AP · COLLEGE BOARD AP PHYSICS · FRAMEWORKS FIRST EXAMINED IN 2025

AP Physics 1 · Algebra-Based

Kinematics, translational dynamics, work and energy, linear momentum, torque and rotational dynamics, rotational energy and momentum, oscillations, and fluids.

SUGGESTED TIME	TOTAL MARKS	QUESTIONS	MULTIPLE CHOICE
70 minutes	**53**	**10**	**6**

SECTION	**AP 1 · AP Physics 1: Algebra-Based**
IN THE FORMAT OF	Section I (single-select multiple choice) and Section II (four free-response task types)
DEMAND	**Routine 3 · Demanding 5 · Discriminating 2** *Written to the standard the free-response rubrics actually apply. A numerical answer that appears without the symbolic expression behind it earns partial credit at best; a claim without reasoning earns nothing at all, however correct the claim is. The C courses are set at calculus level throughout — moments of inertia by integration, drag and RC problems as differential equations — because that is what separates them from Physics 1 and 2.*
SYLLABUS POINTS	1 · 2 · 3 · 4 · 5 · 6 · 7 · 8

INSTRUCTIONS

- Answer all questions in the spaces provided.
- Show your working. Method marks are awarded even where the final answer is wrong.
- Give your answers to a sensible number of significant figures, with a unit.
- The mark scheme for this paper follows the last question.

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> College Board AP Physics course and exam descriptions — https://apcentral.collegeboard.org/courses

THE PAPER

AP Physics 1 · Algebra-Based

Answer all questions. 53 marks in 70 minutes.

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1 ALGEBRA

MULTIPLE CHOICE · ROUTINE · 1 **[1]**

An object moves along a straight line. Its velocity increases uniformly from 0 to 8.0 m/s during the first 4.0 s, stays at 8.0 m/s for the next 3.0 s, then decreases uniformly to 0 during the final 2.0 s. What total distance does the object travel?

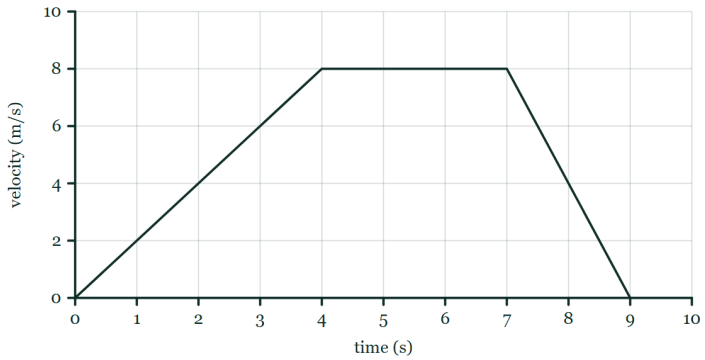

Fig. 1.1 *A velocity–time graph on a gridded pair of axes. The horizontal axis is time in seconds, marked at every second from 0 to 10; the vertical axis is velocity in metres per second, marked 0, 2, 4, 6, 8 and 10. The plotted line is a straight rise from the origin to 8.0 m/s at 4.0 s, then a horizontal segment held at 8.0 m/s until 7.0 s, then a straight fall back to zero at 9.0 s.*

A 40 m

B 48 m

C 56 m

D 72 m

Answer ☐

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2 ALGEBRA

MULTIPLE CHOICE · DEMANDING · 2 **[1]**

A person of mass m stands on a bathroom scale in an elevator. The elevator is moving downward and slowing down. What does the scale read?

A less than mg

B exactly mg

C greater than mg

D zero

Answer ☐

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3 MULTIPLE CHOICE · ROUTINE · 3 **[1]**

ALGEBRA

A car traveling at speed v brakes to rest in a distance d. Assuming the same constant braking force, what distance is required to bring the same car to rest from a speed of 2v?

A d√2

B 2d

C 4d

D 8d

Answer ☐

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4 MULTIPLE CHOICE · DEMANDING · 4 **[1]**

ALGEBRA

A 0.50 kg ball moving at 4.0 m/s to the right collides head-on with a 1.5 kg ball moving at 2.0 m/s to the left. The two balls stick together. What is the velocity of the combined object immediately after the collision?

