

Tom the Tennis Instructor

Name Key Class Period _____

Tom is a tennis instructor. He gives individual lessons for \$35 an hour and does team lessons for \$50 per hourly session. He has trouble getting teams to sign up when league play is not going on, so sometimes he has to count on individual lessons for his income.

1. If Tom only does individual lessons, write an equation for his total income T working i hours.

$$T = 35i$$

- a. How much will he make if he works 30 hours a week? Justify your answer.

$$T = 35(30) = \boxed{\$1,050}$$

- b. If he wants to make \$1,500 dollars per week, how many hours does he have to work? Justify your answer.

$$\frac{1500}{35} = \frac{35i}{35} \quad i = 42.9 \quad \boxed{43 \text{ hours}}$$

2. If league play is going on, Tom can get both individual lessons and team lessons. Write an equation for his total income T for working i individual hours and t team hours.

$$T = 35i + 50t$$

- a. How much will he make if he works 30 hours of individual lessons and 10 hours of team lessons. Justify your answer.

$$T = 35(30) + 50(10) = 1050 + 500 = \boxed{\$1,550}$$

- b. If Tom works 30 hours of individual lessons, how many hours of team lessons would he need to make \$2,000 in a week?

$$\begin{aligned} 2000 &= 30(35) + 50t & \frac{950}{50} &= \frac{50t}{50} & \boxed{19 \text{ hours}} \\ 2000 &= 1050 + 50t & 19 &= t & \end{aligned}$$

3. If Tom works 20 weeks out of the year just doing 30 hours of individual lessons and 32 weeks doing both individual and team lessons (30 hours of individual and 10 hours of team lessons), how much does he make for the year?

$$T = 35(30) = \$1,050 \times 20 = \$21,000$$

$$T = 35(30) + 50(10) = \$1,550 \times 32 = \$49,600$$

$$\boxed{\$21,000 + \$49,600 = \$70,600}$$