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India's Number 1 Education App

MATHS

BOOKS - INDEPENDENTLY PUBLISHED

MATHS (ENGLISH)

HEART OF ALGEBRA

Example

1. If $3x - 2y = 5$, what is the value of $\frac{8^x}{4^y}$?

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2. If $3^{k+1} - 3^k = m$, what is 3^{k+2} in terms of m?

A. $\frac{4}{3}m$

B. $3m$

C. $\frac{9}{2}m$

D. $9m$

Answer: C

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3. Sam and Jeremy have ages tha are consecutive odd integers. The product of their ages is 783. Which

equation could be used to find Jeremy's age, j, if the he is the younger man?

A. $j^2 + 2 = 783$

B. $j^2 - 2 = 783$

C. $j^2 + 2j = 783$

D. $j^2 - 2j = 783$

Answer: C

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4. A crew of painted are hired to paint a house. The cost of the paint is estimated to be $250 and each of

the p painters will get paid $15 per hour. If the crew of painters will work a 7 hour day and the job is estimated to take d days, which expression best represents the total cost of painting the house?

A. $250 + \frac{15p}{7d}$

B. $250 + 105pd$

C. $250 + \frac{105}{pd}$

D. $7d(250 + 15p)$

Answer: B

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5. If $\frac{r}{3} = 6$, what is the value of $\frac{4s}{r}$?

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6. If $kx - 19 = k - 1$ and $k = 3$,what is the value of $x + k$?

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7. If $2y - 7 = 18$, what is the value of $2y + 3$?

A. 15

B. 18

C. 27

D. 28

Answer: D

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8. When 6 times a number x is added to 5 ,the result is 19. What number results when 5 is subtracted from 3 times x?

A. -3

B. $\frac{2}{3}$

C. 2

D. 7

Answer: C

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9. If $\frac{5}{x} = \frac{9}{x+2}$, what is the value of $\frac{x}{3}$?

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10. If $\frac{13}{16}x - \frac{3}{8} = \frac{2}{3} + \frac{3}{10}$, what is the value of x?

A. $\frac{17}{8}$

B. $\frac{9}{4}$

C. $\frac{8}{5}$

D. $\frac{17}{10}$

Answer: C

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11. Solve for b:

$2(b+2)+2b=21$

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12. $\frac{7}{3}\left(x+\frac{9}{28}\right)-3=17$

Which value of x satisfying above?

A. $\frac{33}{4}$

B. $\frac{249}{28}$

C. $\frac{77}{4}$

D. $\frac{45}{28}$

Answer: A

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13. $\frac{2(m+4)+13}{5} = \frac{21-(8-3m)}{4}$

In the equation above, what is the value of m?

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14. If $3x + 3y = 1$, what is the value of $x = y - 6$?

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15. If $\frac{t}{s} = \frac{3}{4}$, what is the value of $\frac{3s}{4t}$?

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16. If $x + 5 = t$, then $2x + 9 =$

A. $t - 1$

B. $t + 1$

C. $2t$

D. $2t - 1$

Answer: D

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17. If $\frac{4}{x+1} = \frac{8}{y-2}$ where $xn2 - 1$ and $y \neq 2$, what is terms of x?

A. $y = 2x + 1$

B. $y = 2(x + 2)$

C. $y = 2x$

D. $y = 4x + 2$

Answer: B

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18. $3(r + 2s) = r + s$

If (r, s) is a solution to the equation above and $s \neq 0$, what is the value of $\frac{r}{s}$?

A. $-\frac{5}{2}$

B. $-\frac{2}{5}$

C. $\frac{2}{3}$

D. $\frac{3}{2}$

Answer: A

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19. Multiply $(2x+1)$ by $(x-5)$.

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20. Express $(x+3)(x-3)$ as a binomial.

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21. Express $(2y-1)(2y+1)$ as a binomial.

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22. If $(x+y)^2-(x-y)^2=28$, what is the value of xy?

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23. Write $\frac{w}{2}-\frac{w}{3}$ as a single fraction.

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24. If $h = \dfrac{y}{x - y}$, what is $h + 1$ in terms x and y?

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25. If $t = \dfrac{1}{r} + \dfrac{1}{s}$, then what is $\dfrac{1}{t}$ in terms of r and s?

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26. $\dfrac{2x - 9}{7} + \dfrac{2x}{3} = \dfrac{8x - 1}{21}$

What value of x is the solution of the above equation?

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27. If $ax - c = bx + d$, what is x in terms of a, b, c, and d?

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28. Factor $n^2 - 5n - 14$.

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29. $\frac{x^{p^2}}{x^{q^2}} = \left(x^{50}\right)^2$ with $x > 1$ and $p - q - 4$, what is the value of $p + q$?

A. 25

B. 50

C. 64

D. 96

Answer: A

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30. Simplify $\frac{2b-2a}{a^2-b^2}$.

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31. $\dfrac{x^2 - 4x - 5}{(x-1)^2 - 4(x-1)}$

The expression above is equivalent to

A. $x + 1$

B. $\dfrac{x+5}{x-1}$

C. $\dfrac{x+1}{x-1}$

D. $\dfrac{x+1}{x-4}$

Answer: C

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32. $\dfrac{3x}{2x-6}+\dfrac{9}{6-2x}$

Which of the following is equivalent to the expression above?

A. $-\dfrac{3}{2}$

B. $\dfrac{-6x^2+36x-54}{(2x-6)(6-2x)}$

C. $\dfrac{3x+9}{2x-6}$

D. $\dfrac{3}{2}$

Answer: D

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33. Solve $x^2 + 2x = 0$ for x.

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34. Solve $x^2 + 3x = 10$ for x.

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35. $2y^2 = 3(y + 9)$

If j and k represent solutions of the equation above and $j > k$, what is the value of $j - k$?

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36. If 4 is a root of $x^2 - x - w = 0$, what is the value of w?

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37. An automobile repair shop wants to mix a solution that is 35% pure antifreeze with another solution that is 75% pure antifreeze. How many liters of each solution must be used in other to produce 80 liters of solution that is 50% pure antifreeze?

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38. $3x = 5y + 19$

$2x + y = -x + 7$

What ordered pair (x, y) represents the solution to the system of equations above?

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39. $2x + 4y = 5x + 11$

$6x - 5y = -16$

What ordered pair (x, y) represents the solution to the system of equations above?

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40. $2x + 5y = 2y - 6$

$5x + 2y = 7$

In the system of equations above, what is the value of the product xy?

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41. A store that offers faxing services charges, a fixed amount to fax one page and a different amount for faxing each additional page. If the cost of faxing 5 pages is $3.05 and the cost of faxing 13 pages is $6.65.

a. What is the cost of faxing one page?

b. What is the total cost of faxing three pages to the same telephone number?

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42. If $2r = s$ and $24t = 3s$, what is the r in terms of t?

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43. If $ab - 3 = 12$ and $2bc = 5$, what is the value of $\frac{a}{c}$?

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44. What is the greatest integer value of x such that $1 - 2x$ is at least 6?

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45. $C = 8n + 522$

The equation above gives the cost, C, in dollars of manufacturing n items. A profit is made when the total revenue from selling a quantity of items is greater than the total cost of manufacturing the same quantity of items. If each items can be sold $14, which of the following inequalies gives all possible values of n that will produce a profit?

A. $n > 87$

B. $n > 112$

C. $n > 522$

D. $n > 609$

Answer: A

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46. If $2x^2 + 3ax - 7 < -17$, what is the smallest possible integer value of a when $x = -1$?

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47. If $-2 \leq 3x - 7 \leq 8$, find x.

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48. If $3 < x + 1 < 8$ and $2 < y < 9$, which of the following best describes the range of values of $y - x$?

A. $-7 < y - x < 5$

B. $-5 < y - x < 7$

C. $0 < y - x < 2$

D. $2 < y - x < 7$

Answer: B

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49. Solve $x : |x - 1| = 4.$

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50. Solve $x : |2x + 3| + 4 = 5$

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51. Solve and check : $|x - 3| = 2x.$

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52. Solve and graph the solution set of $|2x - 1| \leq 7$.

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53. If $5 < |2 - x| < 6$ and $x > 0$, what is one possible value of x?

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54. Line p contains the points $(-1, 8)$ and $(9, k)$. If line p is parallel to line q whose equation of $3x + 4y = 7$. What is the value of k?