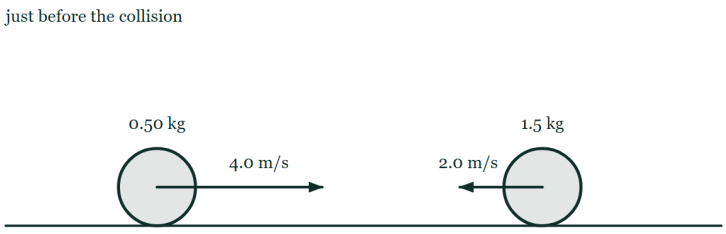

Fig. 4.1 *Two balls of equal size rest on a straight horizontal track, well apart from one another. The left-hand ball is labelled 0.50 kg and carries a horizontal arrow drawn from its centre pointing to the right, labelled 4.0 m/s. The right-hand ball is labelled 1.5 kg and carries a horizontal arrow drawn from its centre pointing to the left, labelled 2.0 m/s, so the two arrows point towards each other along the same line. A note on the figure states that this is the instant just before the collision.*

A 0.50 m/s to the left

B 0.50 m/s to the right

C 2.5 m/s to the left

D 2.5 m/s to the right

Answer ☐

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5 MULTIPLE CHOICE · DEMANDING · 5 · 6 **[1]**

ALGEBRA

A solid disk and a thin hoop have the same mass and the same radius. Both are released from rest at the top of the same incline and roll down without slipping. Which reaches the bottom first?

A the disk, because a smaller fraction of its energy goes into rotation

B the hoop, because its mass is farther from the axis

C neither — they arrive together, because they have the same mass

D neither — they arrive together, because gravity acts equally on both

Answer ☐

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6 MULTIPLE CHOICE · ROUTINE · 8 **[1]**

ALGEBRA

A solid block of density 600 kg/m³ floats at rest in water of density 1000 kg/m³. What fraction of the block's volume is below the surface?

A 0.40

B 0.60

C 1.00

D 1.67

Answer ☐

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7 FREE RESPONSE · MATHEMATICAL ROUTINES · DEMANDING · 2 · 3 **[12]**

ALGEBRA

A block of mass m is released from rest at a height h on an incline that makes an angle θ with the horizontal. The coefficient of kinetic friction between the block and the incline is μ. The block slides down the incline and then continues onto a horizontal surface with the same coefficient of kinetic friction.

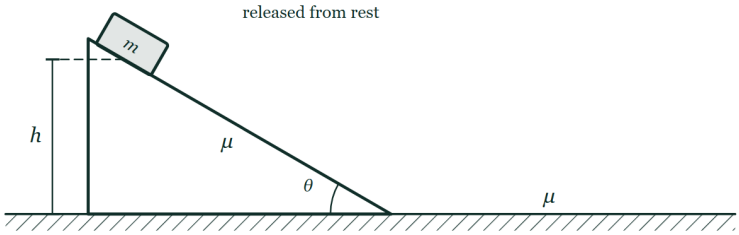

Fig. 7.1 *A wedge-shaped incline stands on a horizontal floor with its sloping face rising from right to left, and the angle between the sloping face and the floor at the foot of the slope is marked θ. A block labelled m rests on the sloping face near the top and is noted as released from rest, with a dimension line to the left of the wedge marking its height h above the floor. The symbol μ is printed on the wedge below the sloping face and again on the floor beyond the foot of the slope, showing that the same coefficient of kinetic friction applies to both surfaces, which run into one another at the bottom of the incline.*

(a) DERIVE **[4]**

Derive an expression for the speed of the block at the bottom of the incline, in terms of m, h, θ, μ and physical constants.

(b) CALCULATE **[3]**

Calculate the speed of the block at the bottom of the incline for m = 2.0 kg, h = 1.5 m, θ = 30°, and μ = 0.25.

(c) DETERMINE **[3]**

Determine the distance the block travels along the horizontal surface before coming to rest.

(d) JUSTIFY **[2]**

A student claims that doubling the mass of the block would double the distance found in part (c). Justify why the student is incorrect, referring to your expression.

8 FREE RESPONSE · TRANSLATION BETWEEN REPRESENTATIONS · DEMANDING · 1 **[12]**

ALGEBRA

A cart moves along a straight horizontal track. Its velocity as a function of time is described as follows: from t = 0 to t = 2.0 s the velocity is constant at +3.0 m/s; from t = 2.0 s to t = 5.0 s the velocity decreases uniformly from +3.0 m/s to −3.0 m/s; from t = 5.0 s to t = 7.0 s the velocity is constant at −3.0 m/s.

