

EXAM STRUCTURE

◆ At NCEA Level 2, the mechanics standard can be broken down into the following topics:

- ◆ Circular motion
- ◆ Linear motion/Linear kinematics
- ◆ Projectile motion
- ◆ Force and Torque
- ◆ Momentum and Energy

However, the NCEA exam questions may not necessarily have a question solely on each of the topics. The examiners like to mix the topics up to check that you know your stuff!

- ◆ The exam involves a mixture of calculation-based and conceptual-based questions. The calculation questions at merit or excellence level often involve multiple steps.
- ◆ The exam typically has 3 questions. There is usually an achieved question, approximately 2 merit questions, and an excellence question.

IMPORTANT SKILLS

- ◆ Be confident with mathematics - unit conversion, trigonometry, scientific notation, and resolving a vector into its components.
- ◆ Drawing labelled diagrams - especially force diagrams and vector diagrams.
- ◆ Problem-solving - merit/excellence level problems involve many steps.
- ◆ Direction is important in this standard. Your force diagrams should have forces with the correct direction, and you should know the difference between a scalar and a vector. Remember a scalar only has magnitude, whereas a vector has a magnitude and direction.
- ◆ With regards to centripetal motion, you should particularly be able to explain and understand why an object is accelerating when it is travelling at a constant speed around a circle.
- ◆ With regards to projectile motion, you should particularly be able to describe how the velocity changes as the object travels its path.
- ◆ When the conservation laws (of energy and momentum) are applicable. You should also be able to justify this.

STUDYING ADVICE

- ◆ Even though you get a formulae sheet, make a mind-map of all the formulae used for this standard. Annotate each formula. This will help you understand when each formula is able to be used!
- ◆ Find a method (e.g. flashcards) that will help you remember all of the terminology used in this standard. There is a lot of jargon used and it is easy to mix them up.

- ◆ Do lots of practice questions. Practicing is the best way to study physics. Make sure that you complete them as if you were under exam conditions - i.e. don't peek at the answers and time yourself! Once you've finished, you should mark yourself to see how you've done.
- ◆ Even if you don't explicitly need to use a formula, write down any relevant formulae when completing conceptual questions. There is no reason why you can't use formulae to aid your answers.
- ◆ Use the StudyTime website for some amazing resources - notes, checklist and a past exam. This will help you consolidate your knowledge to ensure you come out on top.

EXAM ADVICE

- ◆ When solving problems, always write down all the information you are given. Looking at a big chunk of text can be pretty overwhelming.
- ◆ There is no reason why you can't attempt a merit or excellence problem. You get marks for steps - even if you don't finish the problem. If you think you can do parts of it, you absolutely should!
- ◆ Make sure that you double check all of your calculations.
- ◆ Don't forget to make sure that everything is in S.I. units.
- ◆ Remember that if you forget the units, you can always work it out from a formula.