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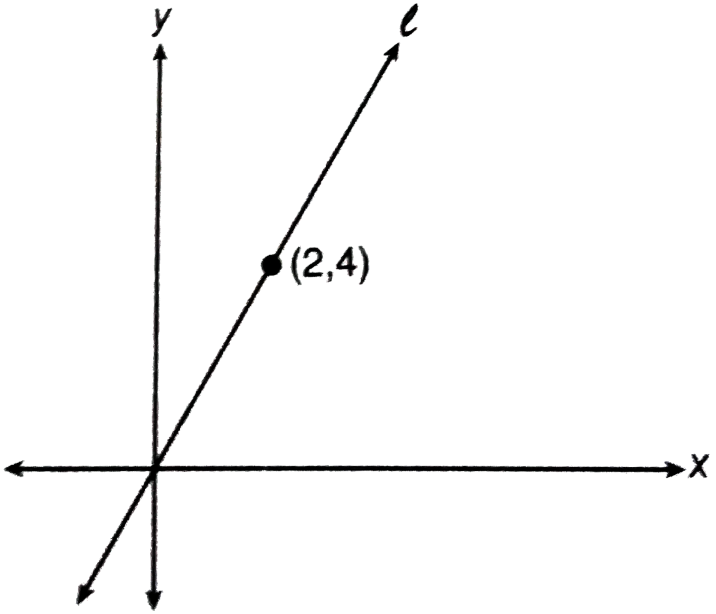

55.

In the accompanying figure. Line l passes through the origin and the point (2, 4). Line m (not shown) is perpendicular to line l at (2, 4). Line m intersects the x-axis at which point?

A. $(5, 0)$

B. $(6, 0)$

C. $(8, 0)$

D. $(10, 0)$

Answer: D

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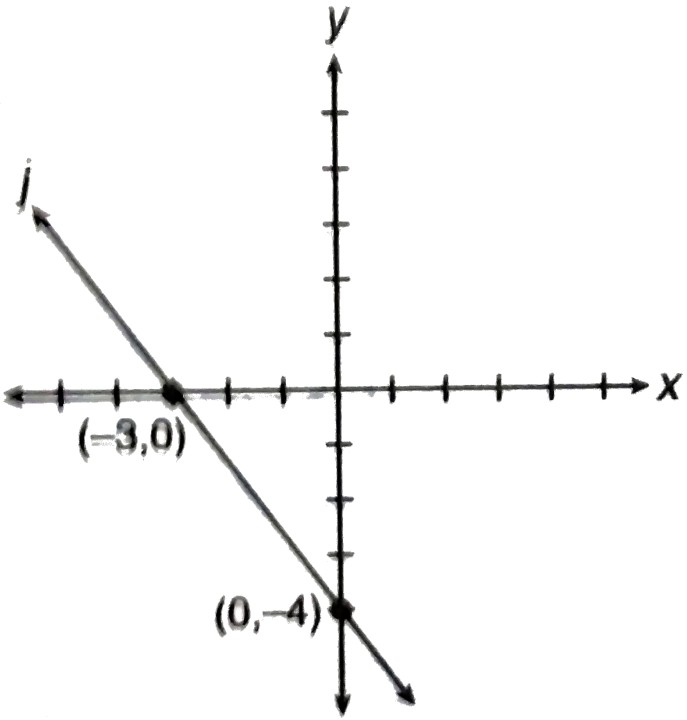

56.

In the figure above, line k (not shown) is perpendicular to line j. If the equation of line k I s $y = px$, what is the value of constant p?

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57. $\frac{3}{2}x - \frac{1}{2}y = 7$

$kx - 6y = 4$

In the system of linear equation above, is a constant.

If the system has no solution, what is the value of k?

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58. If $k(x) = \frac{2x - p}{5}$ and $k(7) = 3$, what is the value of p?

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59. Function f is defined by $f(x) = 2x + 1$. If $2f(m) = 30$, what is the value of $f(2m)$?

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60. Function f is defined by $f(x) = \frac{3}{2}x + c$. If $f(6) = 1$, what is the value of $f(c)$?

A. -20

B. -8

C. 4

D. 12

Answer: A

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61. If $g(x) = 3x - 1$ and $f(x) = 4g(x) + 3$. What is f(2)?

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62. If $f(x) = x^2 - 2x$, what is $f(2x + 1)$?

A. $4x + 2$

B. $4x^2 - 1$

C. $4x^2 + 1$

D. $4x^2 - 4x - 1$

Answer: B

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63.

x	0	1	4	5
$f(x)$	−2	4	0	2

x	2	1	3	−4
$g(x)$	0	2	1	5

Some value of functions f and g are given by the tables above. What is the value of $f(g(3))$?

A. -2

B. 0

C. 2

D. 4

Answer: D

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64. Referring to Figure 3.15, which could be the value of s when $g(s) = 0$?

I.-6

II.2

II.4

A. I only

B. II only

C. III only

D. I and II only

Answer: D

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65. The zeros of the functions $f(x) = 25 - (x + 2)^2$ are

A. -2 and 5

B. -3 and 7

C. -5 and 2

D. -7 and 3

Answer: D

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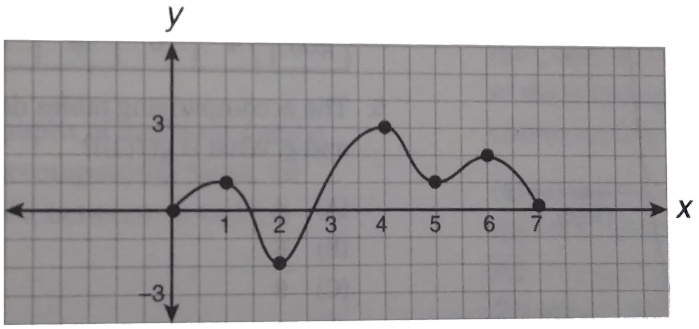
66.



The graph above shows the function y=f(x) over the interval $0 \leq x \leq 7$. What is the value of $f(f(6))$?

A. -2

B. 0

C. 1

D. 2

Answer: A

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Multiple Choice

1. If $5 = a^x$, then $\frac{5}{a} =$

A. a^{x+1}

B. a^{x-1}

C. a^{1-x}

D. $a\frac{x}{5}$

Answer: B

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2. If $y = 25 - x^2$ and $1 \leq x \leq 5$, what is the smallest possible value of y?

A. 0

B. 1

C. 5

D. 10

Answer: A

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3. Given $y = wx^2$ and y is not 0. If the value of x and w are each double, then the value of y is multipled by

A. 1

B. 2

C. 4

D. 8

Answer: D

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4. If $\frac{x^{23}}{x^m} = x^{15}$ and $\left(x^4\right)^n = x^{20}$, then mn=

A. 13

B. 24

C. 28

D. 40

Answer: D

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5. If $2 = p^3$, then 8p must equal

A. p^6

B. p^8

C. p^{10}

D. $8\sqrt{2}$

Answer: C

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6. if $10^{k-3} = m,$ then $10^k =$

A. $1,000m$

B. $m + 1,000$

C. $\frac{m}{1,000}$

D. $m - 1,000$

Answer: A

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7. If w is a positive number and $w^2 = 2$, then $w^2 =$

A. $\sqrt{2}$

B. $2\sqrt{2}$

C. 4

D. $3\sqrt{2}$

Answer: B

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8. If $x = \sqrt{6}$ and $y^2 = 12$, then $\frac{4}{xy} =$

A. $\frac{3}{2\sqrt{2}}$

B. $\frac{\sqrt{2}}{3}$

C. $\frac{3}{\sqrt{2}}$

D. $\frac{2\sqrt{2}}{3}$

Answer: B

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9. If x is a positive integer such than $x^9 - r$ and $x^5 = w$, which of the following must be

equal to x^{13}?

A. $rw - 1$

B. $r + w - 1$

C. $\frac{r^2}{w}$

D. $r^2 - w$

Answer: C

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10. Caitlin a movie rental card worth $175. After she rents the first movie, the card's value is $172.25. After she rents the second movie, its value is $169.50. After

she rents the third movie, the card is worth %166.75. Assuming the pattern continues, which of the following equations define A, the amount of money on the rental card after n rental?

A. $175 - 2.75n$

B. $2.75n - 175$

C. $(175 - 2.75)n$

D. $\frac{175}{2.75}n$

Answer: A

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11. Three times the sum of the number and four is equal to five number, decreased by two. If x represents the number, which equation is a correct translation of the statement?

A. $3(x + 4) = 5x - 2$

B. $3(x + 4) = 5(x - 2)$

C. $3x + 4 = 5x - 2$

D. $3x + 4 = 5(x - 2)$

Answer: A

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12. Owen gets paid $280 per week plus 5% commision on all sides for selling electronic equipment. If he tells d dollars worth of electronic equipment in one week, the amount algebraic expression represents the amount of money he will earn to weeks?

