

# Assessment Prep with Kognity

## IBDP Physics

### What is this guide for?

This guide is designed to help you make the most out of Kognity as a tool to prepare students for success both in formative assessments and IBDP exam preparation.

### How does Kognity help with assessment preparation for IBDP Physics?

According to [John Hattie](#), Professor of Education and Director of the Melbourne Educational Research Institute at the University of Melbourne, Australia, feedback is an important driver for improving teaching and learning. Formative assessments play a large role in consistent feedback throughout the year as students prepare for their IBDP exams. Kognity provides efficient tools for immediate feedback to both the student and teacher.

“

**“Think of feedback as received, not given.”**

John Hattie

#### *For students:*

Students can test their problem solving, interpretation and analysis skills in Physics through completing worked examples and receiving immediate feedback on their responses. In addition, at the end of each section, students can complete section questions that are auto-graded, allowing them to receive feedback right away on their progress.



#### *For teachers:*

Teachers get immediate feedback on their students' progress through the Textbook and Questions data, located on the Insights page. Here, teachers can view a visual representation of student quiz and assignment scores. Teachers can then easily identify those students who need help, which makes intervention fast and efficient.

Below you will find some ways teachers can use Kognity's resources to successfully prepare their students for IBDP Physics assessment components. Click on each picture to explore more in Kognity Physics!



How does Kognity  
help with formative  
assessments?



How does Kognity help  
with IB Assessment  
Preparation?

# How does Kognity help with formative assessments?

## Question Drills

Kognity's question assignments can be used as question drills for review at the end of a unit. Teachers can drill students on different topics using multiple choice questions which appear on Paper 1. All question assignments are auto-graded, so students and teachers can immediately receive the results. Teachers can then revise any common mistakes before starting to teach new content.

**Question preview**

The order that students receive answer options is randomized

**Question**

Two identical cars are travelling down a straight road. The first car moves with speed  $u$ , while the second car moves with speed  $3u$ . At a given point, both cars brake uniformly to come to a complete stop. If both cars stop over the same distance, determine the value of the ratio

$$\frac{F_2}{F_1}$$

where  $F_2$  and  $F_1$  are the net forces acting on the second and first car, respectively.

Add Question  < Previous question Next question >

## Exit Tickets

Exit tickets are a great type of formative assessment. At the end of class, students respond to a series of questions pertaining to the lesson to consolidate their knowledge and understanding. At the end of every Physics section are *section questions*, which teachers can set at the conclusion of the lesson. These questions are auto-graded, so both the students and the teacher get the results immediately.

Energy systems and conservation

1 2 3

An object is raised from the ground to a height that increases its potential energy by 400 J. The object is then released and falls toward the ground. How much kinetic energy does it have halfway to the ground? Give your answer in joules and without a unit.

Your answer

Type here

Report feedback or error Submit answer

# How does Kognity help with formative assessments?

## Notebook and Checklists

Kognity's notebook feature allows students to make their own notes and print out if necessary for consolidation. Students can use the notebook feature when they are performing self-assessment of knowledge and understanding at the end of each chapter with the checklists.



### What you should know

By the end of Subtopic 5.4 Magnetic effects of electric currents you should be able to:

- Draw magnetic field lines around a bar magnet, marking in their direction with arrows.
- Distinguish between the N-pole of a magnet (sometimes known as its north pole or north-seeking pole) and the North Pole of the Earth.
- Know that there is an S-pole at the North Pole and describe the shape and direction of the Earth's magnetic field.
- Draw magnetic field lines in between two bar magnets.
- Associate the density of the lines with the strength of the magnetic field.
- Understand that a compass needle is just a very small magnet allowed to swivel freely.
- Describe the direction of the magnetic field lines around a wire carrying a current using your right hand.
- Describe the shape and spacing of the magnetic field lines around a wire carrying a current.
- Describe the magnetic field outside and inside a solenoid (using your right hand or the shape of the letters N and S).
- Explain why two parallel currents will attract each other.
- Explain why two antiparallel currents will repel each other.
- Identify the direction of movement of a wire carrying a current in a magnetic field using your left hand.
- Define magnetic field strength.
- Calculate the magnitude of the force on a wire carrying a current in a magnetic field.
- Calculate the force on a charged particle moving in a magnetic field.

