

SOLUTIONS (BONUS WORD PROBLEMS 1 & 2)

Section 1.12 #27

NAME OF VARIABLE	UNIT	COMPANY A	COMPANY B
distance travelled	KM	x	$376 - x$
cost	\$/L	$0.45 + 0.0004x$	$0.42 + (0.0004)(376 - x)$

NOTE: $0.4 \text{¢} = 0.0004 \text{\$}$

COST MUST BE EQUAL FOR BOTH COMPANIES
SO

$$0.45 + 0.0004x = 0.42 + 0.0004(376 - x)$$

$$0.03 + 0.0004x = 0.1504 - 0.0004x$$

$$0.0008x = 0.1204$$

$$x = \frac{0.1204}{0.0008}$$

$$= 146$$

SO AT 146 KM FROM COMPANY A THE COST IS EQUAL.

SECTION 1.12 #29

NAME OF VARIABLE	UNIT	Starting Mix	Added Mix	Required Mix
% ANTIFREEZE IN MIXTURE	L/L	25% (or 0.25)	100% (or 1)	50% (or 0.5)
AMOUNT OF MIX	L	$12 - x$	x	12
AMOUNT OF ANTIFREEZE IN MIX	L	$0.25(12 - x)$	x	$0.5(12)$

$$\begin{array}{ccc} \text{Starting} & + & \text{Added} = \text{Required} \\ \text{Mix} & & \text{Mix} \quad \text{Mix} \end{array}$$

$$0.25(12 - x) + x = 6$$

$$3 - 0.25x + x = 6$$

$$.75x = 3$$

$$x = \frac{3}{0.75}$$

$$x = 4$$

So 4 L OF pure ANTIFREEZE is required.