A. $(280d + 5)w$

B. $280 + 0.05dw$

C. $(280 + 0.05d)w$

D. $280w + 60d$

Answer: C

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13. Which expression represents the number of hours in w weeks and d days?

A. $7w + 12d$

B. $84w + 24d$

C. $168w + 24d$

D. $168w + 60d$

Answer: C

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14. Which verbal expressions can be represented by $2(x - 5)$?

A. 5 less than 2 times x

B. 2 multiplied by x less 5

C. Twice the difference of x and 5

D. The product of 2 and x, decreased by 5.

Answer: C

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15. If k pencils cost c cents, what is the cost in cents of p pencils?

A. $\frac{pc}{k}$

B. $\frac{pk}{c}$

C. $\frac{c}{kp}$

D. cpk

Answer: A

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16. If it takes h hours to paint a rectangular will that is x feet wide and y feet long, how many minutes does if take to paint 1 square foot of the bulletin board?

A. $\frac{xy}{60h}$

B. $\frac{60h}{xy}$

C. $\frac{h}{60}(x+y)$

D. $\frac{hxy}{60}$

Answer: B

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17. If carol earnsx dollars a week for 3 weeks and y dollars a week for 4 weeks, what is the average number of dollars per week that she earns?

A. $\frac{1}{7}(x+y)$

B. $\frac{3x+4y}{7}$

C. $\frac{12xy}{7}$

D. $\frac{x}{3}+\frac{y}{4}$

Answer: B

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18. Tim bought a skateboard and two helmets for total of d dollars. If the skateboard costs s dollars, the cost of each helmet could be represents by which of the following expression?

A. $2ds$

B. $\frac{ds}{2}$

C. $\frac{d-s}{2}$

D. $d-\frac{s}{2}$

Answer: C

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19. The length of a rectangle is three feet less than twice its width. If x represents the width of the rectangle, in feet, which inequality represents the area of the rectangle that is at most 30 square feet?

A. $x(2x-3) \leq 30$

B. $x(2x-3) \geq 30$

C. $x(3-2x) \leq 30$

D. `x(3-2x)ge30'

Answer: A

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20. In 1995, the U.S. federal government paid off one-third of its debt. If the original amount of the debt eas $4,920,000,000,000, which expressions represents th amount that was not paid off?

A. 1.64×10^4

B. 1.64×10^{12}

C. 3.28×10^8

D. 3.28×10^{12}

Answer: D

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21. $\dfrac{\left(b^{2n+1}\right)^3}{b^n \cdot b^{5n+1}}$

The expression above is equivalent to which of the following?

A. b^2

B. $\dfrac{1}{b^2}$

C. b^{2n}

D. $\dfrac{1}{b^{2n}}$

Answer: A

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22. If $\frac{m-n}{n} = \frac{4}{9}$, what is the value of $\frac{n}{m}$?

A. $\frac{9}{13}$

B. $\frac{7}{4}$

C. $\frac{9}{5}$

D. $\frac{13}{7}$

Answer: A

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23. If $\frac{p+4}{p-4} = 13$, what is the value of p?

A. $\frac{2}{3}$

B. $\frac{10}{13}$

C. $\frac{28}{9}$

D. $\frac{14}{3}$

Answer: D

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24. If $4x + 7 = 12,$ what is the value of $8x + 3$?

A. 9

B. 11

C. 13

D. 15

Answer: C

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25. $\frac{6}{x} = \frac{4}{x-9}$, what is the value of $\frac{x}{18}$?

A. 3

B. 2

C. $\frac{1}{2}$

D. $\frac{3}{2}$

Answer: D

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26. If $3j - (k_5) = 16 - 4k$, what is the value of $j + k$?

A. 8

B. 7

C. 5

D. 2

Answer: B

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27. If $\frac{1}{2}(10p + 2) = p + 7$, then $4p =$

A. 6

B. $\frac{5}{2}$

C. 4

D. 3

Answer: A

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28. If $0.25y + 0.36 = 0.33y - 1.48$, what is the value of $\frac{y}{10}$?

A. 2.30

B. 1.40

C. 0.75

D. 0.64

Answer: A

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29. If $\frac{4}{7}k = 36$, then $\frac{3}{7}k =$

A. 21

B. 27

C. 32

D. 35

Answer: B

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30. If $\frac{1}{2}x + \frac{1}{4}x + \frac{1}{8}x = 14$, then $x =$

A. 4

B. 8

C. 12

D. 16

Answer: D

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31. If $\frac{2}{x} = 2,$ then $x + 2 =$

A. $\frac{3}{2}$

B. $\frac{5}{2}$

C. 3

D. 4

Answer: C

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32. If $\frac{y-2}{2} = y+2$, then $y =$

A. -6

B. -4

C. -2

D. 4

Answer: A

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33. If $\frac{2y}{7} = \frac{y+3}{4}$, then $y =$

A. 5

B. 9

C. 13

D. 21

Answer: D

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34. If $\frac{y}{3} = 4$, then $3y =$

A. 4

B. 12

C. 24

D. 36

Answer: D

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35. When the number k is multiplied by 5, the result is the same as when 5 is added to k. What is the value of k?

A. $\frac{4}{5}$

B. 1

C. $\frac{5}{4}$

D. $\frac{3}{2}$

Answer: C

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36. $\frac{8r+7}{4s} = 11$

If $\frac{1}{2}r + 1 = s + 1$, what is the value of $r + s$ for the equation above?

A. $\frac{1}{2}$

B. $\frac{3}{4}$

C. 1

D. $\frac{3}{2}$

Answer: B

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37. If $m+1=\frac{5(m-1)}{3}$, then $\frac{1}{m}=$

A. $\frac{1}{4}$

B. $\frac{3}{8}$

C. 2

D. $\frac{8}{3}$

Answer: A

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38. $\frac{5(p-1)+6}{8} = \frac{7-(3-2p)}{12}$

In the equation above, what is the value of p?

A. $\frac{1}{3}$

B. $\frac{5}{11}$

C. $\frac{2}{3}$

D. $\frac{9}{11}$

Answer: B

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39. During the investigation of an archeological dig, a femour bone was found and used to estimate the height of the person it came from using the formula $h = 61.4 + 2.3F$, where h is the height , in centimeters, of a person whoe femour is F centimeters in length. Using this formula, the height of the person was estimated to be 5 feet 8 inches. The length of the femour, in centimeters, was closet to which of the following lengths?

[Note: 1 inch=2.54 centimeters]

A. 37.3

B. 48.4

C. 51.0

D. 56.3

Answer: B

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40. Last month, Sara, Ryan, and Taylor received a total of 882 emails. If Sara received 25% more emails than the sum of the number of emails received by Ryan and Taylor, how many emails did Sara received?

A. 448

B. 486

C. 490

D. 504

Answer: C

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41. In an election for senior class presidents. Emily received approcimately 25% more votes than Alexis. If Emily received 163 votes the number of votes Alexis received is closet to

A. 122

B. 130

C. 138

D. 204

Answer: B

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42. At City High School, the sophomore class has 60 numbers than the freshman class. The junior class has 50 fewer students than twice the students in the freshman class. The senior class is three times as large as the freshman class. If there are a total of 1,424 students at City High School, how many students are in the freshman class?

A. 202

B. 205

C. 235

D. 236

Answer: A

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43. If $V = \frac{1}{3}Bh$, what is h expressed in terms of B and V?

A. $\frac{1}{3}BV$

B. $\frac{V}{3B}$

C. $\frac{3V}{B}$

D. $3VB$

Answer: C

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44. If $F = \frac{kmM}{r^2}$, then m=

A. $\frac{Fr^2}{kM}$

B. $\frac{kFr^2}{M}$

C. $\frac{kM}{Fr^2}$

D. $F\left(r^2 + kM\right)$

Answer: A

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45. If $P = 2(L + M)$, what is W in terms of P and L?

A. $P - 2L$

B. $\frac{P - 2L}{2}$

C. $\frac{2L - P}{2}$

D. $\frac{1}{2}(P - L)$

Answer: B

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46. If $A = \frac{1}{2}h(x + y)$, what is y inn terms A, h, and x?

A. $\frac{2A - hx}{h}$

B. $\frac{A - hx}{2h}$

C. $2Ah - x$

D. $2A - hx$

Answer: A

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47. If $s = \dfrac{2x + t}{r}$, then x=

A. $\dfrac{rs - t}{2}$

B. $\dfrac{rs + 1}{2}$

C. $2rs - t$

D. $rs - 2t$

Answer: A

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48. If $x = x_o + \dfrac{1}{2}(v + v_o)t$, what is v in terms of the other variables?

