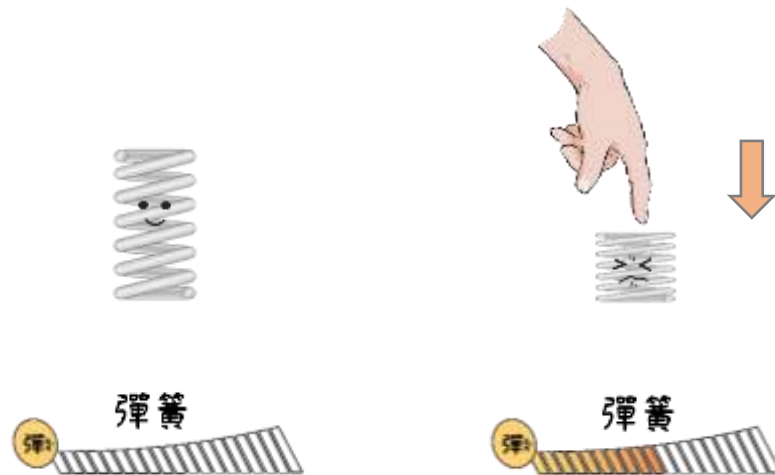


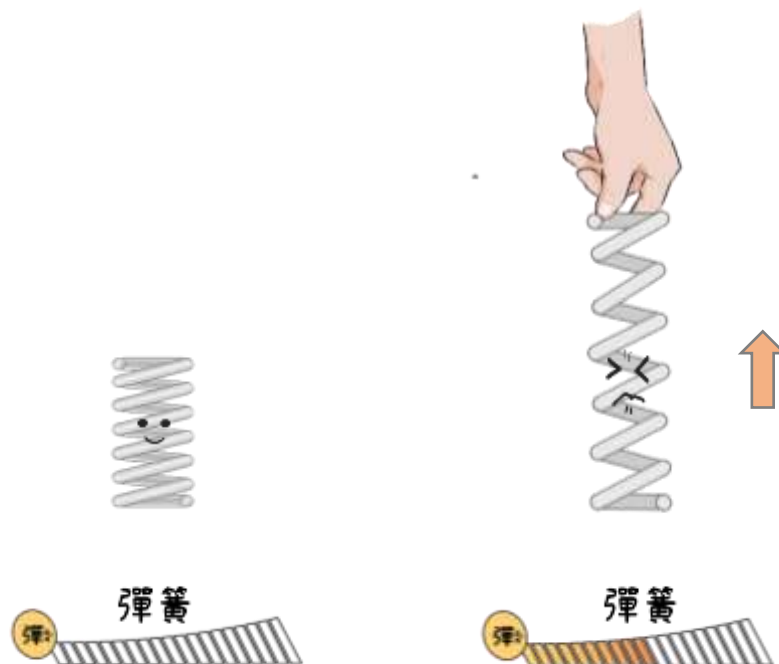
一、愛憋氣的「彈性位能」(💪)

彈性位能最喜歡躲在有彈性的東西裡面，像是橡皮筋、彈簧、或是彈簧床。

當用力把彈簧壓扁或者拉長的時候，其實就是在儲存**能量(彈性位能)**。它會把這些能量「**憋住**」，就像深吸一口氣然後憋住一樣，全身充滿了準備要爆發的**能量**！

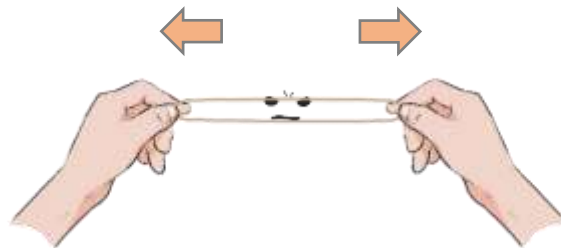
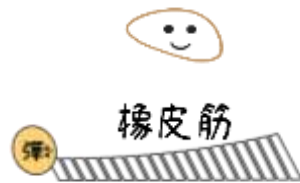


