

TeMS: 17 Lines of Code That Got Me My Dream Job

Dalya Gartzman

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**TeMS -
Textual Math Solver**
Simplisico

allegro



PART I - What is TeMS?

PART I - What is TeMS?

The screenshot displays the Simplisico website, which is a private math tutor. The browser address bar shows the URL <https://www.simplisico.com>. The website header includes the Simplisico logo, navigation links (English, Login, Sign up), and a list of services (career etc, אובל, בידור, שימוש, מנהלות, 30Yoga, games?, Jobs). The main content area features the text "YOUR PRIVATE MATH TUTOR" and "Understand · Simple · Solve". A central video player shows a man standing next to a chalkboard filled with various mathematical formulas, including trigonometric identities, algebraic equations, and geometric diagrams. A green button labeled "Try it for free" is prominently displayed below the video player.

Simplisico
math tutor easy

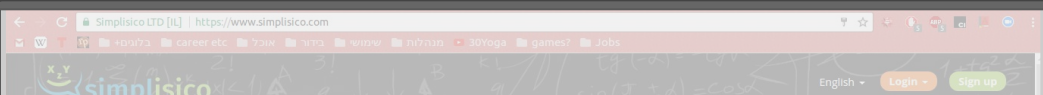
English · Login · Sign up



YOUR PRIVATE MATH TUTOR
Understand · Simple · Solve

INTERSECTION WITH THE Y AXIS
To find the intersection with the y-axis, set x=0 in the equation and solve for y. This is usually a very easy question. For example, if the equation is $y = 2x + 3$, then the intersection with the y-axis is at $y = 3$.

Try it for free

PART I - What is TeMS?



English ▾ דליה גרמון ▾


[Subscribe now](#) to get unlimited access to Simplisico's extended explanations, a full month costs much less than a private tutoring hour!

Enter the equation you have to solve using the keyboard or on-screen buttons, when finished press "Show Solution" and learn how to explore your function.

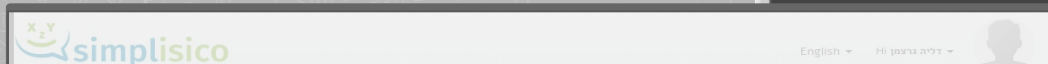
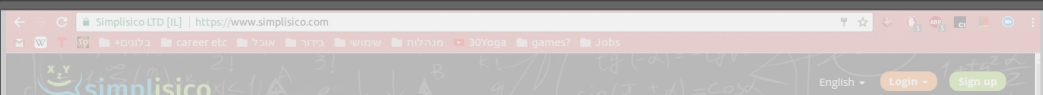
$$f(x) = \frac{5x+6}{2x-3}$$

x	C	\leftarrow	()	\div
$\frac{\Box}{\Box}$	7	8	9	\times
\Box^2 \Box^3	4	5	6	$-$
$\sqrt{\Box}$ $\sqrt[3]{\Box}$	1	2	3	$+$
	0	$\sin / \cos / \ln / \log$	$-$	

[Show Solution >](#)



PART I - What is TeMS?

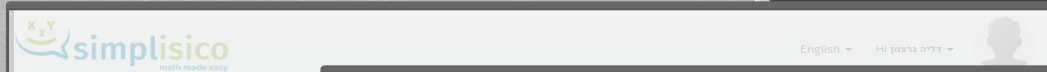
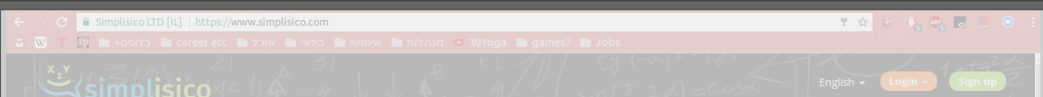


I have 10 minutes to talk and I prepared 42 slides. How long can I spend on each slide?

\times	C	$\leftarrow \times$	()	\div
$\frac{\square}{\square}$	7	8	9	\times
\square^2	4	5	6	$-$
$\sqrt{\square}$	1	2	3	$+$
$\sqrt[n]{\square}$	0	sin / cos / ln / log		.

