**Harold’s Modified GUESS Method**

**“Cheat Sheet”**

18 September 2022

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| **How to Solve Physics Word Problems** |
| **Harold’s Modified GUESS Method** | 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 trumpet 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? |
| Cone Clip Art at Clker.com - vector clip art online, royalty free & public  domain | 1. Draw a simple **diagram** of the problem.  Label everything. | **a****b****c****N** |
| **G** | 2. Write down the **givens** as variables with units. What information did they provide?  Is any of it extraneous? | a = 10 yards Eastb = 40 feet North |
| image of Unicode Character 'EYE' (U+1F441) | 3. Calculate **observations** or easily derived information. Don’t forget unit conversions. | $$10 yards x \left(\frac{3 feet}{1 yard}\right)=30 feet$$ |
| **U** | 4. Write down the **unknowns**.  What are they asking for? | Shortest distance is a straight line, or ‘c’c = \_\_\_\_?\_\_\_\_ <units> |
| **E** | 5. Recall relevant **equations** and formulas. | Since the path marched is a right triangle, we can use the Pythagorean Theorem: $a^{2}+ b^{2}= c^{2}$ |
| **S** | 6. **Solve** symbolically for the unknowns. | $$a^{2}+ b^{2}= c^{2}$$$$c= \sqrt{c^{2}}= \sqrt{a^{2}+ b^{2}}$$ |
| **S** | 7. **Substitute** the givens into the formula. Reduce algebraically to the simplest form.  Don’t forget the units. | a = 30 feetb = 40 feet$$c= \sqrt{(30 feet)^{2} + (40 feet)^{2}}=50 feet$$ |
| **✓✓** | 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.