

This documents is in hpaar/Documents/4A/problem.tex

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## HOW TO DO A MECHANICS PROBLEM

0. Stay cool.
1. Read the problem twice: Once for an overview and once for the details.
2. Make a drawing of the problem showing the given quantities. Make it large so that there is space to enter information in the figure without cluttering it. If an angle is arbitrary, do not make it 45 degrees. This make it harder to recognize similar triangles.
3. Choose a coordinate system with an origin and positive directions. Show this coordinate system in the drawing.
4. Decide what kind of situation you are dealing with and what equations might be needed to solve the problem. Write these equations down in their most general form without making simplifications that the problem might allow.
5. Assign a letter symbol to all numerical values that are given in the problem and use these the make the equations specific to the problem at hand. Do not substitute numbers yet.
6. Count unknowns and equations. Only when these are equal can the equations be solved. If you have more unknowns than equations try to find more equations.
7. Solve the equations for the unknowns.
8. Check that the units are correct in your answers. If they are not you probably made an arithmatical error.
9. Substitute the numerical values for the letter symbols that you have introduced in 5).
10. Look at the solutions in 8) and take limiting cases: Set some quatities to zero or let them get very large and verify that the answers change as expected.