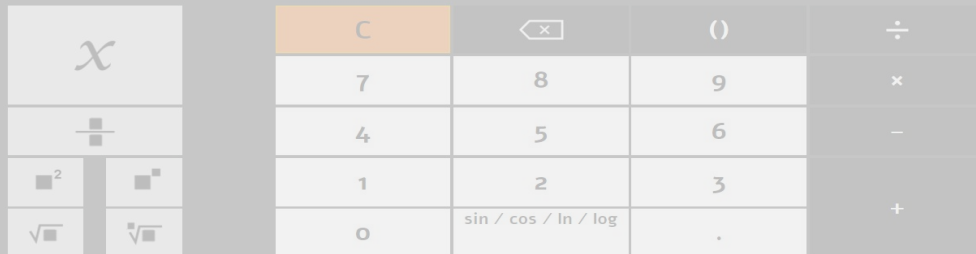
[Show Solution >](#)

PART I - What is TeMS?



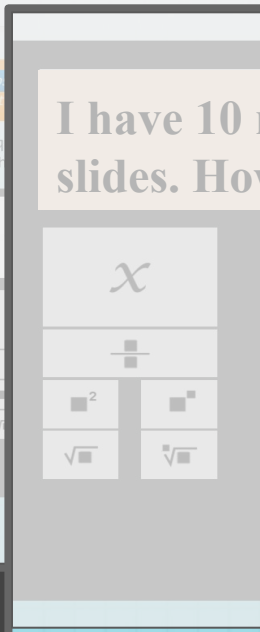
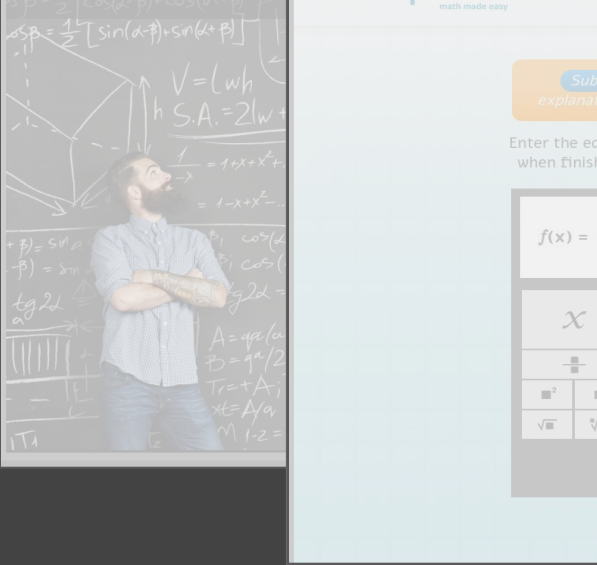
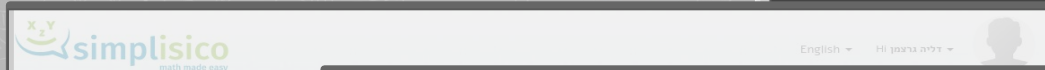
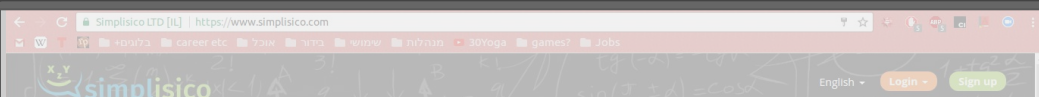
I have 10 minutes to talk and I
slides. How long can I spend on

$$42 * x = 10$$



Show Solution >

PART I - What is TeMS?



(What is machine learning?)



(What is machine learning?)

human learning:

shape(●) = ?



(What is machine learning?)

human learning:

If (# \sqcap) = 0
return circle

If (# \sqcap) = 4
return square

shape(\bullet) = ?



(What is machine learning?)

human learning:

If (# \sqcap) = 0
return circle
If (# \sqcap) = 4
return square


shape(\bullet) = ?


machine learning:

shape(\bullet) = ?

(What is machine learning?)