A. $\frac{2(x - x_o)}{v_o t}$

B. $\frac{2(x - x_o)}{t} - v_o$

C. $\frac{t(x - x_o)}{2v_o}$

D. $v_o t - \frac{2(x - x_o)}{t}$

Answer: B

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49. If $2s - 3t = 3t - s$, what is s in terms of t?

A. $\frac{t}{2}$

B. $2t$

C. $t + 2$

D. $\frac{t}{2} + 1$

Answer: B

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50. If $xy + z = y$, what is x in terms of y and z?

A. $\frac{y + z}{y}$

B. $\frac{y - z}{z}$

C. $\frac{y - z}{y}$

D. $1 - z$

Answer: C

Watch Video Solution

51. If $b(x+2y)=60$ and $by=15$, what is the value of bx?

A. 15

B. 20

C. 25

D. 30

Answer: D

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52. If $\frac{a-b}{b} = \frac{2}{3}$, what is the value of $\frac{a}{b}$?

A. $\frac{1}{2}$

B. $\frac{3}{5}$

C. $\frac{3}{2}$

D. $\frac{5}{3}$

Answer: D

Watch Video Solution

53. If $s + 3s$ is 2 more than $t + 3t$, then $s - t =$

A. -2

B. $-\frac{1}{2}$

C. $\frac{1}{2}$

D. $\frac{3}{4}$

Answer: C

Watch Video Solution

54. If $\frac{1}{p+q} = r$ and $p \neq -q$. What is p in terms of r and q?

A. $\frac{rq-1}{q}$

B. $\frac{1+rq}{q}$

C. $\frac{r}{1+rq}$

D. $\frac{1-rq}{r}$

Answer: D

Watch Video Solution

55. If (a+b+c)/(3)=(a+b)/(2)`, then c=

A. $\frac{a-b}{2}$

B. $\frac{a+b}{2}$

C. $5a+5b$

D. $\frac{a+b}{5}$

Answer: B

Watch Video Solution

56. If the value of n nickets plus d dimes is c cents, what is n in terms of d?

A. $\frac{c}{5}-2d$

B. $5c-2d$

C. $\frac{c-d}{10}$

D. $\frac{cd}{10}$

Answer: A

Watch Video Solution

57. If $\frac{c}{d} - \frac{a}{b} = x, a = 2c,$ and $b = 5d$, what is the value of $\frac{c}{d}$ in terms of x?

A. $\frac{2}{3}x$

B. $\frac{3}{4}x$

C. $\frac{4}{3}x$

D. $\frac{5}{3}x$

Answer: D

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58. $\frac{4}{t-1} = \frac{3}{w-1}$

If in the equation above $t \neq 1$ and $w \neq 1$, then t=

A. $2w - 1$

B. $2(w - 1)$

C. $w - 2$

D. $2w$

Answer: A

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59. $\dfrac{20b^3 - 8b}{4b} =$

A. $5b^2 - 2b$

B. $5b^3 - 2$

C. $5b^2 - 8b$

D. $5b^2 - 2$

Answer: D

Watch Video Solution

60. $\dfrac{3}{w} - \dfrac{4}{3} = \dfrac{5w}{10w^2}$

In the equation above, what is the value of w?

A. $\frac{15}{8}$

B. $\frac{18}{11}$

C. $\frac{23}{12}$

D. $\frac{13}{6}$

Answer: A

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61. $P = 4x - z + 3y$

$Q = -x + 4z + 3y$

Using the definitions above for P and Q. What is $2P - Q$?

A. $7x - 6z + 3y$

B. $9x + 2z + 9y$

C. $9x - 6z + 3y$

D. $7x - 6z + 9y$

Answer: C

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62. If $(x - y)^2 = 50$ and $xy = 7$, what is the value of $x^2 + y^2$?

A. 8

B. 36

C. 43

D. 64

Answer: D

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63. If $p = \frac{a}{a-b}$ and $a \neq b$, then, in terms of a and b, $1 - p =$

A. $\frac{a}{b-a}$

B. $\frac{b}{b-a}$

C. $\frac{a}{a-b}$

D. $\frac{b}{a-b}$

Answer: B

Watch Video Solution

64. If $(a-b)^2+(a+b)^2=24$, then $a^2+b^2=$

A. 4

B. 12

C. 16

D. 18

Answer: B

Watch Video Solution

65. $\frac{2}{p} - \frac{1}{2p} = \frac{p^2 + 1}{p^2 + 1}$

In the equation above, what is the value of $\frac{1}{p}$?

A. $\frac{1}{3}$

B. $\frac{2}{3}$

C. $\frac{3}{2}$

D. 3

Answer: B

Watch Video Solution

66. If $r = t + 2$ and $s + 2 = t$, then $sr =$

A. t^2

B. 4

C. $t^2 - 4$

D. $t^2 - 4t + 4$

Answer: C

Watch Video Solution

67. Which statements is true for all real values of x and y?

A. $(x+y)^2 = x^2 + y^2$

B. $x^2 + x^2 = x^4$

C. $\frac{2^{x+2}}{2^x} = 4$

D. $\frac{2^{x+2}}{2^x} = -4$

Answer: C

Watch Video Solution

68. If $(p-q)^2 = 25$ and $pq = 14$, what is the values of $(p+q)^2$?

A. 25

B. 36

C. 53

D. 81

Answer: D

Watch Video Solution

69. If $\frac{a}{2} - \frac{b}{3} = 1$, what is $2a + 3b$ in terms of b?

A. $\frac{7b}{3} + 1$

B. $\frac{13b}{3} + 4$

C. $\frac{13b + 1}{3}$

D. $\frac{17b}{3}$

Answer: B

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70. If $(x + 5)(x + p) = x^2 + 2x + k$, then

A. p=3 and k=5

B. p=-3 and k=15

C. p=3 and k=-15

D. p=-3 and k=-15

Answer: D

Watch Video Solution

71. For what value of p is $(x-2)(x+2)=x(x-p)$?

A. -4

B. 0

C. $\frac{2}{x}$

D. $\frac{4}{x}$

Answer: D

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72. $\frac{m}{2} - \frac{3(m-4)}{5} = \frac{5(3-m)}{6}$

What value o f m makes the equation above a true statements?

A. $\frac{8}{27}$

B. $\frac{3}{22}$

C. $\frac{62}{27}$

D. $\frac{147}{22}$

Answer: B

Watch Video Solution

73. If $\left(k+\frac{1}{k}\right)^2=16$, then $k^2+\frac{1}{k^2}=$

A. 4

B. 8

C. 12

D. 14

Answer: D

Watch Video Solution

74. If $\frac{a}{b} = 1 - \frac{x}{y}$, then $\frac{b}{a} =$

A. $\frac{x}{y - x}$

B. $\frac{y}{x} - 1$

C. $\frac{y}{x - y}$

D. $\frac{y}{y - x}$

Answer: D

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75. $\frac{11+s}{12r} = \frac{1}{6} + \frac{1-3s}{4r}$

In the equation above, what is r inn terms of s?

A. $r = 5s + 4$

B. $r = \frac{s-2}{3}$

C. $r = 4s + 5$

D. $r = \frac{s+3}{2}$

Answer: A

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76. $q = \dfrac{d}{d+n}$

On a manufacturer's assembly line, d parts are found to be defective and n parts are nondefective. The formula above is used to calculate a quality of parts ratio. What is d expressed in terms of the other two variable?

A. $\dfrac{n}{1-q}$

B. $\dfrac{nq}{1-q}$

C. $\dfrac{n}{q-1}$

D. $\dfrac{nq}{q-1}$

Answer: B

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77. The sum of $\frac{a}{a^2 - b^2}$ and $\frac{b}{a^2 - b^2}$ is

A. $\frac{1}{a - b}$

B. $\frac{a}{a - b}$

C. $\frac{b}{a - b}$

D. $\frac{a + b}{a - b}$

Answer: A

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78. If $ax + x^2 = y^2 - ay$, what is a in terms of x and y?

A. $y - x$

B. $x - y$

C. $x + y$

D. $\frac{x^2 + y^2}{x - y}$

Answer: A

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79. If $\frac{xy}{x-y} = 1$ and $x \neq -y$, what is x in terms of y?

