

$$f = \frac{f_1 - f_2}{f_1 f_2}$$

Solve for  $f_2$   
 $LCD = f_1 f_2$

$$f \cdot f_1 f_2 = \frac{f_1 - f_2}{f_1 f_2} \cdot \frac{f_1 f_2}{1}$$

$$f \cdot f_1 f_2 = \frac{f_1 - f_2}{\cancel{f_1 f_2}} \cdot \frac{\cancel{f_1 f_2}}{1}$$

$$\cancel{f f_1 f_2} = f_1 - f_2$$

$$\underline{\quad + f_2 = + f_2 \quad}$$

$$f f_1 f_2 + f_2 = f_1$$

$$f f_1 f_2 + 1 \cdot f_2 = f_1$$

$$f_2 \left( \frac{f f_1 \cancel{f_2}}{\cancel{f_2}} + \frac{1 \cdot \cancel{f_2}}{\cancel{f_2}} \right)$$

$$f_2 (f f_1 + 1) = f_1$$

$$f_2 = \frac{f_1}{f f_1 + 1}$$



L: Ke # 13

$$f = \frac{f_1 f_2}{f_1 - f_2}$$

LCD =  $f_1 - f_2$

$$f \cdot (f_1 - f_2) = \frac{(f_1 f_2)}{\cancel{(f_1 - f_2)}} \cdot \frac{\cancel{(f_1 - f_2)}}{(1)}$$

$$f f_1 - f f_2 = f_1 f_2$$

$$-f f_2 = -f_1 f_2$$

$$f f_1 - f f_2 - f_1 f_2 = 0$$

$$\frac{-f f_1}{-f f_2 - f_1 f_2} = \frac{-f f_1}{-f f_2 - f_1 f_2}$$

$$-f f_2 - f_1 f_2 = -f f_1$$

$$f f_2 + f_1 f_2 = f f_1$$

$$f_2 \left( \frac{f f_2}{f_2} + \frac{f_1 f_2}{f_2} \right) = f f_1$$

$$f_2 (f + f_1) = f f_1$$

$$\frac{f_2 (f + f_1)}{f + f_1} = \frac{f f_1}{f + f_1}$$

$$f_2 = \frac{f f_1}{f + f_1}$$

$$\frac{7}{5} = \frac{5+2}{3+2} = \frac{7}{5}$$

BAO

Nicholas' way.

$$ff_1 - ff_2 = f_1 f_2$$

$$+ff_2 = +ff_2$$

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$$ff_1 = f_1 f_2 + ff_2$$

$$ff_1 = (f_1 + f) f_2$$

$$\frac{ff_1}{f_1 + f} = f_2$$

$$f_1 f_2 + ff_2 = ff_1$$

#32

t = truck

Plane & truck leave same time, going to same place, 450 miles away.

Plane is 3 times faster than the truck.

Plane arrives 6 hours sooner.

Find speed of truck.

x = speed of truck (mph)

	Plane	Truck
D	450	450
r	3x	x
t	t-6	t

t = time it takes truck to go 450 miles (hrs)

$D = rt$

$$450 = 450$$

$$3x(t-6) = xt$$

$$3x(t-6) = 450$$

$$xt = 450$$

} solve one for one variable. Substitute into the other.

true but 2 variables in 1 equation. Can't solve.

$$xt = 450$$

$$x = \frac{450}{t}$$

$$3x(t-6) = 450$$

$$3\left(\frac{450}{t}\right)(t-6) = 450$$

$$\frac{3}{1} \cdot \frac{450}{t} \cdot \frac{(t-6)}{1}$$

$$\frac{3(\cancel{450})(t-6)}{t} = \cancel{450}$$

Divide  
Both sides  
by 450

$$\frac{3(t-6)}{t} = 1 \quad \text{Clear fracs.}$$

$$3(t-6) = t$$

$$3t - 18 = t$$

$$2t = 18$$

$$t = 9 \text{ hrs}$$

$$x = \frac{450}{t} = \frac{450}{9} = 50 \text{ mph is speed of truck}$$

(39) One train is 15 mph faster than other.  
 They go in opposite directions  
 In 6 hrs, they're 630 miles apart.  
 Find speed of each train.

$x =$  speed of faster train (in mph)  
 $y =$  .. .. slower train ( .. .. ) =  $x - 15$

	Slow	Fast
D	D	630-D
r	$x-15$	x
t	6	6

$$t = \frac{D}{r} = 6 = \frac{D}{x-15} = \frac{630-D}{x}$$

Use  $\frac{D}{x-15} = 6$  to get something for D:

$$D = 6(x-15) \rightarrow \text{Send to other equation for D:}$$

$$\frac{630-D}{x} = 6$$

$$\frac{630 - (6(x-15))}{x} = 6$$

One eq'n.  
 One variable.  
 Cool.

$$\frac{630 - (6x - 90)}{x} = 6$$

$$\frac{630 - 6x + 90}{x} = 6$$

$$\frac{720 - 6x}{x} = 6$$

$$720 - 6x = 6x$$

$$+6x = +6x$$

$$720 = 12x$$

$$12x = 720$$

$$\frac{12x}{12} = \frac{720}{12}$$

$$x = 60 \text{ mph}$$

So slow train is  
moving @ 45 mph

$$60) = 360$$

$$15) = 270$$

$$630$$