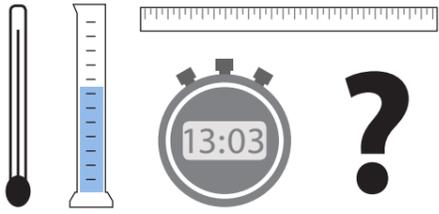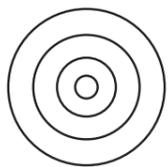# Examiner comment summary – Physics A (H556)

Being clear about which instrument is being used for measurements is vital.

$n = 1$ -13.6 eV
$n = 2$ -3.40 eV
$n = 3$ -1.51 eV
$n = 4$ -0.85 eV

Many candidates incorrectly stated that energy levels are negative due to the negative charge of electrons.
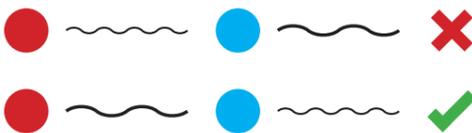
electric potential at a point is the work done in bringing unit positive charge from infinity to the point.

The definition for electric potential lacked precision. Definitions should be clear and unambiguous.
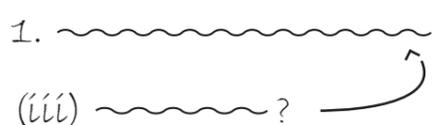
0.34564524 ✔
0.346 ✘

Use calculator unrounded values during calculations to obtain the most accurate final value.
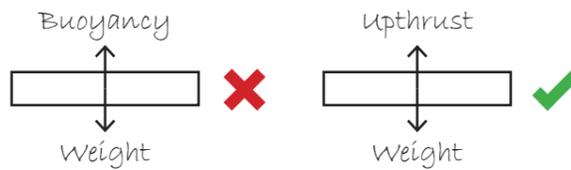
A common error was stating that red light has a shorter wavelength than blue light.

1. ～～～～～～
(iii) ～～～～ ?

Data may be presented at the start of the question and not repeated in each subsequent part.

Ans: 2.27 ~~227~~

It's important that the final answer is clearly distinguishable. Answers no longer considered correct should have a line through them.

Buoyancy ✘   Upthrust ✔
Weight   Weight

Force labels such as buoyancy, pressure, etc, were not acceptable. The specification is clear on the names of relevant forces.
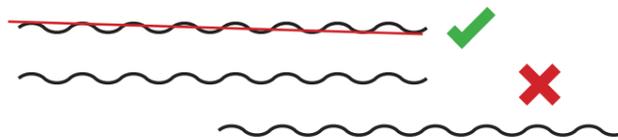
Provided crossed out work is still legible the examiner may credit it if it is actually correct and is not contradicted elsewhere in the answer.

1. ～～～～ ✔
2. ～～～～ ✔
   Ans: ～ ✘

Show every step in calculations clearly. This allows method marks to be awarded in the absence of a correct final answer.

0.0540 (3 sig. fig.)
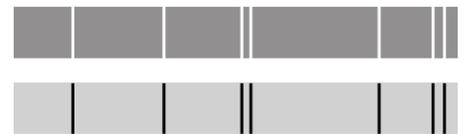3.045 × 10⁴ (4 sig. fig.) → Answer 3 sig. fig.

The 'appropriate number of significant figures' is the same as the least accurate data provided in the question.
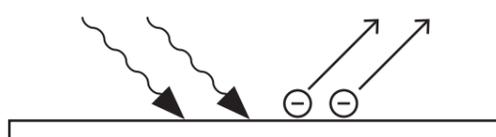
When discussing the photoelectric effect, the role of intensity was less understood – it is the rate of emission of electrons.

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1. ～～～～ ✔
2. ～～～～ ✔

The command word 'show' requires a candidate response with clear and logical steps.

Many candidates muddled emission lines and absorption lines in spectra.

✔   ✘

Additional answer pages fragment the response. Concise responses are usually the best responses.

