



# Becoming even more COURAGEOUS in



# Science

## Life

Creepy Critters  
Spooky Stages

## Energy

Inventive Risk-takers  
"Paranormal" Forces

## Matter

Scary Stuff  
Properties of Prowess

## Earth and Space

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Freaky Phenomena



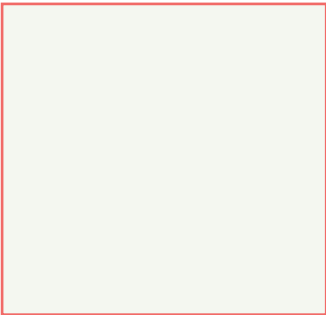
© 2019 Matthew Baganz  
Star Characters by Tasnim Jad  
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# Creepy Critters

Think about all the life forms on the planet, from bacteria and bed bugs to pigeons and piranhas. Choose 2 animals that make you nervous, queasy, or downright terrified and gather some information about them. Include a sketch or colorful illustration.

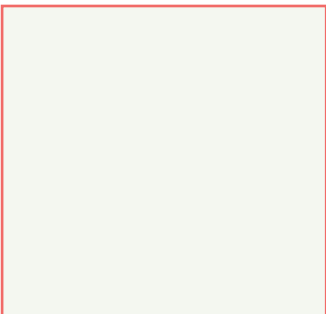


Animal: \_\_\_\_\_



| Body Shape<br>(how it looks) | Locomotion<br>(how it moves) | Vocals<br>(how it sounds) | Texture<br>(how it feels) |
|------------------------------|------------------------------|---------------------------|---------------------------|
|                              |                              |                           |                           |

Animal: \_\_\_\_\_



| Body Shape<br>(how it looks) | Locomotion<br>(how it moves) | Vocals<br>(how it sounds) | Texture<br>(how it feels) |
|------------------------------|------------------------------|---------------------------|---------------------------|
|                              |                              |                           |                           |

Do these animals have anything in common? Do they share certain characteristics, such as having sharp teeth, scaly skin, multiple legs, or no legs at all? Is it really the animal that bothers you, or something else?

# SPOOKY STAGES



It begins inside a dark, confining egg that it needs to break out of. It crawls into the world as a tiny caterpillar small enough to be eaten by almost every other animal around. It furiously munches on leaves, hoping not to be eaten. It then begins to release silk from its head that it weaves with its mouth into a tight cocoon around its whole body. It remains trapped inside, like being zipped up in a sleeping bag... for days or even weeks! It finally emerges to discover that some of its legs are gone, two big wings stick out of its back, and its skin is a different color. It can no longer walk like an accordion but has to learn how to fly by jumping off a branch hundreds of times its own height....

## TALK ABOUT SOME SPOOKY STAGES!



Human life stages can sometimes be scary too. We grow through multiple stages that present different challenges. Circle one person above who you think is in a hard stage. Then answer the questions below.

What might happen during this life stage that you think will be hard to deal with?

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What are some strategies people can use to be courageous when dealing with these problems?

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If you've already been through this stage, how courageous were you when dealing with the struggles?  
If you have yet to enter this stage, how can you prepare to enter this life stage with courage?

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# Inventive Risk-Takers

Our world wasn't always this convenient. Inventions over thousands of years have improved our lives in countless ways. Many of these inventions do work for us, saving us energy for other activities. From the fundamental simple machines like the pulley, lever, and inclined plane to more complex inventions such as elevators, egg beaters, and drills, all of these were created by someone who worked hard to save the rest of us energy. During the design process they didn't know if their inventions would work, so it took courage and commitment to continue. Choose an invention that saves you energy in some way and research its inventor. Which obstacles did this courageous inventor overcome?



