TH-A1 Algebra 1 Week 12 12/7

PB Max Bar (obj #1) travels 50 mi/hr (mi/hr)

Nate's unlawfully taken parking spot (obj #2) traveling 70 mi/hr (mi/hr)

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

1.) Find head start: (obj #1 rate) * (head start time)

50 mi/hr * 2 hr = 100 mi

2.) Find relative rate

if same direction

obj #2 rate − obj #1 rate

70 mi/hr − 50 mi/hr = 20 mi/hr

if different directions

obj #2 rate + obj #1 rate

3.) Head start / Relative Rate

100 mi / 20 mi/hr = 5 hr

Gavin's Holy Man-is (obj #1) travels 100 mi/hr (mi/hr)

A Lightning McQueen Racing Table (obj #2) traveling 150 mi/hr (mi/hr)

leaves 4 (hrs) later in the same (same/opposite)

direction. How long until boom boom?

1.) Head Start distance: $4\text{ hrs} * 100\text{ mi/hr} = 400\text{ mi}$

2) Relative Rate $150\text{ mi/hr} - 100\text{ mi/hr} = 50\text{ mi/hr}$

3.) Time to boom $\frac{\text{Head Start}}{\text{Relative Rate}} = \frac{400}{50} = \boxed{8\text{ hr}}$

Sumo Wrestler eating a cinnamon bagel — travel $\frac{110\ mi/hr}{mi/hr}$

obj #1

An autographed poster of Handsome Squidward — traveling $\frac{200\ mi/hr}{mi/hr}$

obj #2

Leaves at the same time in opposite directions

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

Relative Rate: $200\ mi/h + 110\ mi/hr = 310\ mi/hr$

$(310\ mi/hr)(5\ hrs) =$ **1550 mi**

b) How long until the objects are 1240 miles apart $\frac{\text{distance}}{\text{rate}} = \frac{1240}{310} =$

4 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

Do the opposite!

+11 +11

a = 65

+4

c) 6a = 72

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

8 8

y = 40

e) -15t = 45

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

a) $3x + 8 = 44$

$-8 \quad -8$ (+2)

$\frac{3x}{3} = \frac{36}{3}$ (+2) computation 0.5/each

$x = 12$

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

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

$x + 9 = 14$

$-9 \quad -9$

$\boxed{x = 5}$

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

$9y - 6y + 10 = 8$

$3y + 10 = 8$

$-10 \quad -10$

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

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

$c + 5 = 22$

$-5 \quad -5$

$\boxed{c = 17}$

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

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

$+2x \qquad +2x$

$8x - 25 = 7$

$+25 \quad +25$

$\frac{8x}{8} = \frac{32}{8}$ $\boxed{x = 4}$

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

$4a - 8 = 7a - 35$

$+8 \qquad +8$

$4a = 7a - 27$

$-7a \quad -7a$

$-3a = -27$

$\frac{-3a}{-3} = \frac{-27}{-3}$ $\boxed{a = 9}$

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 $(0.5\text{ hr})(50\text{ mi/hr}) = 25\text{ mi}$

Relative rate: $60 - 50 = 10\text{ mi/hr}$

Time to Boom: $\frac{\text{Head start}}{\text{Relative rate}} = \frac{25\text{ mi}}{10\text{ mi/hr}} = 2.5\text{ hr}$

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?

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?