Student: _____ **Date:** _____	**Instructor:** Joe Betters **Course:** Pre-Calculus Pre AP (Master Course)	**Assignment:** 1.3-1.4 Classwork

1. Solve the equation.

$$\frac{x+6}{2}+\frac{x+4}{9}=1$$

Select the correct choice below and fill in any answer boxes in your choice.

○ **A.** The solution set is {_____}. (Simplify your answer.)

○ **B.** There is no solution.

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2. Solve the equation algebraically. Verify your solution using a graphing utility.

$$x^3+x^2-4x-4=0$$

Select the correct choice below and fill in any answer boxes within your choice.

○ **A.** The solution set is {_____}. (Use a comma to separate answers as needed.)

○ **B.** There are no solutions.

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3. Solve the equation algebraically. Verify your solution using a graphing utility.

$$\frac{2}{x+2}+\frac{3}{x-1}=-\frac{7}{6}$$

Select the correct choice below and fill in any answer boxes within your choice.

○ **A.** The solution set is {_____}. (Use a comma to separate answers as needed.)

○ **B.** There are no solutions.

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4. A truck rental company rents a moving truck for one day by charging $22 plus $0.06 per mile. Write a linear equation that relates the cost C, in dollars, of renting the truck to the number x of miles driven. What is the cost of renting the truck if the truck is driven 177 miles? 465 miles?

Type the linear equation that relates the cost C, in dollars, of renting the truck to the number of x miles driven.

C = _____

(Use integers or decimals for any numbers in the expression. Do not include the $ symbol in your answer.)

What is the cost of renting the truck if the truck is driven 177 miles?

C = $_____

What is the cost of renting the truck if the truck is driven 465 miles?

C = $_____

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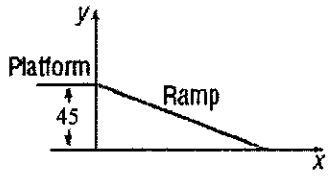
5. A wooden access ramp is being built to reach a platform that sits 45 inches above the floor. The ramp drops 3 inches for every 29-inch run.



(a) Write a linear equation that relates the height y above the floor to the horizontal distance x from the platform.

y = _____

(Simplify your answer. Use integers or fractions for any numbers in the expression.)

(b) Find and interpret the x-intercept of the graph of your equation.

The x-intercept is _____. (Type an ordered pair.)

Now interpret the x-intercept of the graph of your equation. Choose the correct answer below.

- ○ **A.** The maximum rise is this many inches.
- ○ **B.** The ramp meets the floor this many inches from the base of the platform.
- ○ **C.** The ramp meets the platform this many inches from the floor.
- ○ **D.** The length of the ramp is this many inches.

(c) Design requirements stipulate that the maximum run be 30 feet (360 inches) and that the maximum slope be a drop of 1 inch for each 8 inches of run. Will this ramp meet the requirements?

- ○ No
- ○ Yes

(d) What slope could be used to obtain the 45-inch rise and still meet design requirements?

m = _____ (Type an integer or a simplified fraction.)

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6. A cereal company finds that the number of people who will buy one of its products in the first month that it is introduced is linearly related to the amount of money it spends on advertising. If it spends $80,000 on advertising, then 100,000 boxes of cereal will be sold, and if it spends $100,000 on advertising, then 200,000 boxes of cereal will be sold.

(a) Write an equation that relates the amount A spent on advertising to the number x of boxes the company aims to sell.

(b) How much advertising is needed to sell 300,000 boxes of cereal?

(c) Interpret the slope.

What is an equation describing the relation between the amount A spent on advertising and the number x of boxes the company intends to sell?

A = _____

(Use integers or fractions for any numbers in the expression. Do not include the $ symbol in your answer.)

How much advertising is needed to sell 300,000 boxes of cereal?

A = $_____

Interpret the slope.

$_____ must be spent on advertising to sell one additional box of cereal.

1. A. The solution set is $\{-4\}$. (Simplify your answer.)

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2. A. The solution set is $\{-2, -1, 2\}$. (Use a comma to separate answers as needed.)

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3. A. The solution set is $\left\{-\frac{2}{7}, -5\right\}$. (Use a comma to separate answers as needed.)

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4. $0.06x + 22$

   32.62

   49.90

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5. $-\frac{3}{29}x + 45$

   (435,0)

   B. The ramp meets the floor this many inches from the base of the platform.

   No

   $-\frac{1}{8}$

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6. $\frac{1}{5}(x - 100{,}000) + 80{,}000$

   120,000

   0.20

Classwork
1.3-1.4

① $\frac{x+6}{2} + \frac{x+4}{9} = 1$

$9(x+6) + 2(x+4) = 18$

$9x + 54 + 2x + 8 = 18$

$11x = -44$

$x = -4$

② $x^3 + x^2 - 4x - 4 = 0$

$x^2(x+1) - 4(x+1) = 0$

$(x^2 - 4)(x+1) = 0$

$(x+2)(x-2)(x+1) = 0$

$x = -2, -1, 2$

Classwork
1.3-1.4 continued

③ $\frac{2}{x+2} + \frac{3}{x-1} = -\frac{7}{6}$

$2(x-1)(6) + 3(x+2)6 = -7(x+2)(x-1)$

$12x - 12 + 18x + 36 = -7x^2 - 7x + 14$

$7x^2 + 37x + 10 = 0$

$(7x+2)(x+5) = 0$

$x = -2/7$

$x = -5$

④ $C = .06m + 22$

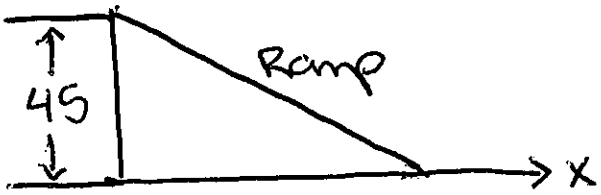
$C = .06x + 22$

$C = .06(177) + 22 = \$32.62$

$C = .06(465) + 22 = \$49.90$

Classwork
1.3-1.4 continued

(5)



Slope 3 inch drop per 29 inch run = $\frac{-3}{29}$

$$y = \frac{-3}{29}x + 45$$

x-intercept

$$0 = \frac{-3}{29}x + 45$$

$$x = 435$$

$$(435, 0)$$

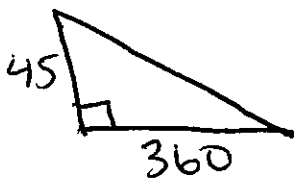
B. Ramp meets floor

$$\frac{435 \text{ inches}}{12 \text{ inches}} = 36.25 \text{ feet}$$

exceeds max of 30 ft.

no

$$-\frac{45}{360} = -\frac{1}{8}$$



Classwork
1.3-1.4 continued

⑥ $(x_1, A_1) = (100{,}000, 80{,}000)$

$(x_2, A_2) = (200{,}000, 100{,}000)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{100{,}000 - 80{,}000}{200{,}000 - 100{,}000} = \frac{1}{5}$$

$y - y_1 = m(x - x_1)$

$A_1 - 80{,}000 = \frac{1}{5}(x - 100{,}000)$

$\boxed{A_1 = \frac{1}{5}x + 60{,}000}$

$A = \frac{1}{5}(300{,}000) + 60{,}000$

$\boxed{A = \$\,120{,}000}$

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slope is $\frac{1}{5}$ or .2

spend $\boxed{\$.20}$ to sell one additional box