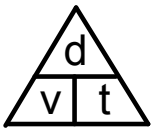
Applications of Linear Systems: dvt Problems

Feb 22/2010

Some strategies:

1. Identify what the question wants. This may tell you one or both of your variables.
2. Remember d = v t



3. Use a table to fill in known and unknown values to help form your equations.
4. Make sure your units are all consistent.

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Ex.1. Alex drove 500 km from Ottawa to Toronto in 5 1/2 h. He drove part of the way at 100 km/h, and the rest of the way at 80 km/h. ~~How far did he drive at each speed?~~

d / v t	distance (d)	=	speed (v)	×	time (t)
trip 1	x		100 km/h		$\frac{x}{100}$
trip 2	y	+	80 km/h	+	$\frac{y}{80}$
Total	500 km	=			5.5 h

$x+y=500$ ① $\frac{x}{100}+\frac{y}{80}=5.5$ [$\times 400$]

① $\times 4$: $4x+4y=2000$ $4x+5y=2200$ ②

②: $4x+5y=2200$

subtract $-y=-200$

$y=200$

Sub $y=200$ into ①

$x+200=500$

$x=300$

∴ he drove 300 km at 100 km/h and 200 km at 80 km/h

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Ex.2. A boat took 2 h to travel 24 km down a river with the current and 3 h to make the return trip against the current. Find the speed of the boat in still water and the speed of the current.

	distance (d)	= speed (v)	time (t)
down stream	24	$x+y$	2
up stream	24	$x-y$	3
Total	48	~~X~~	5

Let x be your speed in still water (muscles / padding or motor)

Let y be the speed of the current.

$24 = (x+y)(2)$

$24 = (x-y)(3)$

$24 = 2x+2y$ (1) $24 = 3x-3y$ (2)

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Assigned Work:

p. 93 # 14
p. 102 # 5
p. 103 # 17, 23*

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