



Score!!!



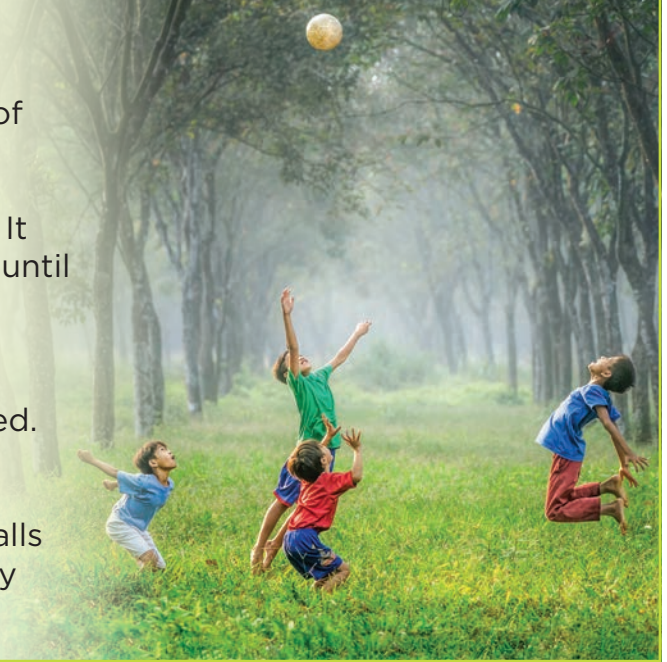
What is Forces and Motion?

Isaac Newton was a key person in the scientific revolution. He is most remembered by Newton's law of forces and motion. He gave three.

Number 1: A ball with no outside force will not move. It stays put. If the ball begins roll, it will continue to roll until it is stopped by an outside force, like your foot.

Number 2: If a ball is kicked (force) the faster (accelerates) the ball will go in the direction it is kicked.

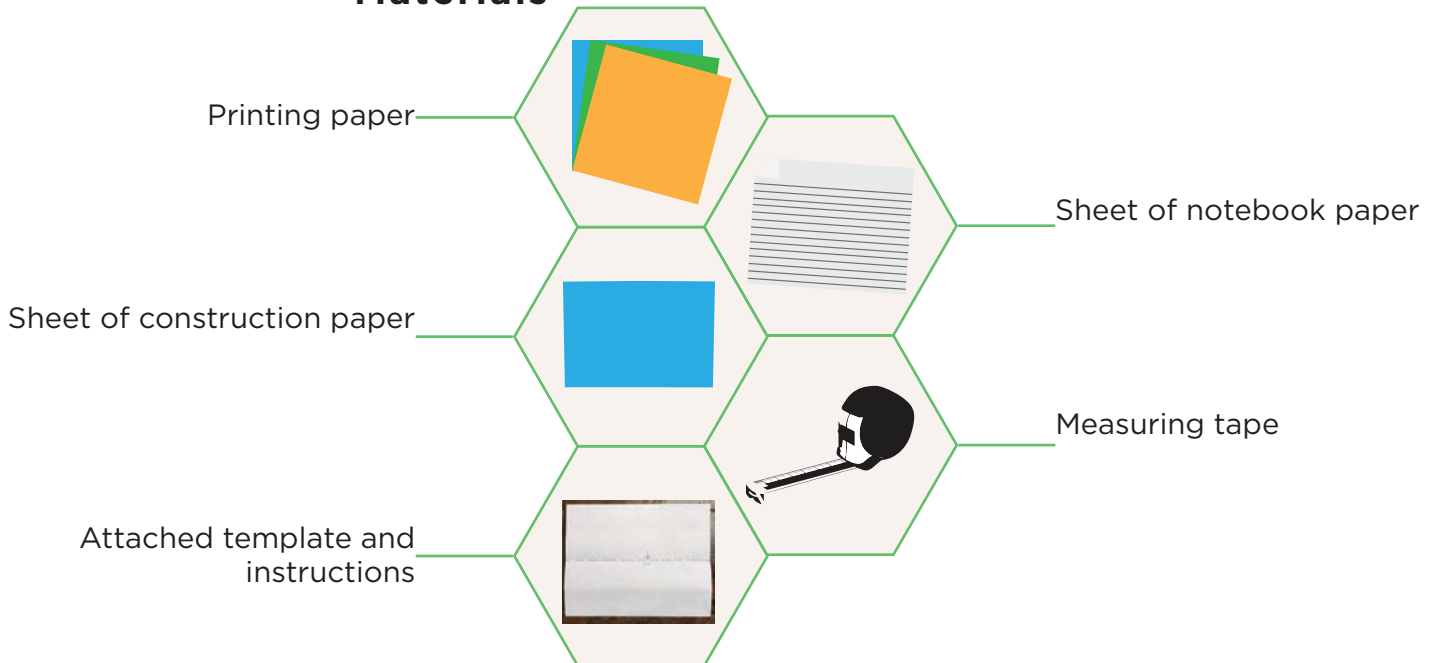
Number 3: If two balls are accelerating toward one another and hit, the force of the hit will cause both balls to go in opposite directions at the same speed. (Every action has an equal and opposite reaction.)



