

Jiggle, Jostle &



jOLT!

WinterPromise

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Thanks for understanding that this guide

MAY NOT BE RESOLD OR INCLUDED IN A RESALE PACKAGE WITH OTHER MATERIALS

Jiggle, Jostle & Jolt!

Science for 4th to 7th Grade Weekly Overview of Topics

FORMS OF ENERGY

- Week 1: Forms of Energy
- Week 2: Mechanical Energy
- Week 3: Chemical Energy
- Week 4: Nuclear Energy
- Week 5: Nuclear Weapons

THERMAL ENERGY

- Week 6: Thermal Energy
- Week 7: Conduction
- Week 8: Convection
- Week 9: Radiation
- Week 10: Solar & Geogthermal Energy

ELECTRICITY

- Week 11: Introducing Electricity
- Week 12: Discovering Static Electricity
- Week 13: All Charged Up
- Week 14: Lightning Lights Up the Sky
- Week 15: Current
- Week 16: Voltage & Power
- Week 17: Circuits



MAGNETISM

- Week 18: Magnetic Fields
- Week 19: Magnetic Materials
- Week 20: The Earth's Magnetic Field
- Week 21: Electromagnetism
- Week 22: Generators & Motors

WAVES & SOUND

- Week 23: Waves
- Week 24: Electromagnetic Spectrum
- Week 25: Sound Waves
- Week 26: Characteristics of Sound
- Week 27: Behavior of Sound
- Week 28: Musical Instruments

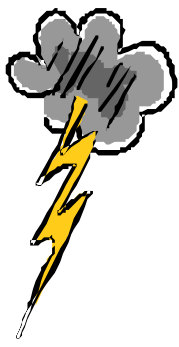
LIGHT

- Week 29: Introducing Light!
- Week 30: Color
- Week 31: Reflection
- Week 32: Mirrors
- Week 33: Refraction
- Week 34: Lenses
- Week 35: Using Energy -- Final Project
- Week 36: Energy Science Review



COMPLETE WITH PARENTAL OVERSIGHT ONLY


You will find this symbol next to many experiments this year. We feel these need parental oversight, as you are working with electricity and need to be careful in attaching certain wires correctly, etc.

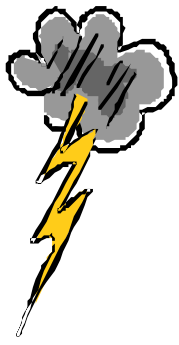


Jiggle, Jostle & Jolt - Week 1

Forms of Energy

ONE-DAY SCHEDULE - Complete All
TWO-DAY SCHEDULE - Divide as Shown



DAY 1	DAY 2
<p style="text-align: center;">READ & COMPLETE:</p> <p>Heat & Energy FORMS OF ENERGY Read Pages 8-11</p> <p><i>Go Over:</i> What Did We Learn? Taking It Further</p>	<p style="text-align: center;">READ & COMPLETE:</p> <p>Solar Workshop Read "Tips & Tricks for Model Building" - Page 4 Read "Understanding the Sun..." - Page 5 Read "Where Does Our Energy Come From?, "History of the Solar Cell," and "How Does a Solar Cell Work?" - Pages 6-7 Read "Powering an Engine with the Energy of the Sun" - Pages 8 to middle of 9</p>
<p style="text-align: center;">YOUR CHOICE OF ACTIVITIES:</p> <p>Heat & Energy Conversion of Energy Page 10 Supplies: 1 copy of "Energy Conversion" worksheet in the back of this guide</p> <p>Heat & Energy Energy Chains Page 11 Supplies: 1 copy of "Energy Chains" worksheet in the back of this guide</p> <p style="text-align: center;">NOTE:</p> <p>In the back of this guide you will find answer keys for the following: What Did We Learn? Taking It Further Student Worksheets Quizzes & Tests</p>	<p style="text-align: center;">YOUR CHOICE OF ACTIVITIES:</p> <p>Create Your "Jolt!" Lab Book Create your "Jolt! Lab Book." Using a spiral notebook, design a cover for your lab book. Then, design a layout for the results you are going to record in it. Your recording should include the following: the name of the experiment, what you are trying to find out, what the experiment involves, the results of the experiment, and your findings. You'll use this lab book all year long.</p> <p> Solar Workshop - Experiment 1 Your New Solar Engine - Pages 8-9 Use the Sun's energy to drive your kit's engine and turn a small sprocket wheel. Record Your Findings in Your Jolt! Lab Book Supplies: Included parts from kit</p>