A. $\frac{y+1}{y-1}$

B. $\frac{y+1}{y}$

C. $\frac{y}{y-1}$

D. $\frac{y}{y+1}$

Answer: C

Watch Video Solution

80. What is the sum of $\frac{4x}{x-1}$ and $\frac{4x+4}{x^2-1}$ expressed in simplest form?

A. $\frac{4x+1}{x-1}$

B. $\frac{4(x+1)}{x-1}$

C. $\frac{4(x^2+4x-1)}{x^2-1}$

D. $\frac{4(x+2)}{x^2-1}$

Answer: B

Watch Video Solution

81. If $h = \frac{x^2-1}{x+1} + \frac{x^2-1}{x-1}$, what is x in terms of h?

A. $\frac{h}{2}$

B. $2h + 1$

C. $2h - 1$

D. $\sqrt{\frac{h}{2}}$

Answer: A

Watch Video Solution

82. If $ax^2 - bx = ay^2 + by$, then $\frac{a}{b} =$

A. $\frac{1}{x - y}$

B. $\frac{1}{x + y}$

C. $\frac{x-y}{x+y}$

D. $\frac{x+y}{x-y}$

Answer: A

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83. If $a \neq b$ and $\frac{a^2-b^2}{9} = a+b$, then what is the value of $a-b$?

A. $\frac{1}{3}$

B. 3

C. 9

D. 12

Answer: C

Watch Video Solution

84. If $\frac{r+s}{x-y}=\frac{3}{4}$, then $\frac{8r+8s}{15x-15y}=$

A. $\frac{32}{45}$

B. $\frac{8}{15}$

C. $\frac{7}{16}$

D. $\frac{2}{5}$

Answer: D

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85. If $x^2 = k + 1$, then $\frac{x^4 - 1}{x^2 + 1}$=

A. k

B. k^2

C. $k + 2$

D. $k - 2$

Answer:

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86. If $p = x(3x + 5) - 28$, then p is divisible by which of the following expression?

A. $3x + 4$

B. $x - 4$

C. $x + 7$

D. $3x - 7$

Answer: D

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87. If $(x+p)$ is a factor of both $x^2+16x+64$ and $4x^2+37x+k$, where p and k are nonzero integer constants, what could be the value of k?

A. 9

B. 24

C. 40

D. 63

Answer: C

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88. The fraction $\frac{x-2}{x^2+4x-21}$ is not defined when x=

A. 2

B. $7 \text{ and } -3$

C. $-7 \text{ or } 3$

D. $-7 \text{ or } -3$

Answer: C

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89. If $\frac{a^2}{2} = 2a$, then a equals

A. 0 or -2

B. 0 or 2

C. 0 or -4

D. 0 or 4

Answer: D

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90. If $(s-3)^2=0$, what is the value of $(s+3)(s+5)$?

A. 48

B. 24

C. 15

D. 0

Answer: A

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91. If $k = 7 + \frac{8}{k}$, what is the value of $k^2 + \frac{64}{k^2}$?

A. 33

B. 49

C. 64

D. 65

Answer: D

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92. $\dfrac{18-3w}{w+6}=\dfrac{w^2}{w+6}$

Which of the following represents the sum of all possible solutions to the equation above?

A. -9

B. -3

C. 3

D. 9

Answer: A

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93. Equation (1):$2x^2 + 7x = 4$

Equation (2): $(y - 1)^2 = 9$

If f is the greater of the two roots of Equations (1) and g is the lesser of the two roots of Equation (2), what is the value of the product $f \times g$?

A. -4

B. -1

C. 2

D. 8

Answer: B

Watch Video Solution

94. $x^3 - 20x = x^2$

If a, b, and c represents the set of all values of x that satisfy the equation above, what is the value of $(a + b + c) + (abc)$?

A. -1

B. 0

C. 1

D. 9

Answer: C

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95. If $\frac{x^2}{3} = x$, then $x =$

A. 0 or -3

B. 3 only

C. 0 only

D. 0 or 3

Answer: D

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96. By how much does the sum of the roots of the equation $(x+1)(y-3)=0$ exceed the product of its roots?

A. 1

B. 2

C. 3

D. 5

Answer: D

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97. If $x^2 - 63x - 64 = 0$ and p and n are integers such that $p^n = x$, which of the following CANNOT be a value for p?

A. -8

B. -4

C. -1

D. 4

Answer: B

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98. If $r > 0$ and $t^t = 6.25r^{t+2}$, then r=

A. $\frac{2}{5}$

B. $\frac{4}{9}$

C. $\frac{5}{8}$

D. $\frac{3}{4}$

Answer: A

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99. $\frac{x}{2x-1} = \frac{2x+1}{x+2}$

If m and n represents the solutions of the equations

above, what is the value of m+n?

A. $-\frac{4}{3}$

B. $-\frac{3}{4}$

C. $\frac{2}{3}$

D. $\frac{5}{4}$

Answer: C

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100. $\frac{1}{(t-2)^2} = 6 + \frac{1}{t-2}$

If p and q represents the solutions of the equations above, what is the value of $p \times q$?

A. $-\frac{3}{2}$

B. $\frac{7}{2}$

C. $\frac{9}{4}$

D. $\frac{15}{6}$

Answer: B

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101. If $2x - 3y = 11$ and $3x + 15 = 0$, what is the value of y?

A. -7

B. -5

C. $\frac{1}{3}$

D. 3

Answer: A

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102. If $2a = 3b$ and $4a + b = 21$, then b=

A. 1

B. 3

C. 4

D. 7

Answer: B

Watch Video Solution

103. If $2p + q = 11$ and $p + 2q = 13$, then p+q=

A. 6

B. 8

C. 9

D. 12

Answer: B

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104. $2(x+y)=3y+5$

$3x+2y=-3$

Which equivalent equation could be used to solve the system of equations above?

A. $2\left(\frac{5+y}{2}\right)+2y=-3$

B. $3\left(\frac{5}{2}-y\right)+2y=-3$

C. $3x+2(2x-5)=-3$

D. $3x+2(5-2x)=-3$

Answer: C

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105. If $x - y = 3$ and $x + y = 5$, what is the value of y?

A. -4

B. -2

C. -1

D. 1

Answer: D

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106. If $5x + y = 19$ and $x - 3y = 7$, then x+y=

A. -4

B. -1

C. 3

D. 4

Answer: C

Watch Video Solution

107. If $x - 9 = 2y$ and $x + 3 = 5y$, what is the value of x?

A. -2

B. 4

C. 11

D. 17

Answer: D

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108. If $\frac{1}{x}+\frac{1}{y}=\frac{1}{4}$ and $\frac{1}{x}-\frac{1}{y}=\frac{3}{4}$, then x=

A. $\frac{1}{4}$

B. $\frac{1}{2}$

C. 2

D. 4

Answer: C

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109. If $5a + 3b = 35$ and $\frac{a}{b} = \frac{2}{3}$, what is the value of a?

A. $\frac{14}{5}$

B. $\frac{7}{2}$

C. 5

D. 7

Answer: A

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110. If $\frac{x}{y} = 6, \frac{y}{w} = 4,$ and $x = 36,$ what is the value of w?

A. $\frac{1}{2}$

B. $\frac{3}{2}$

C. 2

D. 4

Answer: B

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111. If $4r + 7s = 23$ and $r - 2s = 17$ then $3r + 3s =$

A. 8

B. 24

C. 32

D. 40

Answer: B

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112. If $\frac{p-q}{2} = 3$ and $rp - rq = 12$, then r=

A. -1

B. 1

C. 2

D. 4

Answer: C

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113. If $(a+b)^2 = 9$ and $(a-b)^2 = 49$, what is the value of $a^2 + b^2$?

A. 17

B. 20

C. 29

D. 58

Answer: C

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114. $3x - y = 8 - x$

$6x + 4y = 2y - 9$

For the system of equations above, what is the value of the product xy?

A. -3

B. -2

C. 2

D. 3

Answer: A

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115. If $3x + y = c$ and $x + y = b$, what is the value of x in terms of c and b?

A. $\frac{c-d}{3}$

B. $\frac{c-d}{2}$

C. $\frac{b-c}{3}$

D. $\frac{b-c}{2}$

Answer: B

Watch Video Solution

116. If $a + b = 11$ and $a - b = 7$, then ab=

A. 6

B. 8

C. 10

D. 18

Answer: D

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117. $y - z = 7$

$x + y = 3$

$z - y = 6$

For the above system of the equations, x=

A. 5

B. 6

C. 7

D. 8

Answer: D

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118. $a = 4c$

$c = re$

$a = 5e$

For the system of equations above, if $e \neq 0$, what is the value of r?

