Writing Non-Googleable Problems

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Problem: Technology is making it easy for my students to cheat
But we’ve been here before...
As technology evolves, we adapt...

...just as we always have
Example: Graphing calculators become the default in our Statistics classes

<table>
<thead>
<tr>
<th>BEFORE GC</th>
<th>AFTER GC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find the equation of the trend line and the correlation coefficient for the given data set. Use the line to predict.</td>
<td>Use technology to find the equation and $r$. Interpret the slope and $y$-intercept. What are appropriate values to use in predictions? Is there a significant enough correlation to use the trend line’s equation? Why or why not?</td>
</tr>
</tbody>
</table>
HOW

Computation

WHAT
WHERE
WHEN
WHY

Decision making
A Problem

For which salaries is option A better than option B?

A: 5% raise
B: 3% raise plus $1000

An Exercise

Solve the system:

\[ 3x - 2y = -6 \]
\[ x = -4y + 8 \]
Example 1: Solving linear equations
Course: Beginning Algebra

Solve the equation:
\[ 1.5x = 35 \]

Technique #1: Use authenticity and context.

On Shark Tank, a business owner offers 3.14% of his company Pavlok for $500,000. What value is he placing on his company?
Example 1: Solving linear equations

Course: Beginning Algebra

Solve the equation:

\[ 1.5x = 35 \]

Technique #2: Use authenticity and context but make the problem open ended.

Find three Shark Tank pitches online. For each write the percentage equity offered, the amount of money requested, and the resulting value of the company. Show how the value of the company is calculated.
Example 1: Solving linear equations
Course: Beginning Algebra

Solve the equation:

1.5x = 35

Technique #3: Create an equation such that...

Create an equation that would be solved by dividing by 2 and adding 1.
Example 2: Graphing trigonometric functions
Course: Precalculus

Graph the function: \[ y = 2\cos x - 1 \]

**Technique #4: State characteristics.**

For the function \( y = 2\cos x - 1 \), state 8 traits of the graph of the function.
Technique #5: Create a function such that...

Create a trigonometric function in two variables such that the following characteristics exist in its graph:

- The period is $\pi$.
- $\pi/2$ is a zero.
- Its domain is all real numbers.

Example 2: Graphing trigonometric functions

Course: Precalculus

Graph the function:

$$y = 2\cos x - 1$$
Practice

Rewrite this problem so that it can’t be done by a machine:

**Graph:** $y = 4x + 1$

What do I need students to be able to do with this? To what level?
Contact Information

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