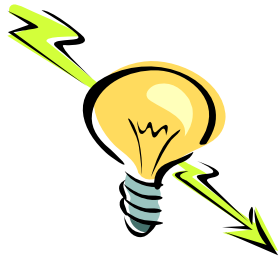


Jiggle, Jostle & Jolt - Week 2

Mechanical Energy

ONE-DAY SCHEDULE - Complete All
TWO-DAY SCHEDULE - Divide as Shown

DAY 1	DAY 2
<p data-bbox="363 533 688 569" style="text-align: center;">READ & COMPLETE:</p> <p data-bbox="230 611 431 646">Heat & Energy</p> <p data-bbox="230 653 505 680">MECHANICAL ENERGY</p> <p data-bbox="230 690 440 722">Read Pages 12-15</p> <p data-bbox="230 751 342 783"><i>Go Over:</i></p> <p data-bbox="230 791 464 823">What Did We Learn?</p> <p data-bbox="230 831 423 863">Taking It Further</p>	<p data-bbox="1029 533 1354 569" style="text-align: center;">READ & COMPLETE:</p> <p data-bbox="899 611 1114 646">Solar Workshop</p> <p data-bbox="899 653 1252 680">Read "Little Shadows" - Page 9</p> <p data-bbox="899 690 1279 722">Read "Artificial Clouds" - Page 10</p>
<p data-bbox="279 968 773 1003" style="text-align: center;">YOUR CHOICE OF ACTIVITIES:</p> <p data-bbox="230 1045 431 1081">Heat & Energy</p> <p data-bbox="230 1087 578 1119">Observing Mechanical Energy</p> <p data-bbox="230 1127 326 1159">Page 13</p> <p data-bbox="230 1167 464 1199">Supplies: 2 pennies</p> <p data-bbox="230 1249 431 1285">Heat & Energy</p> <p data-bbox="230 1291 513 1323">Harnessing Wind Energy</p> <p data-bbox="230 1331 326 1362">Page 14</p> <p data-bbox="230 1371 794 1444">Supplies: Piece of paper, straight pin, soda straw and a photocopy of the pattern on page 14.</p> <p data-bbox="230 1495 431 1530">Heat & Energy</p> <p data-bbox="230 1537 423 1568">Potential Energy</p> <p data-bbox="230 1577 326 1608">Page 15</p> <p data-bbox="230 1617 748 1690">Supplies: Marble, books, cardboard or wood, "Potential Energy" worksheet</p>	<p data-bbox="948 968 1442 1003" style="text-align: center;">YOUR CHOICE OF ACTIVITIES:</p> <p data-bbox="906 1052 1000 1146"></p> <p data-bbox="1016 1045 1438 1081">Solar Workshop - Experiment 2</p> <p data-bbox="1016 1087 1284 1119">Little Shadows - Page 9</p> <p data-bbox="899 1127 1425 1199">Discover how much light your solar module needs in order to run the engine.</p> <p data-bbox="899 1207 1438 1239">Record Your Findings in Your Jolt! Lab Book</p> <p data-bbox="899 1247 1276 1278">Supplies: Included parts from kit</p> <p data-bbox="906 1329 1000 1423"></p> <p data-bbox="1016 1323 1438 1358">Solar Workshop - Experiment 3</p> <p data-bbox="1016 1365 1312 1396">Artificial Clouds - Page 10</p> <p data-bbox="899 1404 1438 1476">Why isn't the sunlight on an overcast day enough to power your solar engine?</p> <p data-bbox="899 1484 1438 1516">Record Your Findings in Your Jolt! Lab Book</p> <p data-bbox="899 1524 1455 1638">Supplies: Included parts from kit, plus bright sunlight, a sheet of 8 1/2 x 11-inch transparent paper such as white tracing paper or wax paper.</p>

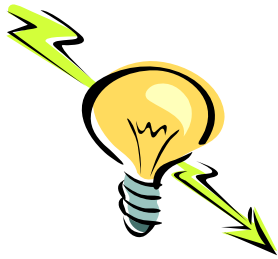


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Energy Conversion

Energy can be transformed from one type to another. For each object below, list the type of energy that it starts with on the left, and list the type of energy the object converts it into on the right. The first one is done as an example.

