

Syllabus

PLATO Course HESI A2

Course Overview

HESI A2 is a comprehensive collection of concepts that introduces Math, Language, and Science designed to give you a deeper understanding of those topics. The course teaches you mathematical concepts such as fractions, ratios, quadratic equations, postulates, theorems, circle, and tangents. Language topics include adverbs, adjectives, and synonyms. Topics in science include Newton's Laws, sound, light, cells, and molecules.

In this course, you will also be introduced to various geometric forms, synonyms, antonyms, linear equations and inequalities, and finding the value of volumes and cones. The various offline activities with this course are focused on improving your understanding about the concepts taught in the course.

Course Goals

By the end of this course, you will be able to do the following:

- Explore fractions, proper and improper.
- Find equivalent fractions and the least common denominator.
- Perform addition, subtraction, multiplication, and division on fractions.
- Add, subtract, multiply, and divide decimal numbers.
- Rename a fraction as a decimal and round decimal numbers.
- Solve real-life problems involving fractions and decimals.
- Learn about ratios.
- Find the mean, median, and mode of a set of data.
- Study variables and find the value of an expression with one variable.
- Evaluate expressions with more than one variable, using the order of operations.
- Add, subtract, multiply, and divide monomials and binomials.
- Solve basic linear equations that have one variable, using inspection, and by isolating the variable.
- Determine linear inequalities using addition and subtraction.
- Solve different types of quadratic equations.
- Solve word problems that can be represented by quadratic equations.
- Simplify and multiply algebraic expressions.
- Factor common algebraic expressions.
- Recognize examples of postulates and theorems.
- Identify congruent, non-congruent, supplementary, and complementary angles.
- Describe the relationship among angles formed by transversal cutting parallel lines.

- Apply transitive properties to parallel and perpendicular lines.
- Determine the measurements of given angles in a triangle by applying two theorems.
- Explore the Pythagorean Theorem and its corollary and apply them to solve problems.
- Use the relationship between the hypotenuse, the legs, and the altitude of right triangles to solve problems.
- Solve problems by applying the relationship between lengths of the legs and the hypotenuse of a 30°-60°-90° right triangle.
- Apply inequality theorems to solve problems.
- Identify examples of different types of polygons.
- Solve problems related to the characteristics of rhombuses and trapezoids.
- Determine the area of any triangle.
- Solve problems based on the characteristics of lines that are tangent to circles.
- Calculate the measure of angles that intercept arcs.
- Use the measurements of a circle to calculate the length of a given arc.
- Calculate the area of a circle.
- Identify various geometric forms.
- Determine the lateral area, total area, and volume of a cylinder and cones.
- Explore adverbs and adjectives.
- Create analogies to clarify your writing.
- Discover prepositions and prepositional phrases.
- Find out about synonyms and antonyms.
- Learn about electricity, circuits, and power.
- Explore magnetism and electromagnetism.
- Learn about types of energy, types of waves and their parts wave part, and properties of waves.
- Study how sound and light travel.
- Discover Newton's three laws, momentum, and inertia.
- Study about work and simple machines.
- Identify ionic, covalent, and metallic substances and describe their bonding.
- Differentiate between ionic, polar covalent and nonpolar covalent bonds.
- Predict molecular polarity and the three-dimensional bond shape of a molecule.
- Draw Lewis Structure.
- Describe kinetic energy.
- Calculate problems using gas laws.
- Study Dalton's law of partial pressures and Graham's law of effusion to describe gases.
- Explain the flow of materials in and out of cells.
- Demonstrate knowledge of the biology, diversity, evolution, and importance of the Kingdom Fungi and importance of Prokaryotes.
- Explore the structure and functions of living organisms.
- Learn basic chemistry to understand biology better.
- Describe how the four major groups of biological molecules function in a natural system.
- Describe DNA's structure and functions, and the gene and its functions.

General Skills

To participate in this course, you should be able to do the following:

- Complete basic operations with word processing software, such as Microsoft Word or Google Docs.
- Complete basic operations with presentation software, such as Microsoft PowerPoint or Google Docs presentation.
- Perform online research using various search engines and library databases.
- Communicate through email and participate in discussion boards.

For a complete list of general skills that are required for participation in online courses, refer to the Prerequisites section of the Plato Student Orientation document, found at the beginning of this course.

Credit Value

HESI A2 is a 0.5-credit course.

Course Materials

- notebook
- computer with Internet connection and speakers or headphones
- Microsoft Word or equivalent
- Microsoft PowerPoint or equivalent

Course Pacing Guide

This course description and pacing guide is intended to help you keep on schedule with your work. Note that your course instructor may modify the schedule to meet the specific needs of your class.