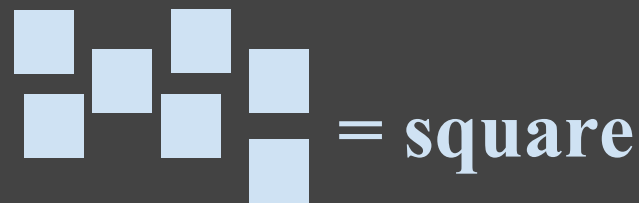
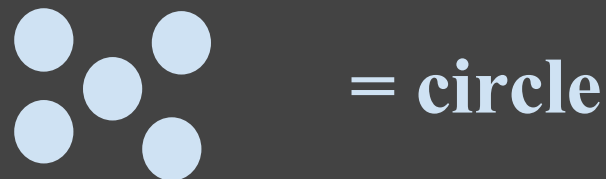
human learning:

If (# ) = 0
return circle

If (# ) = 4
return square

shape() = ?

machine learning:



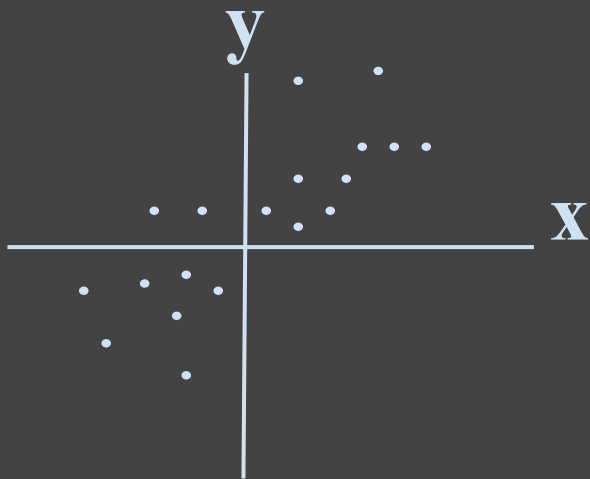
shape() = ?

(What is a neural network?)



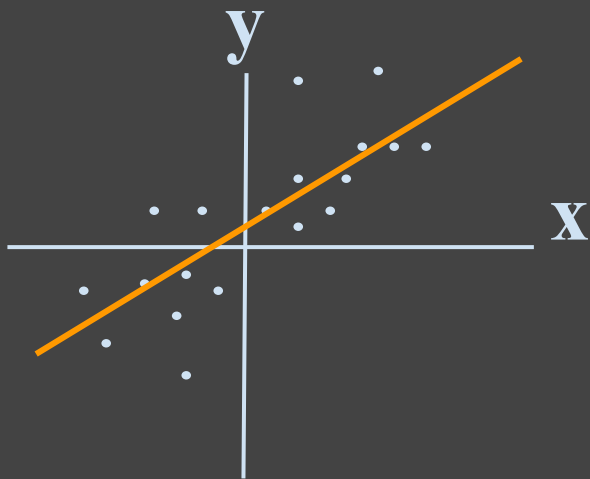
(What is a neural network?)

neuron:



(What is a neural network?)

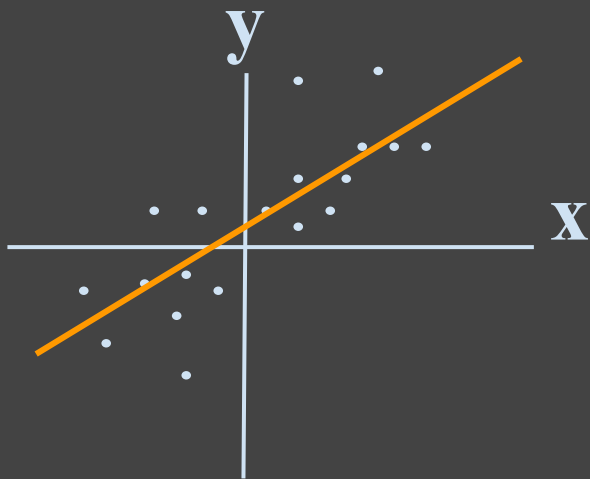
neuron:



$$y=f(x)$$

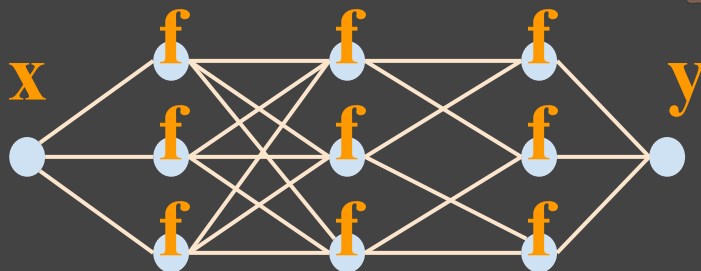
(What is a neural network?)

