Tired of crackers, Kai stole Daniel's bacon and ran due west at 60 mi/hr.

Still croggy, Daniel finally chased after him one hour later running at 75 mi/hr. How long until Daniel catches up with Kai? same direction subtract

Relative Rate $75\text{ mi/hr} - 60\text{ mi/hr}$

15 mi/hr

Every hour Daniel catches up by 15 miles.

Head start: 60 mi/hr for 1 hour

Length: 60 mi

$\frac{60}{15} = 4\text{ h}$

Both going in the same direction

. Head start length / relative rate

$$\text{rate}_{\text{slow}}\left(t + \begin{matrix}\text{head}\\ \text{start}\\ \text{time}\end{matrix}\right) = \text{rate}_{\text{fast}}\, t$$

$60(t+1) = 75t$

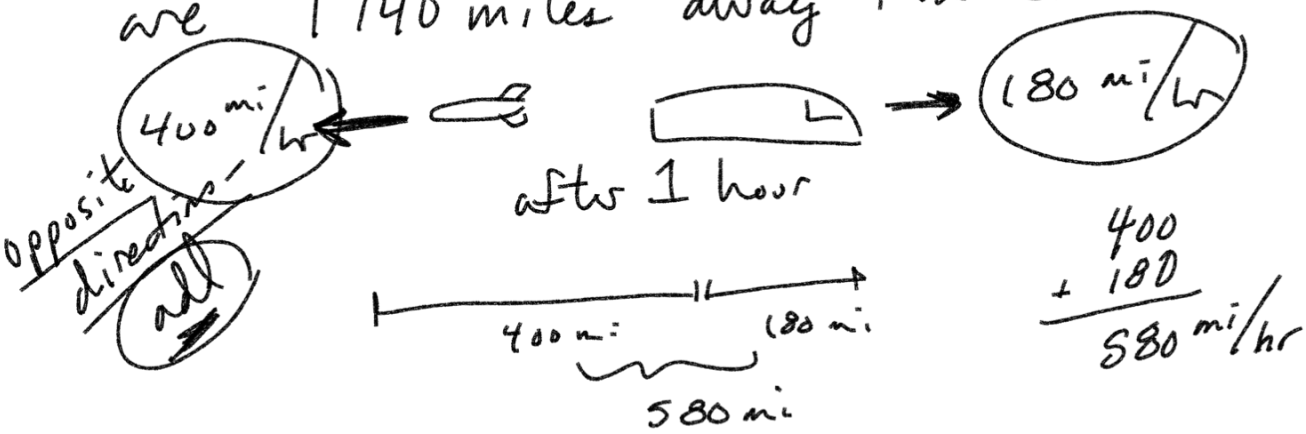
$60t + 60 = 75t$

$-60t \quad -60t$

$\frac{60}{15} = \frac{15t}{15}$

$4 = \frac{60}{15} = t$

The chronic liar Mei Li fires a rocket going 400 mi/hr while on a train going 180 mi/hr in the opposite direction. How long until Mei Li and her lying lies are 1740 miles away from the rocket?



Distance = (rate)(time)

$D = rt$ ← relative rate

$$\frac{1740}{580} = \frac{580t}{580}$$

$$\boxed{3 = t}$$

Elena is a huge disappoint to her family and all those around her. Huge. Very, very large disappointment Cannot really be understated.

Anyway.... after finding out about her hair, Elena ran away from home at 18 miles per hour. Not wanting to ruin Thanksgiving dinner, the family begrudingly chased after her 4 hours later at 27 mi/hr. How long until the family caught up with the disappoint... I mean... Elena?

Headstart: $(18\ mi/h)(4\ h) = 72\ mi$

$27 - 18 = \boxed{9\ mi/hr}$

$$\frac{72\ mi}{9\ mi/hr} = \boxed{8\ hrs}$$

slow rate $(t + 4)$ = fast rate $* t$

$$18(t + 4) = 27t$$

$$18t + 72 = 27t$$

$$-18t \qquad -18t$$

$$\frac{72}{9} = \frac{9t}{9}$$

$$\boxed{t = 8}$$

Ch 2 Pre-Test

$b + 12 = 28$

$-12 \quad -12$

$\boxed{b = 16}$

$a - 3 = 18$

$+3 \quad +3$

$\boxed{a = 21}$

$\frac{8c}{8} = \frac{48}{8}$

$\boxed{c = 6}$

$7\left(\frac{d}{7}\right) = (-4)7$

$\boxed{d = -28}$

$2x + 6 = -20$

$-6 \quad -6$

$\frac{2x}{2} = \frac{-26}{2}$

$\boxed{x = -13}$

$\frac{y}{4} - 8 = -2$

$+8 \quad +8$

$4\left(\frac{y}{4}\right) = (6)4$

$y = 24$

$40 = 6x - 2$

$+2 \quad +2$

$\frac{42}{6} = \frac{6x}{6}$

$\boxed{x = 7}$

$24 = \frac{y}{2} + 4$

$-4 \quad -4$

$2(20) = \left(\frac{y}{2}\right)2$

$\boxed{y = 40}$

- Distribute
- Combine Like Terms

$9x + 3(4x - 20) = 3$

$9x + 12x - 60 = 3$

$21x - 60 = 3$

$+60 \quad +60$

$\frac{21x}{21} = \frac{63}{21}$

$\boxed{x = 3}$

$4(2a - 7) - 2(3a + 8) = 10$

$8a - 28 - 6a - 16 = 10$

$2a - 44 = 10$

$+44 \quad +44$

$\frac{2a}{2} = \frac{54}{2}$ $\quad a = 27$

$8a - 6a$

$8 - 6 = 2$

$8a - 28 = 6a - 16$

$-6a \qquad -6a$

$2a - 28 = -16$

$+28 \quad +28$

$\frac{2a}{2} = \frac{12}{2}$

$\boxed{a = 6}$

HW

Complete Ch 2 Pre-Test

Optional HW 12 ch 2 Review

Test 2 due Dec 15th

end Dec 22nd