Image of your inventor or invention

Inventor: \_\_\_\_\_

Date and place of birth: \_\_\_\_\_

Invention: \_\_\_\_\_

Date and place of creation: \_\_\_\_\_

Main purpose of invention: \_\_\_\_\_

The story of courage: \_\_\_\_\_

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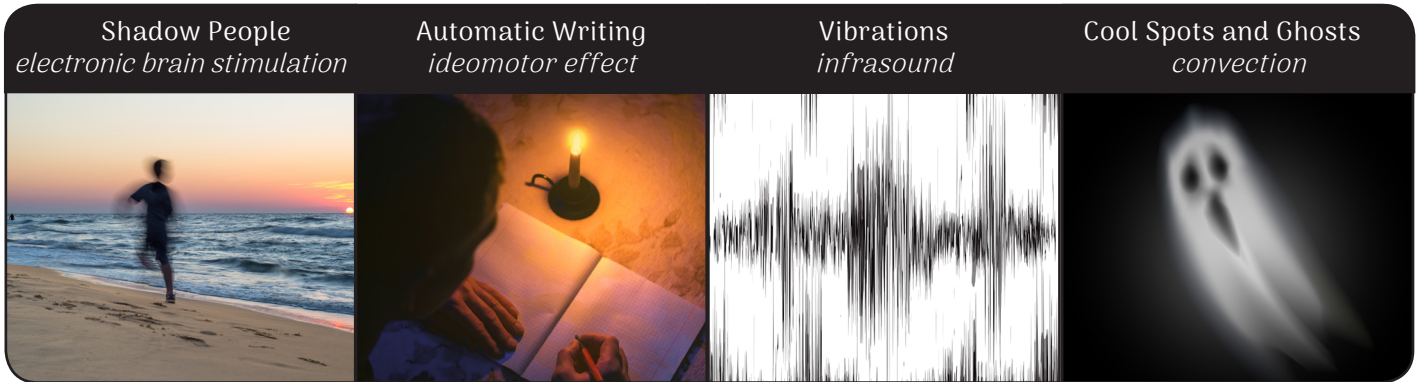
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# "PARAnormal" Forces

Many ghost stories and other scary, "paranormal" phenomena have been explained through the universe's forces and energy. Research and learn about some of the examples below.



Have you ever witnessed something spooky? Determine whether one of the forms of energy below might be responsible for your mystery. Draw a diagram or write a theory that links your mystery to either one of these forms of energy or another form of energy you might learn about.

| Potential Energy (stored)   | Kinetic Energy (motion)  |
|---|--|
| <ul style="list-style-type: none"><li>chemical</li><li>mechanical</li><li>nuclear</li><li>gravitational</li></ul> | <ul style="list-style-type: none"><li>radiant</li><li>thermal</li><li>sound</li><li>electrical</li></ul> |

# SCARY STUFF

Sometimes just knowing what something is really made out of makes it less scary, like seeing the actor behind the mask of a monster in a movie. Have a look below at some of the components of a dentist (one of the top fears, although they're nothing to be afraid of).

Surgical masks are often made of polypropylene fabric, a chemical compound also used in water bottles and sunglasses.

Eyebrows are made of a protein called keratin, related to fingernails and deer antlers.

Medical gloves include latex (a milky substance from plants) and nitrile rubber (a combination of acrylonitrile, a stinky liquid, and butadiene, an invisible gas).

Dental mirrors include stainless steel (made of chemical elements like iron, carbon, and chromium), heated aluminum, and glass.

The uniform, often called scrubs for being used in a clean, "scrubbed" workplace, is made of polyester, a mix of air, water, coal and petroleum.



Some of the top fears kids have include closets, the space under the bed, scary animals from page 56, roller coasters, ghosts, aliens, insects, storms, bullies, elevators, vomiting, school presentations, mean teachers, tests, and pimples. Are you afraid of any of these? Choose one fear and investigate the "stuff" it's made of. Create a diagram of your fear below, labeling its various materials.



# Properties of Prowess

Research the following properties of materials and write a brief definition for each one. Then imagine that prowess (another word for courage) were a tangible (touchable) material. Assign each of these properties of prowess a Courage Level number between 1 and 10, 1 being very low, and 10 being very high, and explain why. For example, would courage have high magnetism (8 or 9) or low magnetism (2 or 3)? Why?