neuron:



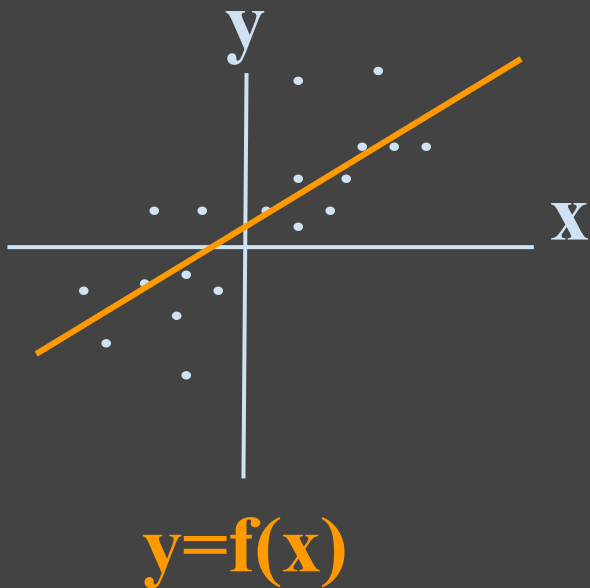
$$y=f(x)$$

neural network:

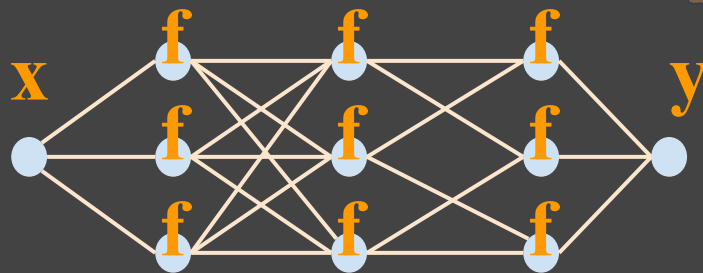


(What is a neural network?)

neuron:



neural network:



- architecture
- what are “f”?
- more stuff...

PART I - What is TeMS?

I have 10 minutes to talk and I prepared 42 slides. How long can I spend on each slide?

$$42 * x = 10$$

\times	C	$\leftarrow \times$	()	\div
$\frac{\square}{\square}$	7	8	9	\times
\square^2 \square^\square	4	5	6	-
$\sqrt{\square}$ $\sqrt[\square]{\square}$	1	2	3	+
	0	sin / cos / ln / log		.

Show Solution >

Preprocessing

Preprocessing

I have 10 minutes to talk and I prepared 42 slides. How long can I spend on each slide?

Preprocessing

I have **A** minutes to talk and I prepared **B** slides. How long can I spend on each slide?

Preprocessing

I have **A** minutes to talk and I prepared **B** slides. How long can I spend on each slide?

TOKENIZE [10, 42, 0] +
[... 'have', '**varA**', 'minutes', ...
'prepared', '**varB**', 'slides', ...]

Preprocessing

I have **A** minutes to talk and I prepared **B** slides. How long can I spend on each slide?

TOKENIZE [10, 42, 0] +
[... 'have', '**varA**', 'minutes', ...
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EMBED

candy → shop
slides → talk

TeMS: a Sequence-to-Permutation RNN with LSTM and Attention

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**I have 10 minutes to talk and
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TeMS: a Sequence-to-Permutation RNN with LSTM and Attention

