5/5

Name: [redacted] Folder #_____

Date: 10/11/12 Period [redacted]

Precalculus Quiz: Linear Equations and Inequalities

2. How much of a 53% salt solution must be mixed with 70 gallons of 18%-salt solution to obtain a soltion that is 25% salt?

a) Explicitly define all variables.

x = # of gallons of Salt solution

y = # of total gallons

b) Write two equations or inequalities that model that situation.

$x + 70 = y$

$.53x + .18(70) = .25y$

c) Solve the problem with a valid method of your choice. State the name of the solution method used.

Substitution

$y = x + 70$

$.53x + .18(70) = .25(x + 70)$

$.53x + 12.6 = .25x + 17.5$

$-12.6 \qquad -12.6$

$.53x = .25x + 4.9$

$-.25 \qquad -.25$

$.28x = 4.9$

$\frac{.28x}{.28} = \frac{4.9}{.28}$

$\boxed{x = 17.5}$

$x + 70 = y$

$17.5 + 70 = y$

$\boxed{87.5 = y}$

d) Confirm your solution with an alternate method. State the name of the solution method used.

Matrix

$x - y = -70 \quad + \quad .53x - .25y = -12.6$

$$\begin{array}{c} \\ \\ \end{array}\begin{bmatrix} 1 & -1 & -70 \\ .53 & -.25 & -12.6 \end{bmatrix} \begin{array}{c} x \\ y \end{array} \begin{bmatrix} 1 & 0 & 17.5 \\ 0 & 1 & 87.5 \end{bmatrix}$$

$x = 17.5$

$y = 87.5$

e) State the final answer in complete sentences, which explain the real world meaning of the solution.

You would mix 17.5 gallons of the salt solution to get obtain 25% salt solution. It means that out of the 53% that we have, only 17.5 of the gallons need to be added to the 70 gallons in order to make the solution 25% salt solution instead of 18% salt solution. Making the previous 70 gallons, 87.5 gallons.

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Name: [redacted] Folder #_____

Date:_____ Period _____

Precalculus Quiz: Linear Equations and Inequalities

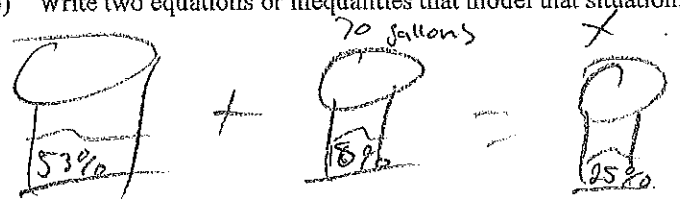
2. How much of a 53% salt solution must be mixed with 70 gallons of 18%-salt solution to obtain a soltion that is 25% salt?

a) Explicitly define all variables.

X = # of gallons of 53% salt solution

Y = Total # of gallons

b) Write two equations or inequalities that model that situation.

1) 

2) $0.53x + 0.18 \cdot 70 = .25y$

c) Solve the problem with a valid method of your choice. State the name of the solution method used.

Algebraically

$0.53x + 0.18 \cdot 70 = .25(x+70)$ $\quad Y = X + 70$

$0.53x + 12.6 = 0.25x + 17.5$

$-0.25x \quad -12.6 \quad -0.25x \quad -12.6$

$\frac{0.28x}{0.28} = \frac{4.9}{0.28}$ $\quad X = 17.5$

d) Confirm your solution with an alternate method. State the name of the solution method used.

guess & check

$0.53(17.5) + 0.18 \cdot 70 = 0.25(17.5 + 70)$

$9.275 + 12.6 = 4.375 + 17.5$

$21.875 = 21.875$

e) State the final answer in complete sentences, which explain the real world meaning of the solution.

You will need 17.5 gallons of 53% salt solution mixed with 70 gallons of 18% salt solution to obtain a solution that is 25% salt

5/5

Name: [redacted] Folder #_____

Date: October 11th Period [redacted]

Precalculus Quiz: Linear Equations and Inequalities

2. How much of a 53% salt solution must be mixed with 70 gallons of 18%-salt solution to obtain a soltion that is 25% salt?

a) Explicitly define all variables.

x = # of gallons of 53% solution.

y = total # of gallons.

b) Write two equations or inequalities that model that situation.

