W-A1 Algebra 1 Week 11 11/15

$8(8+5m) = 4(m-2)$ Distribute

$8(8) + 8(5m) = 4(m) + 4(-2)$

$64 + 40m = 4m - 8$ Isolate variable to one side

$-4m \quad -4m$

$64 + 36m = -8$ solve for m

$-64 \quad\quad -64$

$\frac{36m}{36} = \frac{-72}{36}$ $\boxed{m = -2}$

1.) $3 + 5(5 - 3b) = -5 + 3(4b + 2)$ Distribute

$3 + 25 - 15b = -5 + 12b + 6$ Combine like terms

$-5 + 6 = 6 + (-5)$

$28 - 15b = 1 + 12b$ Isolate variable

$-12b \quad\quad -12b$

$28 - 27b = 1$

$-28 \quad\quad -28$

$\frac{-27b}{-27} = \frac{-27}{-27}$

$\boxed{b = 1}$

Solve for b

$-27b$ $-27+b$ $-27-b$ $-27*b$ $-27 \div b$

2.) $-8a + 7(a - 5) = -3(7 - 2a)$

$-8a + 7a - 35 = -21 + 6a$ Distribute

$-a - 35 = -21 + 6a$ Combine like terms

$-6a \qquad\qquad -6a$

$a = \square$

$-7a - 35 = -21$

$+35 \qquad +35$

Isolated a

opposites

$+ \rightleftarrows -$

$* \rightleftarrows \div$

$-7a = -7 * a$

$\frac{-7a}{-7} = \frac{14}{-7}$

$\boxed{a = -2}$

A train leaves the station traveling 60 mi/h.
Nate, on a big wheel, leaves the same station traveling 80 mi/h one hour later.
How long until Nate crashes into the train?

Train

Distance = rate * time

$D_T = R_T * T_T$

Nate's Big Wheel

$D_N = R_N (T_T - 1)$

$D_T = D_N$

$R_T t = R_N (t-1)$

Train → 4 hrs

Nate → (3 hrs)

$60t = 80(t-1)$

$60t = 80t - 80$

$-80t \quad -80t$

$\frac{-20t}{-20} = \frac{-80}{-20}$

$t = 4$

Relative Rates

Head Start → 60 mi

Relative Rate $80\ mi/hr - 60\ mi/hr = 20\ mi/hr$

$60/20 = (3\ hr)$

Head Start / relative rate

slippery monkey (obj #1) travels at 300 mi/hr.

Pant-suit Bunny (obj #2) traveling at 600 mi/hr leaves after 4 hours. How long until boom boom?

Head start: (speed of obj #1)(time head start)

$(300\ mi/hr)(4\ hr) = 1200\ mi$

Relative Rate of obj #2 = rate obj #2 − rate obj #1

$600\ mi/hr - 300\ mi/hr = 300\ mi/hr$

$$\frac{\text{Head start} \rightarrow 1200}{\text{relative rate} \rightarrow 300} = 4\ hrs$$

Mr Beast (obj #1) travels at 50 (mi/hr).

Prison Liam (obj #2) traveling at 110 (mi/hr)
Leaves after 6 hours. How long until boom boom?

Head start: (Rate #1)(time)
$(50\ mi/hr)(6\ hr) = 300\ mi$

Relative Rate: Rate #2 − Rate #1
$110\ mi/hr - 50\ mi/hr = 60\ mi/hr$

time to intercept: $\frac{\text{Head Start}}{\text{Relative Rate}} = \frac{300}{60} = \boxed{5\ hrs}$