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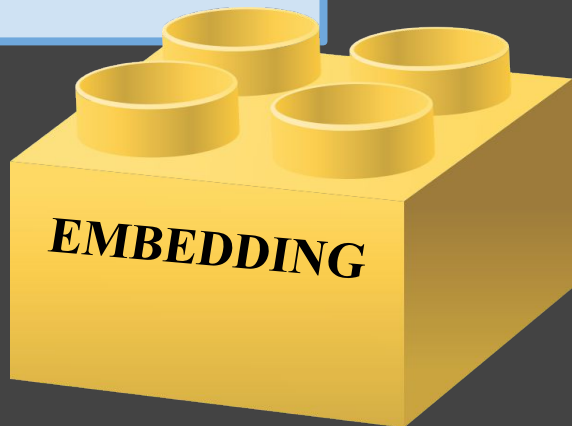
[42, 10, 0]



$$42 * x = 10$$

TeMS: a Sequence-to-Permutation RNN with LSTM and Attention

I have 10 minutes to talk and
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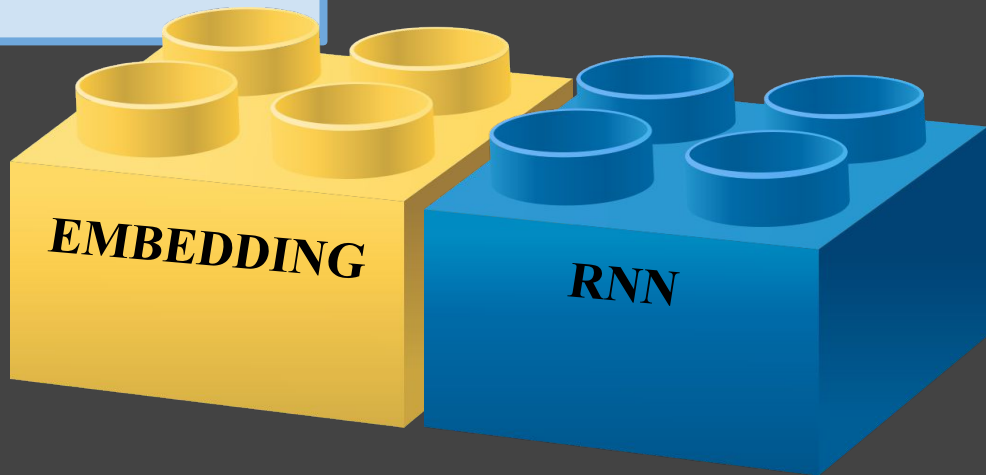
[42, 10, 0]



$42 * x = 10$

TeMS: a Sequence-to-Permutation RNN with LSTM and Attention

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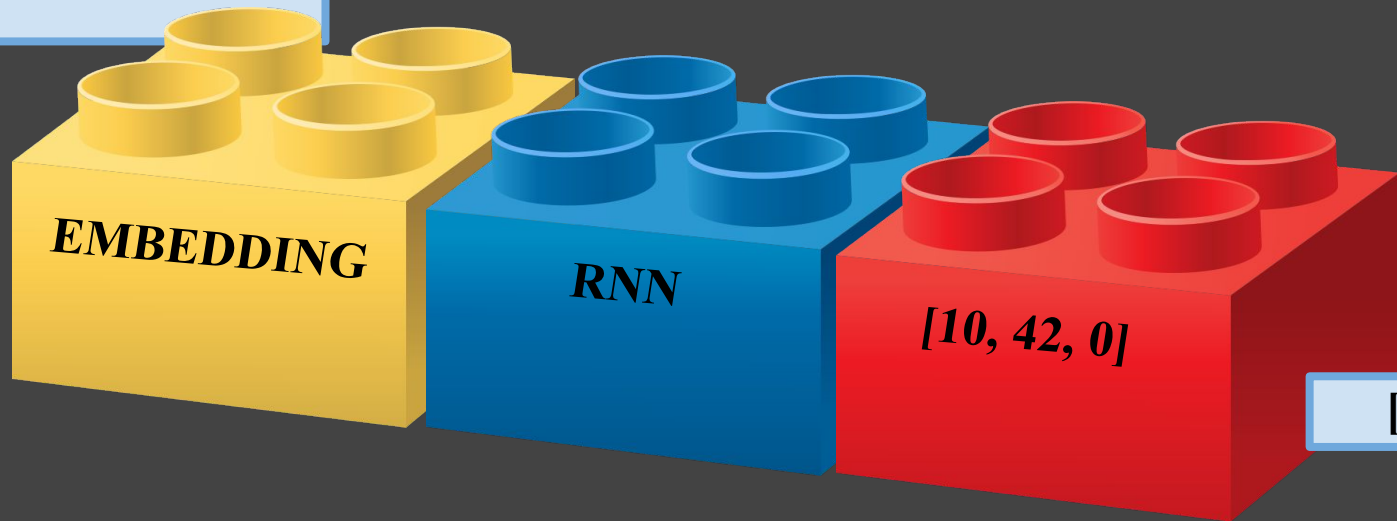
[42, 10, 0]



$42 * x = 10$

TeMS: a Sequence-to-Permutation RNN with LSTM and Attention

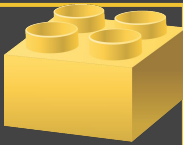
I have 10 minutes to talk and
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slide?