A. $\frac{1}{20}$

B. $\frac{4}{5}$

C. $\frac{5}{4}$

D. 1

Answer: C

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119. During the next football season, a player's earning, x, will be 0.005 million dollars more than

those of a teamates eanings, y. The two players will earn a total of 3.95 million dollars. Which system of equations could be used to determine the amount each player will earn, in millions of dollars?

A. $x + y = 3.95$

$x + 0.005 = y$

B. $x - 3.95 = y$

$y + 0.005 = x$

C. $x + y = 3.95$

$0.005 = x$

D. $y + 0.005 = x$

$y + x = 3.95$

Answer: D

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120. What is the larger integer value of p that satisfies the equality $4 + 3p < p + 1$?

A. -2

B. -1

C. 0

D. 2

Answer: A

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121. If $-3 < 2x + 4 < 9$, which of the following CANNOT be a possible value of x?

A. -2

B. -4

C. 0

D. 2

Answer: B

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122. Rogar is having a picnic for 78 guests. He plans to serve each guest at least one hot dog. If each package, p, contains eight hot dogs, which inequality could be used to determine the number of package of hot dogs Roger must buy?

A. $\frac{p}{8} \geq 78$

B. $8p \geq 78$

C. $8 + p \geq 78$

D. $78 - p \geq 8$

Answer: B

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123. Peter begins his kindergarten year able to spell 10 words. He is going to learn to spell 2 new words every day. Which in inequality can be used to determine how many days, d, it takes Peter to be able to spell at least 85 words?

A. $2d + 10 \geq 85$

B. $20d \leq 85$

C. $(d + 2) + 1 \geq 85$

D. $2d - 10 \leq 85$

Answer: A

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124. Which of the following numbers is NOT a solution of the inequality $7 - 5x \leq -3(x - 5)$?

A. -5

B. -4

C. -2

D. 1

Answer: A

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125. Tamara has a cell phone that charges $0.07 per minute plus a monthly fee of $19.00. She budgets $29.50 per month for total cell phone expenses without taxes. What is the maximum number of minutes. Tamara could use her phone each month in order to stay withi her budget?

A. 150

B. 271

C. 421

D. 682

Answer: A

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126. What is the solutions of $3(2m-1) \leq 4m+7$?

A. $m \geq 5$

B. $m \leq 5$

C. $m \geq 4$

D. $m \leq 4$

Answer: B

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127. An online music club has a one-time registration fee of $13.95 and charge $0.49 to buy each strong. If Emma has $50.00 to join the club and buys songs, what is the maximum number of songs she can buys?

A. 73

B. 74

C. 130

D. 131

Answer: A

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128. The ninth grade class class at a local high school needs to purchase a park permit for $250.00 for their upcoming class picnic. Each ninth grader attending pays $0.75. Each guest pays $1.25. If 200 ninth graders attend the picnic, which inequality can be used to determine the number of guests, x, needed to cover the cost of the permit?

A. $0.75x - (1.25)(200) \geq 250.00$

B. $0.75x + (1.25)(200) \geq 250.00$

C. $(0.75)(200) - 1.25x \geq 250.00$

D. $(0.75)(200) + 1.25x \geq 250.00$

Answer: D

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129. If $2(x-4) \leq \frac{1}{2}(5-3x)$ and x is an integer, what is the smallest possible value of x^2?

A. $\frac{1}{4}$

B. 1

C. 4

D. 9

Answer: D

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130. Edith tutors after school for which she gets paid at a rate of $20 an hour. She has also accepted a job as a library assistant that pays $15 an hour. She will work both jobs, but she is able to work no more than a total of 11 hours week, due to school commitments. Edith wants to earn at least $185 a week working a combination of both jobs. Which inequality can be used to represent the solution?

A. $20(11 + x) + \frac{185}{x} > 15$

B. $20x + 15(11 - x) > 185$

C. $15(11 - x) + \frac{185}{x} > 20$

D. $15x + 20(11 + x) > 185$

Answer: B

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131. Guys is paid $185 per week plus 3% of his total sales in dollar, and Jim is paid $275 per week plus 2.5% of his total sales in dollars. If d represents the dollars amount of sales for each person, which inequality represents the amount of sales for which Guy is paid more than Jim?

A. $d > 18,000$

B. $d < 18,000$

C. $d > 12,500$

D. $d < 12,500$

Answer: A

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132. Connoor wants to attend the town carnival. The price of admission to the carnival is $4.50, and each ride costs an additional 79 cents. If he can spend at most $16.00 at the carnival, which inequality can be used to solve, which inequality can be used to solve for r, the number of rides Connor can go on, and what is the maximum number of rides he can go to ?

A. $0.79 + 4.50r \leq 16.00$, 3 rides

B. $0.79 + 4.50r \leq 16.00$, 4 rides

C. $4.50 + 0.79r \leq 16.00$: 14 rides

D. $4.50 + 0.79r \leq 16.00$: 15 rides

Answer: C

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133. For how many integer values of b is $b + 3 > 0$ and $1 > 2b - 9$?

A. Four

B. Five

C. Six

D. Seven

Answer: D

Watch Video Solution

134. $|n-1|<4$

How many integer n satisfy the inequality above?

A. Two

B. Five

C. Seven

D. Nine

Answer: C

Watch Video Solution

135. If $|x| \leq 2$ and $|y| \leq 1$, then what is the least possible value of x-y?

A. -3

B. -2

C. -1

D. 0

Answer: A

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136. If $\left|\frac{1}{2}x\right| \geq \frac{1}{2}$, then which statements must true?

A. $x \leq -2$ or $x \geq 2$

B. $x \leq -1$ or $x \geq 1$

C. $x \leq -\frac{1}{2}$ or $x \geq \frac{1}{2}$

D. $-1 \leq x \leq 1$

Answer: B

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137. If $\frac{1}{2}|x| = 1$ and $|y| = x + 1$, then y^2 could be

A. 2

B. 3

C. 4

D. 9

Answer: D

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138. In certain greenhouse for plants, the Fahrenheit temperature, F, is controlled so that it does not vary from 79° by more than 7°. Which of the following best expresses the possible range in Fahrenheit temperature of the greenhouse?

A. $|F - 79| \leq 7$

B. $|F - 79| > 7$

C. $|F - 7| \leq 79$

D. $|F - 7| > 79$

Answer: A

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139. If $\frac{|a+3|}{2} = 1$ and $2|b+1| = 6$, then $|a+b|$ could equal any of the following EXCEPT

A. 1

B. 3

C. 5

D. 7

Answer: D

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140. For what value of x is $|1+x| = |1-x|$?

A. No value

B. 1

C. -1

D. 0

Answer: D

Watch Video Solution

141. $-1 < x < 3$

The inequality above is equivalent to which of the following?

A. $|x - 1| < 2$

B. $|x+1|<2$

C. $|x-2|<1$

D. $|x+2|<1$

Answer: A

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142. A certain medication must be stored at a temperature, t, that may range between a low at 45° Fahrenheit a high of 85° Fahreheit. Which inequality represents the allowable range of Fahrenheit temperature?

A. $|t - 65| \leq 20$

B. $|t + 20| \leq 65$

C. $|t + 65| \leq 20$

D. $|t - 20| \leq 85$

Answer: A

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143. The inequality $|1.5C - 24| \leq 30$ represents the range of monthly average temperature, C, in degrees Celsius, during the winter month for a certain city.

What was the lowest monthly average temperature, in degrees Celsius, for for this city?

A. -4

B. 0

C. 6

D. 9

Answer: A

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144. Which of the following represents an equation of the line that is the perpendicular bisector of the

segment whose endpoints are $(-2, 4)$ and $(8, 4)$?

A. $x = 3$

B. $y = 3$

C. $x = 5$

D. $y = 5$

Answer: A

Watch Video Solution

145. What is the slope of the line $2(x + 2y) = 0$

A. $\frac{1}{2}$

B. -2

C. $-\frac{1}{2}$

D. 0

Answer: C

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146. Segments AP and BP have the same length. If the coordinates of A and P are $(-1, 0)$ and $(4, 12)$, respectively, which could be the coorinate of B ?

I. $\left(\frac{3}{2}, 6\right)$

II. $(9, 24)$

III. $(-8, 7)$

A. I and II only

B. II and III only

C. II only

D. III only

Answer: B

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147. Which of the following is an equation of a line that is parallel to the line $\frac{1}{2}y - \frac{2}{3}x = 6$ in the xy-

plane?

A. $y = -\frac{3}{4}x + 1$

B. $y = 4\left(\frac{x-1}{3}\right)$

C. $9x - 6y = 18$

D. $\frac{y}{3} = \frac{x-5}{4}$

Answer: B

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148. Which of the following is an equivalent of a line that is perpendicular to the line $y = -2(x+1)$?

