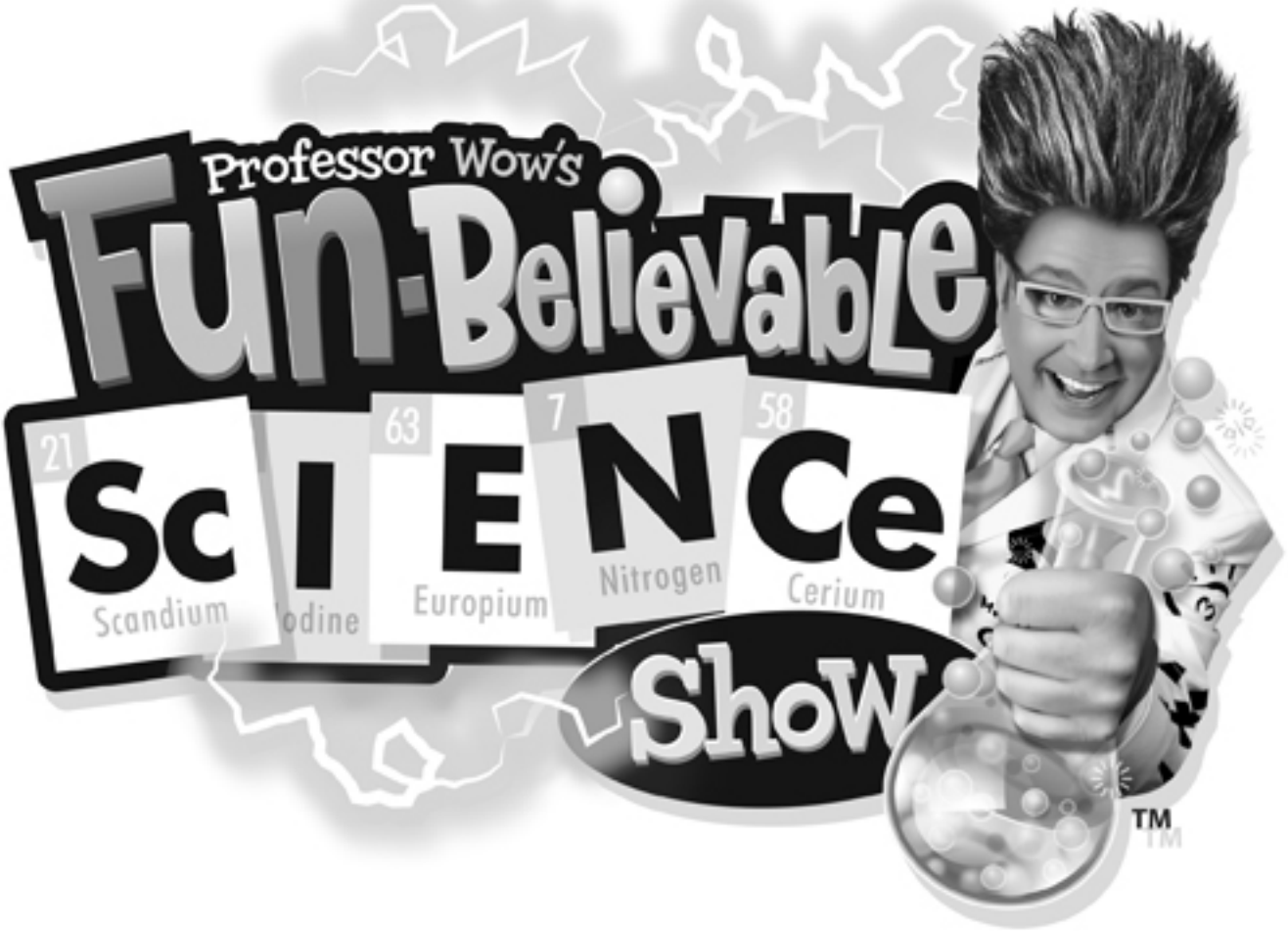


ACTIVITY PACK

Dear Teacher,

when students have fun with science, it can suddenly become a lot more interesting. We encourage you to use this Activity Packet to extend classroom learning. It is intended to be used in conjunction with the live performance of ***The Fun-Believable Science Show*** and Professor Wow's Study Guide found at **www.GreatShowsforKids.com** The activites on the following pages have different levels of difficulty for grades K-8. We recommend that you save these for after the show when the kids are "psyched" about how cool science can be.