用力把彈簧壓扁

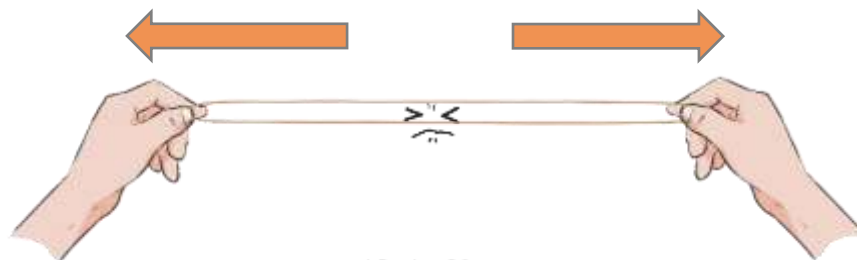


用力把彈簧拉長

越用力把橡皮筋拉長的時候，儲存的**能量(彈性位能)**就越多。



稍微用力拉長橡皮筋

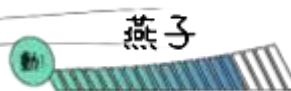
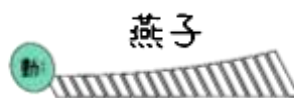


非常用力拉長橡皮筋

所以，「**彈性位能**」就是儲存在被改變形狀的彈性物體裡，一種「**準備好要動**」的「**能量**」。

二、愛跑愛跳的「動能」(🏃🏻‍♂️⚙️)

