

2.3

23.

	rate	time	distance
bike to	14	$1-t$	$14(1-t)$
walk home	3.5	t	$3.5t$

$$14(1-t) = 3.5t$$

$$14 - 14t = 3.5t$$

$$14 = 17.5t$$

$$140 = 175t$$

$$\frac{140}{175} = t$$

$$\text{distance} = 3.5t$$

$$= \frac{3.5}{1} \cdot \frac{140}{175} \cdot \frac{10}{10}$$

$$= \frac{35(140)}{1750}$$

$$= \frac{35 \cdot 14}{175} = \frac{14}{5} \text{ mi}$$

5.	#	price/	total
adult	x	5	$5x$
child	$460-x$	2	$2(460-x)$

$$1880 = 5x + 2(460-x)$$

2.4 Problems Involving Z_0

Investments:

$$\text{Principal (initial amount invested)} \times \text{Interest rate (as decimal)} = \text{Interest earned on that investment}$$

	principal	interest rate	interest earned
5.5%	$9600 - x$.055	$0.055(9600 - x)$
4.5%	x	0.045	$0.045x$

$$465 = 0.055(9600 - x) + 0.045x$$

$$465 = 528 - 0.055x + 0.045x$$

$$465 - 528 = -0.01x$$

$$\frac{465 - 528}{-0.01} = x$$

$$\begin{array}{r} 396 \\ 5.5 \\ \hline 480 \\ 150.0 \end{array}$$

$$-63 = -0.01x$$

$$\frac{100}{100} \frac{63}{0.01} = x$$

$$6300 = x$$

$\$6300$ invested at 4.5% interest
 $\$3300$ invested at 5.5% interest

10.	principal	interest rate	interest earned
3.5%	x	0.035	$0.035x$
4.5%	$42000 - x$	0.045	$0.045(42000 - x)$

$0.035x = 0.045(42000 - x)$

18.

	amount of solution	% concentration	amount of substance
8%	100	0.08	$100(0.08)$
5%	60	0.05	$60(0.05)$
mixture	160	X	$160X$

$$100(0.08) + 60(0.05) = 160X$$

$$8 + 3 = 160X$$

$$11 = 160X$$

$$\frac{11}{160} = X$$

$$\begin{array}{r} 60 \\ .05 \\ \hline 3.00 \end{array}$$

26.

	amount of solution	2% conc.	amount subst.
12%	10 gal	0.12	$10(0.12)$
water	X	0	$X \cdot 0$
15%	$10 - X$	0.15	$0.15(10 - X)$

$$10(0.12) = 0.15(10 - X)$$

$$1.2 = 1.5 - 0.15X$$

$$0.15X = 0.3$$

$$15X = 30$$

$$X = 2 \text{ gal}$$

$$\begin{array}{r} 1.5 \\ - 1.2 \\ \hline 0.3 \end{array}$$

28.	amount of sol'n	2 ^o conc.	amount of subst.
3 ^o	50	0.03	50(0.03)
12 ^o	30	0.12	30(0.12)
mixture	80	X	80X

$$50(0.03) + 30(0.12) = 80X$$

$$\begin{array}{r} 50 \\ 0.03 \\ \hline 1.50 \end{array}$$

$$1.5 + 3.6 = 80X$$

$$5.1 = 80X$$

$$\frac{5.1}{80} = X$$

2.4 odds

$$\begin{array}{r} 0.12 \\ 30 \\ \hline 3.60 \\ 6.42 \\ 0.37 \\ \hline 80 \overline{) 5.10} \\ \underline{-48} \\ 30 \\ \underline{-24} \\ 60 \end{array}$$

0.06