FUN FACT:

Chemical reactions occur all the time, including through everyday activities such as cooking. Try adding an acid such as vinegar to a base such as baking soda and see what happens!

I AM A VERTEBRATE

Classification is the method by which living things are grouped into categories. It is based on the appearance of, and the natural relationships between, organisms. The five classes of vertebrates are: fish, amphibians, reptiles, birds, and mammals. Scientists divide animals into two big groups: **VERTEBRATES** (which have a backbone) and **INVERTEBRATES** (which have no backbone).

Match the pictures with the correct class of vertebrate below.

★ **Advanced Activity:** How many different amphibians, fish, birds, mammals and reptiles can you list in addition to the one pictured below?

AMPHIBIAN

MAMMAL

REPTILE

BIRD

FISH

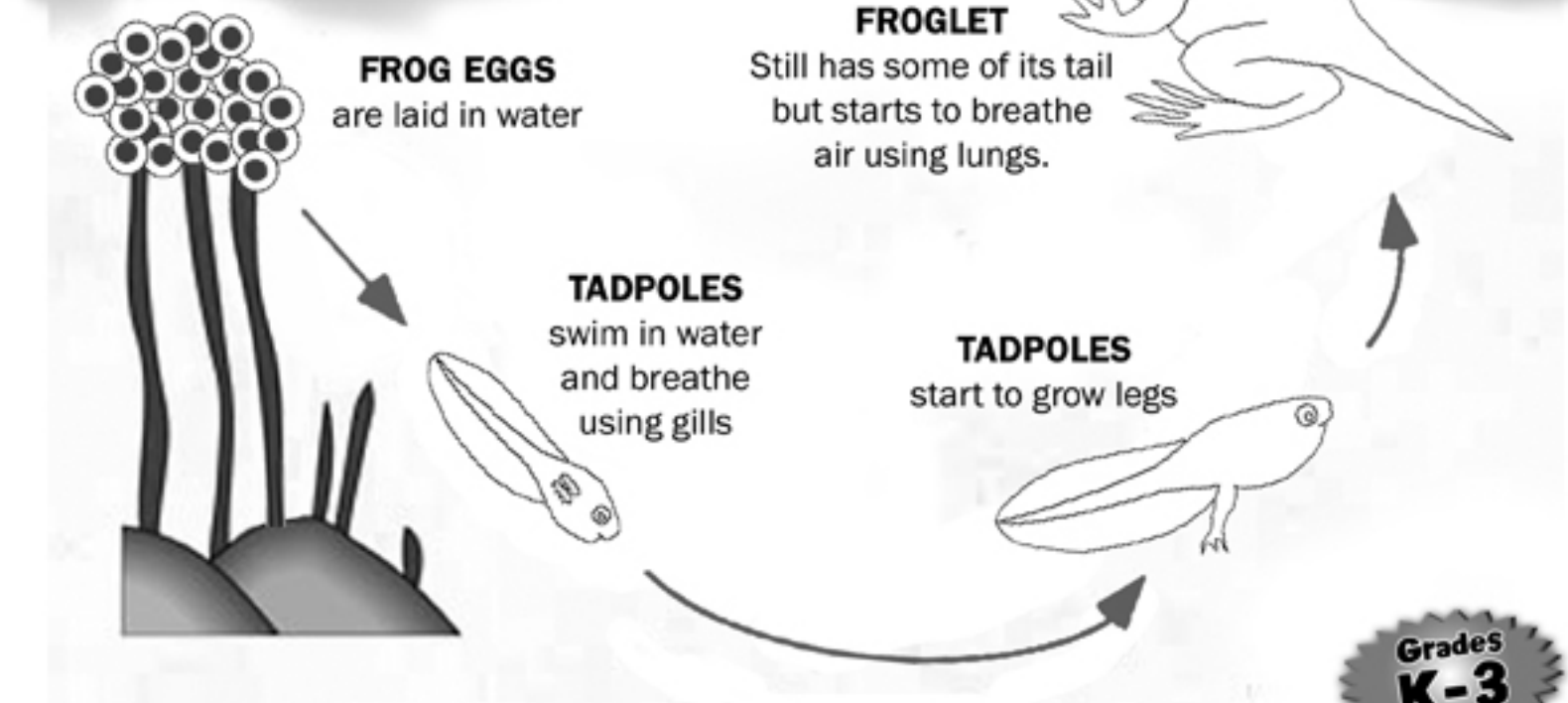
Grades K-6

TALE OF A TADPOLE

FROGS ARE AMPHIBIANS. They spend part of their lives under water and the remainder on land. They have long, powerful jumping legs and a very short backbone. Like all amphibians, frogs spend their lives near water because they must return to the water to lay their eggs. In harsh weather, frogs bury themselves in sand and mud and hibernate through the cold winter.

Follow the life cycle of the frog below by coloring each picture as the frog grows.