The Experiment

Using Newton's law 2, how far can you flick the ball?

Materials

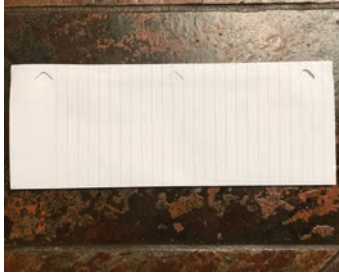


Make the Football

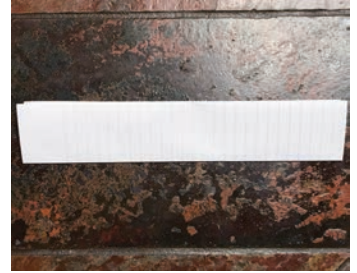
Step 1



Step 2



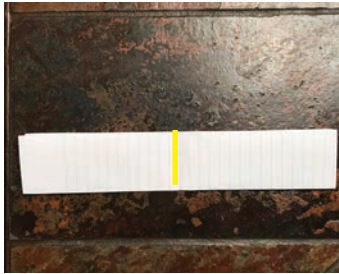
Step 3



Step 4



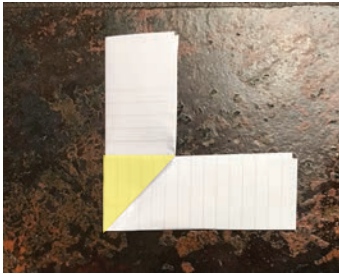
Step 5



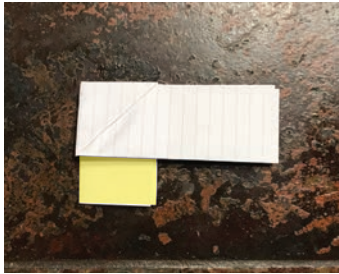
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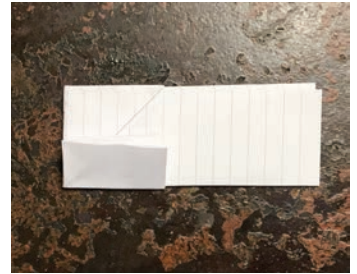
Step 7



Step 8



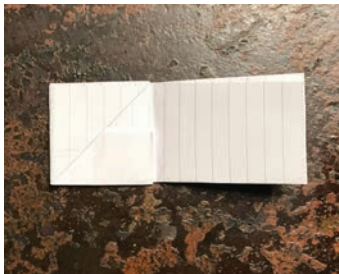
Step 9



Step 10



Step 11



Step 12



Step 13



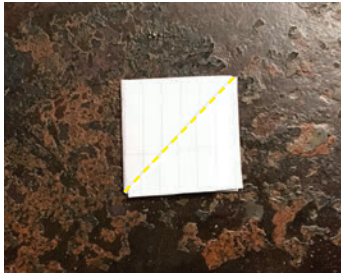
Step 14



Step 15



Step 16



Step 17



Step 18



Video instruction. How to make an origami football. <https://youtu.be/-p4MfCOqarU>

Play Ball!

Step 1: Printing paper ball	<ul style="list-style-type: none"> • Lightly flick the printing paper ball (on the bottom, long side of the triangle). Measure the distance from the start point to the end. • Apply a little more pressure in the flick. Measure the distance from the start point to the end. • Forcefully flick the ball. Measure the distance from the start point to the end.
Step 2: Notebook paper ball	<ul style="list-style-type: none"> • Lightly flick the notebook paper ball. Measure the distance from the start point to the end. • Apply a little more pressure in the flick. Measure the distance from the start point to the end. • Forcefully flick the ball. Measure the distance from the start point to the end.
Step 3: Construction paper ball	<ul style="list-style-type: none"> • Lightly flick the construction paper ball. Measure the distance from the start point to the end. • Apply a little more pressure in the flick. Measure the distance from the start point to the end. • Forcefully flick the ball. Measure the distance from the start point to the end.

Dinner Talk

Talk with your family, siblings, friends, etc about this experiment.

- What were the differences between the balls themselves? How did they feel?
- How did the amount of force change the distance of the ball?
- Which football did you like best? Why?
- Was one football more difficult to fold? Why?

