

HW #6 1.6; 20, 22, 24, 26, 28, 62, 72

20) say  $m$  = # of messages, so monthly Bill =

$$B = 10 + 0.10(m - 1000)$$

given  $B = 38.5$  solve.

$$38.5 = 10 + 0.10(m - 1000)$$

$$\frac{28.5}{0.10} = m - 1000$$

$$m = 1285 \text{ messages}$$

again, for Ms. Allman's

class 161 -- please scan!

thank you :)

-Kaylee

22) let  $m$  = amount invested at 5.5%, so  $4000 + m$  = total amount invested.

4.5% of total investment = interest earned at 4% + interest earned at 5.5%

$$.045(4000 + m) = 0.04(4000) + 0.055m$$

$$180 + .045m = 160 + 0.055m$$

$$20 = 0.01m$$

$$m = \$2000$$

24) interest rate for 1000 =  $a\%$ , interest rate for 2000 =  $(a + \frac{1}{2})\%$

$$\text{Total interest } I = 1000 \cdot \frac{a}{100} \cdot 1 + 2000 \cdot \frac{a + \frac{1}{2}}{100} \cdot 1$$

$$= 10a + 20a + 10$$

$$\text{given } I = \$190 \quad 190 = 30a + 10$$

$$180 = 30a$$

$$a = 6\% \therefore 1000 \text{ invested @ } \boxed{6\% \text{ interest}}$$

26)  $S$  = Husband's salary

$$69875 = 1.15S + S$$

$$69875 = 2.15S$$

$$S = 32,500$$

so Husband's annual salary =  $\boxed{\$32,500}$

28)  $x$  = # of Hours

$$352.50 = \underbrace{(7.50)(35)}_{\text{regular hours worth of pay}} + \underbrace{(7.50)(1.5)(x)}_{\text{over time hours worth of pay}}$$

$$352.50 = 262.50 + 11.25x$$

$$90 = 11.25x$$

$$x = 8 \text{ hours over time}$$

62)  $t$  = time for Hilda to mow the lawn <sup>in minutes</sup> so,  $2t$  = time for Stan to mow the lawn <sup>in minutes</sup>

$$40\left(\frac{1}{t}\right) + 40\left(\frac{1}{2t}\right) = 1$$

$$40 + 20 = t$$

$$t = 60 \text{ minutes for Hilda}$$

$$t = 120 \text{ minutes for Stan}$$

72) let  $x$  = rate ( $\frac{\text{mi}}{\text{h}}$ ) at which Kiran drove from Tortula to Cactus

Cities	Distance	Rate	Time
Tortula $\rightarrow$ Cactus	250	$x$	$\frac{250}{x}$
Cactus $\rightarrow$ Dry Junction	360	$x+10$	$\frac{360}{x+10}$

$t = \frac{\text{distance}}{\text{rate}}$

given: total time = 11 hours so,

$$11 = \frac{250}{x} + \frac{360}{x+10}$$

$$11x(x+10) = 250(x+10) + 360x$$

$$11x^2 + 110x = 250x + 2500 + 360x$$

$$11x^2 - 500x - 2500 = 0$$

$$x = \frac{-(-500) \pm \sqrt{(-500)^2 - 4(11)(-2500)}}{2(11)}$$

$$= \frac{500 \pm \sqrt{360,000}}{22} = \frac{500 \pm 600}{22}$$

so, Kiran drove  $-4.54 \frac{\text{mi}}{\text{h}}$  (not possible) or

drove  $50 \frac{\text{mi}}{\text{h}}$  between Tortula and Cactus.