不管是行駛中的車輛、天空中飛行的小鳥、還是滾動的足球，只要一個東西正在「運動」，它的身上就一定有「動能」。而且同樣的物體動得越快，它就越興奮，能量也越強大喔！



所以，「動能」就是物體在「運動」時所擁有的能量。

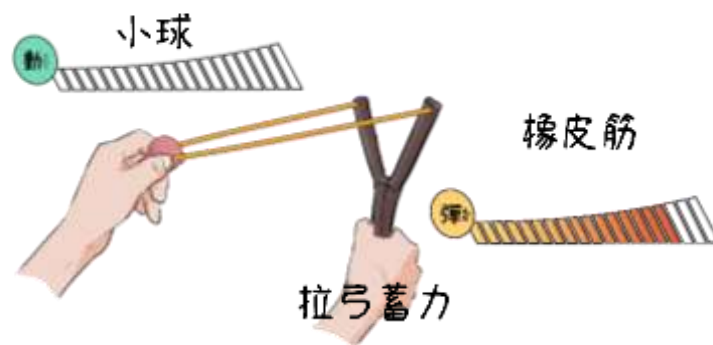
三、「彈性位能」變成「動能」

現在，最神奇的時刻來了！這兩種能量會互相變來變去喔！

我們用拉彈弓當例子：

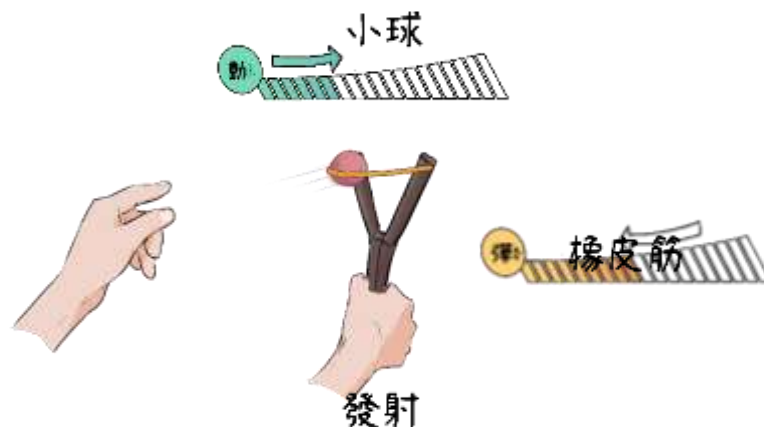
1. 拉開彈弓蓄力

你用力把橡皮筋向後拉，這時候，你把力氣都存進橡皮筋裡了。
把**能量(彈性位能)**都「**憋**」在橡皮筋裡。



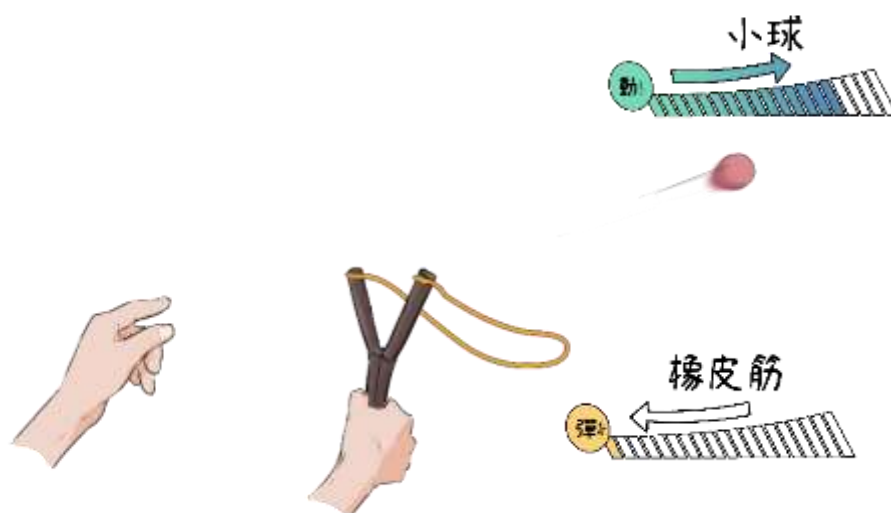
2. 放手！

當你一放手，橡皮筋開始將憋住的**能量(彈性位能)**傳給小球，同時橡皮筋中的**能量(彈性位能)**變成**能量(動能)**進到小球中，讓小球越來越快，小球中的**能量(動能)**也越來越多！



3. 小球飛出去

最後這些衝出來的**能量(彈性位能)**，幾乎全部交給了小球，把小球奮力往前推！小球快速往前飛，身上帶著**能量(動能)**！

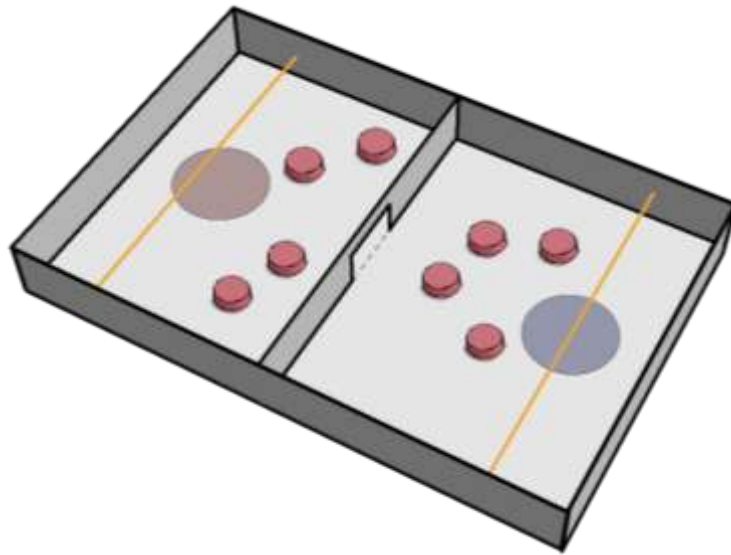


原本儲存在橡皮筋裡的「**彈性位能**」，變成了讓小球往前飛的「**動能**」！

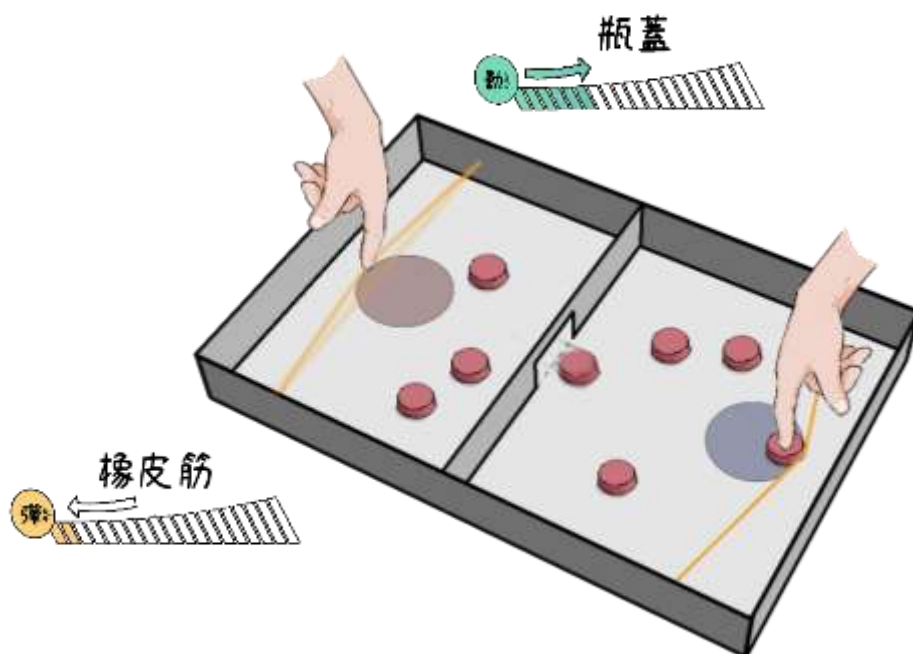
四、闖關活動

第一關：射龍門

(一) 材料：瓶蓋、紙箱、膠帶、橡皮筋(大)