ADULT FROG
Hops out of the water to live on the land.



FROGLET
Still has some of its tail but starts to breathe air using lungs.

FROG EGGS
are laid in water

TADPOLES
swim in water and breathe using gills

TADPOLES
start to grow legs

Grades K-3

FOOD CHAINS & FOOD WEBS

What Is A Food Chain?

The living things in a community are linked through their food. For example, a snake, a mouse and a plant are linked because the mouse eats the plant and the snake then eats the mouse. These links are called **FOOD CHAINS.**

Animals and plants get the energy they need from their food. Plants are called **PRODUCERS,** they use the Sun's energy to make their own food. Animals cannot make their own food, so they have to eat plants or other animals. They are called **CONSUMERS.** Animals often eat more than one kind of food, so they are part of a number of food chains. Several food chains can be joined together into a **FOOD WEB**.

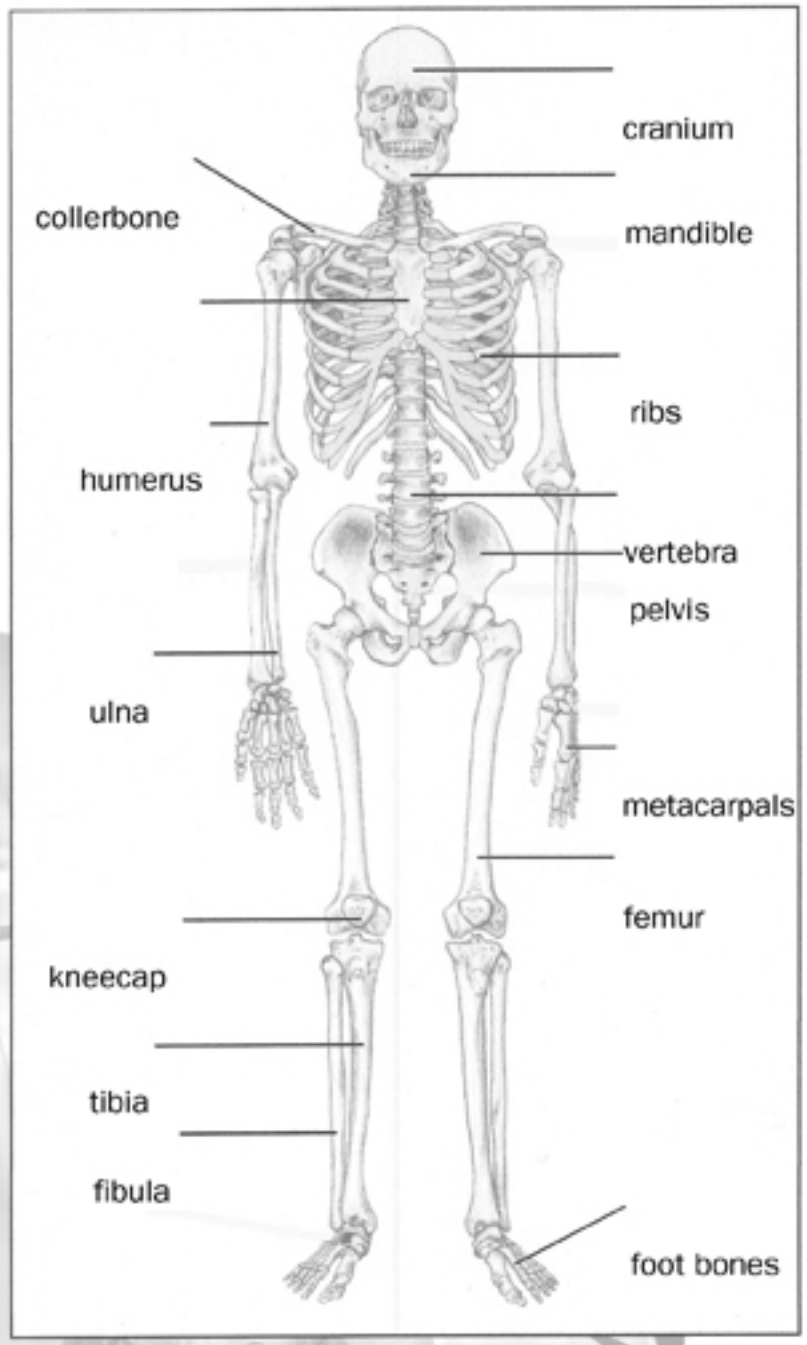
Each member in the food chain feeds on, and obtains energy from, the previous level. In this way, evergy is transfered from level to level. When living things die, their bodies break down and release nutrients into the ground. **DECOMPOSERS,** like fungi, worms, and maggots, break down materials in dead organisms and return them to the soil. The process begins all over again.

