

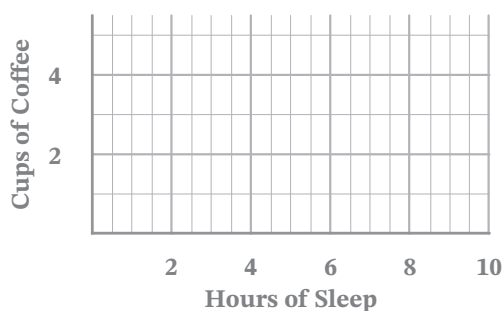
Algebra 1 Midterm Exam

Open Response

- 1) Miss Bee's class collected data. Students wanted to see if there was a relationship between the number of whole cups of coffee consumed after 12 p.m. and the number of hours people slept at night, rounded to the nearest half hour.

Hours Slept	8	7.5	6	6.5	8	9	10	8.5	7	5.5
Cups of Coffee (after 12 p.m.)	1	2	3	2	3	1	0	1	2	5

- A) Graph a scatter plot. Draw a line of best fit.



- B) Explain what the correlation of the scatter plot means in context. Does this show a discrete or continuous set of data?

- C) Write the equation for the line of best fit in slope-intercept form. Show your work.

- D) Suppose a person drank 4 cups of coffee after 12 p.m. How much would you expect them to sleep? Explain if this is interpolation or extrapolation.





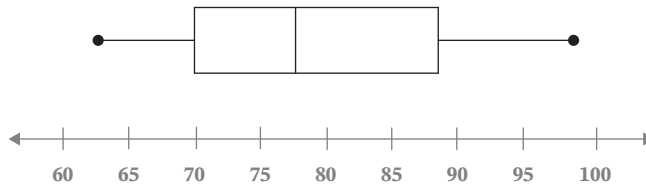
- E) Explain the meaning of the slope and y-intercept within the context of the problem.

CONTINUE

Open Response

- 2)** Garrett needed to fence in his garden. He measured the perimeter and found that it was 44 yards. He forgot to write the dimensions but knows that the length of the garden is two more than the width.
- A)** Write a system of equations to represent Garrett's garden. Define your variables.
- B)** Find the dimensions of the garden using the system from part A. Write your answer in a sentence.
- C)** Suppose the fence is sold in feet rather than yards. What are the dimensions of the garden in feet?
- D)** Garrett decided that he wanted the perimeter to be less than 44 yards. How would this change the system that you wrote in part A?

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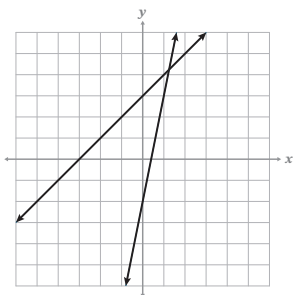
- _____ 3) Willow saves \$16 per week. After three weeks Willow had saved \$4,700. Write a linear equation in point-slope form representing Willow's savings.
- A) $y = 16x + 4,748$
 B) $y - 4,700 = 16(x - 3)$
 C) $y - 3 = 16(x - 4,700)$
 D) $16x - y = -4,748$
- _____ 4) Solve: $3|x - 8| = 15$
- A) $x = 13$
 B) $x = 7, 23$
 C) $x = 3, 13$
 D) $x = 13, 23$
- _____ 5) Choose the number line that correctly graphs the compound inequality.
 $-3x < x - 16$ or $2x + 1 \leq -3$
- A)  B) 
 C)  D) 
- _____ 6) Determine the value of r when $m = \frac{2}{3}$, $(-9, 7)$ and $(r, 11)$.
- A) $r = -3$
 B) $r = -6$
 C) $r = -13$
 D) $r = 15$
- _____ 7) The box plot shows the range in scores for Mrs. Donovan's second-period math class. If 24 students completed the assessment, *how many* students scored above 70%?
- A) 50%
 B) 75%
 C) 6 students
 D) 18 students
- 
- _____ 8) In 1991, the cost of one letter stamp, r , was \$0.29 and the cost of one postcard stamp, p , was \$0.19. A total of \$2.77 was spent on 13 stamps. Which system of equations represents the problem?
- A) $0.29r + 0.19p = 13$
 $r + p = 2.77$
 B) $0.29r + 0.19p = 2.77$
 $r + p = 13$
 C) $0.19r + 0.29p = 2.77$
 $r + p = 13$
 D) $0.29r + 0.19p = 2.77$
 $0.29r + 0.19p = 13$

CONTINUE

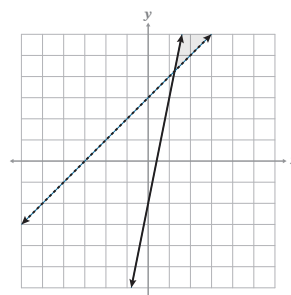
- _____ 16) Determine the graph that best matches the system of inequalities.

$$x - y < -3 \qquad 5x - y \geq 2$$

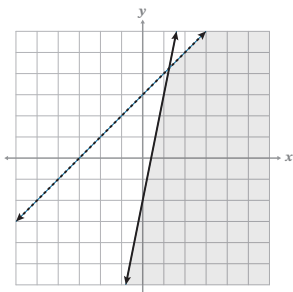
A)



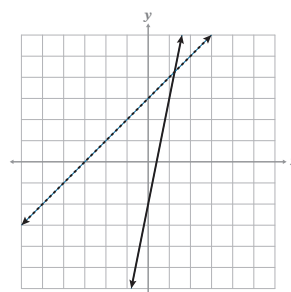
B)



C)



D)



- _____ 17) Solve: $\frac{n+3}{8} = \frac{2n}{5}$

A) $n = \frac{3}{11}$

B) $n = \frac{11}{15}$

C) $n = \frac{15}{21}$

D) $n = \frac{15}{11}$

- _____ 18) Solve: $\frac{1}{2}|3a + 7| - 8 > -1$

A) $a > \frac{7}{3}$ and $a < \frac{7}{3}$

B) $a > \frac{7}{3}$ or $a < \frac{7}{3}$

C) $a > \frac{7}{3}$ or $a < -7$

D) $a > \frac{7}{3}$ and $a < -7$

- _____ 19) Kaia started with \$100 in a lunch account. Each day she spent \$3 on school lunch. What does -3 represent in the equation $y = -3x + 100$? How many days can Kaia purchase lunch before running out of money?

