

Word Problems 4 Key

$$1. d = r_1 t_1 + r_2 t_2 \Rightarrow 305 = (x+20) \cdot 3 + x \cdot 4$$

$$305 = 3x + 60 + 4x$$

$$305 = 7x + 60$$

$$\begin{array}{r} -60 \\ \hline \end{array}$$

$$\frac{7x}{7} = \frac{245}{7}$$

$x = 35$ on winding road

$x+20 = 55$ on level road

2. pennies $.01x$

dimes $.1y$

quarters $.25z$

\$5 bills $5(9x)$

\$20 bills $20(4y)$

\$100 bills $100(97z)$

nickels

$.05(x+7)$

half-dollars

$.5(20-z)$

\$50 bills

$50(35-x)$

\$10 bills

$10(15-y)$

$$3. .11(x) + (-.04)(10,000 - x) = 650$$

$$.11x - 400 + .04x = 650$$

$$\frac{.15x}{.15} = \frac{1050}{.15}$$

$\Rightarrow x = \$7000$ in fund
~~\$3000~~ in stocks

$$4. 22x + 15(732 - x) = 12,912$$

$$22x + 10980 - 15x = 12,912$$

$$\frac{7x}{7} = \frac{1932}{7}$$

$x = 276$ adult tickets

$732 - x = 456$ kids tickets.

$$5. d = r_1 t_1 + r_2 t_2$$

$$205 = x \cdot 2.5 + (x+10) \cdot 2.5$$

$$205 = 2.5x + 2.5x + 25$$

$$205 = 5x + 25$$

$$\frac{180}{5} = \frac{5x}{5}$$

$\Rightarrow x = 36$ mph. slower train
 46 mph for faster train

6. $d = r_1 t_1 - r_2 t_2$

$20 = 50t + (-40)t \Rightarrow \frac{20}{10} = \frac{10t}{10} \Rightarrow t = 2 \text{ hours}$

7. $.09x + .10(2x) + .11(3x) = 270$

$.09x + .20x + .33x = 2790$

$\frac{.62x}{.62} = \frac{2790}{.62}$

$\Rightarrow x = 4500$

$2x = 9000$

$3x = 13,500$

interest

\$ 405

\$ 900

\$ 1485

8. $x = \$100 \text{ bills}$

$x(100) + (46+x)(50) + 7x(20) = 9550$

$100x + 2300 + 50x + 140x = 9550$

$\frac{290x}{290} = \frac{7250}{290}$

$x = 25$

25 \$100 bills

71 \$50 bills

175 \$20 bills

9. $C = 4.5x + 2400$

$R = 7.5x$

$7.5x = 4.5x + 2400$

$-4.5x \quad -4.5x$

$\frac{3x}{3} = \frac{2400}{3}$

$\Rightarrow x = 800$

$R = C$ is break-even

must sell 800 items to break-even