33 The data table below shows the median diameter of grains of sand and the slope of the beach for 9 naturally occurring ocean beaches.

Median Diameter of Grains of Sand, in Millimeters (x)	0.17	0.19	0.22	0.235	0.235	0.3	0.35	0.42	0.85
Slope of Beach, in Degrees (y)	0.63	0.7	0.82	0.88	1.15	1.5	4.4	7.3	11.3

Write the linear regression equation for this set of data, rounding all values to the *nearest thousandth*.

$y = 17.159x - 2.476$

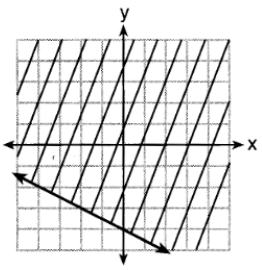
Using this equation, predict the slope of a beach, to the *nearest tenth of a degree,* on a beach with grains of sand having a median diameter of 0.65 mm.

$y = 17.159(.65) - 2.476$

≈ 8.7

Jun 5-9:48 AM

34 Shawn incorrectly graphed the inequality $-x - 2y \geq 8$ as shown below.

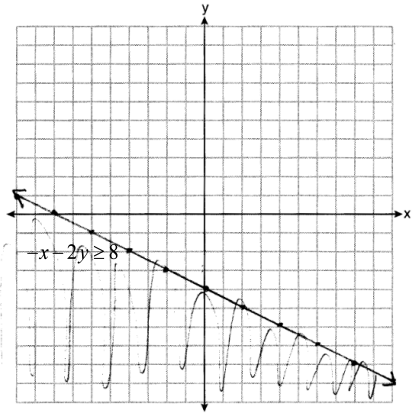


$-2y \geq x + 8$

$y \leq -\frac{1}{2}x - 4$

Explain Shawn's mistake.

Shading should be below line.



Jun 5-9:50 AM

35 A drama club is selling tickets to the spring musical. The auditorium holds 200 people. Tickets cost \$12 at the door and \$8.50 if purchased in advance. The drama club has a goal of selling at least \$1000 worth of tickets to Saturday's show.

Write a system of inequalities that can be used to model this scenario.

$x + y \leq 200$

$12x + 8.50y \geq 1000$

If 50 tickets are sold in advance, what is the minimum number of tickets that must be sold at the door so that the club meets its goal? Justify your answer.

$12x + 8.50(50) \geq 1000$

$12x + 425 \geq 1000$

$\frac{12x}{12} \geq \frac{575}{12}$

$x \geq 47.9$

48

Jun 5-9:50 AM

36 Janice is asked to solve $0 = 64x^2 + 16x - 3$. She begins the problem by writing the following steps:

let $B = 8x$

Line 1	$0 = 64x^2 + 16x - 3$
Line 2	$0 = B^2 + 2B - 3$
Line 3	$0 = (B + 3)(B - 1)$

Use Janice's procedure to solve the equation for x.

$0 = (8x + 3)(8x - 1)$

$x = -\frac{3}{8}, \frac{1}{8}$

Explain the method Janice used to solve the quadratic equation.

Janice substituted B for 8x, resulting in a simple quadratic. Once Factored, Janice substituted 8x for B.

Jun 5-9:50 AM

37 For a class picnic, two teachers went to the same store to purchase drinks. One teacher purchased 18 juice boxes and 32 bottles of water, and spent \$19.92. The other teacher purchased 14 juice boxes and 26 bottles of water, and spent \$15.76.

Write a system of equations to represent the costs of a juice box, j, and a bottle of water, w.

$18j + 32w = 19.92$
$14j + 26w = 15.76$

Kara said that the juice boxes might have cost 52 cents each and that the bottles of water might have cost 33 cents each. Use your system of equations to justify that Kara's prices are *not* possible.

$14(.52) + 26(.33)$
$7.28 + 8.58$
$15.86 \neq 15.76$

Jun 5-9:51 AM

#37 Continued

Kara said that the juice boxes might have cost 52 cents each and that the bottles of water might have cost 33 cents each. Use your system of equations to justify that Kara's prices are *not* possible.

$14(.52) + 26(.33)$
$7.28 + 8.58$
$15.86 \neq 15.76$

Solve your system of equations to determine the actual cost, in dollars, of each juice box and each bottle of water.

$7(18j + 32w = 19.92)$
$9(14j + 26w = 15.76)$

$126j + 224w = 139.44$
$126j + 234w = 141.84$
$10w = 2.4$
$w = .24$

$18j + 32(.24) = 19.92$
$18j + 7.68 = 19.92$
$\frac{18j}{18} = \frac{12.24}{18}$
$j = .68$

Jun 5-9:51 AM