
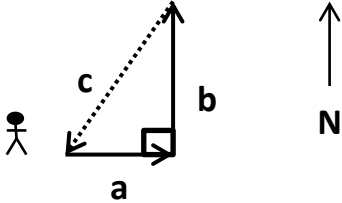




Harold's Modified GUESS Method

"Cheat Sheet"

18 September 2022

How to Solve Physics Word Problems		
<p>Harold's Modified GUESS Method</p>		<ol style="list-style-type: none"> 1. Diagram 2. Givens 3. Observations 4. Unknowns 5. Equations 6. Solve 7. Substitute 8. Double Check
<p>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?</p>		
	<ol style="list-style-type: none"> 1. Draw a simple diagram of the problem. Label everything. 	
G	<ol style="list-style-type: none"> 2. Write down the givens as variables with units. What information did they provide? Is any of it extraneous? 	$a = 10 \text{ yards East}$ $b = 40 \text{ feet North}$
	<ol style="list-style-type: none"> 3. Calculate observations or easily derived information. Don't forget unit conversions. 	$10 \text{ yards} \times \left(\frac{3 \text{ feet}}{1 \text{ yard}}\right) = 30 \text{ feet}$
U	<ol style="list-style-type: none"> 4. Write down the unknowns. What are they asking for? 	Shortest distance is a straight line, or 'c' $c = \text{?} <\text{units}>$
E	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 6. Solve symbolically for the unknowns. 	$a^2 + b^2 = c^2$ $c = \sqrt{c^2} = \sqrt{a^2 + b^2}$
S	<ol style="list-style-type: none"> 7. Substitute the givens into the formula. Reduce algebraically to the simplest form. Don't forget the units. 	$a = 30 \text{ feet}$ $b = 40 \text{ feet}$ $c = \sqrt{(30 \text{ feet})^2 + (40 \text{ feet})^2} = 50 \text{ feet}$
	<ol style="list-style-type: none"> 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.