## Exam Practice Tasks

Kognity provides exam-style questions, marks schemes and model answers that teachers can use in a variety of different ways with their students. For example, teachers can go over a practice paper as a class, write the answer together, and focus on examiner comments.

4 of 85 Paper: 3 Marks: 10

**Question**

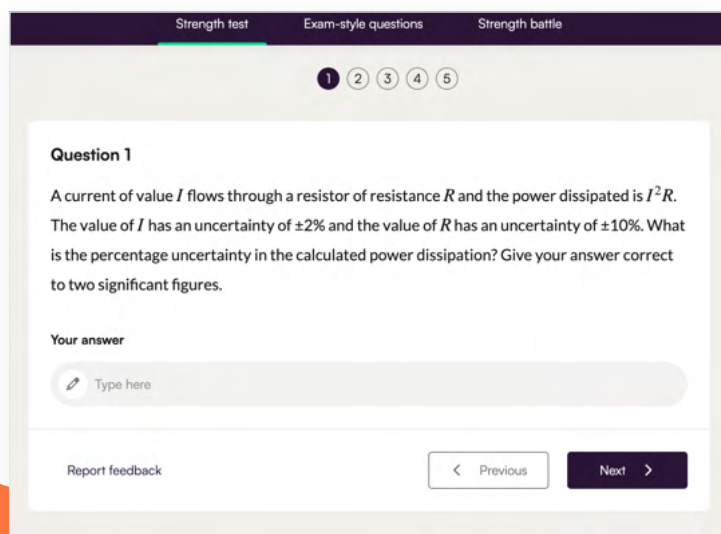
**Figure 1** shows a converging lens of  $f = 15$  cm and diverging lens of  $f = 5$  cm, placed 10 cm apart so that their focal points coincide on the right hand side of the lens pair. Two parallel rays coming from an object at infinity are shown entering and two leaving the lens pair.

The diagram shows two lenses on a horizontal optical axis. The converging lens is on the left, and the diverging lens is on the right. The distance between the optical centers of the two lenses is 10 cm. The focal length of the converging lens is  $f_o = 15$  cm, and the focal length of the diverging lens is  $f_e = 5$  cm. Two parallel rays enter from the left, pass through the converging lens, then the diverging lens, and emerge as two rays that appear to come from a common point on the right. A small eye icon is shown looking at the rays.

# How does Kognity help with formative assessments?

## Self-Study

To provide students with resources for self-directed active recall study, use strength tests and battles. Students can also use self-assessment checklists before a test or exam to help identify areas of weakness, and keep track of their progress with the strength bar.



## Practising data analysis in smaller, quick experiments

Using simulations to replace experiments which do not need to be carried out in a lab - where doing so would consume an excessive amount of time. This is great formative practice for IB assessment components.

**Example 1**

Four point charges of the same magnitude but with polarity signs as shown, are located at the four corners of a square as shown in **Figure 6**. Which one of the following diagrams could show the force on the point charge in the upper right corner?

The diagram shows a square with four point charges at its corners. The top-left corner has a negative charge (-), the top-right corner has a positive charge (+), the bottom-left corner has a negative charge (-), and the bottom-right corner has a positive charge (+). Below the square are four diagrams labeled A, B, C, and D, each showing a point charge with a force vector arrow. Diagram A shows a negative charge with a vector pointing down and to the right. Diagram B shows a negative charge with a vector pointing down and to the left. Diagram C shows a negative charge with a vector pointing up and to the right. Diagram D shows a negative charge with a vector pointing straight down.

**Figure 6.** Four point charges at the corners of a square: force directions on the charge at the top right of the figure.

> Show solution

# How does Kognity help with formative assessments?

## Concept Maps

Have students draw a concept map explaining the key ideas from a section or subtopic.

### Electric charge

What do we know about charge? We know that it is some property of the particles that make up objects. The Greeks of 600 BCE realised that charge could be accumulated when animal fur was rubbed on various substances such as amber (fossilised tree resin; **Figure 1**).



