

Harold's Word Problems "Cheat Sheet"

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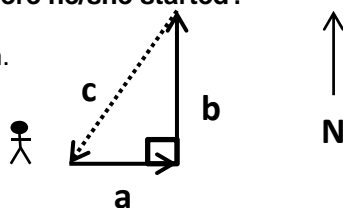
Harold's Modified GUESS Method for Solving Word Problems:

1. Diagram
2. **G**ivens
3. Observations
4. **U**nknowns
5. **E**quations
6. **S**olve
7. **S**ubstitute
8. Double Check

Example:

A marching band player marches 10 yards East then 40 feet North on a football field. What is the shortest distance he/she must march to return to where he/she started?

1. Draw a simple **diagram** of the problem. Label everything.



2. Write down the **givens**. What information did they provide? Is any of it extraneous?
 - a. $a = 10$ yards East
 - b. $b = 40$ feet North
3. Calculate **observations** or easily derived information such as unit conversions.
 - a. $10 \text{ yards} \times \left(\frac{3 \text{ feet}}{1 \text{ yard}}\right) = 30 \text{ feet}$
4. Write down the **unknowns**. What are they asking for?
 - a. Shortest distance is a straight line, or 'c'
 - b. $c = \underline{\quad? \quad}$ <units>
5. Recall relevant **equations** and formulas:
 - a. Since the path marched is a right triangle we can use the Pythagorean Theorem: $a^2 + b^2 = c^2$
6. **Solve** symbolically
 - a. $a^2 + b^2 = c^2$
 - b. $c = \sqrt{c^2} = \sqrt{a^2 + b^2}$
7. **Substitute** the givens into the formula and reduce down to the simplest form. Don't forget the units.
 - a. $a = 30$ feet
 - b. $b = 40$ feet
 - c. $c = \sqrt{(30 \text{ feet})^2 + (40 \text{ feet})^2} = 50 \text{ feet}$
8. **Double check** your work. Ask yourself if the answer makes sense. Box in your answer.

The shortest distance he/she must march is 50 feet.

NOTE: My method is an extension to the popular GUESS method taught in many high schools.