ELASTICS AND SPRINGS
We can make things move using stretched elastic or compressed springs. When we stretch an elastic or compress a spring, we store energy in it. This stored energy is called movement energy.

Potential energy
The two different kinds of potential energy are: potential or stored energy, and kinetic energy or energy in motion. An example of the difference between kinetic and potential energy is the “snake-in-a-can” prank.

This is how it works: A can, which is decorated on the outside, has a long spring inside it that will uncoil and jump out when the lid of the can is removed. The spring is decorated like a snake and usually the unsuspecting victim is caught by surprise, thinking that they are opening a can of peanuts. The compressed spring inside the can has potential energy and when the lid of the can is opened and the spring is released, the potential energy becomes kinetic energy.

FUN ACTIVITY: Who can shoot their elastic band the furthest? In this experiment you will investigate how the distance of stretch in a rubber band at rest relates to the distance the rubber band travels after being released. The elastic band that travels the furthest will have released the most amount of stored energy that is converted into movement energy.

Materials:
An open space (Preferably one which you can write on with chalk)
Chalk, ruler
24 rubber bands (all the same length and kind)
Tape measure
Paper and pen
What you need to do

1. Stand with your feet together and ask your friend to mark a starting line with chalk. Shoot your elastic bands from behind this line. Your friend will use this line to measure the distance that your elastic band has travelled.
2. Place your first elastic on the tip of the ruler, pull it back to measure 10cm on the ruler and then let it go. Take note of the angle and height at which you shoot the band to keep this constant for all four elastic bands.
3. Ask your friend to draw a circle where the elastic band lands.
4. Shoot the other four elastic bands at a pull back of 10cm and mark where each one lands with the chalk.
5. Now measure how far you have shot each band by placing the tape measure at the starting line and extending it to where the elastic band landed in each circle. Fill in your findings in the table below.
6. Now do the same experiment, using a stretch distance of 15cm, 20cm and 25cm. Shoot at least four elastic bands for each stretch length. After each launch, circle where each one lands. Measure the distances from your starting line to the circles. Record your findings below.

<table>
<thead>
<tr>
<th>Distance</th>
<th>Elastic band 1</th>
<th>Elastic band 2</th>
<th>Elastic band 3</th>
<th>Elastic band 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>10cm</td>
<td></td>
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<tr>
<td>15cm</td>
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<td>20cm</td>
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<td></td>
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<tr>
<td>25cm</td>
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<td></td>
</tr>
</tbody>
</table>

Questions

1. On the 10cm stretch, did all four elastic bands land close to each other or was there a lot of variation?
2. For the other lengths, did all four elastic bands land close to one another or was there a lot of variation?
3. Was there a noticeable difference between each distance and where the bands landed?
4. Does your data follow any type of pattern or trend?
5. What was the relationship between the stretch length and the launch distance?
6. What do you think this indicates about the relationship between potential and kinetic energy when using rubber bands?

In summary, movement is produced when you stretch an elastic band. The stored energy in the stretched band has the potential to do work. We call this potential energy because the energy has the potential to do something for us later.

Springs can also be compressed (squashed) or stretched and in that way they store energy. A slinky dinky is simply a metal coiled spring which, when stretched, stores energy.
a slinky spring

Spring released stored energy becomes movement energy.

A spring can also be compressed and still do work. Look at the little boy jumping on the pogo stick. This pogo stick works using compressed springs.

1. Name two other toys that have stored (potential) energy:

   

2. In your own words, describe how a spring works:

   

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KEY WORDS:
kinetic energy potential energy stored energy movement energy compressed