, 9, 1, 11

38. Name the mode or modes in the following sample.
21, 2, 29, 8, 24, 26, 10, 6, 30, 17, 30

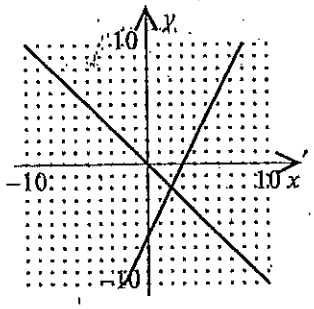
[A] 39 [B] 30, 2 [C] 30 [D] 18.5

39. What are the mean, median, and mode of the data in the following sample?
9, 3, 3, 3, 24, 13, 18, 8, 3, 11, 15

[A] 10, 22, 3 [B] 10, 9, 3 [C] 9, 10, 3 [D] 9, 3, 10

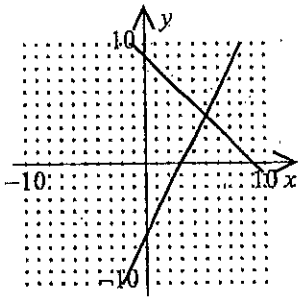
40. Solve the system by graphing: $x + y = 9$
$y = 2x - 6$

[A]



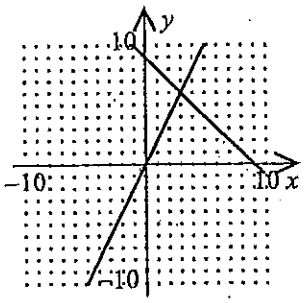
(2, −2)

[B]



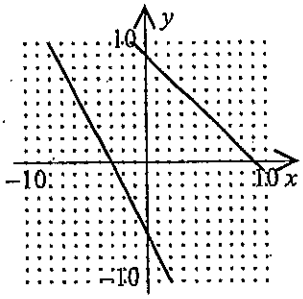
(5, 4)

[C]



(3, 6)

[D]

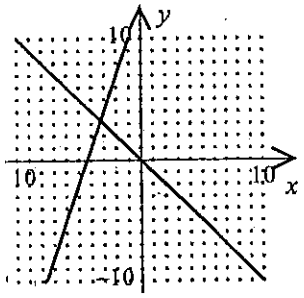


(−15, 24)

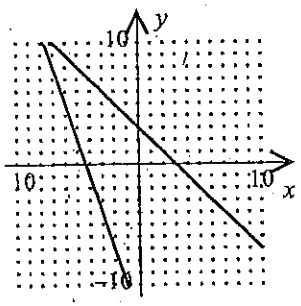
41. Graph: $x + y = 3$

$3x - y = 13$

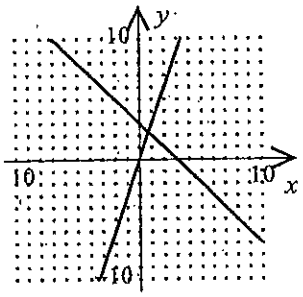
[A]



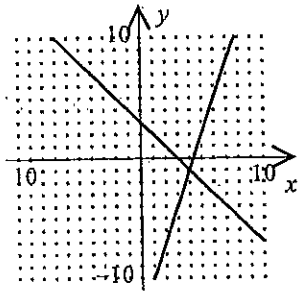
[B]



[C]



[D]



42. The Holman family is going to the county fair. They have two ticket options as shown in the chart below.

Ticket Option	Admission Price	Price Per Ride
A	\$6	40¢
B	\$4	80¢

A. Write an equation that shows the cost per person for each option.
B. Use graphing to solve the system of equations.

[A] A. $C = 4 + 0.8r$
$C = 6 + 40r$
B. (0.05, 0.08)

[B] A. $C = 6 + 0.4r$
$C = 4 + 80r$
B. (5, 8)

[C] A. $C = 6 + 0.4r$
$C = 4 + 0.8r$
B. (5, 8)

