AP PHYSICS 1
REVIEW PACKET

Summer 2026

The following collection of materials is intended to provide students with a general review of concepts and techniques learned during their freshman and sophomore year science classes. Students should complete this packet over the course of the summer and be prepared to **submit the completed work on the first day of classes.**

The material and assessments found in this packet will be tested the first day of classes to ensure all students are able to perform at a common standard and possess a minimum level of understanding.

AP Physics 1 – Units & Key Equations Reference Sheet

Unit 1: Kinematics

Topics:

- Position, Displacement, Distance
- Velocity and Acceleration
- Motion Graphs
- Free Fall

Unit 2: Dynamics

Topics:

- Newton's Laws
- Forces and Free-Body Diagrams
- Friction, Tension, Normal Force

Unit 3: Circular Motion & Gravitation

Topics:

- Centripetal Motion
- Gravitational Forces
- Orbits

Unit 4: Energy

Topics:

- Work and Energy
- Kinetic and Potential Energy
- Conservation of Energy

Unit 5: Momentum

Topics:

- Momentum and Impulse
- Collisions

Unit 6: Simple Harmonic Motion

Topics:

- Springs and Oscillations
- Pendulums

Unit 7: Torque & Rotational Motion

Topics:

- Rotational Kinematics
- Torque and Equilibrium

Unit 8: Fluids

Topics:

- Pressure and Density
- Buoyancy
- Fluid Flow

AP PHYSICS 1 – Required Skills and Masteries

This course requires students to have a previous understanding and mastery of various mathematical concepts. Students who are not familiar with the following will need to review and teach themselves these concepts in order to succeed in AP Physics 1. While the list below is not exhaustive, students should ensure that they are familiar and competent in these areas.

1. **Trigonometry**
    a. Properties of right triangles
    b. Knowledge of application of the Pythagorean theorem
    c. Applications of trigonometric functions and their inverse.

2. **Geometry**
    a. Finding the area under a curve
    b. Determining the slope of a function
    c. Finding the tangent line of a given point
    d. Linearization of functions
    e. Properties of squares, rectangles, parallel lines, and other geometrical constructs.

3. **Algebra**
    a. Substitution of variables
    b. Order of operations
    c. Application and purpose of the quadratic formula
    d. Solving systems of equations
    e. Finding local maxima and minima of functions
    f. Proportional reasoning
    g. Scientific notation
    h. Unit conversions

AP PHYSICS 1 – GENERAL ASSESSMENT

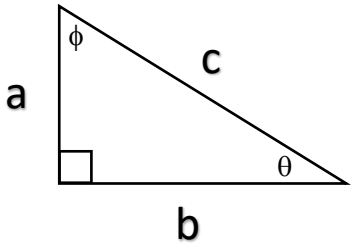
The following assessment is designed to help students identify strengths and weaknesses in their knowledge prior to the start of the AP Physics 1.

Students are required to complete this assessment in its entirety and will submit their own finished physical copy on the first day of class. Students who fail to do so will be removed from the course.

The following questions represent the base level of understanding required of students who are enrolled in AP Physics 1. This assessment is designed for students to complete in a single session that should take no longer than 30 minutes. Students are not permitted to use any references or resources during this assessment.

Trigonometry Review

For the following questions use the figure shown below of a right triangle. Question 1 has been completed for you as an example. Your answers may contain trigonometric functions (sin, cos, tan) and their inverses ($\sin^{-1}$, $\cos^{-1}$) .



Question 1: Find an expression for **c** given the variables ϕ and b.

Question 2: Find an expression for **b** given the variables θ and c.

Question 3: Find an expression for **a** given the variables ϕ and c.

Question 4: Find an expression for θ given the variables a and b.

Question 5: Find an expression for ϕ given the variables a and b.

Geometry Review

Question 1: A square has a perimeter of 44 meters. How long is each side of the square?

Question 2: Two parallel lines are separated at a distance of 5 meters. If a line is drawn that goes through the parallel lines and forms an angle of 30° relative to one of the parallel lines, what is the length of the drawn line segment between the parallel lines?

Question 3: An equilateral triangle is found to have an area of 10 m^2. What is the length of a single side of the equilateral triangle?

Question 4: A rectangle with a perimeter of 24 meters is divided into 3 equal sections such that each section forms a square. What is the area of a single square?

Question 5: A circle has an area of 9π m^2. What is the circumference of the circle? You may leave your answer in terms of radians.

Algebra Review

For the following questions solve for the unknown variable given in the problem and write your numerical answer in the box provided.

Question 1: Solve for **x** given the following equation: $2x^2 + 3x - 2 = 0$

Question 2: Solve for **x** given the following equations: $x + y = 4$ $2x - 3y = 3$

Question 3: Solve for **x** given the following equation: $\frac{(x+2)(x-3)}{(x+4)^3} = 0$

Question 4: Solve for **z** given the following equations:

$x + 3y - 2z = 12$ $2x - y + 2z = 16$ $5x + 5y - 10z = 40$

Question 5: A cubit is equal to 21 inches. A single inch is equal to 2.54 centimeters. How many cubits are in 2.3 kilometers?