



GETTING STARTED WITH PHYSICS

HOW TO ANSWER A QUESTION PROBLEM SOLVING

A HOW-TO APPROACH TO PROBLEM SOLVING FOR BOTH QUANTITATIVE AND QUALITATIVE QUESTIONS

In writing an answer to a question it is often necessary to consider many things simultaneously - it is not possible to write out the answer like you would in copying a passage of text from a book. A **HOW-TO APPROACH** can help you improve your skills in answering questions for examinations, assignments, tutorials, laboratory, etc.

It is better to think "on paper" than in "your head". It is most important that you put information on paper - this makes it possible to access information more easily than organising ideas in your "minds eye".

In hitting a golf ball well, you would have noticed that golfers spend a lot a time setting themselves up. You need to set yourself up before you attempt your answer. You have to visualise what the problem is about, determine the problem type (category) know what information is given and think about what you know. After this setup then you can go into action to execute your answer and evaluate it.

To be good at golf requires lots of "quality" practice. The same is for you, to become good at physics requires practice, but remember it is **only good practice that makes perfect and not the time spent.**

There basically four interconnected phases in this HOW-TO APPRIACH.

Identify \Leftrightarrow **Setup** \Leftrightarrow **Execute** \Leftrightarrow **Evaluate**

IDENTIFY

- Identify what the question asking
- Identify the known and unknown physical quantities (units)
- Identify the type of problem (category)

SETUP **need a goof memory base and understanding**

- Visualise the physical situation
- **Diagrams** - reference frames / coordination system / origin / directions
- Write down key concepts, principles, equations, assumptions that may be needed to answer the question

EXECUTE

- Answer to the question from what you know.
- Numerical questions - solve before calculations - manipulate equations then substitute numbers add comments.

EVALUATE

- CHECK - answer reasonable, assumptions, units, signs, significant figures, look at limiting cases

In doing all questions it is good idea to implement the **HOW-TO APPROACH** problem solving technique. In examinations, using the technique will help you maximize your marks.

Being good at problem solving is essential in physics and you will improve your conceptual understanding and problem solving skills by using this the **HOW-TO APPROACH** problem solving strategy.

To improve your skills at answering examination questions you need to strive to achieve **technical excellence**. When working through the problems suggested in this course, you should implement the **HOW-TO APPROACH** with the aims of improving your physics knowledge and your technical skill at setting out the solutions to the problems.

After completing the questions and reviewing the solutions reflect upon what you have done, compare your written answer with the answers provided and think about how you can improve your technique to achieve excellence.

COMMENTS FROM HSC MARKING CENTRE

Examiners may write questions that address the syllabus outcomes in a manner that requires candidates to respond by integrating their knowledge, understanding and skills developed through studying the course, including the prescribed focus areas. This reflects the fact that the knowledge, understanding and skills developed through the study of discrete sections should accumulate to a more comprehensive understanding than may be described in each section separately. It is important to understand that the preliminary course is assumed knowledge for the HSC course.

- The answer spaces provided are guide to the maximum length of response required. Should use examination time to analyse the question and plan responses carefully, working within that framework to produce clear and concise responses.
- Responses may include the use of dot points, diagrams and/or tables, and should avoid internal contradictions. This is particularly so in holistic questions which need to be logical and well structured.
- Should show evidence of a good knowledge of basic definitions.
- Follow the instructions provided on the examination paper.
- Set out all working for numerical questions.
- Answers should include correct units and correct number of significant figures.
- Do not repeat the question as part of the response.
- Look at the structure of the whole question.
- Use pencils and a ruler to draw diagrams and graphs and other appropriate equipment. A clear plastic ruler helps in plotting points and drawing the line of best fit.