[D] A. $C = 6 + 40r$
$C = 4 + 80r$
B. (0.05, 0.08)

43. Solve the system by substitution: $y = 2x - 4$

$y = 3x$

[A] (–4, –12) [B] (–3, –9) [C] (4, 2) [D] (1, –2)

44. Solve by substitution: $x+4y = -9$
$y = -3x-5$

[A] $(-1,-2)$ [B] no solution [C] $\left(-2, -\frac{7}{4}\right)$ [D] $(0,-5)$

45. The length of a rectangle is 2 cm more than three times the width. If the perimeter of the rectangle is 20 cm, what are the dimensions?

[A] width = 4 cm, length = 14 cm [B] width = 2 cm, length = 8 cm

[C] width = 4 cm, length = 16 cm [D] width = 2 cm, length = 16 cm

46. Solve by linear combinations: $4x-4y=0$
$x+4y=-15$

[A] no solution [B] $(-3,-3)$ [C] $(0, 0)$ [D] $(-12,-3)$

47. A jumbo jet carries 310 passengers, 24 in first class, and the remainder in coach. If the average first class ticket is \$840 and the average coach ticket is \$393, how much will the airline gross if the plane is full?

[A] \$132,558 [B] \$191,115 [C] \$135,418 [D] \$249,672

48. Marc sold 520 tickets for the school play. Student tickets cost \$2 and adult tickets cost \$6. Marc's sales totalled \$2072. How many adult tickets and how many student tickets did Marc sell?

[A] 253 adult, 267 student [B] 262 adult, 258 student

[C] 258 adult, 262 student [D] 267 adult, 253 student

49. Which system of equations has no solution?

[A] $5x-10y=-2$
$x-10y=-1$

[B] $5x-10y=-2$
$5x-10y=-1$

[C] $5x-10y=-2$
$5x+10y=-2$

[D] $5x-10y=-2$
$15x-30y=-6$

50. Determine if the system has no solutions, one solution, or many solutions.
$4x+y = 12$
$16x+4y = 48$

[A] $(2, 4)$ [B] many solutions [C] $(2,-4)$ [D] no solution

NAME_____ DATE_____

1. Simplify. Leave your answer in exponential form. $4^5 \times 4^{11}$

   [A] 4^6 [B] 4^{16} [C] 16^{16} [D] 4^{55}

2. Simplify: $(9^3)^9$ [A] 9^{27} [B] 27^9 [C] 9^{54} [D] 9^{12}

3. Simplify the product: $(3gh^3)^3(gh)^5$

   [A] $3g^8h^{14}$ [B] $27g^8h^8$ [C] $27g^8h^{14}$ [D] $3g^4h^{14}$

4. Sara bought 3 fish. Every month the number of fish she has doubles. After m months she will have F fish, where $F = 3 \cdot 2^m$. How many fish will Sara have after 2 months if she keeps all of them and the fish stay healthy?

   [A] 7 [B] 12 [C] 20 [D] 36

5. Simplify: $a^7 \times a^{-9}$ [A] $\frac{1}{a^{63}}$ [B] a^{63} [C] a^2 [D] $\frac{1}{a^2}$

6. Multiply: $2^3 \times 4 \times 8^0$ [A] 0 [B] 192 [C] 32 [D] 256

7. Which is equivalent to $\frac{2^{12}}{2^3}$? [A] 2^9 [B] 2^3 [C] 2^{15} [D] 2^8

8. Simplify: $\frac{18x^7y^2}{-6x^2y^6}$ [A] $\frac{2x^9}{y^8}$ [B] $-\frac{2x^9}{y^8}$ [C] $\frac{3x^5}{y^4}$ [D] $-\frac{3x^5}{y^4}$