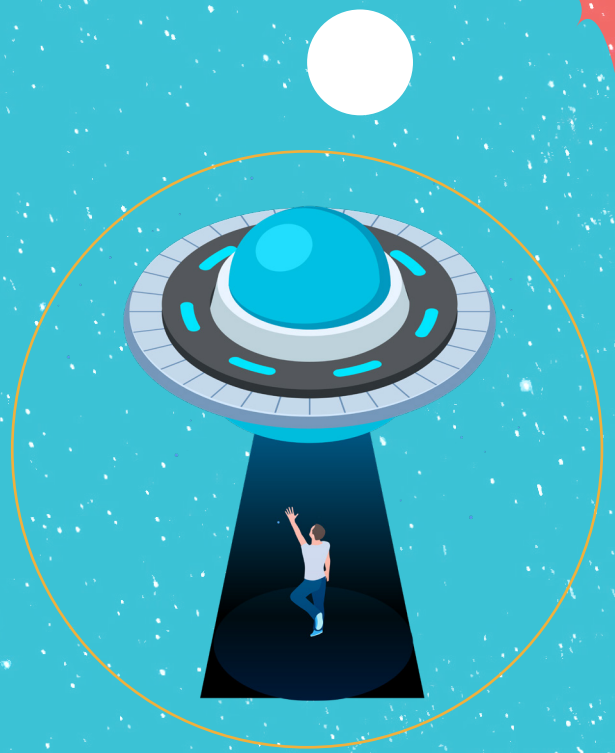
| Property     | Definition | Courage Level | Why? |
|--------------|------------|---------------|------|
| flexibility  |            |               |      |
| magnetism    |            |               |      |
| density      |            |               |      |
| transparency |            |               |      |
| absorbancy   |            |               |      |
| mass         |            |               |      |
| volume       |            |               |      |
| conductivity |            |               |      |
| strength     |            |               |      |
| solubility   |            |               |      |



# ALIEN THEORY

Many people claim to have seen an unidentified flying object (UFO), and others even claim to have been abducted by aliens!

Here on earth there are specific elements that sustain life, including air, water, a source of food, and shelter from weather and extreme temperature. Are these elements also in space to support alien life? Are there different elements in space that could support life? Explore these questions and write an explanation that might reduce fear in those who believe they might be abducted by aliens one day.



## Alien Explanation

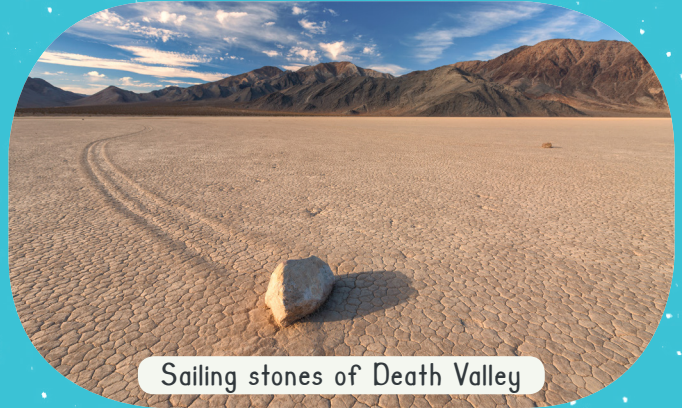
A blue background with a starry pattern. On the left side, there is a cartoon character's face, which is partially visible and appears to be smiling. The character has large, expressive eyes and a wide smile. The background is a solid blue color with many small white stars scattered throughout. The cartoon character's face is on the left side, and the rest of the page is the blue starry background.



# FREAKY PHENOMENA



Aurora Borealis



Sailing stones of Death Valley

The earth is host to many apparently mysterious phenomena. Pictured on this page are just a couple of them which have intimidated cultures across the world. Research one of the world's many phenomena and provide a brief scientific explanation for why there's nothing to be afraid of.

Other phenomena include:

- unrelated worldwide reports of similar sea monsters
- green flashes
- fire rainbows
- Bigfoot, Skunk Ape, or Yeren
- bioluminescence
- red tide
- the Bermuda Triangle
- Namibia's fairy circles

## WHAT OTHER NATURAL MYSTERIES CAN YOU FIND?

There is no reason to fear \_\_\_\_\_ because

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My Source: \_\_\_\_\_

# Science Reflection

1

How have you become a more courageous scientist?

2

What was your greatest strength when engaging with this chapter?

3

What was your greatest weakness when engaging with this chapter?