- A) 100 represents Kaia's starting amount in her account. She can buy lunch for 33 days.
 B) -3 represents Kaia spending \$100 each day on lunch. She can buy lunch for 34 days.
 C) -3 represents Kaia spending \$3 each day on lunch. She can buy lunch for 33 days.
 D) -3 represents Kaia spending \$3 each day on lunch. She can buy lunch for 34 days.

- _____ 20) The sum of the digits of Jing's age is 1. The difference between the tens and units digit is 1. How old is Jing?

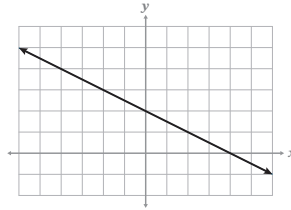
- A) Jing is 10 years old.
 B) Jing is 11 years old.
 C) Jing is 1 year old.
 D) Jing is 0 years old.

CONTINUE

- _____ 21) A vertical and horizontal line meet at the point $(11, -23)$. Select the answer that represents the equations.
- A) $x = 11$
 B) $y = -23$
 C) $x = 11, y = -23$
 D) $x = -23, y = 11$

- _____ 22) Choose the equation written in standard form that best matches the graph.

- A) $y = -\frac{1}{2}x + 2$
 B) $\frac{1}{2}x + y = 2$
 C) $2x + y = 4$
 D) $x + 2y = 4$



- _____ 23) Select the absolute value equation that best represents the information.

The distance from 8 is 17 units.

- A) $|x - 17| = 8$
 B) $|x - 8| = 17$
 C) $|x + 8| = 17$
 D) $|x + 17| = 8$

- _____ 24) Determine the formula and a_{55} given the arithmetic sequence.

$$\{5, 3, 1, -1, -3, \dots\}$$

- A) $a_n = 5 - 2(n - 1); a_{55} = -103$
 B) $a_n = -2 + 5(n - 1); a_{55} = 268$
 C) $a_n = 5 + 2(n - 1); a_{55} = 113$
 D) $a_n = 5 - 2(n + 1); a_{55} = -108$

- _____ 25) Ari can work no more than 16 hours a week working two jobs but must earn at least \$785. He makes \$7 per hour as a cashier, c , and \$8 per hour walking dogs, d . Write a system of inequalities to represent Ari's situation.

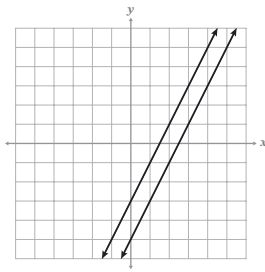
- | | |
|------------------|---------------------|
| A) $c + d < 16$ | B) $c + d \leq 16$ |
| $7c + 8d > 785$ | $7c + 8d \geq 785$ |
| C) $c + d < 785$ | D) $c + d \leq 785$ |
| $7c + 8d > 16$ | $7c + 8d \geq 16$ |

CONTINUE

_____ 32) Graph the system and name the solution(s).

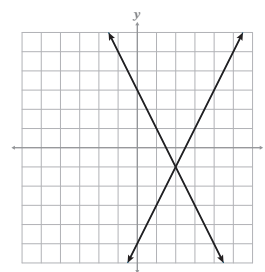
$y = 2x - 5$ $2x - y = 3$

A)



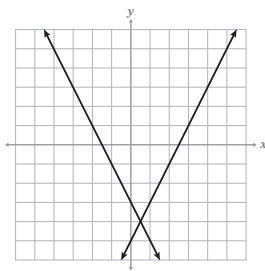
no solution

B)



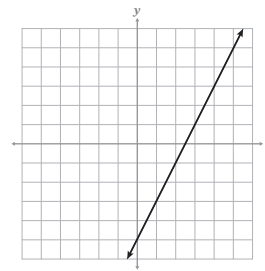
solution: (2, -1)

C)



solution: (0.5, -4)

D)

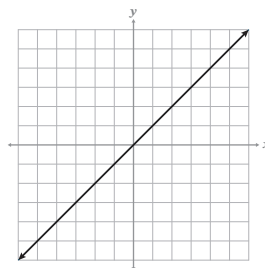


infinite solutions

_____ 33) Which, if any, represent the *parent function* of a linear equation? Choose all that apply.

domain: $(-\infty, \infty)$, range: $(-\infty, \infty)$

$f(x) = 3x$



$\{(-2, -2), (-1, -1), (0, 0), \dots\}$

$y = x - 1$

_____ 34) An absolute value equation can have _____ solution(s). Choose all that apply.

one solution

two solutions

no solutions

infinite solutions

_____ 35) Let Q represent a non-zero rational number and let I represent an irrational number.

Check all possible answers that may result in a *rational* number.

$Q + I$

$I + I$

$Q \cdot Q$

$I \cdot I$