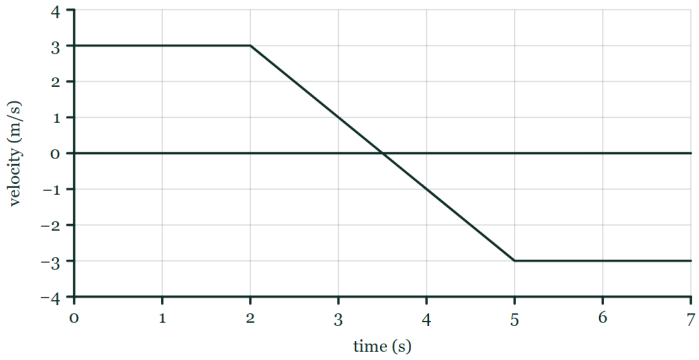

Fig. 8.1 *The cart's velocity–time graph. The time axis is drawn horizontally through velocity zero and is marked in seconds from 1 to 7; the vertical velocity axis is marked in metres per second from −4 to +4. The plotted line runs horizontally at +3.0 m/s from t = 0 to t = 2.0 s, then falls as a single straight sloping segment, passing through zero, to −3.0 m/s at t = 5.0 s, and then runs horizontally at −3.0 m/s until t = 7.0 s.*

(a) SKETCH **[3]**

Sketch a graph of the cart's acceleration as a function of time from t = 0 to t = 7.0 s. Label the value of the acceleration on each interval.

(b) DETERMINE **[3]**

Determine the time at which the cart is farthest from its starting point, and determine that distance.

(c) SKETCH **[3]**

Sketch a graph of the cart's position as a function of time over the same interval, taking the starting position as zero.

(d) DESCRIBE **[3]**

Describe the motion of the cart in words, making clear the difference between the interval in which it is slowing down and the interval in which it is speeding up.

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9 ALGEBRA

FREE RESPONSE · EXPERIMENTAL DESIGN AND ANALYSIS · DISCRIMINATING · 2 **[12]**

A student is given a wooden block, a horizontal board of the same material, a set of known masses, a spring scale, a meter stick, and a stopwatch. The student wants to determine the coefficient of kinetic friction μ between the block and the board.

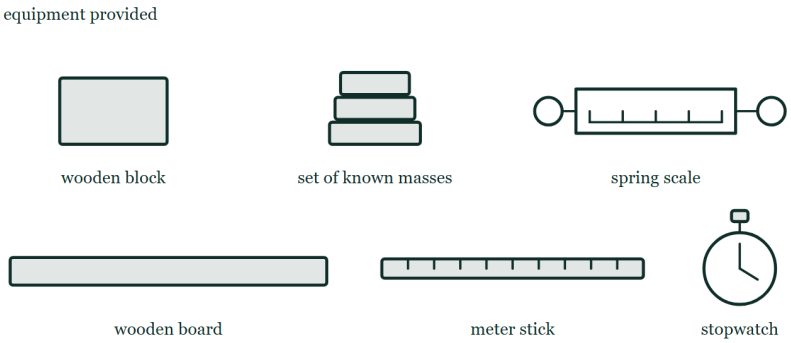

Fig. 9.1 *The equipment provided, drawn as six separate labelled items laid out side by side rather than as an assembled apparatus: a rectangular wooden block; a set of known masses drawn as a stack of three flat slabs; a spring scale drawn as a barrel with a graduated face and a ring at each end for pulling and for attaching; a long flat wooden board; a meter stick divided by evenly spaced marks; and a stopwatch drawn as a circular dial with two hands and a button on top.*

(a) DESCRIBE **[4]**

Describe an experimental procedure the student could use to collect the data needed. Include the quantity that is deliberately varied, the quantity measured in response, and at least two quantities held constant.

(b) DESCRIBE **[3]**

Describe how the student should graph the data so that the coefficient of friction can be determined from a straight line, and state what quantity the slope of that line represents.

(c) DETERMINE **[3]**

The student's best-fit line has a slope of 0.32 when friction force is plotted against normal force, and a vertical intercept of +0.15 N rather than zero. Determine the coefficient of kinetic friction, and explain what the non-zero intercept suggests about the experiment.