In the box below create a food chain or food web:

Name: _____

Grades 4-8

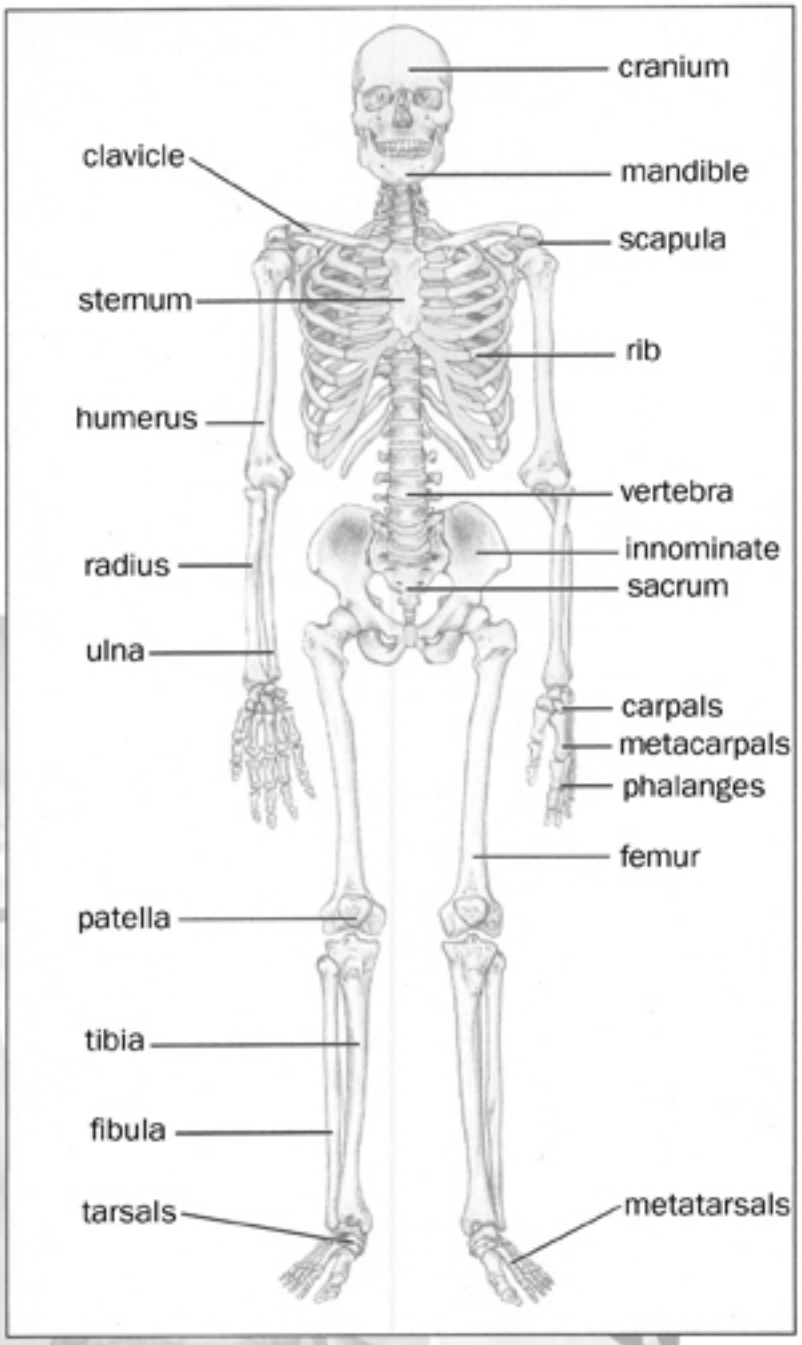
NO BONES ABOUT IT!