...gas molecules on Mercury would have more energy than the escape velocity ✘

When discussing escape velocity, it isn't acceptable to equate high energy with speed in responses.
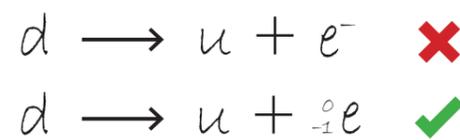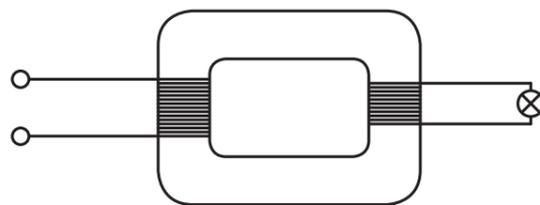
a. ～～～～
b. ～～～～
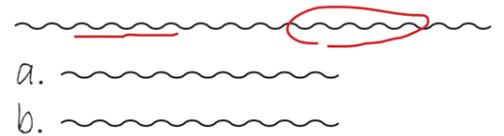
Underlining or circling key information in MCQs is sensible, as is jotting down ideas and equations.

a. ～～～～ ✕
b. ～～～～ ✓
c. ～～～～ ✕

For multiple choice questions, eliminating options by annotating is good practice.

A LEVEL *PHYSICS A*

OCR Oxford Cambridge and RSA

Examiner comment summary – Physics A (H556)

emf induced is proportional to the rate of change of magnetic flux linkage. ✓

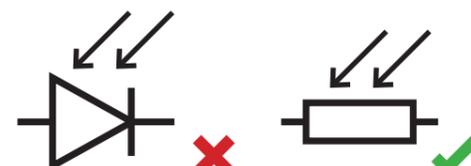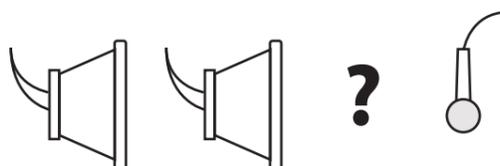Candidates should try to use correct technical terms in responses, e.g. magnetic flux.

$$d \longrightarrow u + e^- \quad ✗$$
$$d \longrightarrow u + {}_{-1}^{0}e \quad ✓$$

When discussing electromagnetic induction, a common misconception was that there was an alternating current within the iron core.

When writing decay equations electrons should be represented as ${}_{-1}^{0}e$ rather than e^-.

alpha particle rest mass
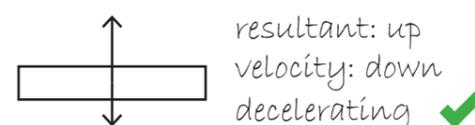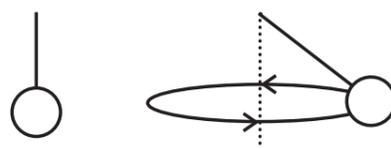$$m_\alpha \quad 6.646 \times 10^{-27}\,kg$$

Many failed to realise the mass of an alpha particle is in the Data, Formulae and Relationships booklet.

Explanations often confused path and phase difference, or referred to the detection of nodes and antinodes.

Some candidates drew a variation of an LED symbol instead of that of an LDR.

? *Ans:* 〜

resultant: up
velocity: down
decelerating ✓

Questioning whether the answer to a calculation is plausible is a useful habit to cultivate.

Many answers stated that centripetal force is a real force, rather a provision necessary for an object to follow a circular path.

Some candidates didn't remember that the resultant can be opposite to the direction of velocity.

$$\ln(V/V) = -t/RC \quad ✗$$
$$\ln(V/V_0) = -t/RC \quad ✓$$

The resultant displacement is the sum of the individual displacements of the waves ✓

	1	2	3
Current (A)			
Force (N)			

Some candidates had omitted the subscript on V_0 in the expression $\ln(V/V_0)$.

Many candidates incorrectly stated the principle of superposition, discussing addition of amplitudes rather than displacements.

Too many candidates were content with taking a single measurement when describing an experiment.

When redshifted, emission lines all undergo the same 'fractional' wavelength increase. Longer wavelengths have a larger absolute increase.

The full candidate exemplar materials for the Physics A (H556) papers can be found on Interchange.