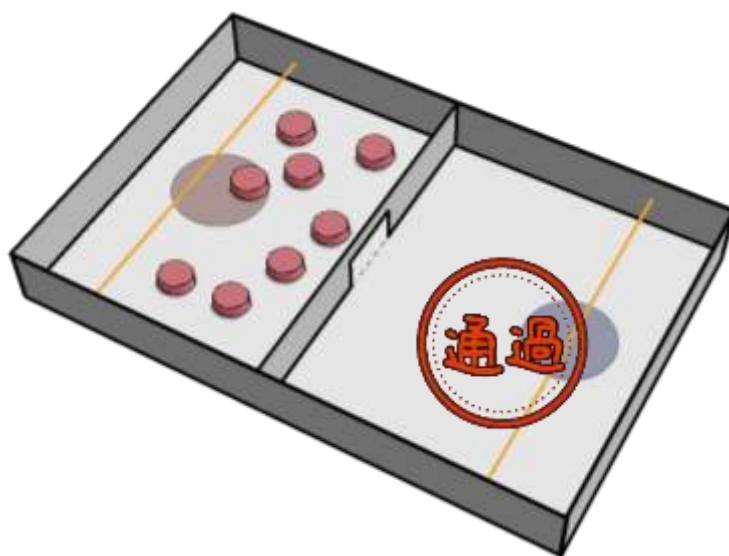


(二) 原理：



(三) 關卡規則：

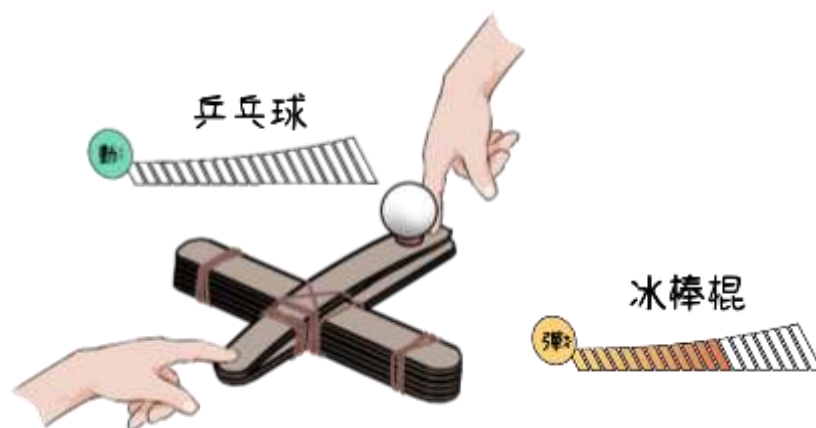
比賽時間 1 分鐘，先將場地中所有瓶蓋彈射對手場地者獲勝；或時間到時，自己場地中瓶蓋數較少的勝。擊敗關主就算通關。



