

Name: _____

FROG PHYSICS

In “Frogs for Sale” (p. 20), you learned about the illegal trading of frogs. These long-legged amphibians are known for their jumping ability. In this activity, you’ll create an origami jumping frog to investigate the different types of energy necessary to execute a leap.

ENERGY CONVERSION

When a frog jumps, energy shifts between three different forms:

KINETIC ENERGY: energy of an object in motion

GRAVITATIONAL POTENTIAL ENERGY: energy stored by an object due to its height

ELASTIC POTENTIAL ENERGY: energy stored due to an object’s changing shape, such as when a spring is stretched or compressed or when muscles flex or relax

STEP 1: MAKE A PAPER FROG

Follow the directions on the second page to fold an origami frog from a 5" x 5" piece of heavy cardstock.

STEP 2: OBSERVE YOUR FROG JUMPING

Place your origami frog so its sits on a flat surface. Make it jump by pressing on the back of the frog, and then releasing it. Observe what happens.

STEP 3: ANALYZE IT

Use what you observed from your paper frog and the information on energy conversions above to complete the diagram below. At each stage of the frog’s jump, describe the type of energy being used and how it’s being converted from one stage to the next.



A

B

C

D

E

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FROG PHYSICS

MAKE AN ORIGAMI JUMPING FROG



1 Fold the 5" x 5" piece of paper in half.



2 Fold over the top-right corner of the paper diagonally until the corner meets the left side of the card. You should have a sharp peak on the top left side. Press on the fold to form a crease. Unfold the corner.



3 Repeat step No. 2, this time folding over the top-left corner of the card. Once unfolded, you should have an X-shaped crease in the card.



4 Fold down the top portion of the card. Your fold should be located on the center of the X. Unfold.



5 Fold down the top of the card again, pulling in the sides so that you form a triangle on the top of the card.



6 Fold up the bottom left and right corners of the triangle you have just formed. The new triangles should meet in the middle. These are your frog's front legs.



7 Fold in the sides of the lower part of the card. The edges should meet in the middle.



8 Fold up the bottom of your card so that the bottom edge extends slightly over the top tip of the triangle.



9 Take the piece you just moved and fold it in half back downward. This folded piece represents your frog's lower legs.

Visit <http://papercraft.wikidot.com/origami:simple-jumping-frog> for step-by-step visual instructions.