A. $x + 2y = 7$

B. $8x - 4y = 9$

C. $\frac{x-1}{6} = \frac{y}{3}$

D. $y - 2x = 0$

Answer: C

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149. The point whose coordinates are $(4, -2)$ lies on a line whose slope is $\frac{3}{2}$. Which of the following are the coordinates of another point on this line?

A. $(1, 0)$

B. $(2, 1)$

C. $(6, 1)$

D. $(7, 0)$

Answer: C

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150. If point $E(5, h)$ is on the line that contains $A(0, 1)$ and $B(-2, -1)$, what is the value of h?

A. -1

B. 0

C. 1

D. 6

Answer: D

Watch Video Solution

151. Which could be the slope of a line that contains $(1, 1)$ and passes between the points $(0, 2)$ and $(0, 3)$?

A. $-\frac{3}{2}$

B. $-\frac{1}{2}$

C. 0

D. $\frac{1}{2}$

Answer: A

Watch Video Solution

152. The line $y + 2x = b$is perpendicular to a line that passes through the origin. If the two lines intersect at the point $(k + 2, 2k)$, what is the value of k?

A. $-\frac{3}{2}$

B. $-\frac{2}{3}$

C. $\frac{2}{5}$

D. $\frac{2}{3}$

Answer: D

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153. Which of the following is an equation of the line that is parallel to the line $y - 4x = 0$ and has the same y-intercept as line $y + 3 = x + 1$?

A. $y = 4x - 2$

B. $y = 4x + 1$

C. $y = -\frac{1}{4}x + 1$

D. $y = -\frac{1}{4}x - 2$

Answer: A

Watch Video Solution

154. Which of the following graphs shows a line where each value of y is three more than half of x?

A. Graph (1)

B. Graph (2)

C. Graph (3)

D. Graph (4)

Answer: B

View Text Solution

155. The lines $y = ax + bany = bx + a$ are graphed in the xy-plane. If a and b are non-zero constants and a+b=0, which statements must be true?

A. The lines are parallel

B. The lines intersect at right angled

C. The lines have the same x-intercept.

D. The lines have the same y-intercept.

Answer: C

Watch Video Solution

156. $4x + 6y = 12$

$y = 80 - kx$

For what value of k does the system of equation above have no solution?

A. $-\frac{3}{2}$

B. 0

C. $\frac{2}{3}$

D. 4

Answer: C

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157. Sara correctly solves a system of two lines equations and finds that the system has no solution. If one of the two equation is $\frac{y}{6} = \frac{x}{4} = 1$, which could be the oher equation in this system?

A. $y = \frac{2}{3}x + 12$

B. $y = \frac{3}{2}x$

C. $y = -\frac{3}{2}x$

D. $y = \frac{3}{2}x + 6$

Answer: B

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158. Ben correctly solves a system of two linear equations and finds that the system has an infinite number of solutions. If one of the two equations is $3(x + y) = 6 - x$, which could be the other equation in this system?

A. $y = \frac{3}{4}x + 2$

B. $y = \frac{4}{3}x$

C. $y = -\frac{4}{3}x + 2$

D. $y = -\frac{4}{3}x + 6$

Answer: C

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159. The graph of the inequality $y \leq 2x$ and include all the points in which quadrant?

A. Quadrant I

B. Quadrant II

C. Quadrant III

D. Quadrant IV

Answer: D

Watch Video Solution

160. $\frac{1}{2}x - \frac{5}{6}y = 5$

$-2x + ky = 3$

In the system of linear equations above, k is a constant. If the system has no solution, what is the value of k?

A. $\frac{5}{3}$

B. $\frac{5}{2}$

C. $\frac{10}{3}$

D. $\frac{15}{2}$

Answer: C

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161. The graph of a line in the xy-plane has slope $\frac{1}{2}$ and contains the point $(0, 7)$. The graph of a seconds line passes through the points $(0, 0)$ and $(-1, 3)$. If the two lines intersect at the point (r, s), what is the value of $r + s$?

A. -3

B. -2

C. 2

D. 4

Answer: D

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162. $y + x > 2$

$y \leq 3x - 2$

Which graph shows the solution of the set is inequalities above?

A.

Graph (1)

B.

Graph (2)

C.

Graph (3)

D.

Graph (4)

Answer: B

View Text Solution

163. $3x + 5 = 2y$

$$\frac{x}{3} + \frac{y}{2} = \frac{2}{3}$$

For the system of equations above, which of the following statements is true?

A. The system has no solution.

B. The graph of the equations in the xy-plane intersect at right angles.

C. The graphs of the equations in the xy-plane intersect but not at right angles.

D. The system has infinitely many solutions

Answer: B

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164. If the function f is defined by $f(x) = 3x + 2$, and if $f(a) = 17$, what is the value of a?

A. 5

B. 9

C. 10

D. 11

Answer: A

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165. A function f is defined such that $f(1) = 2, f(2) = 5,$ and $f(n) = f(n-1) - f(n-2)$ for all integer values of n greater than 2. What is the value of f(4)?

A. -8

B. -2

C. 2

D.

Answer: B

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166. If function f is defined by $f(x) = 5x + 3$, then which expression represent $2f(x) - 3$?

A. $10x - 3$

B. $10x + 3$

C. $10x$

D. 3

Answer: B

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167. If the function k is defined by $k(h) = (h + 1)^2$, then $k(k - 2) =$

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168. In 2014, the United States Postal Service charged $0.48 to mail a first class letter weighing upto 1oz. And $0.21 for each additional ounce. Based on these rates which function would determine the cost, in dollars, c(z), of meiling a first-class letter weighing z ounces where z is an integer greater than 1?

A. $c(z) = 0.48z + 0.21$

B. $c(z) = 0.21z + 0.48$

C. $c(z) = 0.48(z - 1) + 0.21$

D. $c(z) = 0.21(z - 1) + 0.48$

Answer: D

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169. In 2012, a retail chain of fast food rstaurant has 68 restaurants in California an started to expand nationally by adding 9 new restaurants each year thereafter. At this rate, which of the following functions f represents the number of restaurants there will be in this retail chain n years after 2012 assuming none of these restaurants close?

A. $f(n) = 2,012 + 9n$

B. $f(n) = 9 + 68n$

C. $f(n) = 68 + 9(n - 2,012)$

D. $f(n) = 68 + 9n$

Answer: D

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170. According to market research, the number of magzine subscriptions that can be sold can be estimated using this function $n(p) = \frac{5,000}{4p - k}$, where n is the number of thousands of subscriptions sold, p is the price in dollars for each individual subscription, and k is some constant. If 250,000 subscriptions were sold at $15 for each

subscription, how many subscriptions could be sold if the price were set at $20 for each subscription?

A. $59,000$

B. $75,000$

C. $100,000$

D. $125,000$

Answer: D

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Grib In

1. If $2^4 \times 4^2 = 16^x$, then x=

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2. If $a^7 = 7,777$ and $\frac{a^6}{b} = 11$, what is the value of ab?

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3. If $y = 2^{2p-1}$ and $z = p - 2$, what is the value of $\frac{y}{z}$ when $p = 2.5$?

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4. If $13 \leq k \leq 21, 9 \leq p \leq 19, 2 < m < 6$ and $k, p,$ and m are integers, what is the largest possible value of $\frac{k-p}{m}$?

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5. If $2w - 1 = 2,$ what is the value of $w^2 - 1$?

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6. If $11 - 3x$ is 4 less than 13, what is the value of 6x?

Watch Video Solution

7. If $2x + 1 = 8$ and $15 - 3y = 0$, what is the value of $\frac{x}{y}$?

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8. The total score in a football game was 72 points. The winning team scored 12 points more than the closing team. How many points did the winning team score?

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9. Max's cell phone plan charges a monthly "pay-as-you-go rate" of $0.13 for each text message sent or received. If Max was charged $7.41 for 15 more sent texts than he received, how many texts did Max send?

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10. If $\frac{7}{12}x - \frac{1}{3}x = \frac{1}{2} + \frac{3}{8}$, what is the value of x?

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11. $D = 141 - 0.16p$

$S = 64 + 0.28p$

The set of equations above describes how the supply, S, and demand, D, for a computer memory chip depends on market price. If p represents the price in dollars for each lot of 10 memory chips, for what dollar price per memory chip does supply equal demand?

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12. The set of equations above describes how the supply, S, and demand, D, for a computer memory chip depends on market price. If p represents the price in dollars on market price. If p represents the price in dollars for each lot of 10 memory chips, for whar

dollars price per memory chip does supply equal demand?