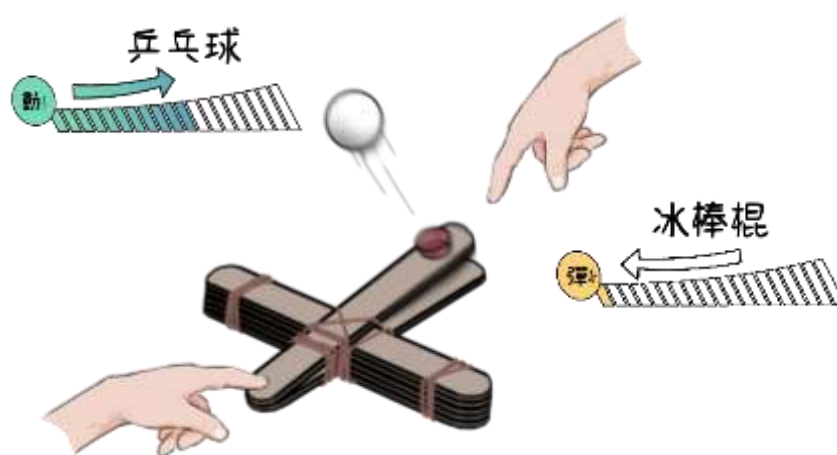
第二關：製作投石機

(一) 材料：冰棒棍、橡皮筋(小)、瓶蓋

(二) 原理：



彎曲冰棒棍蓄力



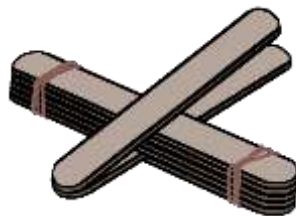
發射

(三) 關卡規則：

完成投石機製作即通關，投石機送給參與者。



步驟一：用 5 根冰棒棍夾住 1 根冰棒棍，並且細綁固定。



步驟二：上方疊上 1 根冰棒棍。



步驟三：細綁固定。



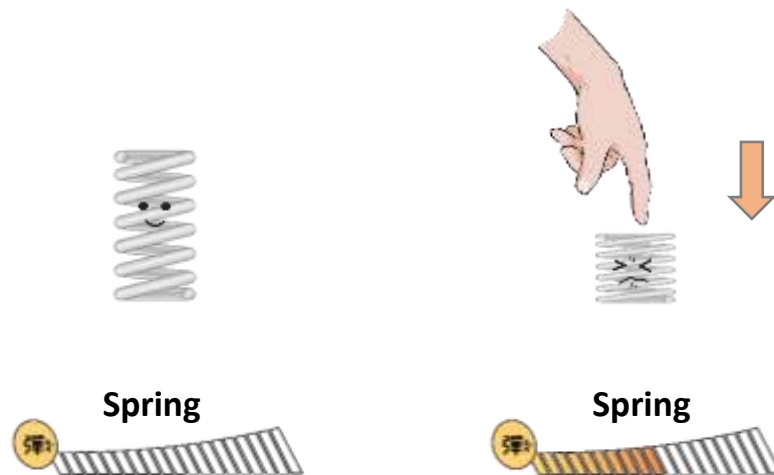
步驟四：貼上瓶蓋。



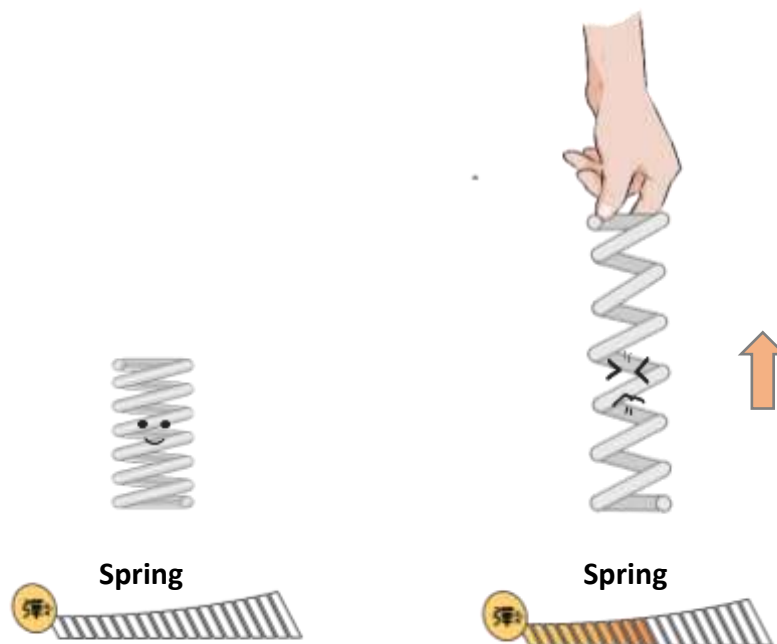
I. Elastic Potential Energy (🧘)

“Elastic potential energy” loves to hide inside elastic objects, such as rubber bands, springs, or trampolines.

When you forcefully compress or stretch a spring, you are actually **storing energy (elastic potential energy)**. It "holds" this energy inside, much like taking a deep breath and **holding it**—the entire body is filled with **energy** ready to burst out !



Push the spring down hard

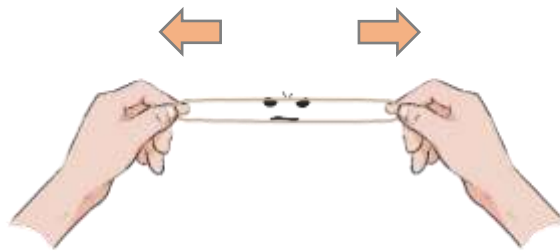


Pull the spring out long

The harder you pull the rubber band, the more energy "elastic potential energy" it stores.



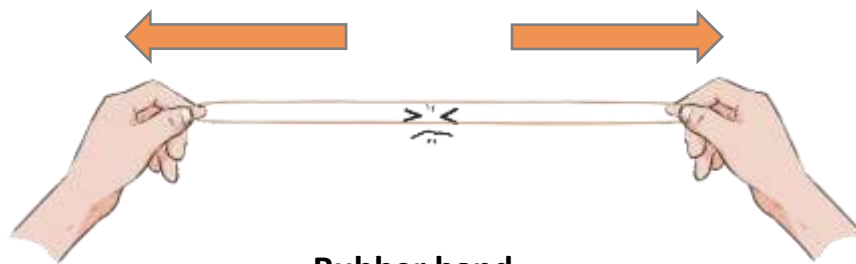
Rubber band



Rubber band



Pull the rubber band a little bit



Rubber band



Pull the rubber band very hard

So, "elastic potential energy" is energy stored in a stretchy object when its shape changes, and it is "ready to move"!