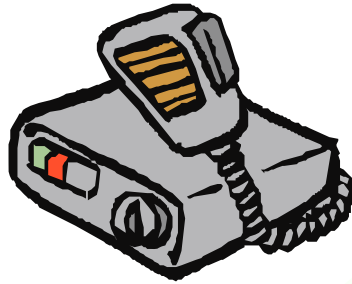
Initial Energy Type	Object	Final Energy Type
Chemical	Battery	Electrical
	Stove	
	Mixer	
	Radio	
	Light bulb	
	Telephone	
	Car engine	
	Piano	
	Motor	
	Generator	
	Curling iron	
	Vacuum cleaner	
	Human body	
	Computer keyboard	

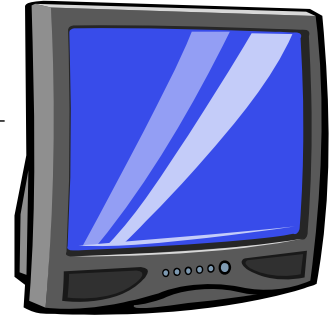


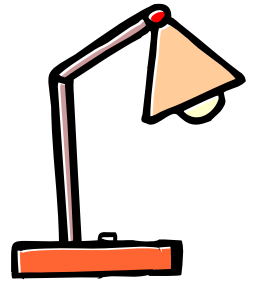
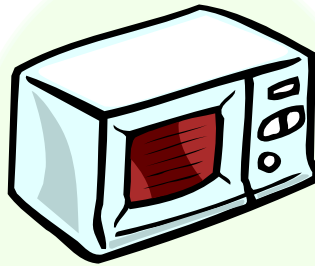
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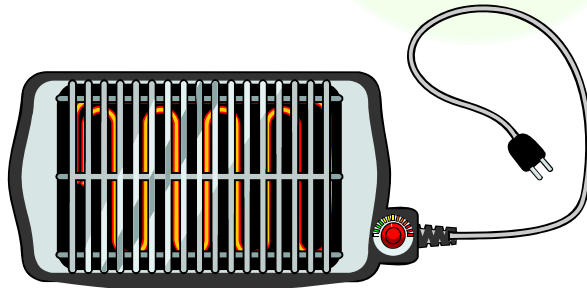
Electromagnetic Spectrum

Below are pictures of devices from our everyday lives. Using the Electromagnetic Spectrum on page 83 of "Heat and Energy," number the devices with numbers 1 to 7 in order from lowest frequency to highest frequency.

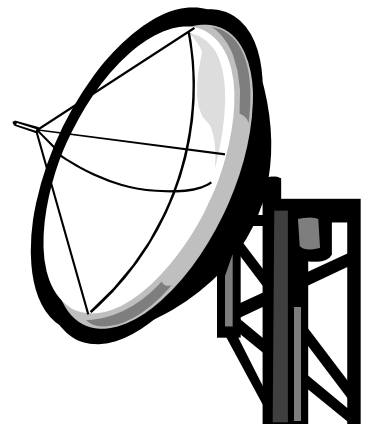


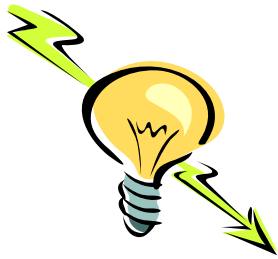












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Quiz for Lessons 1-5

Short answer:

1. List six types of energy recognized by scientists.

2. Give the scientific definition of energy: _____

3. What are the two forms that mechanical energy can take? _____

4. Where is chemical energy stored? _____

5. What type of process releases energy by splitting the nucleus of an atom? _____

6. Who first described mathematically how matter is converted to energy? _____

7. Which releases more energy, chemical or nuclear bonds? _____

8. Name two elements common used in nuclear weapons. _____

Describe the type of energy represented by each item below:

9. Gasoline _____

10. Rainbow _____

11. Running rabbit _____

12. Plant growing _____

13. Tinkling bell _____

14. Flashlight _____

15. Thrown baseball _____

16. Campfire _____

17. Nuclear bomb _____

18. Magnet _____

19. Computer _____

20. Electric can opener _____

Challenge Questions:

21. Write the First Law of Thermodynamics: _____

22. Give three examples of potential energy: _____

23. What are three types of radiation? _____