

DINOSAUR MYSTERIES

1. Dinosaur fossils have been found in Antarctica. How could dinosaurs have survived in Antarctica?

Plate tectonics: At the time of dinosaurs, the land masses were located at or around the equator. The land masses shifted after the dinosaurs died off and part became what we know as Antarctica.

2. Why are there bird skeletons in Dinosaur Mysteries?

There are some strong similarities between the skeletal structure of modern birds to the skeletal structure of theropod (meat eating) dinosaurs. Many scientists believe the similarities suggest a link between dinosaurs and modern birds.

NEWTON'S ALLEY

1. Experiment with all three of the Pulley Chairs. Why is one chair easier to lift than another?

The more pulleys you have in a system, the more work they will do for you. The easiest chair has three pulley systems, the middle chair has two and the most difficult chair only has one.

2. Is the tug of war a fair match? Why or why not?

It is not a fair match. One side pulls from the top while the other side pulls from the bottom. It is much easier to pull something down when pulling from the top. Winning the match from the bottom-pulling side is almost impossible.

YOU – THE INSIDE STORY

1. Why don't the nails at the Bed of Nails poke through your skin?

When you lay down, your weight is spread out across the whole bed, so when the nails (placed closely together) come up they are able to lift you. You are not really putting much pressure on the individual nails. If you were to step on a nail, your entire weight would push against the nail and injury to your foot would be likely.

2. Test your reaction time. Identify experiences or activities in life where how fast you react matters.

- Playing sports
- Riding a bicycle
- Playing video games
- Skateboarding
- Touching a hot pan

SCIENCE AGLOW

1. Visible light is the only part of the electromagnetic spectrum that we can see with our eyes. Some electromagnetic energy has higher frequency waves than visible light.

Name two types of high frequency waves that are used in medicine.

Ultraviolet waves, X-Rays, and Gamma waves are all high frequency electromagnetic waves. X-Rays are used in the medical field to see through soft materials like skin to take a picture of the dense bone underneath. Gamma waves can be used in medicine to kill cancer cells.

2. What type of cells make animals see colors differently than we do?

Photoreceptors are cells in the eye that sense light. Some are sensitive to different wave lengths, allowing them to see different colors. The number and type of photoreceptors determine which colors animals can see.

SCIENCE & MAIN

1. Which size gear makes it easier to start spinning the bike wheel? Which size gear spins the bike wheel faster with each full turn of the gear?

The small gear makes it easier to spin the bike wheel because it needs less force to make one complete rotation. The big gear spins the bike wheel faster for each gear rotation.

2. Every sound wave is a combination of which two measurements? What do they measure?

Amplitude shows the volume of the sound. High volume makes tall waves and low volume makes small waves. Frequency is the number of vibrations the sound makes. Lots of waves close together are called high frequency waves. They are made by high note. Low frequency waves are spaced farther apart and are made by low notes.

POWER UP

1. Experiment with the Light the Future hand crank. Which bulb was hardest to light? Why?

The incandescent bulb is hardest to light because you have to generate more energy to power it. The florescent bulb is easier to light than the incandescent bulb, and the LED is the easiest to light because it takes the least amount of energy to power it.

2. What happens to electricity after it is generated in a power plant?

The electricity first goes to a transmission substation so that it can be converted to high voltage to travel long distances. Once the power is close to a town, the electricity goes through a distribution substation so that the voltage can be reduced. This lower volatage can then be used in houses and businesses