2. Kinetic Energy (🏃 🌀)

Whether it is a car driving on the road, a bird flying in the sky, or a rolling soccer ball, as long as an object is **moving**, it has **kinetic energy**. The **faster an object moves**, the more excited it gets, and the **stronger its energy** becomes!



So, "**kinetic energy**" is the energy an object has when it is **moving**.

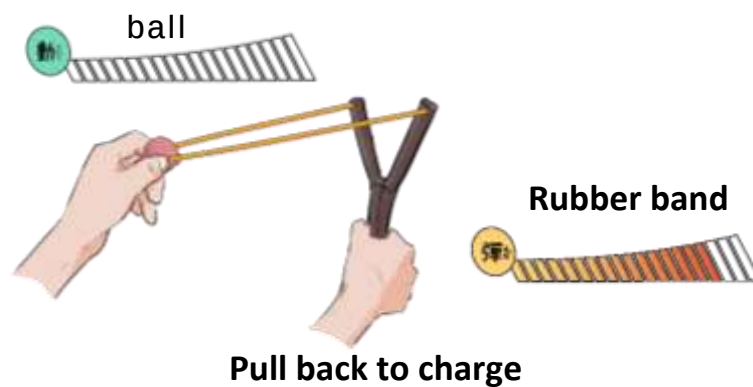
3. Elastic Potential Energy → Kinetic Energy

Now comes the most magical moment! These two types of energy can turn into each other!

Let's use **pulling a slingshot** as an example:

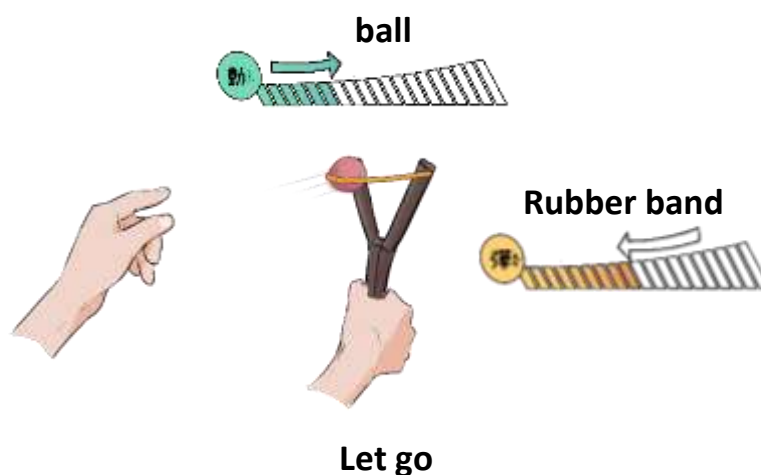
(1) Pull back to charge

You use muscle power to pull the rubber band backward. At this moment, you store **energy (elastic potential energy)** tightly inside the rubber band.



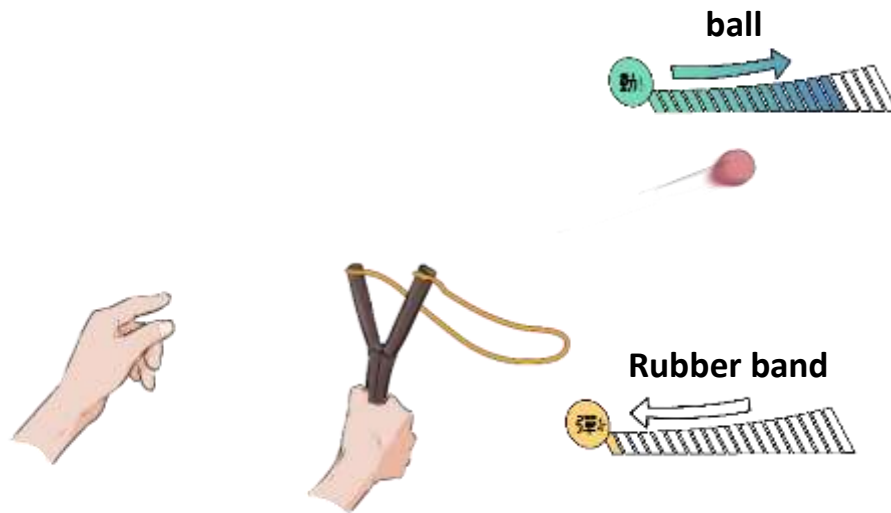
(2) Let go!