(d) EXPLAIN **[2]**

Explain why taking the slope of the best-fit line gives a more reliable value for μ than calculating f/N from a single pair of readings.

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10 ALGEBRA

FREE RESPONSE · QUALITATIVE/QUANTITATIVE TRANSLATION · DISCRIMINATING · 3 · 5 · 6 **[11]**

A solid sphere and a block have the same mass. Both are released from rest at the same height at the top of an incline. The sphere rolls down without slipping. The block slides down a frictionless section of the same incline. The moment of inertia of a solid sphere about its center is $(2/5)MR^2$.

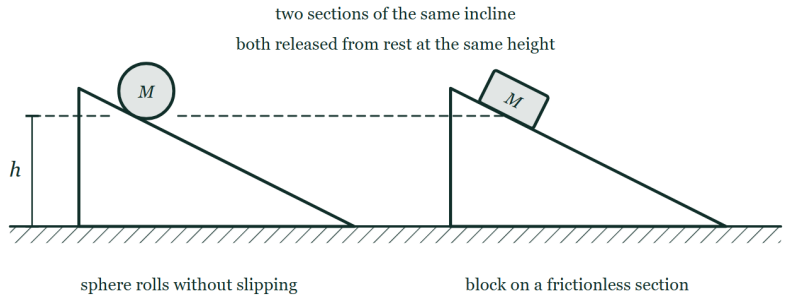

Fig. 10.1 *Two identical wedge-shaped inclines stand side by side on the same horizontal floor, labelled as two sections of the same incline. A solid sphere of mass M rests on the sloping face of the left wedge, and a block of mass M rests at the same point up the sloping face of the right wedge. A dashed horizontal line runs across the figure at the level of both objects, and a dimension line at the far left marks their common release height h above the floor. A note states that both are released from rest at the same height; a label under the left ramp reads that the sphere rolls without slipping, and one under the right ramp that the block is on a frictionless section.*

(a) INDICATE **[1]**

Indicate which object reaches the bottom of the incline with the greater translational speed, or whether they arrive with the same speed. No justification is required in this part.

(b) DERIVE **[4]**

Derive expressions for the translational speed of each object at the bottom of the incline, in terms of g and the height h.

(c) JUSTIFY **[2]**

Use your expressions to justify the answer you gave in part (a).

(d) EXPLAIN **[4]**

Explain, without using equations, why the sphere arrives more slowly, and explain why the answer does not depend on the mass or the radius of the sphere.

MARK SCHEME

AP Physics 1 · Algebra-Based — mark scheme

One line per mark, as an examiner would award them. A note under a part is the error that part is set to catch.

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1 [1]

MULTIPLE CHOICE · ROUTINE · 1

ALGEBRA

An object moves along a straight line. Its velocity increases uniformly from 0 to 8.0 m/s during the first 4.0 s, stays at 8.0 m/s for the next 3.0 s, then decreases uniformly to 0 during the final 2.0 s. What total distance does the object travel?

KEY **B** **48 m**

The distance is the area under the velocity–time graph: a triangle of 16 m, a rectangle of 24 m, and a triangle of 8 m, giving 48 m. C treats the final stage as a rectangle rather than a triangle, and A drops it altogether. D multiplies 8.0 by the whole 9.0 s, treating the graph as if the object moved at its maximum speed throughout.

SP1

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2 [1]

MULTIPLE CHOICE · DEMANDING · 2

ALGEBRA

A person of mass m stands on a bathroom scale in an elevator. The elevator is moving downward and slowing down. What does the scale read?

KEY **C** **greater than mg**

A is chosen by almost everyone who reasons from the direction of motion rather than the direction of the acceleration. Moving down while slowing down means the acceleration points upward, so the normal force must exceed the weight.

SP2

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3 [1]

MULTIPLE CHOICE · ROUTINE · 3

ALGEBRA

A car traveling at speed v brakes to rest in a distance d. Assuming the same constant braking force, what distance is required to bring the same car to rest from a speed of 2v?

KEY **C** **4d**

B is the answer of a candidate reasoning proportionally without noticing that kinetic energy goes as v^2. The work–energy theorem gives $Fd = \frac{1}{2}mv^2$, so $d \propto v^2$.

SP2

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4 [1]

MULTIPLE CHOICE · DEMANDING · 4

ALGEBRA

A 0.50 kg ball moving at 4.0 m/s to the right collides head-on with a 1.5 kg ball moving at 2.0 m/s to the left. The two balls stick together. What is the velocity of the combined object immediately after the collision?

