

Unit 7 Suspension 2019

Content Area: **Applied Technology**
Course(s):
Time Period: **Marking Period 2**
Length: **3 weeks**
Status: **Published**

Summary

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In this unit students will learn about automobile tires, their construction, wear angles and, sidewall markings. The student will also learn the proper way to change a flat, how to mount and balance a tire on a rim and how to diagnose simple tire related problems. Emphasis will be on proper tire maintenance and safety.

Introduction:

The goal of this unit is to give students a basic understanding of how essential the tires and wheels are on any vehicle and how they are used on many applications to perform various jobs, the content will be the understanding of how wheels are simple tools used as part of a complex machine. The content introduced will be in accordance with STEAM learning and incorporate all the elements of the acronym. The Science (Physics) of how wheels assist in doing work. The Technology of how tires of various sizes are used in a complex machine. The Engineering of such a machine. The Art (Automotive). The Math in tire sizes.

July 2019

Standards

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
LA.RH.9-10.1	Accurately cite strong and thorough textual evidence, to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.
LA.RH.9-10.2	Determine the theme, central ideas, key information and/or perspective(s) presented in a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
LA.RH.9-10.3	Analyze in detail a series of events described in a text; draw connections between the events, to determine whether earlier events caused later ones or simply preceded them.
	Craft and Structure
MA.K-12.4	Model with mathematics.
MA.K-12.5	Use appropriate tools strategically.
	Integration of Knowledge and Ideas
MA.K-12.6	Attend to precision.

MA.K-12.7	Look for and make use of structure.
MA.K-12.8	Look for and express regularity in repeated reasoning.
CRP.K-12.CRP1.1	Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP5	Consider the environmental, social and economic impacts of decisions.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP11	Use technology to enhance productivity.
SCI.HS-ESS3-4	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
SCI.HS-PS3-1	Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.
SCI.HS-PS2-2	Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.
SCI.HS-PS2-3	Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.
SCI.HS-PS1-5	Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.
SCI.HS-PS2-1	Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.
CAEP.9.2.12.C	Career Preparation
CAEP.9.2.12.C.1	Review career goals and determine steps necessary for attainment.
CAEP.9.2.12.C.2	Modify Personalized Student Learning Plans to support declared career goals.
CAEP.9.2.12.C.3	Identify transferable career skills and design alternate career plans.
CAEP.9.2.12.C.4	Analyze how economic conditions and societal changes influence employment trends and future education.
CAEP.9.2.12.C.5	Research career opportunities in the United States and abroad that require knowledge of world languages and diverse cultures.
CAEP.9.2.12.C.6	Investigate entrepreneurship opportunities as options for career planning and identify the knowledge, skills, abilities, and resources required for owning and managing a business.
CAEP.9.2.12.C.7	Examine the professional, legal, and ethical responsibilities for both employers and employees in the global workplace.
CAEP.9.2.12.C.8	Assess the impact of litigation and court decisions on employment laws and practices.
CAEP.9.2.12.C.9	Analyze the correlation between personal and financial behavior and employability.

Essential Questions

What is an automotive suspension system?

What is the primary function of an automobile tire and how is it constructed?

How can a tire's quality be determined and where is important information about the tire located?

What marking can be found on a tire side wall, what are the meanings?

Objectives

Students will know:

what the markings on the sidewall of a tire mean.

the three grading designations of a tire traction, temperature and tread wear.

what the effects of poor tire maintenance will cause

Students will be skilled at:

the proper way to change a flat.

Learning Plan

Preview the essential questions and connect to learning throughout the unit.

Teacher led discussion on a vehicle's suspension system its purpose and how it operates.

Demonstration of the proper uses and function of tire equipment, jacks, lug wrenches, tire balancer, etc.

Video on automotive suspension systems pausing frequently to reiterate key points and promote discussions on

Hands on Task Sheets pertaining to the suspension system.

Written test on essential knowledge and lesson mastery.

Closing discussion and anticipatory set.

Assessment

perform a hands practicum of the proper way to change a flat. Formative Assessment

participate in class discussion regarding wear angles, tire markings, and maintenance. Formative Assessment

written quizzes and test on tire markings and suspension. Summative Assessment

demonstrate safe work habits, when working with and around tires and related equipment. Formative Assessment

Final Exam - Benchmark Assessment

Job Sheets - Formative Assessment

Materials

Use of Modern Automotive Technology text and workbook chapter 65.

Internet research to be incorporated throughout the unit of study.

Modifications

<https://docs.google.com/spreadsheets/d/1AckQSTINShzIM-rDV5YKYUFm2WMCxJQiS10rEZ4jCC8/edit?usp=sharing>