**Figure 1.** Amber can become electrically charged.

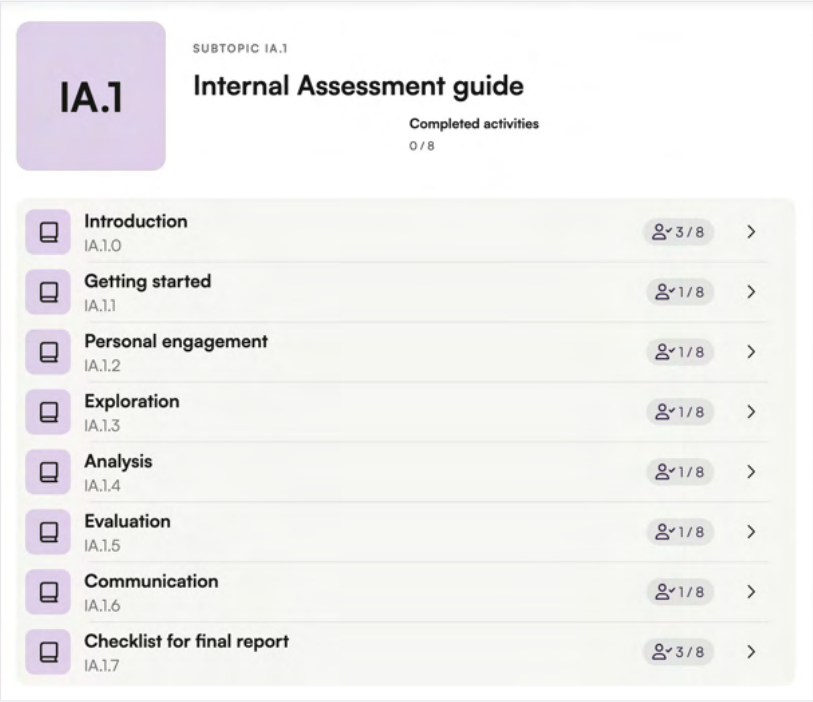
Credit: Evgeny\_Kozhevnikov iStock

# How does Kognity help with IB Assessment Preparation?

There are three big IB-specific components to the Physics class which all students must comply with: the required practicals, the internal assessment, and the exams. While the required practicals are not a part of a student's IB grade, all students are expected to have a working knowledge of these, and might eventually find questions relating to these in Paper 3.

## Internal Assessment

To ensure success in the IA, teachers must spend time introducing and explaining the criteria and responsibilities to their students. Users will find a detailed guide explaining what the Internal Assessment consists of, what students are expected to achieve, and how they will be evaluated. More importantly, students will find a section on how to get started on the IA, which is often the harder part of the process.



The screenshot displays a user interface for the 'Internal Assessment guide' under the subtopic 'IA.1'. At the top, it shows 'SUBTOPIC IA.1' and 'Internal Assessment guide' with a progress indicator 'Completed activities 0 / 8'. Below this is a list of eight activities, each with a document icon, a title, a sub-code, and a progress indicator (e.g., '3 / 8') followed by a right-pointing arrow. The activities are: Introduction (IA.1.0), Getting started (IA.1.1), Personal engagement (IA.1.2), Exploration (IA.1.3), Analysis (IA.1.4), Evaluation (IA.1.5), Communication (IA.1.6), and Checklist for final report (IA.1.7). A yellow ribbon graphic is visible at the bottom right of the interface.

Activity	Code	Progress
Introduction	IA.1.0	3 / 8
Getting started	IA.1.1	1 / 8
Personal engagement	IA.1.2	1 / 8
Exploration	IA.1.3	1 / 8
Analysis	IA.1.4	1 / 8
Evaluation	IA.1.5	1 / 8
Communication	IA.1.6	1 / 8
Checklist for final report	IA.1.7	3 / 8

# How does Kognity help with IB Assessment Preparation?

## Practicals

Kognity includes a step-by-step guide for each of the 10 required practicals. Students can follow along - or, once they get more experience, explore one of the suggested alternative experiments - comparing their data and their process, to make sure they understand everything. Each practical also includes a set of questions at the end.

