

CURIOSITY AT HOME

JUMP FOR JOY



How far can you jump compared to other animals? Explore animal movement by comparing your jump distance with other members of the animal kingdom.

MATERIALS

- Measuring tape
- Masking tape
- Marker
- Pens or pencils
- Paper or science notebook for making predictions and recording data
- Flat area to jump
- **Optional:** Stack of heavy books



PROCEDURE

- Measure out a distance of 10 feet for your “track” and lay down a 10 foot piece of tape. Make marks on the tape with a marker or small pieces of tape at 1-foot intervals.
- Using the chart on this page, make a prediction for the jump length for the following animals—rabbit, elephant, flea, kangaroo, cricket, grasshopper, lemur, dog, bobcat, frog, and yourself! Record these predictions here or in your science notebook. Remember that some animals may be able to jump longer than your 10-foot track!
- Stand at the end of the tape. From a standing position, jump as far as you can.
- Record your distance with your initials on tape. Record in your science notebook.
- Challenge other members of your household to make a prediction of their own jump length and test it out! Record their data.
- Take a look at the actual jump length table on the following page. Using this animal data, mark the jump length for each animal on your 10 foot tape (where you can!). How close were your predictions?

Animal	Jumping Distance Prediction (in feet)
Rabbit	
Elephant	
Flea	
Kangaroo	
Cricket	
Grasshopper	
Lemur	
Dog	
Bobcat	
Frog	
You	



Experiment continued on next page...



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TRY THIS

Why do big animals, like elephants, have such short jumping distances?

- Hold on to a stack of heavy books, and (carefully) repeat your experiment. Record your new jump distance and the distances of your household members. How are they different than your first measurements?
- Larger animals weigh more, and eventually big animals can weigh so much that the amount of muscle they have does isn't enough for them to jump. Holding a stack of books is like being an elephant; we still have lots of muscle, but the extra weight makes it much more difficult to jump!
- Can you increase your jumping distance? How does your distance change if you take a running start? Repeat your experiment with this change.

DID YOU KNOW?

Many factors determine the distance that an animal is able to jump, including running speed, take-off velocity, muscle strength, and weight. Animals specialized for jumping usually have a high muscle-mass-to-weight ratio and the ability to reach high running speeds prior to takeoff.

While an elephant has a lot of muscle, it also weighs 10,000 pounds, so its muscle-mass-to-weight ratio is not large enough for jumping. In fact, elephants can't jump. A flea has much less muscle than an elephant but it only weighs approximately 1 milligram. Therefore, fleas can jump very far compared to their body size. Some physical adaptations for jumping farther include long legs, larger leg muscles, and extra joints. A great example is a frog, which has all three of these adaptations!

Animal	Jumping Distance Prediction (in feet)
Rabbit	9 ft.
Elephant	0 ft.
Flea	3 ft
Kangaroo	30 ft.
Cricket	4 ft.
Grasshopper	5 ft.
Lemur	25 ft.
Dog	7 ft.
Bobcat	8 ft.
Frog	6 ft.



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K–2 GRADE EXPLORATION

Here are some questions you can explore together.

- How many jumps does it take for you to reach the frog's jump length? What about the rabbit's?
- Which animal jumped the farthest? Which animal jumped the shortest?
- Does an animal's size change how far it can jump? What else affects jump length besides size?
- How can you change your jump length? What if you try jumping like a frog? Jumping like a rabbit?
- When do humans jump? To reach things? When playing sports? What activities do you like that involve jumping?



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