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13. If $\frac{7(x+9)}{4} - 1 = 41,$ what is the value of $x - 9$?

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14. Gerald and Jim work at a functions store. Gerald is paid $185 per week plus 4% of this total sales. Jim is paid $275 per week plus 2.5% of his total sales. What amount of sales will make their weekly pay the same?

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15. If 7 questors and n nickels is quivalent to 380 pennies, what is the value of n?

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16. A gardener is planting two type of trees.

*Type A is three feet tall and graws at a rate of 14 inches per year.

*Type B is five tall and grows at a rate of 9 inches per year.

How many year will it take for these trees to grow to the same height?

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17. $\frac{9n-(5n-3)}{8}=\frac{2(n-1)-(3-7n)}{12}$

In the equation above, what is the value of n?

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18. An animal shelter $2.35 per day to care for each cats and $5.50 per day to care for each dog. If $89.50 is spent caring for a total of 22 cats and dogs, how much was spent on caring for all of the cats?

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19. $r = 2.24 + 0.06t$

$p = 2.89 + 0.10x$

In the equation above, r and p represent the price per gallons, in dollars, of regular and premium grades of gasolin, respectively, x months after January 1 of last year. What was the cost per gallon, in dollars, of premium gasoline for the month in which the per gallons price of premium exceeded the per gallon price of regular by $0.93?

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20. If $16 \times a^2 \times 64 = (4 \times b)^2$ and a and b are positive integers, then b is how many times greater than a?

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21. if $3a - c = 5b$ and $3a + 3b - c = 40$, what is the value of b?

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22. if $a = 2x + 3$ and $b = 4x - 7$, for what value of x is $3b = 5a$?

Watch Video Solution

23. $\frac{x}{8} + \frac{y}{5} = \frac{31}{40}$

In the equation above, if x and y are positive integers, what is the value of x+y?

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24. If $\frac{1}{8}x + \frac{1}{8}y = y - 2x$, then what is the value of $\frac{x}{y}$?

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25. If $(3y-1)(2y+k)=ay^2+by-5$ for all values of y, what is the value of a+b?

Watch Video Solution

26. If $4x^2+20x+r=(2x+s)^2$ for all values of x, what is the values of $r-s$?

Watch Video Solution

27. $\frac{5}{8}=\frac{-(11-7y)}{4y}+\frac{1}{2y}-\frac{1}{8}$

What value of makes the equation above a true statement?

Watch Video Solution

28. If $(4p+1)^2 = 81$ and $p > 0$, what is a possible value of p?

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29. If $(x-1)(x-3) = -1$, what is a possible value of x?

Watch Video Solution

30. By what amount does the sum of the roots exceed the product of the roots of the equation $(x-5)(x+2)=0$?

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31. $(3k+14)k=5$

If r and s represents the solutions of the equation above and $r > s$, what is the value of the difference r-s?

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32. If p and q are distinct roots of the equation above and $pq > 0$, what is the value of the product pq?

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33. $(2a - 5)^2 = (4 - 3a)^2$

What is the sum of roots of the equation above?

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34. If 5 sips+4 gulps= 1 glass and 13 sips+ 7 gulps= 2 glasses, how many sips equal a gulp?

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35. When amy exercise in her fitness certer for 1 hour she burns a total of 475 calories. If she burns 9 calories a minute jogging on the treadmilll and then burns 6.5 calories a minute pedalling on the stationary bicycle, how many minutes of the hour does she spend exercising on the bicycle?

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36. John and Sara each bought the same type of pen and notebook in the school bookstore, which does not charge sales tax. John paid $5.55 for two pens and

three notebooks, and Sara paid $3.50 for one pen and two notebook. How much does the school bookstore charge for one notebook?

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37. $\frac{1}{2}r - \frac{1}{3}s = 8$

$\frac{5}{8}r - \frac{1}{4}s = 29$

For the system of equations above, what is the value of r+s?

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38. During its first week of business a market sold a total of 108 apples and oranges. The second week, five times the number of apples and three times the number of oranges were sold. A total of 452 apples and oranges were sold during the second week. How many more apples than oranges were sold in the first week?

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39. Jacod and Zachary go to movie threater and purchase refrements for their friends. Jacod spends a total of $18.25 on two bags of popcorn and three

drinks. Zachary spends a total $27.50 for four bags of popcorn and two drinks. What is the cost for purchasing one bag of popcorn and one drinks?

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40. A mobile phone-based taxi service a base fee of $2 plus an amount per mile for the trip. Ariel is charged $16.94 for a ride that takes 14 minutes and travels 10 miles. Victoria is charged $11.30 for ride that take 10 minutes and travels 6 miles.

Q. What is the per-minute charge?

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41. A mobile phone-based taxi service a base fee of $2 plus an amount per mile for the trip. Ariel is charged $16.94 for a ride that takes 14 minutes and travels 10 miles. Victoria is charged $11.30 for ride that take 10 minutes and travels 6 miles.

Q. What would be the carge for a ride that takes 8 minutes and travels 5 miles?

View Text Solution

42. For what integer value of y is $y + 5 < 8$ and $2y - 3 < 7$?

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43. If 2 times an integer x is inceasing by 5, the result is always greater than 16 and less than 29. What is the least value of x?

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44. If $2 < 20x - 13 < 3$,what is one possible value for x?

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45. $\frac{1}{7}+\frac{1}{8}+\frac{1}{9}+\frac{1}{10}<\frac{1}{8}-\frac{1}{9}+\frac{1}{10}+\frac{1}{n}$

For the above inequality. What is the greatest possible positive integer value of n?

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46. Chelsea has $45 to spend at an amusement park.She spends $20 on admission and $15 on snacks. She wants to play a game that costs $0.65 per game. What is the maximum number of times she can play the game?

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47. Chris rents a booth at a flea market at a cost of $75 for one day. At the flea market Chris sells picture frames each of which costs him $6.00. If Chris sells each picture frame for $13, how many pictures frames must he sell to make a profit of at least $200 for that day?

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48. An online electronics store must sell at least $2,500 worth of printers and monitors per day. Each printer costs $125 and each monitor costs $225 and each monitors costs $125. The store can ship a

maximum of 15 items per day. What is the maximum number of printers it can ship each day?

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49. $-\frac{5}{3} < \frac{1}{2} - \frac{1}{3}x < -\frac{3}{2}$

For the inequality above, what is a possible values of $x - 3$?

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50. $|t - 7| = 4$

$|9 - t| = 2$

What value of r satisfies both of the above equations?

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51. If $|-3y+2|<1$, what is one possible value of y?

Watch Video Solution

52. If $|x-16| \leq 4$ and $|y-6| \leq 2$, what is the greatest possible value of x-y?

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53. An ocean depth finder shows the number of feet in the depth of water at a certain place. The difference

between d, the actual depth of the water, and the depth finder reading , x, is |d-x| and must be less than or equal to 0.05d. If the depth finder reading is 620 feet, what is the maximum value of the actual depth of the water, to the nearest foot?

Watch Video Solution

54. A line with slope of $\frac{3}{14}$ passes though points $(7, 3k)$ and $(0, k)$. What is the value of k?

Watch Video Solution

55. A line in the xy-plane contains the points $A(c, 40)$ and $B(5, 2c)$. If the line also contains the origin, what is a possible value of c?

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56. $6x + py = 21$ ltbgt $px + 5y = 7$

If the above system of equations has infinitely many solutions, what is the value of $\frac{p}{q}$?

Watch Video Solution

57. $(k-1)x+\frac{1}{3}y=4$

$k(x+2y)=7$

In the system of linear equations above, k is a constant. If the system has no system, what is the value of k?

Watch Video Solution

58. $\frac{1}{3}r+4s=1$

$kr+6s=-5$

In the system of equations above, k and s are nonzero constant. If the system has no solutions, what is the value of k?

Watch Video Solution

59. The graph of a line in the xy-plane passes through the points $(5, -5)$ and $(1, 3)$. The graph of a second line has a slope of 6 and passes through the point $(-1, 15)$. If the two lines intersect at (p, q), what is the value of $p + q$?

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60. The above figure shows the graph of y=f(x) where c is a nonzero constant. If $f(w + 1.7) = 0$ and $w > o$, what is a possible value of w?

View Text Solution

61. Let the function f and g be defined by the graphs in the accompanying diagram. What is the value of $f(g(3))$?

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62. The figure above shows the graph of function h. If function f is defined by $f(x) = h(2x) + 1$, what is the value of $f(-1)$?

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