Mat 011 Agenda     Day 6: 2/3/03

- Attendance
- Applications - Solving Equations
- PowerPoint Lecture 5, S31
- PowerPoint Lecture 6, S43

Solving Equations:
Lawn Mowing, S43
Choice of jobs, S44
Weight related to height, S45

Homework: Topics 7, 8 pages S41, S49
\[ \sqrt{4x - 9} + 25 = 17 \]
\[-5x + 8\]
\[-(2x + 4y - 9) - 32\]
\[-2x - 4y + 9 + 32\]
\[3(-2x + 4y - 9) = -6x + 12y - 27\]
Fixed Cost = $200

& 25 - hour

<table>
<thead>
<tr>
<th>hours</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>$25(3) - 200 = -$125</td>
</tr>
<tr>
<td>10</td>
<td>$25(10) - 200 = 50</td>
</tr>
</tbody>
</table>

Let \( h \) = # hours \( P \) = Profit

\[ P = 25h - 200 \]

\[ P = 25h - 200 \]
A company determines that cost, \( C \), of making \( x \) items is \( C = 2.2x + 78 \) and the revenue, \( R \), is \( R = 2.25x \). Find the break even point.

\[
\begin{align*}
R &= C \\
2.25x &= 2.20x + 78 \\
-2.20x &= -2.20x \\
\text{or} \\
0.05x &= 78 \\
\frac{0.05}{0.05}x &= \frac{78}{0.05} \\
x &= 1560 \text{ items}
\end{align*}
\]
Wrecker charges $21.95 per day plus .41 a mile.

Another rental company, Limo, charges a flat rate of $39.95 a day with unlimited miles. How many miles would you have to drive to make Limo cost the same as Wrecker?

\[ C_w = 21.95 + 0.41m \]
\[ C_L = 39.95 \]
\[ C_L = C_w \]
\[ 39.95 = 21.95 + 0.41m \]
\[ 21.95 = 0.41m \]
\[ 18.00 = \frac{0.41m}{0.41} \]
\[ 43.99 = m \]
Wrecker charges $21.95 per day plus .41 a mile.

A third company, Ertz, charges $18.95 a day and .50 a mile. What is the formula that calculates the cost of renting a car from Ertz for a day? How many miles would you have to drive to make Ertz cost the same as Wrecker?

\[
C_E = 18.95 + .50m \\
C_W = 21.95 + .41m
\]

\[
\begin{align*}
C_E &= C_W \\
18.95 + .50m &= 21.95 + .41m \\
-18.95 &= -18.95 \\
.50m &= 3.00 + .41m \\
-.41m &= -.41m \\
.09m &= .09 \\
\frac{m}{.09} &= \frac{3.00}{.09} \\
m &= 33.3 	ext{ miles}
\end{align*}
\]
Two girls want to enter the lawn-mowing business for the summer. They plan to buy a lawn mower for $180 and they hope to charge $8 an hour.

Let $h =$ # hours

$P =$ profit

$P = 8h - 180$
Two girls want to enter the lawn-mowing business for the summer. They plan to buy a lawn mower for $180 and they hope to charge $8 an hour.

<table>
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<th>Hours</th>
<th>Calculations</th>
<th>Profit</th>
</tr>
</thead>
</table>

Two girls want to enter the lawn-mowing business for the summer. They plan to buy a lawn mower for $180 and they hope to charge $8 an hour.

How many hours will they have to work to breakeven?

\[ P = 0 \]

\[ 0 = 8h - 180 \]

\[ 180 = 8h \]

\[ h = \frac{180}{8} \]

\[ h = 22.5 \] hours
Two girls want to enter the lawn-mowing business for the summer. They plan to buy a lawn mower for $180 and they hope to charge $8 an hour.