9. Write 67,900 in scientific notation.

   [A] 0.679×10^5 [B] 67.9×10^3 [C] 679×10^2 [D] 6.79×10^4

10. Write 0.0000133 in scientific notation.

    [A] 0.133×10^{-4} [B] 1.33×10^{-5} [C] 133×10^{-6} [D] 133×10^{-7}

11. Multiply: $(3.5\times10^{-14})(9.9\times10^{17})$

[A] 13.4×10^3 [B] 34.65×10^4 [C] 3.465×10^3 [D] 34.65×10^3

12. Simplify: $\sqrt{81}$ [A] 9 [B] 0.9 [C] 90 [D] 81

13. Evaluate: $\sqrt{\frac{9}{36}}$ [A] $\frac{1}{12}$ [B] $\frac{1}{6}$ [C] $\frac{1}{2}$ [D] $\frac{5}{8}$

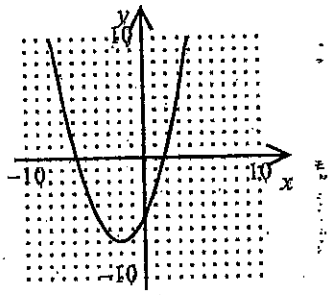
14. Solve: $64x^2 - 9 = 0$

[A] $-\frac{64}{9}, \frac{64}{9}$ [B] $-\frac{9}{64}, \frac{9}{64}$ [C] $-\frac{8}{3}, \frac{8}{3}$ [D] $-\frac{3}{8}, \frac{3}{8}$

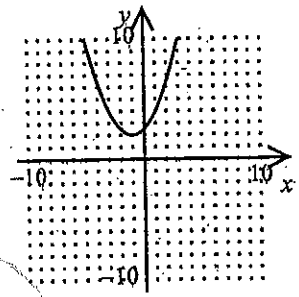
15. Simplify: $\sqrt{4} \cdot \sqrt{30}$ [A] $4\sqrt{30}$ [B] $2\sqrt{30}$ [C] $\sqrt{120}$ [D] $3\sqrt{20}$

16. Graph: $y = x^2 - 2x + 5$

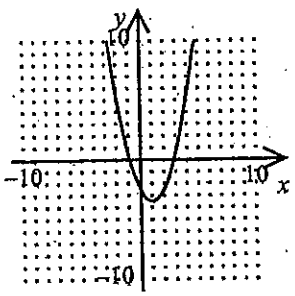
[A]



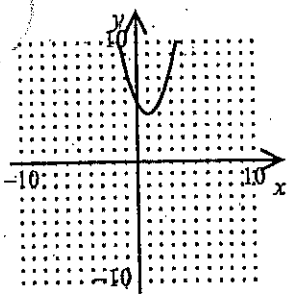
[B]



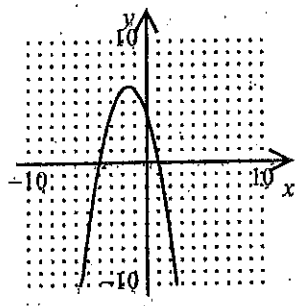
[C]

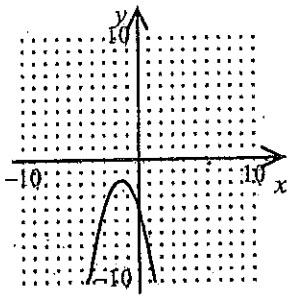


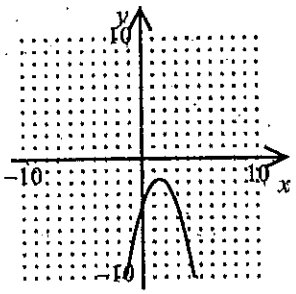
[D]

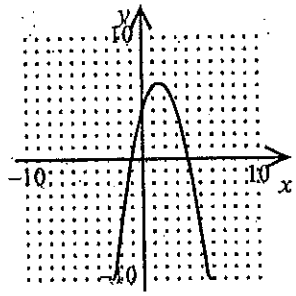


17. Graph the parabola: $y = -x^2 + 3x - 4$

[A] 

[B] 

[C] 

