

HW: Worksheet/7-11, 13

Warm up:

Juan left home on his bicycle at 10:00AM, traveling at 21km/h. At noon, his brother set out after him on his motorcycle. If the motorcycle traveled at 63km/h, at what time did Juan's brother overtake him?

	r	t	d
J	21	$t+2$	$2t+42$
Bro	63	t	$63t$

$$\begin{array}{r}
 21t + 42 = 63t \\
 -21t \quad \quad -21t \\
 \hline
 42 = 42t \\
 \frac{42}{42} = \frac{42t}{42} \\
 \hline
 1 = t
 \end{array}$$

1:00 pm

A jet flying at a constant speed took 5 hours to fly to San Francisco from St. Louis. On the return trip, a tailwind of 125mi/h decreased the flying time by an hour and 15 minutes. What was the speed of the plane on the return trip?

	r	t	d
there	f	5	5f
back	f+125	3.75	3.75f+468.75

5-1h15min
5-1 $\frac{1}{4}$

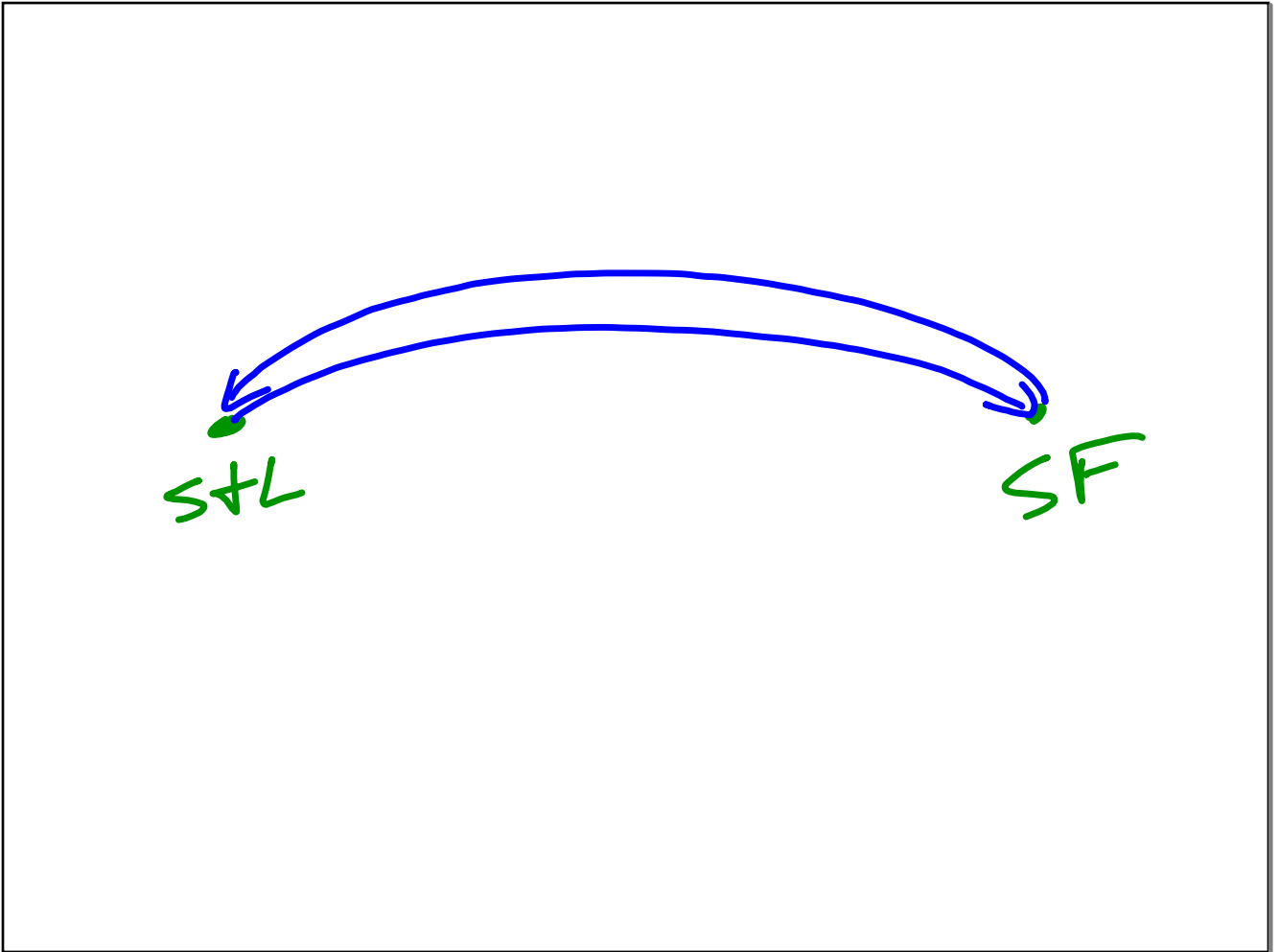
$$5f = 3.75f + 468.75$$

$$-3.75f \quad -3.75f$$

$$\frac{1.25f}{1.25} = \frac{468.75}{1.25}$$

$$f = 375$$

500 mi/h



HW Solutions

5) 2h

14) 5h

20) 3h

21) 33mi

⑤

	r	t	d
L	18	t	18t
S	6	t	6t



$$18t - 6t = 24$$

$$\frac{12t}{12} = \frac{24}{12}$$

$$t = 2$$

$$\textcircled{2h}$$



	r	t	d
E	20	+	20t
W	15	+	15t

$$20t + 15t = 175$$

$$35t = 175$$

$$\frac{35t}{35} = \frac{175}{35} \quad t = 5$$

5h

Q28

	r	+	d
N	50	+	50
S	65	+	65

$$50d + 65t = 345$$

$$\frac{115d = 345}{115 \quad 115}$$

$$\frac{115 \quad 115}{115 \quad 115}$$

$$d = 3$$

3

Q21

	r	d	d
fast	60	t	60t
slow	45	$t + \frac{11}{60}$	$45t + \frac{33}{4}$

$$3 \cdot 45 \cdot \frac{11}{60}$$

$$\begin{array}{r}
 60t = 45t + \frac{33}{4} \\
 -45t \quad -45t \\
 \hline
 15t = \frac{33}{4} \\
 \frac{15t}{15} = \frac{33}{4 \cdot 15} \\
 t = \frac{33}{60}
 \end{array}$$

33 mi

- 1) Two jets leave Denver at 9:00AM, one flying east at a speed of 50km/h greater than the other, which is traveling west. At 11:00AM, the planes are 2500km apart. Find their speeds.