The moment you let go, the rubber band passes its stored **energy** to the small ball. The energy changes from **elastic potential energy** into **kinetic energy** inside the ball. This makes the ball go faster and faster, gaining more and more **kinetic energy**!



(3) The ball flies out

Finally, almost all of this rushing **energy (elastic potential energy)** is given to the small ball, pushing it forward with great force! The small ball flies forward quickly, carrying **energy (kinetic energy)** with it !

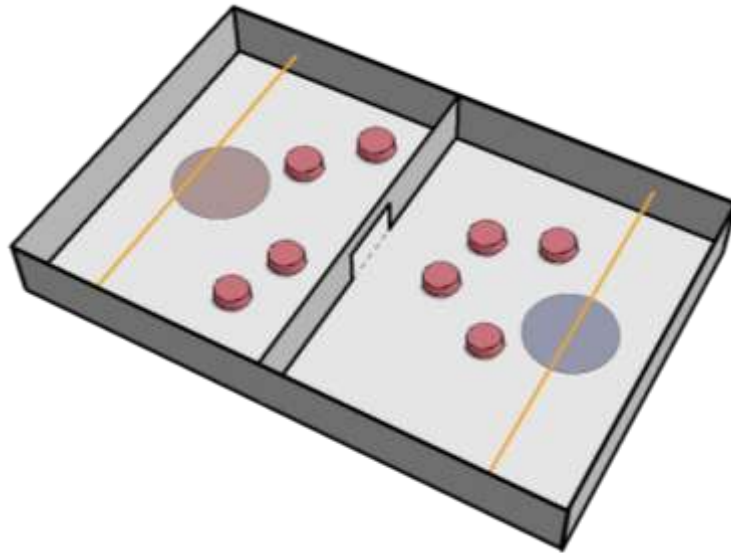


The "**elastic potential energy**" originally stored in the rubber band becomes the "**kinetic energy**" that makes the small ball fly forward!

