$\frac{Motion \ Formula}{The \ distance, \ d, \ traveled \ by \ an \ object \ moving \ at \ a \ rate, \ r,}$ in time t, is given by  $d = r \cdot t$ 

Ex pg 68

Delta Airlines' fleet includes B737/8005, each with a cruising speed of 517 mph and Saab 340b5, each with a cruising speed of 290 mph. Suppose Saab 340b takes off & travels its cruising speed.

One hour later a B737/800 takes off and follows the Same route, traveling at its oursing speed. How long will it take for the B737/800 to overtake the Saab 340b?

B737 SIZ Mph

 $f_{aub} \xrightarrow{290 \text{ mph}} d_B = \text{miles traveled by the } B737/800$   $d_S = \text{miles traveled by the } Saab 340b$ t = hours after the B737/800 leaves

	Pistance	Rate	Time	
B737/800	dB	517	セ	$\implies$ d <sub>B</sub> = 517·t
Saab 340b	ds	290	t+1	$\Rightarrow$ ds = 290·(t+1)

When does  $d_B = d_S$ ? 517t = 290(t+1) 517t = 290t + 290 227t = 290  $t = \frac{290}{227} \approx 1.28$  hours Check:  $d_B = 517(1.28) = 661.76$  mi  $d_S = 290(1.28+1) = 290(2.28) = 661.2$  mi Answer the question: About 1.28 hours after the B737/800 takes off, it will overtake the Saab 340b  $\frac{E \times P}{5} = \frac{4}{2}$ A private airplane leaves an airport & flics east at a speed of 180 km/h. 2 hours later a jet leaves the same airport at a speed of 900 km/h. How far from the airport will the jet overtake the airplane?  $d_{A} = 180 \cdot (t+2) \qquad d_{A} = km \text{ traveled by the airplane}$   $d_{J} = 4A \qquad t = \text{hours after the jet leaves}$   $900 \cdot t = 180 (t+2) \qquad d_{J} = km \text{ traveled by the jet}$   $d_{J} = d_{A} \qquad t = \text{hours after the jet leaves}$   $900 \cdot t = 180 (t+2) \qquad q_{OO} + 180 (t+2) \qquad q_{OO} + 180 (t+2)$ 

$$d_{3} = 900(\frac{1}{2}) = 450 \text{ km}$$
eck  $d_{A} = 180(\frac{1}{2} + 2) = 180(\frac{2}{3}) = 450 \text{ km} \checkmark$ 

Ex p76 #50

Marissa is designing a poster. The width of the poster will be 2/3 of its height & its perimeter will be 100 in. Find the dimensions of the poster.

Perimeter: add up all the side lengths  

$$h = height of the poster
w = width of the poster
 $P = perimeter of the poster$   
 $W = \frac{2}{3}h$   
 $P = h + h + w + w = 2h + 2w = 2h + 2(\frac{2}{3}h) = 2h + \frac{4}{3}k$   
 $= \frac{6}{3}h + \frac{4}{3}h = \frac{10}{3}h$   
 $3(100 in) = (\frac{10}{3}h) 3$   
 $\frac{300 in}{10} = \frac{10}{10}h$   
 $30 in = h$$$

 $W = \frac{2}{3}h = \frac{2}{3}(30) = \frac{60}{3} = 20$  in

The dimensions of the poster is 20in × 30in

## <u>Ex</u> p77 #65

Rosalyn worked 48 hr one week and earned \$1066 paycheck. She earns time and a half (1.5 times her regular hourly wage) for the number of hours she works in excess of 40. What is Rosalyn's regular hourly wage?

$$1066 = 40x + 8(1.5x)$$
  
= 40x + 12x  
= 52x  
$$\frac{1066}{52} = x$$
  
= 20.5  
heck: 40(20.5) = 820

$$8(1.5.20.5) = 8(30.75) = 246$$
  
 $820 + 246 = 1066$   $\checkmark$ 

Rosalyn's hoorly wage is \$20.50

Ex p77 #66

City Cabs charges \$1.75 pickup fee and \$1.50 per mile traveled. Dicgo's farc for a cross-town cab ride is \$19.75. How far did he travel in the cab?

d = miles traveled by Diego 19.75 = 1.75 + 1.50d 18.00 = 1.50d 18 = 1.5 d  $\frac{18}{1.5} = d$  12 = dCheck: 19.75 = 1.75 + 1.5(12) = 1.75 + 18= (9.75)

Answer: Diego traveled 12 miles