How many hours will they have to work to make $780 for the summer?

\[ P = 8h - 180 \]

\[ 780 = 8h - 180 \]

\[ 180 = 8h + 180 \]

\[ 960 = 8h + 0 \]

\[ 120h = 960 \]

\[ h = 12 \]
You are offered two very similar jobs selling math textbooks. One (Company A) pays 8% commission plus $10,000 a year and the other (Company B) pays 12% commission.

\[ W_A = 0.08S + 10,000 \]

\[ W_B = 0.12S \]

\[ W_B = W_A \]

\[ 0.12S = 0.08S + 10,000 \]

\[ 0.04S = 10,000 \]

\[ S = \frac{10,000}{0.04} \]

\[ S = \$250,000 \]
You are offered two very similar jobs selling math textbooks. One (Company A) pays 8% commission plus $10,000 a year and the other (Company B) pays 12% commission.

What is the equation that relates wages and Sales for companies A and B?
You are offered two very similar jobs selling math textbooks. One (Company A) pays 8% commission plus $10,000 a year and the other (Company B) pays 12% commission.

How much would you have to sell for the two companies to pay you the same amount of money for the year?
Women’s recommended weight formula: “Give yourself 100 lbs plus 5 lbs for every inch over 5 ft tall.” (Remember 5 ft = 60 inches!)

<table>
<thead>
<tr>
<th>Height</th>
<th>Calculations</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>61 inches</td>
<td>$5(61-60)+100$</td>
<td>105</td>
</tr>
<tr>
<td>65 inches</td>
<td>$5(65-60)+100$</td>
<td>125</td>
</tr>
<tr>
<td>72 inches</td>
<td>$5(72-60)+100$</td>
<td>160</td>
</tr>
<tr>
<td>h inches</td>
<td>$5(h-60)+100$</td>
<td></td>
</tr>
</tbody>
</table>

\[
W = 5(h-60)+100
\]

\[
W = 5h-300+100
\]

\[
W = 5h-200\quad h \geq 60 \text{ inches}
\]
Women’s recommended weight formula: “Give yourself 100 lbs plus 5 lbs for every inch over 5 ft tall.” (Remember 5 ft = 60 inches!)

What is the equation that relates weight and height? Simplify the equation.
Women’s recommended weight formula: “Give yourself 100 lbs plus 5 lbs for every inch over 5 ft tall.” (Remember 5 ft = 60 inches!)

How tall should you be if you weigh 135 lbs?

\[ W = 5h - 200 \quad h \geq 60'' \]

\[
135 = 5h - 200 \\
200 + 135 = 5h \\
335 = 5h \\
\frac{335}{5} = h \\
67'' = h
\]
Women’s recommended weight formula: “Give yourself 100 lbs plus 5 lbs for every inch over 5 ft tall.” (Remember 5 ft = 60 inches!)

How tall should you be if you weigh 85 lbs?

\[ W = 5h - 200 \]

\[
85 = 5h - 200
\]

\[
\frac{285}{200} = \frac{5h}{200}
\]

\[
\frac{285}{200} = \frac{5h}{200}
\]

\[
57'' = h \Rightarrow \text{Cannot apply}
\]
\[ W = 5h - 200 \]
\[ 0 = 5h - 200 \]
\[ 200 = 5h \]
\[ 40'' = h \]

does not apply
Women’s recommended weight formula: “Give yourself 100 lbs plus 5 lbs for every inch over 5 ft tall.” (Remember 5 ft = 60 inches!)

How tall should you be if you weigh zero lbs?
Women’s recommended weight formula: “Give yourself 100 lbs plus 5 lbs for every inch over 5 ft tall.” (Remember 5 ft = 60 inches!)

Solve the formula for h.
On Line Tutoring:
http://www.mc3.edu/peoplac/lal/lal.htm#ot

Mat 011 Web page:
http://www.mc3.edu/crsprog/career/MATHSCI/mat011/mat011.htm

BlackBoard: http://blackboard.mc3.edu
Your username is: << first letter first name – full last name – last 4 digits of Datatel ID >>
Password is: <<Datatel ID >>
For Example:
Student Name: John Smith   Datatel ID: 1234567
ID: jsmith4567
Password: 1234567