$x + 70 = y$

$.53x + .18(70) = .25y$

c) Solve the problem with a valid method of your choice. State the name of the solution method used.

substitution

$.53x + .18(70) = .25(x + 70)$

$.53x + 12.6 = .25x + 17.5$

$-.25x \quad -12.6 \qquad -.25x \quad -12.6$

$\frac{.28x}{.28} = \frac{4.9}{.28}$

$x = 17.5$

$x = 17.5$

$x + 70 = y \rightarrow 17.5 + 70$

$y = 87.5$ gallons

d) Confirm your solution with an alternate method. State the name of the solution method used.

graphically

$x + 70 = y$

$y_1 = x + 70$

$y_2 = \frac{.53x + .18(70)}{.25}$

$x = 17.5$

$y = 87.5$

Write as $(17.5, 87.5)$

e) State the final answer in complete sentences, which explain the real world meaning of the solution.

You would mix 17.5 gallons of a 53% salt solution with 70 gallons of a 18% salt solution to obtain 87.5 gallons of a 25% salt solution.

4/5

Name [redacted] Folder # [redacted]

Date: 10/11/12 Period [redacted]

Precalculus Quiz: Linear Equations and Inequalities

$\boxed{53}x + \boxed{18}70 = \boxed{25}y$

2. How much of a 53% salt solution must be mixed with 70 gallons of 18%-salt solution to obtain a soltion that is 25% salt?

a) Explicitly define all variables. 53%

X = # of gallons of ~~53%~~ Soution.

y = # of total gallons.

b) Write two equations or inequalities that model that situation.

$x + 70 = y$ $\qquad \frac{(.53\%x + .18(70))}{.25} = y$

c) Solve the problem with a valid method of your choice. State the name of the solution method used.

Graphing Intersect

$y_1 = x + 70$

$y_2 = \frac{(.53\%x + .18(70))}{.25}$

(17.5, 87.5)

d) Confirm your solution with an alternate method. State the name of the solution method used.

Subsution

$x + 70 = (.53x + 18(70))$

$\frac{(.53x + 12.6)}{.25}$

$x =$ ___

$y =$ ___

$y_1 = x + 70$

$y_2 = \frac{(.53\%x + 18(70))}{.25}$

$x + 17.5 = 53x + 12.6$

$4.9 = -.47x$

-10.42 = ? −1

so close!

e) State the final answer in complete sentences, which explain the real world meaning of the solution.

You would mix 17.5 gallons with a 53% salt solution with 70 gallons with a 18% salt solution to contain 87.5 gallons with 25% salt solution.

4/5

Name: [redacted]
Date: October 11, 2012

Folder #
Period [redacted]

Precalculus Quiz: Linear Equations and Inequalities

2. How much of a 53% salt solution must be mixed with 70 gallons of 18%-salt solution to obtain a soltion that is 25% salt?

a) Explicitly define all variables.

X = Number of gallons of 53% solution

y = # of total gallons (25%)

b) Write two equations or inequalities that model that situation.

$x + 70 = y$,

$\frac{.52x + .18(70)}{.25} = \frac{.25y}{.25}$

$y_2 = .52x + .18(70) \div .25$

c) Solve the problem with a valid method of your choice. State the name of the solution method used.

(Graphically) $y_1 = x + 70$

$y_2 = (.52x + .18(70)) \div .25$

Window.

x min = -80

x max = 300.

Y max = 300

d) Confirm your solution with an alternate method. State the name of the solution method used.

If you do it in the calculator you press 2nd and then calc press 5 press enter three times Andy the intersection would be $(-110.8\overline{3}, 29.1\overline{6})$

e) State the final answer in complete sentences, which explain the real world meaning of the solution.

It would take 29 1/6 more gallons to be mixed with 53% of the salt solution and 40% to be mixed with the 18% of salt solution.