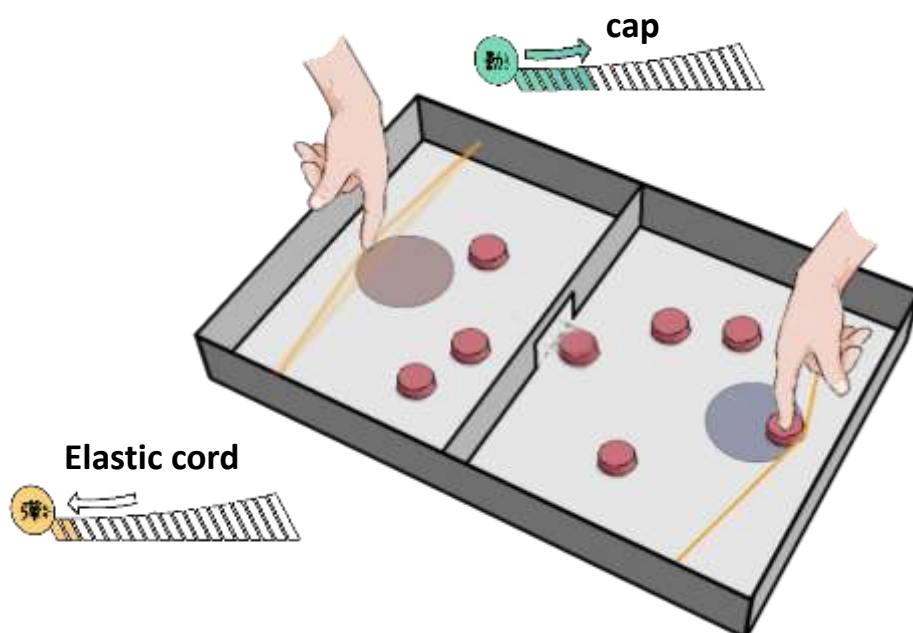
4. Challenge Activities

Stage 1: Shoot the Dragon Gate

(1) Materials: Bottle caps, cardboard boxes, tape, large elastic cords

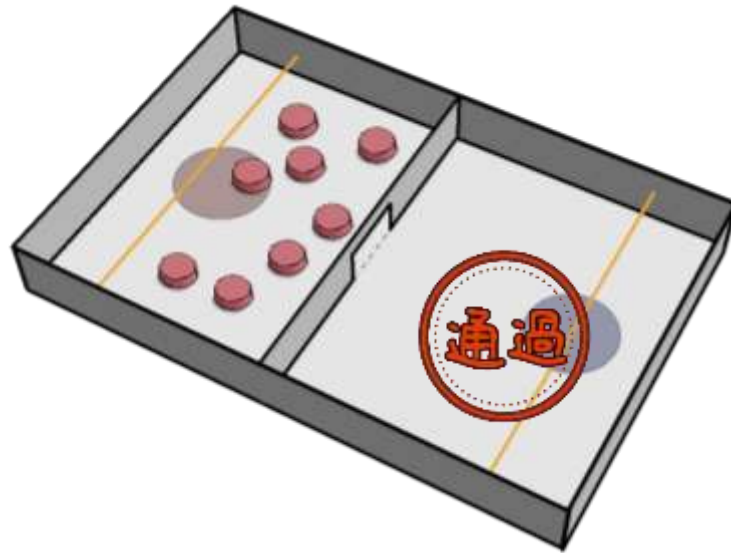


(2) How it Works



(3) Game Rules:

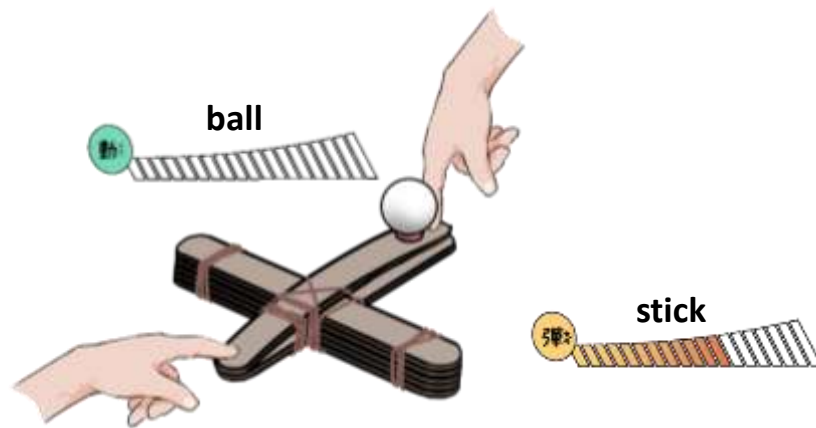
You have 30 seconds. Challenge the game master. If you shoot more bottle caps into the game master's side, you pass the stage!



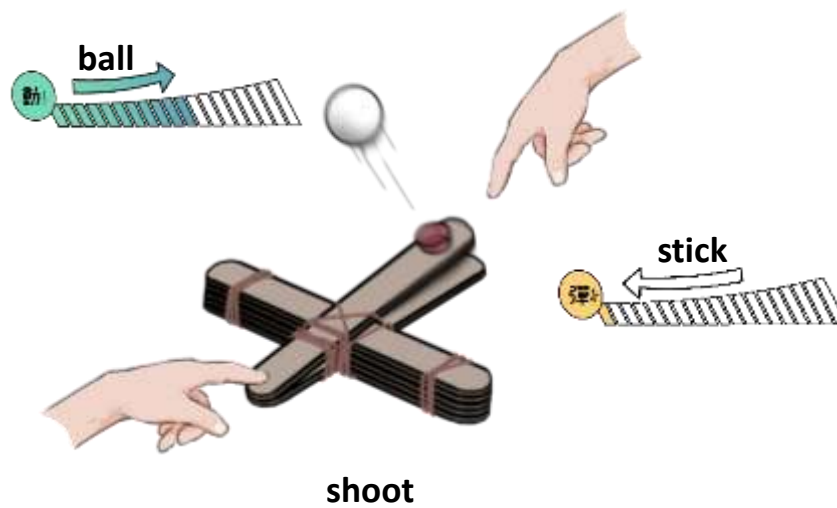
Stage 2: Build a Catapult

(1) Materials: Popsicle sticks, small elastic cords, bottle caps

(2) How it Works



Bend the sticks to store energy

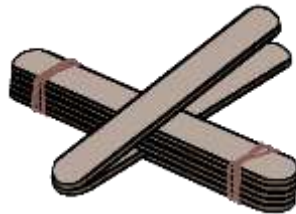


(3) Game Rules:

Finish building the catapult to pass the stage. You get to keep the catapult as a gift.



Step 1: Clamp 1 popsicle stick between 5 popsicle sticks and tie them securely together.



Step 2: Stack 1 popsicle stick on top.



Step 3: Tie and secure it.



Step 4: Glue the bottle cap on top.