**P.1** SUBTOPIC P.1  
**Required practicals**  
Completed activities  
0 / 10

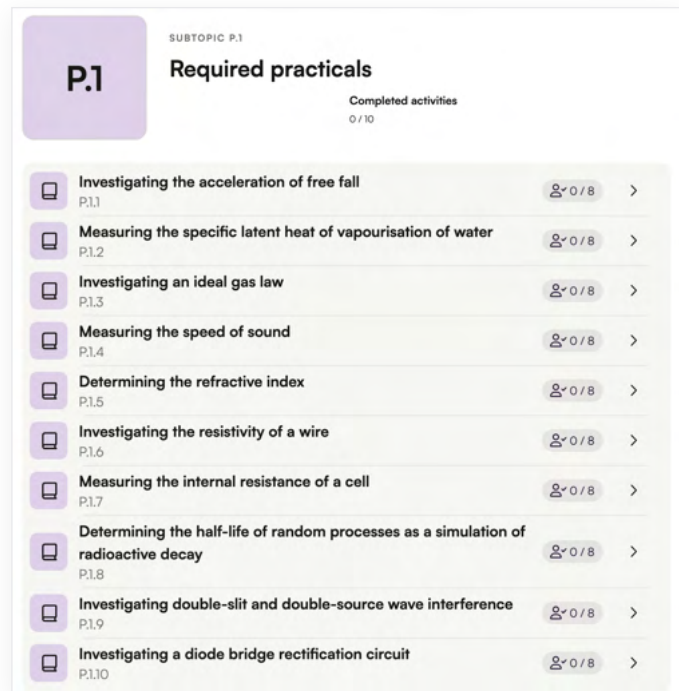
	<b>Investigating the acceleration of free fall</b> P.1.1	0 / 8	>
	<b>Measuring the specific latent heat of vapourisation of water</b> P.1.2	0 / 8	>
	<b>Investigating an ideal gas law</b> P.1.3	0 / 8	>
	<b>Measuring the speed of sound</b> P.1.4	0 / 8	>
	<b>Determining the refractive index</b> P.1.5	0 / 8	>
	<b>Investigating the resistivity of a wire</b> P.1.6	0 / 8	>
	<b>Measuring the internal resistance of a cell</b> P.1.7	0 / 8	>
	<b>Determining the half-life of random processes as a simulation of radioactive decay</b> P.1.8	0 / 8	>
	<b>Investigating double-slit and double-source wave interference</b> P.1.9	0 / 8	>
	<b>Investigating a diode bridge rectification circuit</b> P.1.10	0 / 8	>



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## IB Exam Papers

Exam prep is always something students worry about. Kognity is an invaluable tool for these final assessments: students will find that each section on the textbook includes a couple of boxes, all of which contain useful information, such as “Be aware” (things to watch out for, like common mistakes), “Definition” or “Important”, and perhaps more relevant, “Exam tip”, which as the name implies are useful tips to keep in mind when answering exams. Each subtopic has a Checklist at the end, recapping all the important ideas - students can quickly go over these when studying for their finals.



### Definition

**Magnets** are objects that have two pole types, which by arbitrary convention are called north (or N or north-seeking), and south (or S or south-seeking).

Magnetised objects always contain both types of pole in equal magnitude. Like poles repel, and unlike poles attract one another.

Magnets at rest do not experience forces solely related to their magnetism by other field types, such as gravitational or electric.

Magnets create a vector magnetic field around themselves.

# How does Kognity help with IB Assessment Preparation?



## Exam tip

If you are asked to draw magnetic field lines, carefully follow the rules in the definition box above.

Kognity's exam-style assignments are all based on Papers 1 to 3 and contain questions, example answers and commented mark schemes that provide students tips for success written by examiners. Just add a timer when using an exam-style assignment to model real exam conditions!

IBDP Physics SL FE2016 - All

57 questions [Add exam-style question](#)

Add	Sent	Question	Paper	Marks	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	(a) This question compares optical fibre links with communications satellites for transmission of data over long distance...	3	11	Q
<input type="checkbox"/>	<input checked="" type="checkbox"/>	This question is about some aspects of ultrasound imaging. (a) (i) Ultrasound frequencies used in medical applications ...	3	13	Q
<input type="checkbox"/>	<input checked="" type="checkbox"/>	This question is about some features of X-Ray imaging. (a) (i) X-rays travel at essentially the same speed in air and in de...	3	11	Q
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Figure 1 shows a converging lens of $f = 15$ cm and diverging lens of $f = 5$ cm, placed 10 cm apart so that their focal poi...	3	10	Q
<input type="checkbox"/>	<input checked="" type="checkbox"/>	(a) A concave (converging) spherical mirror has radius of curvature 80. cm. An object is placed 30. cm in front of the ...	3	10	Q