[D] 

18. Solve: $x^2 + 6x + 3 = 0$

[A] $-6 + 2\sqrt{6}, -6 - 2\sqrt{6}$ [B] $3 + \sqrt{6}, 3 - \sqrt{6}$

[C] $6 + 2\sqrt{6}, 6 - 2\sqrt{6}$ [D] $-3 + \sqrt{6}, -3 - \sqrt{6}$

19. Solve by the quadratic formula: $x^2 = -3x + 1$

[A] $\frac{-3 + \sqrt{13}}{2}, \frac{3 - \sqrt{13}}{2}$ [B] $\frac{-3 + \sqrt{13}}{2}, \frac{-3 - \sqrt{13}}{2}$

[C] $-3 + \sqrt{13}, -3 - \sqrt{13}$ [D] $3 + \sqrt{13}, 3 - \sqrt{13}$

20. Determine the number of solutions of the equation.

$3x^2 - 3x - 2 = 0$

[A] 0 [B] 3 [C] 2 [D] 1

21. Tell if the equation has two solutions, one solution, or no solutions. $4x^2 + 2x + 6 = 0$

[A] two solutions [B] no solutions [C] one solution [D] not enough information

22. Identify the numerical coefficients: $3v^4 + v^6 - v^3 - 15$

[A] 3, 0, 0, –15 [B] –15 [C] 3, 1 ,–1, –15 [D] 3, –15

23. Write the polynomial in standard form: $2x^3+2x-x^6-2$

[A] $-2+2x+2x^3-x^6$ [B] $2-2x-2x^3+x^6$

[C] $-x^6+2x^3+2x-2$ [D] x^6-2x^3-2x+2

24. Find the degree of the polynomial: $8x-2$ [A] 3 [B] 4 [C] 2 [D] 1

25. Classify $5s+5$ and state its degree.

[A] binomial, 1 [B] binomial, 3 [C] monomial, 10 [D] trinomial, 2

26. Add: $(-3x-5x^5-3)+(7x^5-3-9x)$

[A] $2x^5-12x$ [B] $2x^5-12x-6$ [C] $4x^5-8x-12$ [D] $4x^5-8x-6$

27. Simplify: $(3j^4+2)-(3j+1)+(5j^4-6j)$

[A] $-2j^4-9j+3$ [B] $8j^4+9j-1$ [C] $8j^4-9j+1$ [D] $8j^4-9j+3$

Subtract:

28. $(3x^3+2x^2+2)-(6x^3-4x^2+4x-2)$

[A] $-3x^3+6x^2-4x+4$ [B] $-3x^3-6x^2-4x$

[C] $-3x^3-6x^2+4x+4$ [D] $3x^3-6x^2+4x$

29. $(x^3+x^2+8)-(6x^3+4x^2+3)$

[A] $7x^3+5x^2+5$ [B] $-5x^6-3x^4+5$ [C] $-5x^3-3x^2+5$ [D] $7x^3+5x^2+11$

Multiply:

30. $(5w+3)(5w-3)$

[A] $25w^2-9$ [B] $25w^2+30w-9$ [C] $25w^2+15w-9$ [D] $25w^2-30w-9$

31. $(x+3)(x-4)$

[A] x^2-x-12 [B] x^2-x+12 [C] $x^2+7x-12$ [D] $x^2-7x-12$

32. Multiply using the vertical format:

$$\begin{array}{r} 2y^2-2y+7 \\ \underline{\qquad\quad y-4} \end{array}$$

[A] $2y^3+6y^2-y+28$ [B] $2y^3-10y^2+15y-28$

[C] $-6y^3+6y^2+7y-28$ [D] $2y^2-y+3$

Multiply:

33. $(x+3)(x^2+3x-4)$

[A] $x^3+6x^2+5x-12$ [B] x^3+3x^2-12

[C] $x^3+6x^2+9x-12$ [D] $x^2+2x-12$

34. $(5c+3)(5c-3)$

[A] $25c^2-9$ [B] $25c^2-30c-9$ [C] $25c^2+9$ [D] $25c^2-30c+9$

35. $(6x^2-3)^2$

[A] $36x^4-36x^2-9$ [B] $36x^4-9$

[C] $36x^4-36x^2+9$ [D] $36x^2-12x+9$

36. Factor: x^2+3x+2

[A] $(x+1)(x+2)$ [B] $(x+1)(x-2)$ [C] $(x-1)(x+2)$ [D] $(x-1)(x-2)$

37. The area of a rectangular school yard is given by the equation $x^2+23x+126$ as measured in square yards. Your teacher wants you to run the length. How far will you run if $x=34$?

[A] 5 yards [B] 91 yards [C] 43 yards [D] 48 yards

38. Find the missing term in the perfect square trinomial. $(x+1)^2 = x^2+2x+$ ____

[A] 1 [B] $\frac{1}{2}$ [C] 2 [D] 4

39. Solve: $16f^2+56f+49=0$ [A] $f=\frac{7}{4}$ [B] $f=-\frac{7}{4}$ [C] $f=\frac{4}{7}$ [D] $f=-\frac{4}{7}$

Simplify:

40. $6\sqrt{6}+3\sqrt{6}-3\sqrt{6}$ [A] $\sqrt{36}$ [B] 36 [C] $6\sqrt{6}$ [D] $12\sqrt{6}$

41. $\sqrt{75}+\sqrt{48}$ [A] $3\sqrt{9}$ [B] $9\sqrt{3}$ [C] $\sqrt{123}$ [D] $54\sqrt{3}$

42. $7\sqrt{6}-3\sqrt{81}-5\sqrt{24}$

[A] $-30\sqrt{6}$ [B] $-\sqrt{111}$ [C] $-3\sqrt{6}-27$ [D] $-3\sqrt{6}-27-5\sqrt{24}$

Solve:

43. $\sqrt{x-4}+2=2$ [A] 4 [B] 8 [C] no solution [D] –4

44. $\sqrt{4x+3}=25$ [A] $\frac{1}{2}$ [B] $\frac{311}{2}$ [C] $\frac{1}{2}$, –2 [D] 121

45. $\sqrt{x+20}=x$ [A] 5 [B] 5, –4 [C] no solution [D] –4

46. Solve by completing the square: $x^2-2x-15=0$

[A] –3, –5 [B] –3, 5 [C] 3, –5 [D] 3, 5

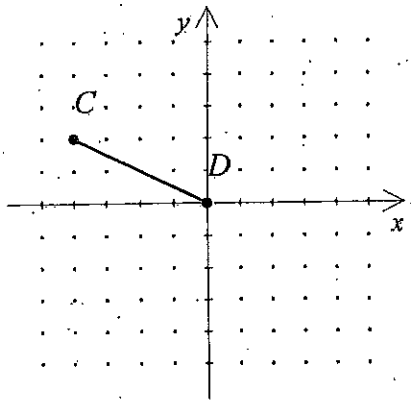
47. Find the number that must divide each term in the equation so that the equation can be solved by the method of completing the square: $7x^2+6x=13$

[A] x [B] 6 [C] 13 [D] 7

48. Solve by completing the square: $4x^2-2x-6=0$

[A] $\frac{3}{2}$, –1 [B] $\frac{9}{4}$, $-\frac{11}{4}$ [C] 1, $-\frac{3}{2}$ [D] $\frac{11}{4}$, $-\frac{9}{4}$

49. Find the midpoint of $\overline{CD}$.



[A] (1, –2) [B] (2, –1) [C] (–2, 1) [D] (–1, 2)

50. Find the midpoint of (13, 15) and (–4, –16).

[A] $\left(\frac{9}{2}, -\frac{1}{2}\right)$ [B] $\left(\frac{17}{2}, \frac{31}{2}\right)$ [C] (9, –1) [D] (–9, 1)