Joe invested some money. His total return (interest) was $5880. Part was invested at 5% apr. Part was invested @ 6% apr. The amount invested @ 6% was $10,000 more than the amount invested @ 5%. How much did he invest at each rate?

Let x = amt invested @ 5% apr. ($)

y = " " " " 6% apr. ($)

$y = x + 10000$

$.05x + .06y = 5880$

Interest earned — Interest Earned.

4 zeros

$.05x + .06(x + 10000)$

.0600 (4 spots)

$.05x + .06x + 600 = 5880$

$.11x + 600 = 5880$

$.11x = 5280$

$x = \frac{5280}{.11} = 48000 \Rightarrow$

$y = 58000$ (from $y = x + 10000$)

Check!

$.05(48000) + .06(58000) =$

$2400 + 3480 = 5880$ Sweet!

Aug 26-7:33 AM

How many gallons of 60% solution must be mixed with 60 gallons of 30% solution to obtain a 50% mixture?

Amt of Pure Substance = Amt of Pure Substance

Want to Know How many gallons of 60% solution must be mixed

Let x = amt of 60% solution used (gallons)

Amt of Pure Substance = Amt of Pure Substance

60% soln + 30% soln = 50% soln

$.6x + .3(60) = .5(x+60)$

Tabular methods can help.

	vol.	Pure Substance
60% mix	x	.6x
30% mix	60	.3(60)
TOTAL: 50% mix	x+60	.6x+.3(60)

Some prefer this way of setting things up.

This is also .3(x+60)

The source of the eq'n.

Like 5'1.1 #21 from MyLab

$2x+1 = -\sqrt{15}$

$2x = -\sqrt{15} - 1$

$x = \frac{-\sqrt{15}-1}{2} = -\frac{(\sqrt{15}+1)}{2} = -\frac{\sqrt{15}+1}{2}$

On TI 30:
$(-\sqrt{15}-1)/2$

On piece of crap:
15 x² .5 = +1 = /2 =
Then took the negative.

≈ — 2.436491673103708442589632699 8912

Fritz normally commutes at an average speed of 72 miles per hour, but this morning's heavy traffic held him to only 54 miles per hour. He must determine whether he can drive home fast enough this evening in order to maintain his usual round-trip average speed.

In order to maintain his usual average round-trip speed, Fritz will have to drive home at ☐ miles per hour.

Average speed $= \frac{54+x}{2}$ want $= 72$

x = speed on the return trip (mph)

3,5

Shared Work

The Key: Write things in terms of how much gets done in one time unit (hours)

Della can do the job in 2 hours. John can do the job in 5 hours. How long does it take them if they work together?

One Job Done = One Job done

Let x = the amount of time Della spends at it

= " " " " Dan " " "

Della gets $\frac{1}{2}$ of the job done in 1 hr.

$\frac{1}{2}x + \frac{1}{5}x = 1$

Book says $\frac{1}{2} + \frac{1}{5} = \frac{1}{x}$

$\frac{\text{Amt of job done}}{\text{hour}} \cdot x \text{ hours}$

$\frac{x}{2}$ is awesome

$\frac{1}{2x}$ Bad — Wrong

$1/2x$ Bad — Ambiguous

$\frac{1}{2} x$ Bad

x must do a chin-up.

LCD = 2·5

$\frac{1}{2}x + \frac{1}{5}x = 1$

$\frac{2.5}{1} \cdot \frac{1}{2}x + \frac{2.5}{1} \cdot \frac{1}{5}x = 2.5 \cdot 1$

$5x + 2x = 10$

$7x = 10$

$x = \frac{10}{7}$ blah blah blah.

Good test question.

Della can do the job in 2 hours. John can do the job in 5 hours. How long does it take them if they work together, if Della shows up an hour late?

Let x = the amt of time Della spends at it (hrs)

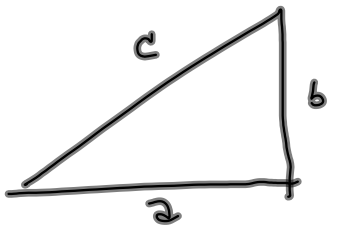
$x+1$ = " " " " " Don " " " (hrs)

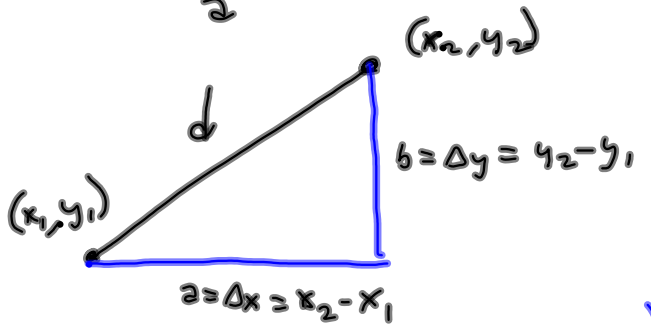
Then $\frac{1}{2}x + \frac{1}{5}(x+1) = 1$ is the setup

See #18 on homework.

Pythagorus says:

$a^2+b^2=c^2$ is the source of the distance formula





$d^2=(x_2-x_1)^2+(y_2-y_1)^2$

Solve for d:

$\sqrt{d^2}=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$|d|=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$d=\pm\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

And we assume that distance is nonnegative.

So $d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$ is the distance

An aside:

$\sqrt{d^2}=|d|$

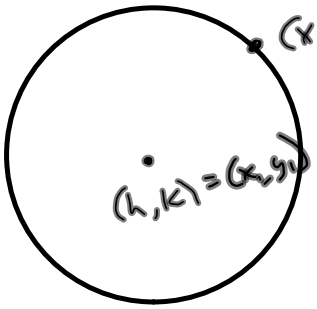
$\sqrt{9}=\sqrt{(-3)^2}=3$

$\sqrt{3^2}=3$

A circle is the set of all points equidistant from a fixed point.

r = radius.

(h, k) = center



(x, y) is on the circle so

$$\sqrt{(x_2-x_1)^2+(y_2-y_1)^2} = r$$

$$\sqrt{(x-h)^2+(y-k)^2} = r$$

$$(x-h)^2+(y-k)^2 = r^2$$

is the standard form of the equation of a circle of radius r centered @ (h, k).

Aug 26-8:54 AM