W-A1 Algebra 1 Week 12 11/29

T-Rex Peep (obj #1) travels 50 mi/hr (mi/hr)

Chewed up Jumbo ~~pencil~~ traveling 70 mi/hr (mi/hr)

leaves 5 hour(s) later in the same (same/opposite) direction. How long until boom boom?

1.) Find Head start $5\text{hr} * 50\ \text{mi/hr} = \underline{250\ \text{mi}}$

2.) Find Relative Rate obj 2 rate - obj 1 rate

$70\ \text{mi/hr} - 50\ \text{mi/hr}$

$\underline{20\ \text{mi/hr}}$

3.) $\frac{\text{Head start}}{\text{relative rate}} = \frac{250}{20} = \boxed{12.5\text{hrs}}$

Antique, slightly arthritic table (obj #1) travels 120 mi/hr (mi/hr)

Garfield McDonald's cup traveling 150 mi/hr (mi/hr)

leaves 2 hour(s) later in the same (same/opposite) direction. How long until boom boom?

1.) Head start $(2\text{ hr})(120\ \text{mi/hr}) = 240\ \text{mi}$

2.) Relative Rate obj 2 - obj 1

$150\ \text{mi/hr} - 120\ \text{mi/hr} = 30\ \text{mi/hr}$

3.) $\frac{\text{Head start}}{\text{Relative Rate}} = \frac{240}{30} = \boxed{8\text{ hrs}}$

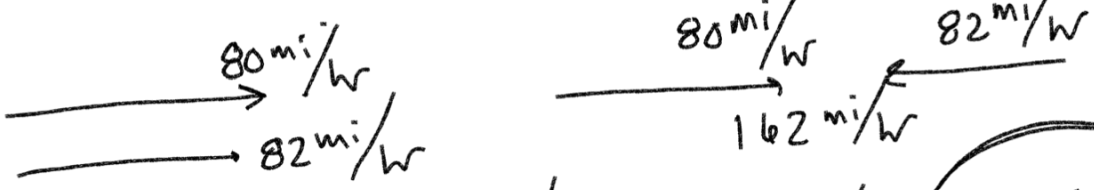
White squirrel with a santa hat and eye patch (obj #1) traveling $\frac{50\ mi/hr}{mi/hr}$

Box of Pac N Mac traveling $\frac{60\ mi/hr}{mi/hr}$

leaves at the same time in opposite directions.

a) How far away would they be after 5 hours?

Relative Rate same direction → subtract
different direction → add



Relative rate $50\ mi/hr + 60\ mi/hr = 110\ mi/hr$

$(5\ hrs)(110\ mi/hr) = \boxed{550\ mi}$

b) How long until the objects are 1000 miles apart?

$\frac{\text{miles apart}}{\text{relative rate}} = \frac{1000\ mi}{110\ mi/hr} \approx 9.09 = \boxed{9.1\ hrs}$

Algebra 1
Chapter 2 Practice Test

1.) (5 pts each) Solving One Step Equations (2-1) Solve each equation.

a) $b + 8 = 21$

b) $a - 11 = 54$
$+11 \quad +11$
$a = 65$

c) $6a = 72$

d) $\frac{y}{8} = 5$ $\cdot 8$ $\cdot 8$
$y = 40$

e) $-15t = 45$

2.) (5 pts each) Solving Two-Step Equations (2-2) Solve each equation.

a) $3x + 8 = 44$

$-8 \quad -8$

$\frac{3x}{3} = \frac{36}{3}$

$x = 12$

b) $\frac{b}{5} - 4 = -2$

$+4 \quad +4$

$5\left(\frac{b}{5}\right) = (2)5$

$b = 10$

c) $15 = 6x - 9$

d) $8 = \frac{a}{-7} + 12$

3.) (5 pts each) Solving Multi-Step Equations (2-3) Solve each equation.

a) $8c + 7(2c - 3) = 23$

b) $3(4 + x) - (2x + 3) = 14$

$12 + 3x - 2x - 3 = 14$

$x + 9 = 14$

$-9 \quad -9$

$x = 5$

c) $9y - 2(3y - 5) = 8$

$9y - 6y + 10 = 8$

$3y + 10 = 8$

$-10 \quad -10$

$\frac{3y}{3} = \frac{-2}{3}$

$y = \frac{-2}{3}$

d) $\frac{c+5}{2} = 11$

$\frac{(c+5)}{2}$

$\frac{c}{2} + \frac{5}{2} = 11$

$2\left(\frac{c+5}{2}\right) = (11)2$

$c + 5 = 22$

$-5 \quad -5$

$c = 17$

4.) (5 pts each) Equations with Variables on Both Sides (2-4) Solve each equation.

a) $6x - 25 = 7 - 2x$

$+2x \qquad +2x$

$8x - 25 = 7$

$+25 \quad +25$

$\frac{8x}{8} = \frac{32}{8}$

$x = 4$

b) $4(a - 2) = 7a - 35$

$4a - 8 = 7a - 35$

$+35 \qquad +35$

$4a + 27 = 7a$

$-4a \qquad -4a$

$\frac{27}{3} = \frac{3a}{3}$

$a = 9$

c) $9b + 15 = 11b + 27$

d) $8(3y - 2) = 4(5y + 4)$

5.) (5 pts each) Equations and Problem Solving (2-5) Write and solve an equation for each situation.

a) A man stole Nate's burrito and drove away at 50 mi/hr. Hangry, Nate took off on foot in the same direction a half an hour later. If Nate ran at 60 mi/hr, how long will it take for him to catch the nefarious burrito burglar?

→ Head start: $50\ mi/hr * 0.5\ hr = 25$ miles

→ Relative Rate: $60\ mi/hr - 50\ mi/hr = 10\ mi/hr$

$$\frac{\text{Head start}}{\text{relative rate}} = \frac{25\ \text{mile}}{10\ mi/hr} = 2.5\ hrs$$

b) A train leaves the station at 12pm traveling at 120 mi/hr. A second train left from the same station at 2pm traveling 80 mi/hr in the opposite direction. How long until the trains are 840 miles apart?

T1 → $120\ mi/hr$ (+)

$80\ mi/hr$ T2

2pm

3hr after 2pm = 5pm

Head start $(2\ hrs)(120\ mi/hr) = 240\ mi$

Relative Rate: $120\ mi/hr + 80\ mi/hr = 200\ mi/hr$

840 − 240 = 600

c) Usain Bolt ran an iron man event at a respectable 12 mi/hr. Nate, feeling generous, gave him an hour head start. If Nate ran 18 mi/hr, how long until he caught up with Usain Bolt?