Extra Enrichment

Visit:

Force and Motion: Facts. <http://bit.ly/2Z1WLuj>

Force and Motion | Science Trek | PBS. <http://bit.ly/2YPoXFG>

Go to your local library and check these books out:

- *Roller Coaster* by Marla Frazee
- *The Boy Who Harnessed the Wind* by William Kamkwamba
- *Force & Motion (Eyewitness Science)* by Peter Lafferty

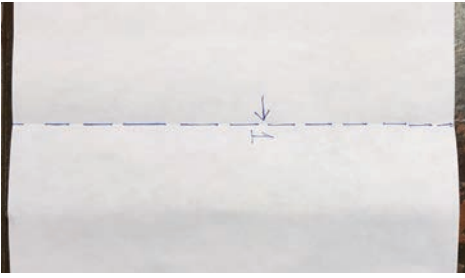


United States Department of Agriculture
National Institute of Food and Agriculture
NIFA Award Notification
2017-46100-27224

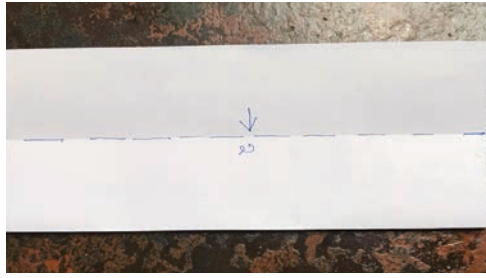


Make the Football - Steps using the attached template

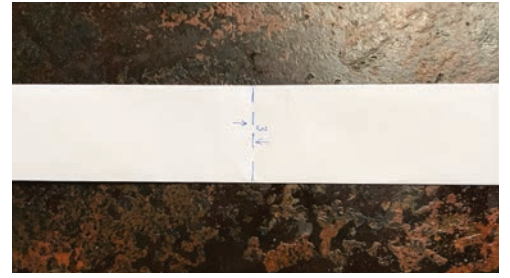
Step 1



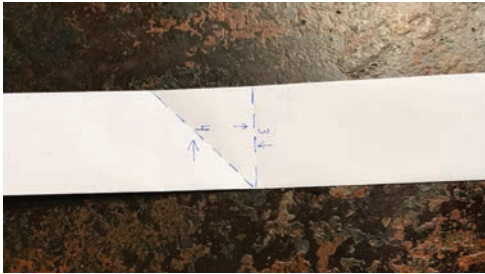
Step 2



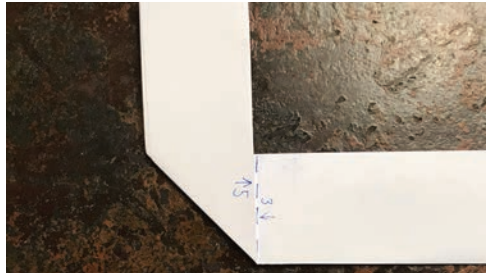
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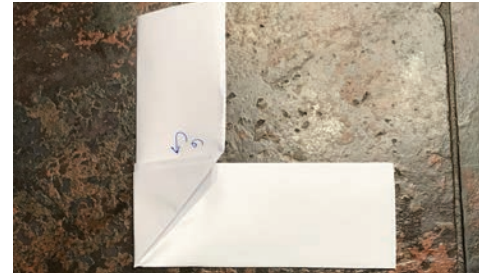
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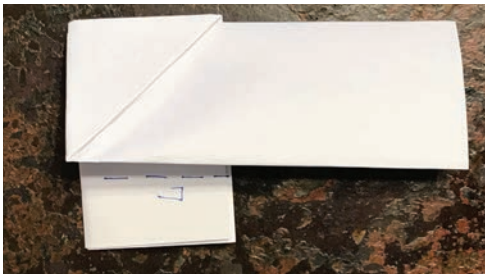
Step 5



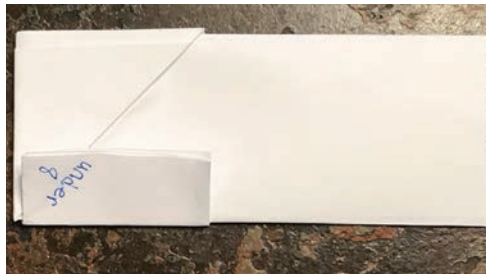
Step 6



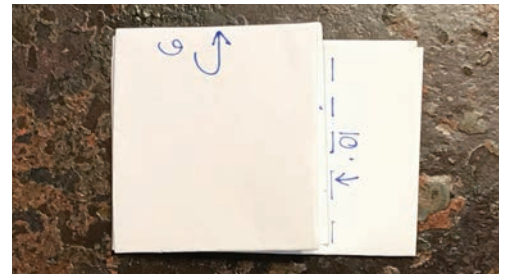
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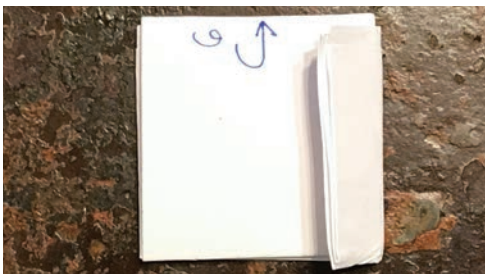
Step 8



Step 9



Step 10



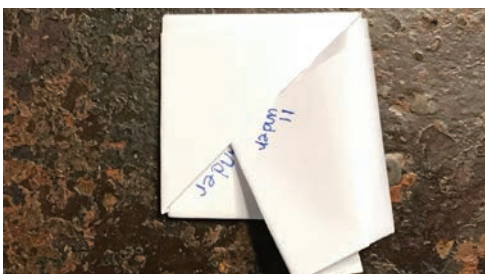
Step 11



Step 12



Step 13



Step 14



Step 15





