

Mechanical Systems Summary & Review

<p>What do we use machines to do work and to transfer energy? How can we design and use machines efficiently and responsibly? How have machines changed over time?</p>	
<p>Key Concepts Science Focus 8 ((Unit At A Glance p. 356)</p>	<p style="color: purple;">Guiding Questions and Activities to Help you Study</p>
<p>Topic 1 Levers and Inclined Planes</p>	<ul style="list-style-type: none"> - Describe the various types of simple machines. (additional notes) - Explain the differences between the three different class levers. (p. 271) - Know the scientific meaning of Work and how to calculate it. (p. 276) - How do machines make work easier? (p.278)
<p>Topic 2 The Wheel and Axle, Gears, and Pulleys</p>	<ul style="list-style-type: none"> - What is Mechanical Advantage and how is it calculated? (p.278-281) - Explain how machines can be designed and adapted to meet the specific needs of people. (p.283) - Describe what a winch is. (p. 285) How does a wheel and axle work? (p. 286) - Illustrate different gear ratios and combinations of gears. (notes, p. 287-289) - Describe how pulleys are used to change the direction of motion when objects are lifted. (p 292-293) - Illustrate different kinds of pulleys and practical applications for each. (p 292-293)
<p>Topic 3 Energy, Friction and Efficiency</p>	<ul style="list-style-type: none"> - Describe the difference between potential and kinetic energy. (p.296) - How do machines transfer energy? (p 298) - What does friction do to efficiency in a machine? (p.298-299)
<p>Topic 4 Force, Pressure and Area</p>	<ul style="list-style-type: none"> - What happens when you change the area over which force is applied? (p.304) - Provide some practical applications, which use the principle of 'spreading force over a larger area', to reduce the pressure. (p.305) - Describe Pascal's law and give practical examples, which apply the law. (p.307-309)
<p>Topic 5 Hydraulics and Pneumatics</p>	<ul style="list-style-type: none"> - Explain the difference between hydraulics and pneumatics. (p.313) - Create a comparison chart that illustrates the similarities and differences between open (pneumatic) and closed (hydraulic) systems. Identify practical everyday situations in which hydraulics and pneumatics are used to make work easier. (p 314-318) - Describe where hydraulics and pneumatics can be found in your body. (p.323-325)
<p>Topic 6 Combining Systems</p>	<ul style="list-style-type: none"> - Describe how large machines (systems), are created by combining simple machines (subsystems). (p.326-330)
<p>Topic 7 Machines throughout History</p>	<ul style="list-style-type: none"> - Illustrate a timeline of transportation machines throughout history (p.332-341)
<p>Topic 8 People and Machines</p>	<ul style="list-style-type: none"> - How does society change the way machines are developed and used? (p.342-343) - What impacts do machines have on people and the environment (p.344-346) - What reasons are there to develop better machines by using science and technology? (p 348) - What is the science of ergonomics? (p. 349)
<p style="color: purple;">Design a Concept Map linking the ideas introduced and reinforced in this Unit on Mechanical Systems</p>	
<p>Try some of the Practice Quizzes to see how much you have recalled from this Unit</p>	