Our bones are a hard structure that provides a frame for our bodies. We are born with about 350 bones in our skleton. As we grow older our bones fuse together to form a total of 206 bones by the time we are teenagers. In the blank space below draw a picture of what you might look like if you didn't have any bones. Would you look like a jellyfish or even an earthworm? (They don't have bones.)

Grades K-3

BONE TO PICK



You have a total of 206 bones. In the picture of our skeleton learn the name of bones then circle the words in the puzzle. The words appear horizontally, vertically, backwards and diagonally.

b	i	r	v	q	w	e	u	s	g	h	k	z	v
k	z	x	o	j	a	l	l	e	t	a	p	o	m
s	c	a	p	u	l	a	n	s	y	u	h	z	e
e	q	w	e	r	p	t	a	s	u	x	c	m	t
g	v	b	n	r	m	o	o	t	p	i	x	e	a
n	c	l	a	v	i	c	l	e	o	p	d	t	c
a	r	c	s	f	e	m	u	r	f	a	h	a	a
l	a	a	z	x	c	v	b	n	l	n	m	t	r
a	n	i	h	u	m	e	r	u	s	a	t	a	p
h	i	b	s	d	f	g	b	m	a	h	a	r	a
p	u	i	j	k	l	i	z	x	c	v	r	s	s
q	m	t	w	e	f	r	t	y	r	u	s	a	i
v	e	r	t	e	b	r	a	h	u	c	a	l	m
o	p	e	l	b	i	d	n	a	m	k	l	s	z
r	i	n	n	o	m	i	n	a	t	e	s	o	x

Grades 4-8

MAN ON THE MOON

Earth is one of the eight planets that continually circle the Sun, making up the Solar System. Our Moon circles continualy around the Earth. Our Moon is one of the best studied objects in the Solar System. On July 20, 1969, Astronaut Commander Neil Armstrong became the first man to walk on the moon. He spoke the famous words, "That's one small step for a man, one giant leap for mankind."

Pretend you are traveling through space on your very own space rocket. Circle the pictures below that are objects you would see in your journey through outer space:

ASTRONAUT

DOLPHIN

MOON

ROCKET

SATURN

METEOR

LUNAR MODULE

SATELLITE

STEER

GALAXY WORD SCRAMBLE

WHAT ARE GALAXIES? Our Sun is just one of a vast concentration of more than 100 billion stars, arranged in a shape like a fried egg, more than 100,00 light-years across. This huge star city is called the Milky Way or the Galaxy because we see it as a pale band across the night sky. The word "galaxy" comes from the Greek word for milky. Earlier this century, astronomers realized that the Galaxy is not the only star city in the universe. In fact, there are billions of similar star groups scattered throughout space. These are also called galaxies.

Unscramble the words to find things in our Galaxy:

1. esurvnei _____
2. ntunepe _____
3. tonasruta _____
4. etmore _____
5. uyrcrem _____
6. napelt _____
7. yromatsno _____
8. itvyagr _____
9. eoaristd _____
10. cpeoelste _____
11. euvns _____
12. sulhtet _____
13. btior _____
14. nus _____
15. lglxay _____
16. rmas _____
17. runast _____
18. astr _____
19. emtoc _____
20. nomo _____

Use your imagination and design and build your own vision of a future colony on the moon or another planet in a distant galaxy. What are the weather conditions, temperature, surface type, gravity, water, and food? Is there alien life on your planet? Take turns going around the class and sharing your stories of faraway galaxies and planets.

