2.2 An Introduction to Problem Solving

(Voteckey Notes P.17)

**Vocabulary:** To be a good problem solver, you must know what each word in the problem means.

**Shapes:**

- **Rectangle:**
  - Perimeter: \(2L + 2W\)
  - Area: \(L \times W\)

- **Square:**
  - \(P = 4s\)
  - \(A = s^2\)

- **Triangle:**
  - \(P = a + b + c\)
  - \(A = \frac{1}{2}bh\)

**Writing Algebraic Expressions that can be simplified:**

- **Perimeter:** \(2 + x + 1 + 2 + x + 2 + x\)
  - \(4x + 16\)

- **Simplify:**
  - \(-8 + \frac{x}{7} = -3\)
  - \(x - 3\)
  - \(\text{or}\)
  - \(x + 3\)
01/20/2016

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(Lecture Notes p.17)

Vocabulary: to be a good Problem solver, you must know what each word in the problem means.

Shapes:

Rectangle: $\text{Perimeter} = 2L + 2W$
$\text{Area} = L \times W$

Square: $P = 4s$
$A = s^2$

Triangle: $P = a + b + c$
$A = \frac{1}{2}bh$

Writing Algebraic expressions that can be simplified

$\text{Perimeter: } Z + 8 + Z + Z + 8 + Z = 4Z + 16$

$\frac{x - 8}{3} = 5$

$7 - 1 + \frac{2}{3} = 8$
$\frac{x - 8}{2} = x - 3$
$-1 - 1 = -2$
$-x - x = -2x$

$\frac{3}{2} = 7$
$-8 + \frac{2}{3} = -3$
$\frac{8}{8} + \frac{8}{8} = 5$
Perimeter:
\[7 + 8 + 5 + x - 3 + x - 8 + 1 = 2x + 10\]

Applying the steps for problem solving:
1. UNDERSTAND
2. TRANSLATE
3. SOLVE
4. INTERPRET

2.2.1

First Plan
$10 per month plus 5 cents per text

Second Plan
$20 for unlimited texts

Roberto (150 texts)

\[
\begin{align*}
\text{Plan 1} \\
\text{Cost} &= \frac{10 + 0.05(150)}{} \\
&= 10 + 7.50 \\
&= 17.50 \\
\text{Plan 2} \\
\text{Cost} &= 20 \\
&= 20
\end{align*}
\]

Jordan (300 texts)

\[
\begin{align*}
\text{Plan 1} \\
\text{Cost} &= 10 + 0.05(300) \\
&= 10 + 15.00 \\
&= 25.00
\end{align*}
\]

Review sessions
Friday 11 am-11:50 in this room
1.) **UNDERSTAND**

<table>
<thead>
<tr>
<th></th>
<th>Guess</th>
<th>Plan 1</th>
<th>Plan 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 + 0.05T - (170)</td>
<td>$20.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 + 8.50</td>
<td>-$18.50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*T: the number of texts for which the two plans cost the same*

2.) **TRANSLATE / SOLVE**

\[
\frac{10 + 0.05T}{10} = 20
\]

\[
-10
\]

\[
\frac{0.05T}{0.05} = \frac{10}{0.05}
\]

\[
T = 200 \text{ texts}
\]

4.) **INTERPRET:** The number of texts for which the two plans cost the same is 200.

2. d. x

Item costs $10.99

**COUPON 1**

(3 off)

Saves you $3 dollars

$3.00

**COUPON 2**

(25% off)

Saves you $0.25 \times 10.99 = 2.7475$

Rounds to $2.75$