Math 107

Spring 2017

Lecture 9

Find two consecutive odd integers such that 3 times the smallest one is equal to 36 more than the largest one.

x & $x+2$

$3 \cdot \text{Smallest} = \text{Largest} + 36$

$3x = x + 2 + 36$

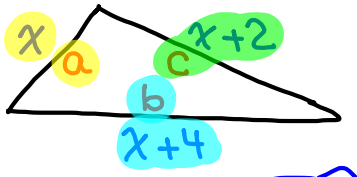
$3x - x = 38$

$2x = 38$

$x = \frac{38}{2}$ $\boxed{x = 19}$

19 & 21

A triangle has a perimeter of 126 ft. Three sides are three consecutive even integers. Find the largest side.



$P = 126$

$a + b + c = 126$

$x + x+4 + x+2 = 126$

$3x + 6 = 126$

$3x = 126 - 6$

$3x = 120$

$x = \frac{120}{3}$ $x = 40$

$40 + 4 = 44$ ft

Linear motion:

$d = r \cdot t$

distance

rate (speed)

time

Ex: 40 mph for 1.5 hrs

$d = r \cdot t$ $d = 40(1.5) = 60$

60 miles

Opposite direction: Add

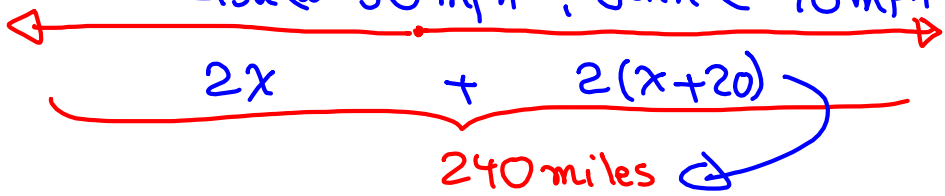
Same direction: Subtract

John & Lisa left and went in opposite direction

After 2 hrs, they were 240 miles apart.
John was driving 20 mph faster than Lisa.
Find speed for both.

Cat.	r	· t	= d
John	$x+20$	2	$=2(x+20)$
Lisa	x	2	$=2x$

Lisa @ 50 mph & John @ 70 mph



$2x + 2(x+20) = 240$

$2x + 2x + 40 = 240$

$4x + 40 = 240$

$4x = 200$

$x = \frac{200}{4}$

$x = 50$

Jose headed north, while Maria went South.

Jose was driving 15 mph slower than Maria but had 1 hr head start.

After Maria drove for 2 hrs, they were 305 miles apart. Find speed for both.

Cat.	r	· t	= d
Jose	$x-15$	· 3	$= 3(x-15)$
Maria	x	· 2	$= 2x$

$\underbrace{3(x-15) + 2x}_{305 \text{ Miles}}$

$3(x-15)+2x=305$

$3x-45+2x=305$

$5x=305+45$

$5x=350$

$\boxed{x=70}$

70 mph, 55 mph.

Mike drove 295 miles in total.

He drove 1 hr in the mountain, and 4 hrs on HWY.

His speed on HWY was 10 mph faster time 4 times his speed in the mountain.

Find his speed on the HWY.

	r	t	= d
Mtn.	x	1	$= x \cdot 1$
HWY	$4x+10$	4	$= (4x+10)4$

$4(15)+10=60+10=70$ mph

$x+4(4x+10)=295$

$x+16x+40=295$

$17x=255$

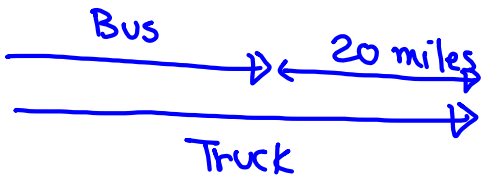
$x=\frac{255}{17}$ $\quad x=15$

A bus and a truck left the same rest area at the same time, going same direction.

Truck @ 55 mph, while bus @ 45 mph.

How long does it take before they are 20 miles apart?

	r	· t	= d
Truck	55	t	$= 55t$
Bus	45	t	$= 45t$



$55t - 45t = 20$

$10t = 20$

$\boxed{t = 2}$

2 hrs

I have 37 coins.

Dimes & Nickels only.

Dimes is 1 more than twice # nickels.

How many of each?

How much money do I have?

Dimes + Nickels = 37

$2x + 1 + x = 37$

$3x + 1 = 37$

$3x = 36$

$x = 12$

12 Nickels & 25 Dimes

$12(5) + 25(10)$

$60 + 250 = 310¢$ or $\$3.10$