Unit 1: Basic Mathematics

Summary

In this unit, you will study how to use a fraction to represent a part of an object. Taking the concept of fractions further, you will learn about fraction notation, proper and improper fractions, and equivalent fractions. You will also rename improper fractions as whole or mixed numbers. You will find the Least Common Denominator and rename fractions using it. Further, you will add, subtract, multiply, and divide fractions and decimals. Additionally, you will learn to add, subtract, multiply, and divide decimal numbers. You will rename fractions as decimals, and round decimal numbers. In the latter part of the unit, you will study ratios. Finally, you will solve real life problems using addition and subtraction, multiplication and division, and fractions and decimals.

Unit 2: Algebra

Summary

In this unit, you will study how to find the mean, median, and mode of a set of data. You will study variables and find the value of an expression with one variable. Also, you will evaluate the expressions with more than one variable using the order of expressions. You will add, subtract, multiply, and divide monomials and binomials. You will solve linear equalities using addition and subtraction. Additionally, you will solve special quadratic equations in which both the sides are perfect squares. You will review polynomials and factoring, and solve equations that have absolute values. You will solve equations of the form $x^2 + bx = 0$. You will use the quadratic formula to find a set for a quadratic equation, and solve word problems that can be represented by quadratic equations. By collecting like terms and following grouping symbols, you will simplify algebraic expressions. You will multiply algebraic expressions, using a shortcut to binomials and special products. Finally, you will factor common algebraic expressions, and simplify rational expressions using what you know about factoring.

Unit 3: Geometry

Summary

Unit 3 focuses on concepts in Geometry. The unit begins by teaching you postulates and theorems. It then goes on to teach you to identify congruent, non-congruent, supplementary, and complementary angles. Then, you will describe the relationship among angles formed by transversal cutting parallel lines and apply transitive properties to parallel and perpendicular lines. By applying two theorems, you will then correctly determine the measurements of given angles in a triangle. You will study the Pythagorean Theorem and its corollary and apply them to solve problems. Further in the unit, you will solve problems using the relationship between the hypotenuse, the legs, and the altitude of right triangles. Further, you will apply the inequality theorems to solve problem involving the relative sizes of the sides and angles of triangles. Going ahead, you will identify the examples of different types of polygons, and solve problems involving the measure of angles of polygons. You will also solve problems involving the measure of interior and exterior angles of regular polygons. The unit further teaches you to solve problems related to rhombuses and trapezoids and calculate the area of the same. Given the measure of a base and the altitude to that base, you will learn to determine the area of any triangle. You will apply the relationship among circles, chords, and radii to solve problems. You will also solve problems on the line tangents of circles. Going ahead, you will apply the theorem and postulates to solve problems about arcs and chords in congruent circles. You will calculate the measure of angles that intercept arcs and the circumference of any circle. Towards the end of this unit, you will calculate the area of a circle, and using the measurements of a circle, calculate the length of a given arc. You will identify geometric forms such as a prism, right prism, oblique prism, triangular prism, quadrangular prism, pentagonal prism, hexagonal prism, and n-gonal prism. Finally, you will determine the lateral area, total area, and volume of a cylinder and cones.

Unit 4: Language

Summary

Unit 4 focuses on English grammar. In this unit, you will learn to create analogies to clarify your writing. You will study adverbs and their use in comparing things. You will also learn to find adjectives, and use the same to compare things. In the other lessons in the unit, you will learn about prepositions, recognizing a prepositional phrase, and using a prepositional phrase in a sentence. Finally, you will study antonyms and synonyms.

Unit 5: Science, Part 1

Summary

Unit 5 starts with a lesson about electricity, forms of electricity, circuits, and power. You will then learn how magnets work. You will also learn about magnetism and electricity. You will then learn about the types of energy, types of waves and their parts, and properties of waves. You will study the properties and behavior of sound and light. Further in the unit, you will learn about motion, speed, velocity, and acceleration. At the end of the unit, you will learn about Newton's three laws, momentum, and inertia. Finally, you will learn about work and simple machines.

Unit 6: Science, Part 2

Summary

In this unit, you will identify ionic, covalent, and metallic substances, and describe their bonding. You will differentiate between ionic, polar covalent, and nonpolar covalent bonds. You will draw the Lewis structure. Then, you will predict molecular polarity, identify intermolecular forces, and predict the three-dimensional bond shape of a molecule. You will study about kinetic energy. Further in the unit, you will calculate problems using gas laws, and identify an ideal gas and use the ideal gas law. To describe gases, you will use Dalton's law of partial pressures and Graham's law of effusion. The unit then moves into biology, starting with how materials are transported in and out of cells. You will demonstrate knowledge of the biology, diversity, evolution, and importance of the Kingdom Fungi and prokaryotes. You will study the structure and functions of living organisms and understand enough about basic chemistry to better understand biology. Finally, you will describe DNA's structure and functions, including replication and repair, and study the gene and its functions.