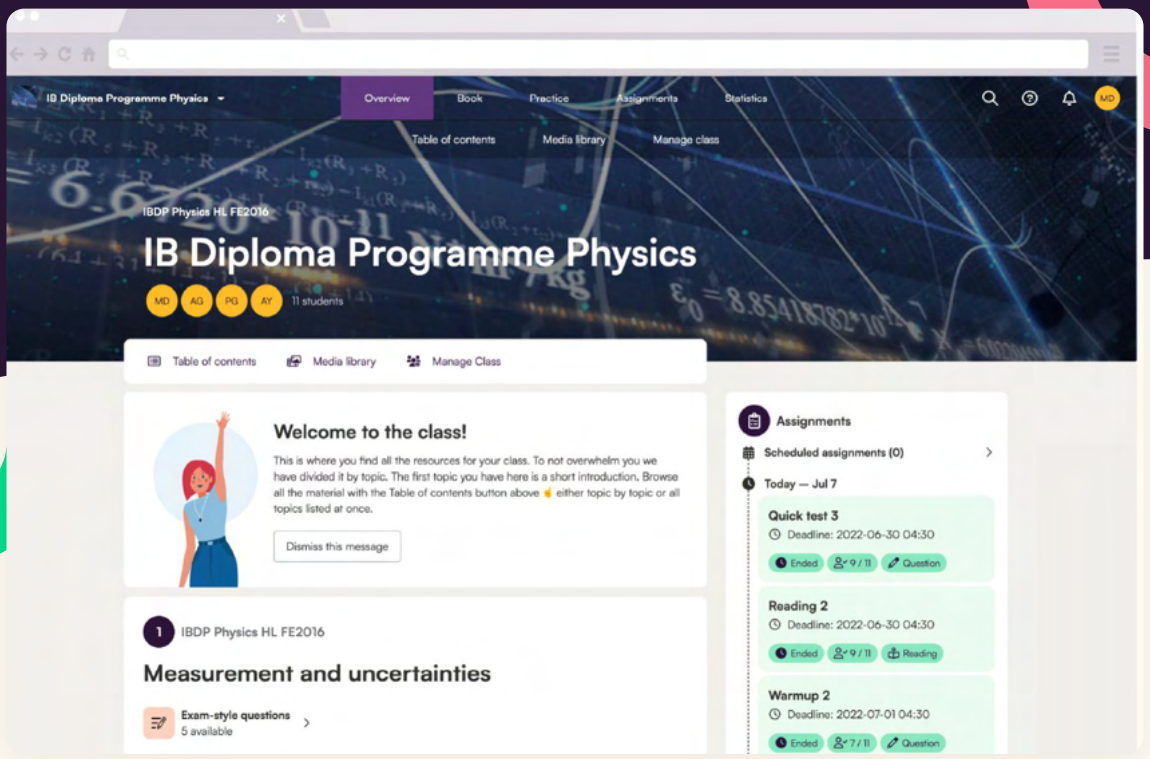
Kognity

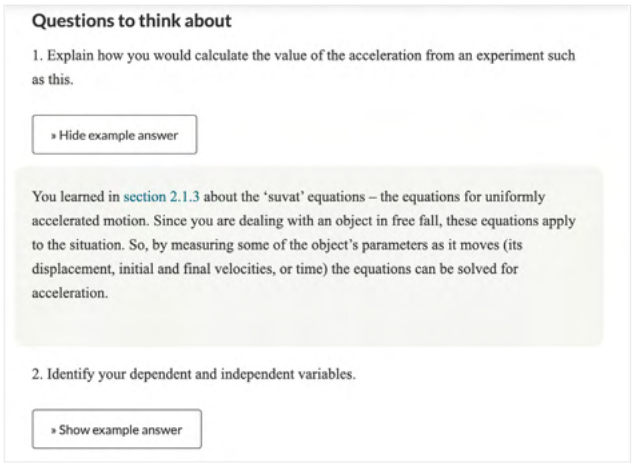
IBDP Physics

Our IBDP Physics SL / HL subject supports the full DP syllabus for first examination from 2016.



Key Features

The Required Practicals section offers step-by-step instructions for each practical. These instructions guide students through the experimental design, data collection and analysis and offer some questions to reflect on as a conclusion. The practicals present different alternatives, such as hands-on experiments and the use of a simulator.



Within Kognity Physics you will find TOK boxes that help students make connections between TOK and Physics. These provide interesting discussion points together with examples of knowledge questions. Additionally, Nature of Science boxes make clear the application of TOK to the Natural Sciences.

Theory of Knowledge

There is nothing new to be discovered in physics now. All that remains is more and more precise measurement.