4/5

Name: [redacted]

Date: 10-11-12

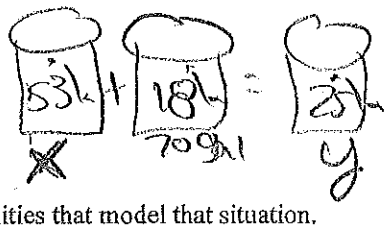
Folder #

Period [redacted]

Precalculus Quiz: Linear Equations and Inequalities

2. How much of a 53% salt solution must be mixed with 70 gallons of 18%-salt solution to obtain a soltion that is 25% salt?

a) Explicitly define all variables.



x = # of gallons of 53% solution

y = # of total gallons 25%

b) Write two equations or inequalities that model that situation.

$x + 70 = y$

$.53(x) + .18 \cdot (70) = .25y$

c) Solve the problem with a valid method of your choice. State the name of the solution method used.

- Graphically

$x + 70 = y$

$y_1 = x + 70$ $y_2 =$

$y_2 = (.53x + .18(70))/.25$

$\frac{.53x + .18(70)}{.25} = \frac{.25}{.25}$

$x = 17.5$ 176

$y = 87.5$

d) Confirm your solution with an alternate method. State the name of the solution method used.

e) State the final answer in complete sentences, which explain the real world meaning of the solution.

when a solution contains 53% salt solution and is mixed with a 70 gallons of a 18% salt solution to obtain a solution that is 25% salt you must have 17.5 gallons of the 53% salt solution.

4/5

Name: [redacted] Folder #_____

Date: October 11, 2012 Period [redacted]

Precalculus Quiz: Linear Equations and Inequalities

2. How much of a 53% salt solution must be mixed with 70 gallons of 18%-salt solution to obtain a soltion that is 25% salt?

a) Explicitly define all variables.

x = # of salt solution 53%

y = # of total salt solution 25%

b) Write two equations or ~~inequalities~~ that model that situation.

$x + 70 = y$ $\quad$ $.53x + .18(70) = .25y$

c) Solve the problem with a valid method of your choice. State the name of the solution method used.

Graphically

$x + 70 = y$

$y1 = x + 70$

$y2 = \frac{(.53x + .18(70))}{.25}$

$\frac{.53x + .18(70)}{.25} = \frac{.25y}{.25}$

$[17.5, 87.5]$ (x, y)

d) Confirm your solution with an alternate method. State the name of the solution method used.

e) State the final answer in complete sentences, which explain the real world meaning of the solution.

You would mix 17.5 gallons of a 53% salt solution with 70 gallons of 18% salt solution to obtain 87.5 gallons of 25% salt solution.

4/5

Name: [redacted]
Date: 10-11-12

Folder [redacted]
Period [redacted]

Precalculus Quiz: Linear Equations and Inequalities

2. How much of a 53% salt solution must be mixed with 70 gallons of 18%-salt solution to obtain a soltion that is 25% salt?

a) Explicitly define all variables.

x = # of gallons of solution 53.
y = # of total gallons (25%)

b) Write two equations or inequalities that model that situation.

$x+70=y$

$\frac{.53x+.18(70)}{.25} = \frac{.25y}{.25}$

c) Solve the problem with a valid method of your choice. State the name of the solution method used.

- Graphically

$x+70=y$

$\boxed{y_1 = x+70}$

$\frac{.53x+.18(70)}{.25} = \frac{.25y}{.25}$

$\boxed{y_2 = \frac{.53x+.18(70)}{.25}}$

d) Confirm your solution with an alternate method. State the name of the solution method used.

- Graphically

x = 17.5
y = 87.5

e) State the final answer in complete sentences, which explain the real world meaning of the solution.

You would mix 17.5 gallons of a 53% salt solution with 70 gallons of a 18% salt solution to obtain 87.5 gallons of a 25% salt solution.

4/5

Name: [redacted] Folder #

Date: 10-11-2012 Period [redacted]

Precalculus Quiz: Linear Equations and Inequalities

2. How much of a 53% salt solution must be mixed with 70 gallons of 18%-salt solution to obtain a soltion that is 25% salt?

a) Explicitly define all variables.

x = # of gallons of 53% Solution
y = total # of gallons

b) Write two equations or inequalities that model that situation.