KEY **A** **0.50 m/s to the left**

Total momentum is (0.50)(+4.0) + (1.5)(−2.0) = −1.0 kg·m/s, and the combined mass is 2.0 kg. B gets the size right and the sign wrong, which on a real exam is a wrong answer, not a near miss.

SP2

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5 MULTIPLE CHOICE · DEMANDING · 5 · 6 **[1]**

ALGEBRA

A solid disk and a thin hoop have the same mass and the same radius. Both are released from rest at the top of the same incline and roll down without slipping. Which reaches the bottom first?

KEY **A** **the disk, because a smaller fraction of its energy goes into rotation**

C and D are the answers of a candidate applying the free-fall result, where mass genuinely does cancel. It does cancel here too — but the rotational inertia does not, and the hoop's larger I/MR^2 leaves less of the released energy available as translational kinetic energy.

SP3

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6 MULTIPLE CHOICE · ROUTINE · 8 **[1]**

ALGEBRA

A solid block of density 600 kg/m³ floats at rest in water of density 1000 kg/m³. What fraction of the block's volume is below the surface?

KEY **B** **0.60**

A is the fraction above the surface. D inverts the ratio and should be rejected on sight — a fraction of a volume cannot exceed 1.

SP2

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7 ALGEBRA

FREE RESPONSE · MATHEMATICAL ROUTINES · DEMANDING · 2 · 3 **[12]**

A block of mass m is released from rest at a height h on an incline that makes an angle θ with the horizontal. The coefficient of kinetic friction between the block and the incline is μ. The block slides down the incline and then continues onto a horizontal surface with the same coefficient of kinetic friction.

(a) DERIVE · SP2 **[4]**

Derive an expression for the speed of the block at the bottom of the incline, in terms of m, h, θ, μ and physical constants.

1 1 point: uses energy conservation with a friction term, $\Delta K = mgh - f \cdot L$

2 1 point: identifies the distance along the incline as $L = h / \sin\theta$ and the friction force as $f = \mu mg \cos\theta$

3 1 point: friction work $= \mu mg \cos\theta \cdot (h / \sin\theta) = \mu mgh \cot\theta$

4 1 point: $v = \sqrt{(2gh(1 - \mu \cot\theta))}$, with m correctly cancelling

A numerical answer with no symbolic expression scores at most one point on this task type. The expression is the task.

(b) CALCULATE · SP2 **[3]**

Calculate the speed of the block at the bottom of the incline for m = 2.0 kg, h = 1.5 m, θ = 30°, and μ = 0.25.

1 1 point: $\cot 30° = 1.73$, so $1 - 0.25(1.73) = 0.567$

2 1 point: $v = \sqrt{(2 \times 9.8 \times 1.5 \times 0.567)}$

3 1 point: v = 4.1 m/s, with unit

(c) DETERMINE · SP2 **[3]**

Determine the distance the block travels along the horizontal surface before coming to rest.

1 1 point: on the horizontal surface the only horizontal force is friction, μmg

2 1 point: $\frac{1}{2}mv^2 = \mu mg \cdot d$, so $d = v^2/(2\mu g)$

3 1 point: $d = 16.7 / (2 \times 0.25 \times 9.8) = 3.4$ m

(d) JUSTIFY · SP3 **[2]**

A student claims that doubling the mass of the block would double the distance found in part (c). Justify why the student is incorrect, referring to your expression.

1 1 point: mass appears in both the kinetic energy and the friction force and cancels from $d = v^2/(2\mu g)$

2 1 point: v itself is also independent of m, so the distance is unchanged when the mass is doubled

8 ALGEBRA

FREE RESPONSE · TRANSLATION BETWEEN REPRESENTATIONS · DEMANDING · 1 **[12]**

A cart moves along a straight horizontal track. Its velocity as a function of time is described as follows: from t = 0 to t = 2.0 s the velocity is constant at +3.0 m/s; from t = 2.0 s to t = 5.0 s the velocity decreases uniformly from +3.0 m/s to −3.0 m/s; from t = 5.0 s to t = 7.0 s the velocity is constant at −3.0 m/s.

(a) SKETCH · SP1 **[3]**

Sketch a graph of the cart's acceleration as a function of time from t = 0 to t = 7.0 s. Label the value of the acceleration on each interval.

