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- 41.** The equations below are linear equations of a system where a , b , and c are positive integers.

$$ay + bx = c$$

$$ay - bx = c$$

Which of the following describes the graph of at least 1 such system of equations in the standard (x,y) coordinate plane?

- I. 2 parallel lines
 - II. 2 intersecting lines
 - III. A single line
- A.** I only
 - B.** II only
 - C.** III only
 - D.** I or II only
 - E.** I, II, or III

49. For what value of a would the following system of equations have an infinite number of solutions?

$$\begin{aligned}2x - y &= 8 \\6x - 3y &= 4a\end{aligned}$$

- A. 2
- B. 6
- C. 8
- D. 24
- E. 32

18. If $2x + 3y = 55$ and $4x = y + 47$, find $x - y$.

f. 28

g. 16

h. 5

i. 12

j. 24

31. At what point do the lines $x = 9$ and $3x + y = 4$ intersect?

a. $(3, 9)$

b. $(\frac{5}{3}, 9)$

c. $(-20, -9)$

d. $(9, -23)$

e. $(9, 4)$

62. If $4x = 3y + 15$ and $2y - x = 0$, find x .

f. 6

g. 3

h. 2

i. -1

j. 5

23. What is the value of b in the solution to the system of equation below?

$$3a - 2b = 21$$

$$a + 3b = -4$$

- A.** 17
- B.** 9
- C.** 5
- D.** -3
- E.** -5

36. How many ordered pairs (x,y) of real numbers will satisfy the equation $2x - 5y = 6$?

F. 0

G. 1

H. 2

J. 3

K. Infinitely many

38. If the following system has a solution, what is the x -coordinate of the solution?

$$\begin{aligned}3x + 6y &= 52 \\x + 6y &= 24\end{aligned}$$

- F. 19
- G. 14
- H. 6
- J. 0
- K. The system has no solution.

58. Which statement best describes the lines $-2x + 3y = 12$ and $-60 + 15y = 10x$?

f. the same line

g. parallel

h. skew

i. perpendicular

j. intersect at one point

18. If $2x + 3y = 55$ and $4x = y + 47$, find $x - y$.

f. 28

g. 16

h. 5

i. 12

j. 24

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- 15.** This month, Kami sold 70 figurines in 2 sizes. The large figurines sold for \$12 each, and the small figurines sold for \$8 each. The amount of money he received from the sales of the large figurines was equal to the amount of money he received from the sales of the small figurines. How many large figurines did Kami sell this month?
- A.** 20
 - B.** 28
 - C.** 35
 - D.** 42
 - E.** 50

58. For every positive 2-digit number, x , with tens digit t and units digit u , let y be the 2-digit number formed by reversing the digits of x . Which of the following expressions is equivalent to $x - y$?

F. $9(t - u)$

G. $9(u - t)$

H. $9t - u$

J. $9u - t$

K. 0

58. Which statement best describes the lines $-2x + 3y = 12$ and $-60 + 15y = 10x$?

f. the same line

g. parallel

h. skew

i. perpendicular

j. intersect at one point

ONLY ONE THAT WORKS

56. Lines p and q intersect at point $(1,3)$ in the standard (x,y) coordinate plane. Lines p and r intersect at $(2,5)$. Which of the following is an equation for line p ?

- F. $y = 2x + 1$
- G. $y = 2x + 2$
- H. $y = 2x + 3$
- J. $y = 2x + 5$
- K. Cannot be determined from the given information

← plug $(1,3)$ and $(2,5)$

Equation of lines

If line p goes thru both points to find equation

Since all choices have slope 2

→ plug in one point and find line

$$3 = 2(1) + b$$

$$1 = b$$

38. If the following system has a solution, what is the x-coordinate of the solution?

$$\begin{aligned} 3x + 6y &= 52 \\ x + 6y &= 24 \end{aligned}$$

- F. 19
G. 14
H. 6
J. 0
K. The system has no solution.

SYSTEMS OF EQUATION
If you want the x value
eliminate the y value

$$\begin{array}{r} 3x + 6y = 52 \\ - \quad x + 6y = 24 \\ \hline 2x = 28 \\ x = 14 \end{array}$$

GO ON TO THE NEXT PAGE.

23. Which of the following (x,y) pairs is the solution for the system of equations $x + 2y = 5$ and $-2x + y = 10$?

- A. $(-3,4)$
B. $(-1,3)$
C. $(1,2)$
D. $(5,0)$
E. $(\frac{35}{3}, -\frac{10}{3})$

All the x and y values, so solve for one and you'll have your answer

SYSTEMS OF EQUATIONS

$$\begin{array}{r} 2(x + 2y = 5) \\ + (-2x + y = 10) \\ \hline 0 + 5y = 20 \\ y = 4 \end{array}$$

multiply by 2 in your head.

A is only choice

This month, Heather sold 75 figurines in 2 sizes. The large figurines sold for \$15 each, and the small figurines sold for \$10 each. The total amount of money received for the large figurines was the same as the total received for the small figurines. How many large figurines did Heather sell this month?

- F. 25
- G. 30
- H. 37
- J. 45
- K. 50

What are the 2 positive integers such that the square root of their sum is 5 and the square root of their product is 12 ?

- i. 2 and 3
- ii. 3 and 4
- iii. 5 and 144
- iv. 9 and 16
- v. 12 and 25

49. Elkville High won a Friday night basketball game by 10 points; the next night they scored 25 points more than on Friday and again won by 10 points. The sum of the opponents' scores for the 2 games was 109. How many points did Elkville score on Friday?

WARNING \Rightarrow TIME WASTER if you don't set up properly.

- A. 37
- B. 41
- C. 46
- \rightarrow D. 52
- E. 72

$$E_1 + E_2 - 109 = 20$$

$$E_1 + E_1 + 25 - 109 = 20$$

$$2E_1 = 154$$

They won by ten both nights
 $E_2 - E_1 = 25$ so $E_2 = E_1 + 25$