- 2) An ultralight plane had been flying for 40min when a change of wind direction doubled its ground speed. The entire trip of 160mi took 2h . How far did the plane travel during the first 40min ?
- 3) Jan can run at 7.5m/s and Mary at 8.0m/s . On a race track, Jan is given a 25m head start and the race ends in a tie. How long is the track?
- 4) Jamie ran two laps around a track in 99s . How long did it take him to run each lap if he ran the first lap at 8.5m/s and the second at 8.0m/s ?

1) Two jets leave Denver at 9:00AM, one flying east at a speed of 50km/h greater than the other, which is traveling west. At 1:00AM, the planes are 2500km apart. Find their speeds.

	v	t	d
E	$w+50$	2	$2w+100$
W	w	2	$2w$

west $\rightarrow 600 \text{ km/h}$
east $\rightarrow 650 \text{ km/h}$

$$2w + 100 + 2w = 2500$$

$$\frac{4w = 2400}{4} \quad w = 600$$

2) An ultralight plane had been flying for 40min when a change of wind direction doubled its ground speed. The entire trip of 160mi took 2h. How far did the plane travel during the first 40min?

$$2 - \frac{2}{3} = 1\frac{1}{3} = \frac{4}{3}$$

$$\frac{2}{3}(48) = 32$$

32mi

	r	t	d
before	b	$\frac{2}{3}$	$\frac{2}{3}b$
after	2b	$\frac{4}{3}$	$\frac{8}{3}b$

$$\frac{2}{3}b + \frac{8}{3}b = 160$$

$$\frac{10}{3}b = (160) \frac{3}{10}$$

$$b = 48$$

3) Jan can run at 7.5m/s and Mary at 8.0m/s . On a race track, Jan is given a 25m head start and the race ends in a tie. How long is the track?

4) Jamie ran two laps around a track in 99s. How long did it take him to run each lap if he ran the first lap at 8.5m/s and the second at 8.0m/s?

A ship must average 22 knots (nautical miles per hour) to make its 10-hour run on schedule. During the first four hours, bad weather caused it to reduce speed to 16 knots. What should its average speed be for the rest of the trip to maintain its schedule?