1 1 point: a = 0 on $0 \le t < 2.0$ s and on $5.0 \text{ s} < t \le 7.0$ s

2 1 point: a constant and negative between 2.0 s and 5.0 s

3 1 point: value stated as -2.0 m/s², from $(-3.0 - 3.0)/(5.0 - 2.0)$

(b) DETERMINE · SP2 **[3]**

Determine the time at which the cart is farthest from its starting point, and determine that distance.

1 1 point: the cart is farthest away when the velocity changes sign, at t = 3.5 s

2 1 point: area under the graph from 0 to 3.5 s = (3.0)(2.0) + ½(1.5)(3.0)

3 1 point: distance = 6.0 + 2.25 = 8.25 m

The point most often lost is the first. Candidates look for where the acceleration changes rather than where the velocity crosses zero, and place the maximum at t = 5.0 s.

(c) SKETCH · SP1 **[3]**

Sketch a graph of the cart's position as a function of time over the same interval, taking the starting position as zero.

1 1 point: straight line of positive constant slope from the origin to (2.0 s, 6.0 m)

2 1 point: curve that flattens to a maximum at t = 3.5 s and then falls, with curvature downward throughout 2.0–5.0 s

3 1 point: straight line of constant negative slope after t = 5.0 s

(d) DESCRIBE · SP3 **[3]**

Describe the motion of the cart in words, making clear the difference between the interval in which it is slowing down and the interval in which it is speeding up.

1 1 point: moves in the positive direction at constant speed for the first 2.0 s

2 1 point: from 2.0 s to 3.5 s it still moves in the positive direction but slows, because velocity and acceleration have opposite signs

3 1 point: from 3.5 s onward it moves in the negative direction and speeds up until 5.0 s, because velocity and acceleration now have the same sign, then travels at constant speed

The distinction is the whole point of the question: a negative acceleration slows an object down only while the object is moving forward.

9 ALGEBRA

FREE RESPONSE · EXPERIMENTAL DESIGN AND ANALYSIS · DISCRIMINATING · 2 **[12]**

A student is given a wooden block, a horizontal board of the same material, a set of known masses, a spring scale, a meter stick, and a stopwatch. The student wants to determine the coefficient of kinetic friction μ between the block and the board.

(a) DESCRIBE · SP4 **[4]**

Describe an experimental procedure the student could use to collect the data needed. Include the quantity that is deliberately varied, the quantity measured in response, and at least two quantities held constant.

1. 1 point: pull the block along the board with the spring scale at constant velocity, so that the applied force equals the friction force
2. 1 point: vary the total mass by adding known masses on top of the block — this is the independent variable
3. 1 point: record the spring-scale reading for each total mass — this is the dependent variable
4. 1 point: hold constant the surfaces in contact and the surface area, and keep the pull horizontal for every trial

"At constant velocity" is worth a point on its own. If the block accelerates, the scale reading exceeds the friction force and every value of μ comes out too large.

(b) DESCRIBE · SP4 **[3]**

Describe how the student should graph the data so that the coefficient of friction can be determined from a straight line, and state what quantity the slope of that line represents.

1. 1 point: plot the friction force (spring-scale reading) on the vertical axis against the normal force, or against the total mass, on the horizontal axis
2. 1 point: the relationship $f = \mu N$ is linear through the origin
3. 1 point: the slope equals μ if the horizontal axis is the normal force, or μg if the horizontal axis is the mass

(c) DETERMINE · SP4 **[3]**

The student's best-fit line has a slope of 0.32 when friction force is plotted against normal force, and a vertical intercept of +0.15 N rather than zero. Determine the coefficient of kinetic friction, and explain what the non-zero intercept suggests about the experiment.

1. 1 point: $\mu = 0.32$, the slope, which is dimensionless
2. 1 point: the model predicts an intercept of zero, since zero normal force means zero friction
3. 1 point: a positive intercept indicates a systematic error — for example the spring scale reads high at zero, or the pull was not horizontal, adding a constant component to every reading

Reading μ from a single data point instead of from the slope scores nothing here. The design of the graph is what the task type is assessing.

(d) EXPLAIN · SP4 **[2]**

Explain why taking the slope of the best-fit line gives a more reliable value for μ than calculating f/N from a single pair of readings.