$[42, 10, 0]$



$42 * x = 10$



```
# generate embeddings
embedding = w2v.Word2Vec()
embedding.build_vocab(all_questions)
embedding.train(all_questions)
```

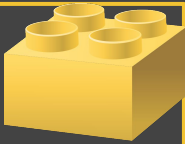
```
# Words model
words_model = Sequential()
words_model.add(Embedding(vocab_size, embedding_dim, weights=[embedding]))
words_model.add(LSTM(64, activation='softmax', return_sequences=True, dropout=0.5))
words_model.add(LSTM(64, activation='relu', return_sequences=False, dropout=0.5))
words_input = Input(shape=(max_len,))
processed_words = words_model(words_input)
```

```
# Numbers model
nums_model = Sequential()
nums_model.add(Dense(3, input_dim=3))
nums_input = Input(shape=(3,))
processed_nums = nums_model(nums_input)
```

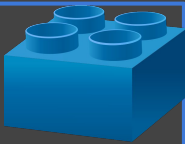
```
# Concatenate models
merged = keras.layers.concatenate([processed_nums, processed_words])

# add one dense layer to integrate the merging
hidden = Dense(32, activation='tanh')(merged)
hidden = Dropout(0.5)(hidden)

# finish with a dense layer
output = Dense(3)(hidden)
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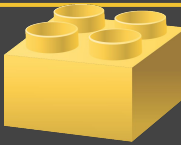
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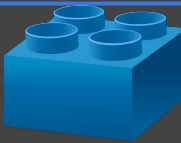
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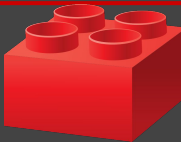


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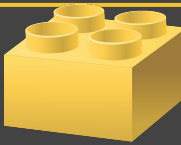
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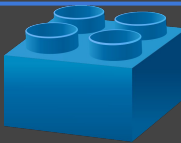


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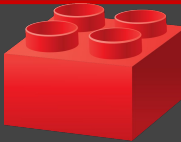


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Results

Input:

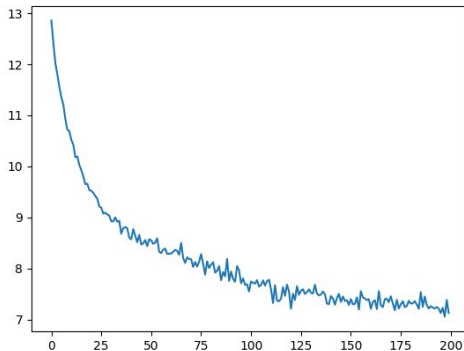
['You have 5 apples...',
'23 years from now...',
'Sean collected 47 stamps...',
'A cup of coffee costs 13.5\$...',
'Fourteen drinks were served ...']

Prediction:

$5 * x = 39 - 19$
 $2 * x = 23 - 16.8$
 $5 * x = 47 - 17$
 $2 * x = 13.5 - 3.5$
 $4 * x = 14 - 6$

Truth:

$5 * x = 39 - 19$
 $2 * x = 23 - 16.8$
 $5 * x = 47 - 17$
 $2 * x = 13.5 - 3.5$
 $-4 * x = 6 - 14$



PART I Recap



PART II - Get a Side Project!



PART II - Get a Side Project!

PART II - Get a Side Project!

“hello world”



PART II - Get a Side Project!

“hello world”



yes!



PART II - Get a Side Project!

“hello world”



yes!



publish???



PART II - Get a Side Project!

“hello world”



yes!



publish???



Take Home Message



DREAM BIG

Thank you :)

Questions?

DalyaG@gmail.com

TeMS -
Textual Math Solver

Simplisico

allegro

