

OPTIONS FRMS Science 8 B	Scope and Sequence
Unit Lesson	Objectives
Motion and Forces	
Speed and Velocity	
	Differentiate between speed and velocity.
	Solve problems involving distance, time, speed, and/or velocity.
	Interpret graphs of distance versus time.
Acceleration	
	Describe the concept of acceleration.
	Solve problems involving velocity, time, and acceleration.
	Interpret graphs of velocity versus time.
Lab: Motion	
	Measure distance and time to determine speed.
	Graph changes in motion.
	Interpret data to determine acceleration.
Introduction to Forces	
	Describe the concept of force.
	Explain how to determine the net force on an object.
	Distinguish between balanced and unbalanced forces and their effect on motion.
Newton's Laws of Motion	
	Describe Newton's first law of motion and how it relates to inertia.
	Use Newton's second law of motion to calculate force, mass, and acceleration.
	Explain Newton's third law of motion and how it relates to action and reaction forces.
	Identify applications of Newton's three laws of motion.

Unit Lesson

Objectives

Lab: Newton's Laws of Motion

Demonstrate Newton's first law.

Verify Newton's second law by changing the variables F, m, or a.

Momentum

Define and calculate momentum.

Explain how momentum is conserved.

Apply Newton's third law of motion to understand what happens to momentum when two objects collide.

Use mathematical representations to show that the total momentum of a system of objects is conserved when there is no net force on the system.

Unit Test

Health

Communicable Diseases

Identify the causes, symptoms, and risk factors related to communicable diseases.

Identify laws, policies, and regulations that promote health and prevent disease.

Identify strategies to detect, treat, and prevent communicable diseases.

Describe the impact of global health issues on local communities.

A Substance-Free Lifestyle

Explain health benefits of abstaining from or discontinuing use of alcohol, tobacco, and other drugs.

Identify strategies for preventing use of tobacco, alcohol, and other addictive substances.

Identify healthy alternatives to alcohol, tobacco, and other drug use.

Identify treatment options for those suffering from alcoholism nicotine dependency, and drug addiction.

Skills for Healthy Relationships

Identify character traits that promote healthy relationships.

Unit Lesson

Objectives

Describe strategies for communicating in healthy ways.

Explain the role of empathy in building and maintaining healthy relationships.

Conflict Resolution and Decision-Making Skills

Explain healthy communication and conflict resolution skills.

Describe how to apply a thoughtful decision-making process to a dangerous, risky, or emotionally charged situation.

Explain how to effectively respond to peer pressure.

Identify options that exist when communication fails or breaks down.

Conception, Pregnancy, and Birth

Explain how conception occurs and the stages of pregnancy.

Describe practices that are important for the health of a pregnant woman and her fetus.

Evaluate the physical, social, emotional, legal, and economic effects of teen pregnancy and parenting.

Abstinence, Safe Sex, and Making Informed Decisions

Describe the benefits of abstinence.

Compare and contrast a variety of FDA-approved contraceptives.

Identify factors that influence one's perceptions about sexual activity.

Identify ways to maintain sexual or reproductive health.

Understanding HIV, AIDS, and STIs

Describe characteristics of a healthy relationship.

Identify methods for preventing the spread of STIs.

Describe treatment options for STIs.

Analyze the impact STIs and HIV/AIDS have on someone's everyday life.

Unit Lesson

Objectives

Test

Waves, Sound, and Light

Introduction to Waves

Define waves and explain how they carry energy.

Distinguish between mechanical waves and electromagnetic waves.

Compare and contrast transverse waves and longitudinal waves.

Properties of Waves

Describe how a wave's amplitude is related to the energy the wave carries.

Describe the relationship between the frequency and wavelength of a wave.

Calculate the speed of a transverse wave.

Explain why waves travel at different speeds.

Use mathematical representations to show relationships among the frequency, wavelength, and speed of waves traveling in various media.

Wave Interactions

Explain what happens when waves interact.

Describe how a wave's direction is changed by reflection, refraction, and diffraction.

Differentiate between constructive and destructive interference.

Sound Waves

Describe how sound waves are produced and how they travel.

Identify the features of a sound wave.

Explain how different materials and different temperatures affect the speed of sound waves.

Using Sound

Explain how and why animals use echolocation.

Unit Lesson

Objectives

Describe the uses of ultrasound technology.

Summarize the ways in which sound waves are used for communication.

The Electromagnetic Spectrum

Describe the different parts of the electromagnetic spectrum.

Distinguish how electromagnetic waves differ from one another.

Identify how different types of electromagnetic waves are used.

Properties of Light

Describe the wave and particle models of light.

Explain what happens when light interacts with objects.

Recognize what determines the color of an object.

Reflection and Mirrors

Explain how light is reflected from a surface.

Describe the law of reflection.

Describe how a mirror forms an image.

Identify the types of images formed by different kinds of mirrors.

Refraction and Lenses

Explain how light is refracted when it passes from one medium to another.

Describe how a lens forms an image.

Analyze ray diagrams for a lens.

Identify the types of images formed by different kinds of lenses.

Unit Lesson

Objectives

Unit Test

Electricity and Magnetism

Electric Charge

Determine how electric charges interact.

Explain how electrons cause objects to become electrically charged.

Analyze the factors that affect the strength of an electric force.

Describe the electric field due to a charge.

Electric Current

Explain how an electric current is produced.

Explain the relationship between voltage and an electric current.

Describe resistance and how it affects current.

Distinguish between conductors, superconductors, semiconductors, and insulators.

Ohm's Law

Explain the relationship between current, voltage, and resistance (Ohm's law).

Calculate the voltage, current, or resistance given the other two quantities.

Magnets and Magnetism

Describe the properties of magnets.

Determine how magnetic poles interact with each other.

Illustrate the magnetic field around a magnet.

Describe Earth's magnetic field.

Lab: Magnetic and Electric Fields

Demonstrate and describe magnetic fields.

Unit Lesson

Objectives

Demonstrate and describe electric fields.

Show how magnetic and electric fields are related.

Electromagnetism

Indicate how magnetism is produced by electric currents.

Explain how an electric current is produced by a magnet.

Describe the characteristics of solenoids and electromagnets.

Unit Test

Cumulative Exam

Cumulative Exam Review

Cumulative Exam