1. 1 point: the slope uses every data point, so random errors in individual readings tend to average out
2. 1 point: a systematic offset such as the intercept above shifts a single-point ratio but does not change the slope, so the slope is insensitive to it

10 ALGEBRA

FREE RESPONSE · QUALITATIVE/QUANTITATIVE TRANSLATION · DISCRIMINATING · 3 · 5 · 6 **[11]**

A solid sphere and a block have the same mass. Both are released from rest at the same height at the top of an incline. The sphere rolls down without slipping. The block slides down a frictionless section of the same incline. The moment of inertia of a solid sphere about its center is $(2/5)MR^2$.

(a) INDICATE · SP3 **[1]**

Indicate which object reaches the bottom of the incline with the greater translational speed, or whether they arrive with the same speed. No justification is required in this part.

1 1 point: the block

(b) DERIVE · SP2 **[4]**

Derive expressions for the translational speed of each object at the bottom of the incline, in terms of g and the height h.

1 1 point: block — $Mgh = \frac{1}{2}Mv^2$, so $v = \sqrt{(2gh)}$

2 1 point: sphere — energy is shared between translation and rotation, $Mgh = \frac{1}{2}Mv^2 + \frac{1}{2}I\omega^2$

3 1 point: applies the rolling condition $\omega = v/R$ and substitutes $I = (2/5)MR^2$, giving $Mgh = (7/10)Mv^2$

4 1 point: $v = \sqrt{(10gh/7)}$

(c) JUSTIFY · SP3 **[2]**

Use your expressions to justify the answer you gave in part (a).

1 1 point: compares the coefficients — 10/7 = 1.43 is smaller than 2, so the sphere's speed is smaller

2 1 point: states the ratio explicitly, v_sphere / v_block = √(5/7) = 0.85

(d) EXPLAIN · SP3 **[4]**

Explain, without using equations, why the sphere arrives more slowly, and explain why the answer does not depend on the mass or the radius of the sphere.

1 1 point: both objects convert the same gravitational potential energy per unit mass

2 1 point: the sphere must also spin as it moves, so part of that energy goes into rotational kinetic energy and less is left for translation

3 1 point: the mass appears in every energy term and cancels, so it cannot affect the result

4 1 point: the radius cancels because the rolling condition ties ω to v through the same R that appears in the moment of inertia — only the shape factor 2/5 survives

The last point is the hardest on the exam and is the reason this task type exists: the candidate has to say in words what the algebra in part (b) did, and identify which symbol survived the cancellation and why.

THE CHEAPEST MARKS ON ANY PAPER

What the command words are asking for

Every board publishes these and marks to them. A candidate who explains where the question said state has spent four minutes earning one mark; one who states where it said explain has earned none.

Calculate	Perform mathematical steps to arrive at a final answer, including an algebraic expression, correctly substituted numbers, and units.
Derive	Perform a series of mathematical steps from a fundamental law or relationship to arrive at the desired result.
Describe	Provide the relevant characteristics of a specified topic.
Determine	Arrive at a conclusion after reasoning, observation, or applying mathematical routines.
Explain	Provide information about how or why a relationship, situation or outcome occurs, using evidence and reasoning.
Indicate	Select the correct option from those provided, before giving any reasoning that is asked for.
Justify	Provide evidence to support or defend a claim, and reasoning to explain how that evidence supports the claim.
Sketch	Draw a shape or trend line, without requiring exact plotted values.

WHAT IS BEING TESTED

AP assessment objectives

Every AP Physics exam has two sections of equal weight. Section I is single-select multiple choice with four options and no penalty for a wrong answer. Section II is free response, scored in points, and every question is built on one of four published task types. A table of equations and a table of constants are supplied for both sections, so nothing on an AP exam tests whether you can recall a formula.

SP1 7 MARKS · 13%	**Creating representations** Describe, create and use models, diagrams, graphs and free-body diagrams to represent a physical situation.
SP2 21 MARKS · 40%	**Mathematical routines** Determine and apply mathematical relationships, working symbolically before substituting, and check the reasonableness of a result.
SP3 13 MARKS · 25%	**Scientific questioning and argumentation** Make and justify a claim with evidence and reasoning, and evaluate the claims and reasoning of others.
SP4 12 MARKS · 23%	**Experimental method and data analysis** Design an experimental procedure, identify and control variables, analyse data including linearisation, and evaluate sources of error.

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