$x + 70 = y$
$.53x + .18(70) = .25y$

Substitution c) Solve the problem with a valid method of your choice. State the name of the solution method used.

$.53x + .18(70) = .25(x+70)$
$.53x + 12.6 = .25x + 17.5$
$-.25x \quad -.25x$
$.28x + 12.6 = 17.5$
$-12.6 \quad -12.6$
$\frac{.28x}{.28} = \frac{4.9}{.28}$
$\boxed{x = 17.5}$

$17.5 + 70 = y$
$\boxed{87.5 = y}$

d) Confirm your solution with an alternate method. State the name of the solution method used.

e) State the final answer in complete sentences, which explain the real world meaning of the solution.

You would mix 17.5 gallons of 53% salt solution with 70 gallons of 18% salt solution to obtain 87.5 gallons of 25% salt solution

4/5

Name [redacted] Folder #_____

Date:_____ Period _____

Precalculus Quiz: Linear Equations and Inequalities

2. How much of a 53% salt solution must be mixed with 70 gallons of 18%-salt solution to obtain a soltion that is 25% salt?

a) Explicitly define all variables.

X = # of gallons of 53%

y = total of gallons.

b) Write two equations or inequalities that model that situation.

$y = x + 70$

$.53x + .18(70) = .25y$

c) Solve the problem with a valid method of your choice. State the name of the solution method used.

$.53x + .18(70) = .25y$

$.53x + .18(70) = .25(x + 70)$

$.53x + 12.6 = .25x + 17.5$

$-.25 \quad -12.6 \quad -.25 \quad -12.6$

$\frac{.28x}{.28} = \frac{4.9}{.28}$ $x = 17.5$ $y = 87.5$

d) Confirm your solution with an alternate method. State the name of the solution method used.

e) State the final answer in complete sentences, which explain the real world meaning of the solution.

you would mix 17.5 gallons of 53% salt solution with 70 gallons of 18%-salt solution to get 87.5 gallons of 25%-salt solution.

3/5

Name: [redacted]

Date: 10/11/17

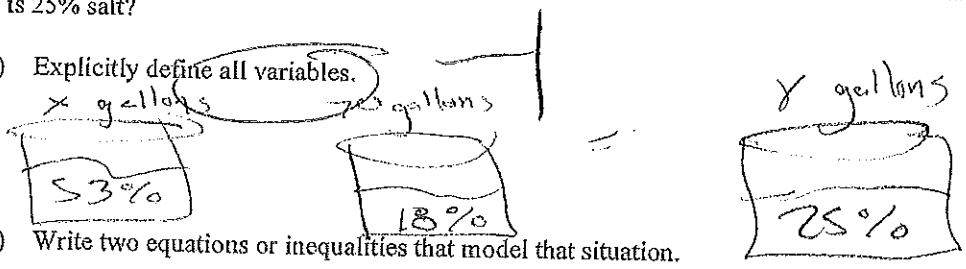
Folder #

Period [redacted]

Precalculus Quiz: Linear Equations and Inequalities

2. How much of a 53% salt solution must be mixed with 70 gallons of 18%-salt solution to obtain a soltion that is 25% salt?

a) Explicitly define all variables.



b) Write two equations or inequalities that model that situation.

$0.53x + 70 \cdot .18 = 0.25y$

$0.53x + 12.6 = 0.25(x+70)$

c) Solve the problem with a valid method of your choice. State the name of the solution method used.

$0.53x + 12.6 = 0.25x + 17.5$

$-0.25 \quad -12.6 \quad -0.25 \quad -12.6$

Algebraically with elimination

d) Confirm your solution with an alternate method. State the name of the solution method used.

$\frac{0.28x}{.28} = \frac{4.9}{.28}$

$\boxed{x = 17.5}$

e) State the final answer in complete sentences, which explain the real world meaning of the solution.

To obtain a solution that is 25% salt you must mixed 17.5 gallons of 53% salt with 70 gallons of 18% salt.