ANSWERS: (1) universe (2) neptune (3) astronaut (4) meteor (5) mercury (6) planet (7) astronomy (8) gravity (9) asteroid (10) telescope (11) venus (12) shuttle (13) orbit (14) sun (15) galaxy (15) mars (17) star (18) star (19) comet (20) moon

Grades 4-8

BERNOULLI'S BALL

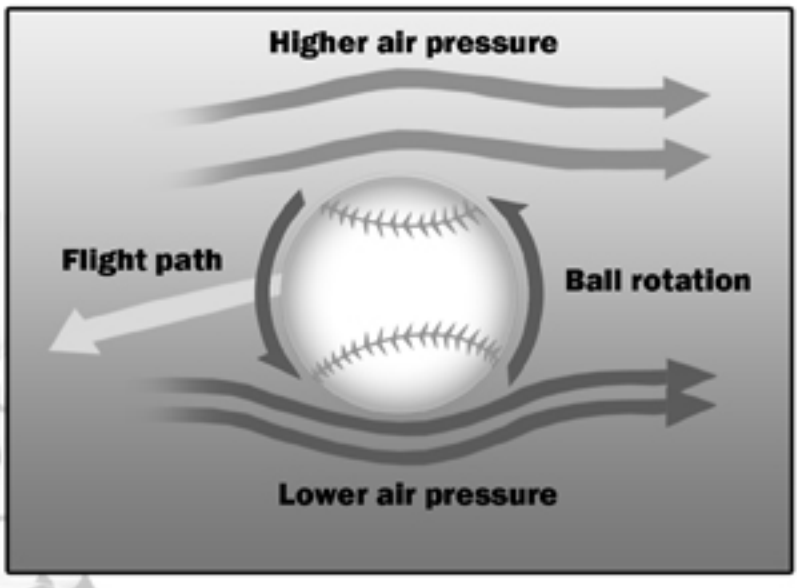
WHAT YOU WILL NEED: Hair Dryer & Ping Pong Ball

TURN THE HAIR DRYER on cold and try to balance the ping pong ball in the air stream from the dryer. Your ball should hover there. Try moving the ball around the room without touching it. Move the hair dryer from side to side and up and down. Now try to add more balls to the air stream. What happens?

Why does a ball "float" this way? Because of **Bernoulli's Principle!** Daniel Bernoulli discovered that the faster a fluid (or air) flows, the less pressure it exerts. The faster flowing air in contact with the ball exerts less pressure than the surrounding air that is traveling straight up. The lower pressure ball is "trapped" inside a cylinder of higher pressure and is thus held in place.

The upward flow of air from the hair dryer balances the gravitational force from the earth. What holds the ball in the air stream? What holds the ball even when the air stream is moved and tilted? The answer is that the air presure from the air in the rest of the room holds it.

THIS IS FOR ALL YOU BASEBALL FANS!
This same pressure difference causes a baseball to curve, called the **Magnus effect.** The baseball has spin, meaning the ball is rotating such that the top is moving in the direction of flight and the bottom is moving againt it. Since the stitching on top is essentially moving faster than the stitching on the bottom in relation to the outside air, there is an area of high pressure that is developed on top, and an area of low pressure underneath. This pressure differential will act to push the ball into a curve.



Grades 4-8

COOL SCIENCE WEBSITES:

- **FT EXPLORING**
  ftexploring.com
- **BRAIN POP**
  brainpop.com
- **SCIENCE MADE SIMPLE**
  sciencemadesimple.com
- **PLANET PALS**
  planetpals.com
- **HOW STUFF WORKS**
  howstuffworks.com
- **EXPLORE LEARNING**
  explorelearning.com
- **CHEMISTRY 4 KIDS**
  chem4kids.com
- **AMAZING SPACE**
  amazingspace.org

DID YOU KNOW . . .
sneezing with your eyes open is IMPOSSIBLE!