



Name:

Date:

**Energy:** The capacity to do work. Appears in many forms, all of which are either kinetic or potential.

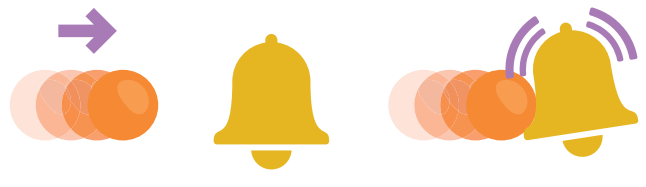
**Potential energy**  
(stored energy)






**Kinetic energy**  
(energy of motion)



Energy cannot be destroyed. But it can be transferred from one object to another or even transformed from one form to another.



## Ready for a little Tech Challenge fun? Let's build a timer!

<p><b>Design Problem</b></p> 	<p>Create a mechanical timer, or a device that can indicate when a specific amount of time has passed.</p>
<p><b>Criteria</b></p> 	<ul style="list-style-type: none"> <li>• Use at least one simple machine.</li> <li>• Device indicates when time has passed with a sound or visual signal.</li> <li>• Determine the number of seconds the device will track consistently.</li> </ul>
<p><b>Constraints</b></p> 	<p>There's a time limit.</p>

How could you build a device that meets these criteria and constraints?  
How could you change your device to include this new criteria?



### Materials

Take a look and see what's available to you! Think about...

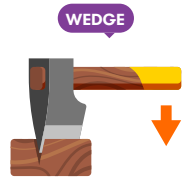
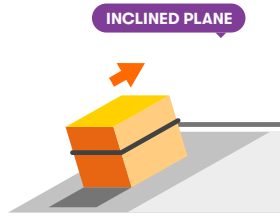
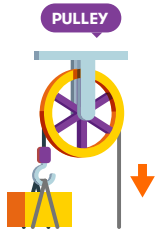
- What simple machines could you create with these materials?
- How could you create a sound or visual signal?
- How can you use stored potential energy to power your timer?



**Tip:** Use as little tape as possible. This will let you change your design faster!



## Simple Machines



## Ready, Set, Build!

1. Try brainstorming with the materials. See what happens when you use and combine them in different ways.
2. Create your device.
3. Test as you build!
  - Make observations on how your device performs. How does it meet the criteria?
  - Use these observations to iterate, or improve on, your next design.

**Device Sketches** Use the space provided to take notes, sketch, and reflect. See if you can include where energy is stored or transferred from one object to another.

## Test Results

<b># of seconds</b>						
<b>Criteria Used</b>						

<b>While building I changed...</b>	<b>If I had more time I would change...</b>
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