Welcome to M 111
Technical Mathematics
formerly Math 103
Rich Pierce
8-9:30 TR

Syllabus/Schedule

Attendance

website
Pre-test
10 minutes
No Calculator

1.1 Whole Numbers

**Whole Number** - a number that can be counted in a group

![Natural Numbers](chart)

**Place Values** - the name of the place that a specific number is holding

![Place Values](chart)
Reading Numbers

320,275

three hundred twenty thousand
two hundred seventy-five

Rounding

325,275

Round to tens → 325,280

thousands → 325,000

hundred thousand → 300,000
1.2 Subtraction

Solution to subtraction is called difference.
Estimating

\[ 57 - 36 \approx 20 \]
\[ 66 - 40 = 26 \]
\[ \approx 20 \]

Find the missing dimension \( L \). First Estimate then find the exact answer.

Find the missing dimension \( L \). First Estimate then find the exact answer.

\[ 110 - 20 - 40 = 50 \text{ in} \]

**Exact**

\[ 110 - 19 - 38 = 53 \]
The GVW (weight) of your truck is 7860 lbs, if with your current load the weight is 12,340 lbs, what is the weight of the load?

\[
\begin{align*}
12340 & \quad - \quad 7860 \\
\hline
5480 & \quad lbs
\end{align*}
\]

3.1 Decimals

Place Values
Reading/Writing

2.75
Two and seventy five hundredths

0.0034 in
thirty-four ten-thousandths

Adding

3.2 + 5.76

3.2
5.76
8.96
Subtracting

\[ 6.7 - 4.32 \]

\[
\begin{array}{c}
6.70 \\
- 4.32 \\
\hline
2.38
\end{array}
\]

A vehicle in your shop has had several people work on it. Four people have worked on it, first 3.4 hrs, second 2.7 hrs, third 1.4 hrs, and 0.5 hrs. How many hours should the customer be billed in labor?

\[
\begin{array}{r}
3.4 \\
2.7 \\
1.4 \\
+ 0.5 \\
\hline
8.0 \text{ hrs}
\end{array}
\]
When at room temperature a piece of machinery is measured at 35.048mm, after use it is heated and now measures 35.45mm. How much expansion did the machinery have?

35.45
- 35.048
---
0.302

6.1 Addition of signed numbers

What is a negative number?

-3 -2 -1 0 1 2 3
Natural Numbers and Integers

Natural #s $\rightarrow 1, 2, 3, \ldots$

Integers $\rightarrow \ldots -1, 0, 1, 2, \ldots$

Negatives and the number line

- negatives go left
- positives go right
Absolute Value

→ everything is positive

|-3| = 3 makes everything non-negative

|4| = 4

|10| = 0

Calculator

+/-  (-)  

-3 + 7
A company that you bought stock in last year reported quarterly returns of a loss of $157,000, profit of $72,000, profit of $39,000, and a loss of $15,500. Did the company make or lose money last year?

\[-157,000 + 72,000 + 39,000 - 15,500\]

\[= -61,500\]

In connecting a PVC pipe, you have a tight space. If the distance between the fittings is 6.5 ft, but each fitting is inserted 0.125 of a foot into the fitting, how long must the pipe be cut? Round to the hundredth.

\[6.5 - 0.125 - 0.125 = 6.75\]
6.2 Subtraction of signed numbers

**Opposites**

\[
3 \rightarrow -3 \\
-4.75 \rightarrow 4.75
\]

**Ideas of subtraction with negatives**

- Two negatives make a positive

\[
-3 - 5 = -8 \\
3 - (-5) = 3 + 5 = 8
\]
Last year many companies were in the red so the government created a "bailout." If AIG was 785 million in debt and then received 1 billion from the government, how far are they out of debt?

\[
\begin{align*}
&-785,000,000 \\
+&1,000,000,000 \\
+&215,000,000
\end{align*}
\]

<table>
<thead>
<tr>
<th>Montana</th>
<th>Highest point</th>
<th>Granite Peak</th>
<th>Park</th>
<th>12,799</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lowest point</td>
<td>Kootenai River</td>
<td>Lincoln</td>
<td>1,800</td>
</tr>
</tbody>
</table>

What is change in elevation in MT

\[12,799 - 1,800 = 10,001\]
<table>
<thead>
<tr>
<th>California</th>
<th>Highest point</th>
<th>Mt. Whitney</th>
<th>Inyo-Tulare</th>
<th>14,494</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest point</td>
<td>Death Valley</td>
<td>Inyo</td>
<td>-282</td>
<td></td>
</tr>
</tbody>
</table>

\[
14494 - (-282) = 14776 \text{ ft}
\]

Have a good day