This quote is often attributed to Lord Kelvin, around the year 1900. Electromagnetism, forces, gravity and waves had all been explained and a lot of scientists at the time thought the same thing; the study of physics had been completed. They were all proved wrong. Within 20 years, Einstein had developed his theories of special and general relativity, light had been shown to have particle-like behaviour and quantum mechanics was born. These three things completely revolutionised Physics. Is it possible to ever 'finish' the study of something? Could there ever be a point where there is nothing more to know?

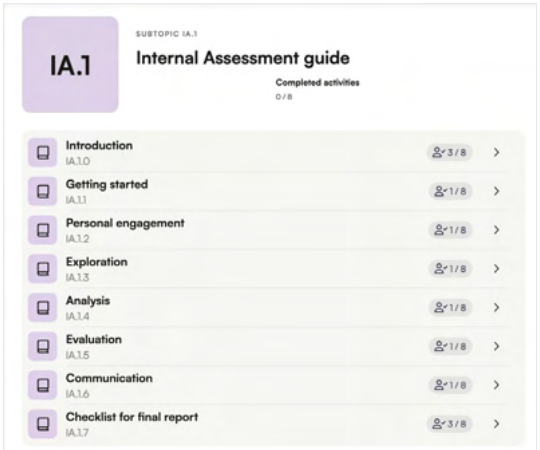
Nature of Science

In topic 4 we discussed the properties of waves, focusing specifically on light. In a Nature of Science box in section 4.4.2, the idea of light behaving as a particle was introduced. It took centuries for scientists to agree on the actual nature of light.

In 1637 René Descartes put forward the idea that light was made from tiny particles – then called corpuscles – and scientists (most notably Isaac Newton) stuck to this theory until 1801. Then, Thomas Young performed his famous double slit experiment that we studied in section 4.4.2. Young's experiment proved that light must be a wave because it diffracts and interferes with itself. The particle theory of light could not explain this effect, so the wave theory was accepted. But in a 1905 paper, Einstein's mathematical model of the photoelectric effect showed that light can actually be considered a particle; a photon.

Today, the accepted scientific theory is that light can be thought of as a wave **or** a particle, depending on the situation.

In addition to the fully syllabus-aligned book, Kognity Chemistry includes a detailed support guide for the Internal Assessment as well as a fully-equipped practice centre.



Interactive simulations, animations, & GGB applets

Diagrams, illustrations, 3D models, photos and videos add a visual perspective to key concepts of the syllabus. Kognity Physics also contains interactive Geogebra applets that make learning fun and engaging.

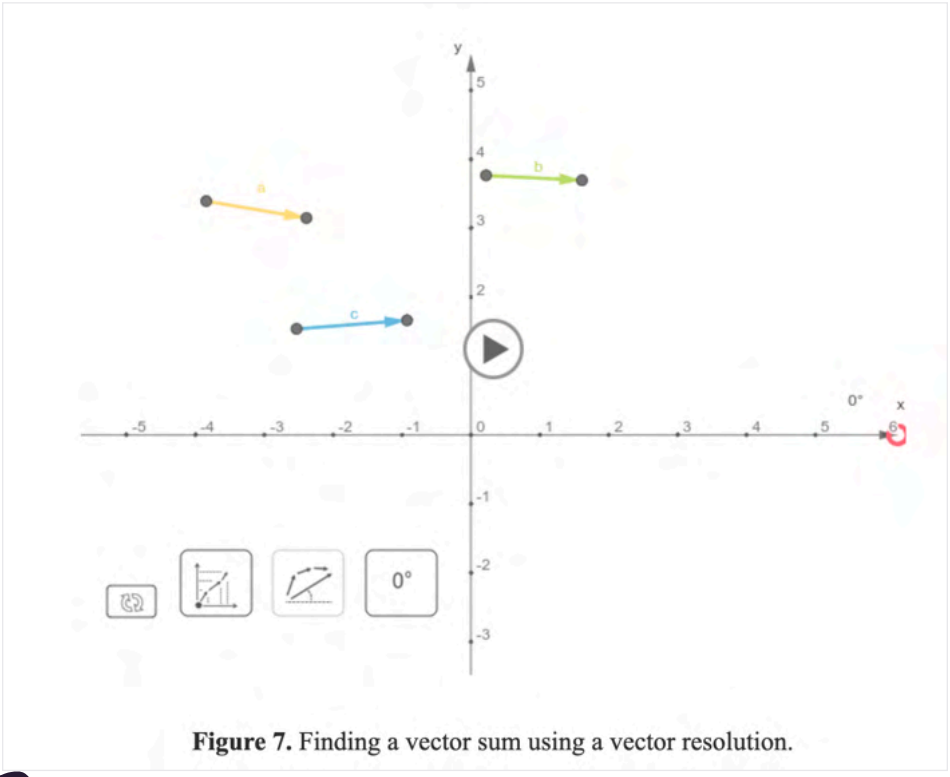


Figure 7. Finding a vector sum using a vector resolution.