



Year 5/6

Even Years

Year 5/6: Properties and Changes of Materials Knowledge Mat

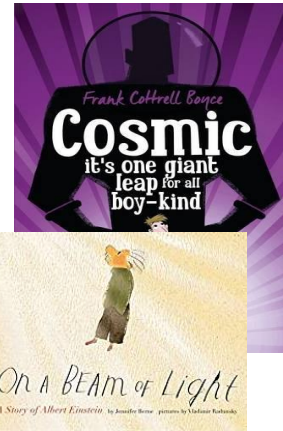
Subject Specific Vocabulary		Interesting Books	Sticky Knowledge about properties and changes of materials		
solubility	Is a chemical property referring to the ability for a given substance, the solute, to dissolve in a solvent.		<input type="checkbox"/> Irreversible changes, like burning, cannot be undone. Reversible changes, like melting and dissolving, can be changed back again.		
conductivity	Conductivity defines a material's ability to conduct electricity.		<input type="checkbox"/> Mixtures can be separated out by methods like filtering and evaporating. A change is called irreversible if it cannot be changed back again.		
transparency	In general, transparency is the quality of being easily seen through, letting light through.		<input type="checkbox"/> Examples of reversible changes. Melting: Melting is when solid converts into a liquid after heating. Example of melting is turning of ice into water. Freezing: Freezing is when a liquid converts into a solid.		
thermal	Something that is thermal is hot, retains heat, or has a warming effect.		<input type="checkbox"/> A cooked egg cannot be changed back to a raw egg again. Mixing substances can cause an irreversible change. For example, when vinegar and bicarbonate of soda are mixed, the mixture changes and lots of bubbles of carbon dioxide are made. Burning is an example of an irreversible change.		
solution	A solution is a mixture of two or more substances where one or more is dissolved.				
evaporation	Evaporation is the process of a substance in a liquid state changing to a gaseous state after heating.	Important facts to know by the end of the properties and changes of materials topic:		<div> <div>Solid</div> <div>Liquid</div> <div>Gas</div> </div> 	
dissolve	To dissolve is defined as to become broken up or absorbed by something or to disappear into something else.	<ul style="list-style-type: none"> • Know what a reversible change means. • Know what an irreversible change means. • Give examples of reversible and irreversible changes. • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating 			
reversible	Reversible changes can be undone.				
irreversible	Irreversible changes cannot be undone. A new material is formed.				
thermal	Something that is thermal is hot, retains heat, or has a warming effect				
filtering	To filter a substance means to pass it through a device which is designed to remove certain particles contained in it.				
melting	Melting, is a physical process that results in the phase transition of a substance from a solid to a liquid.				
separate	separate, part, and divide mean to break into parts or to keep apart.				

Year 5/6: Earth and Space Knowledge Mat

Subject Specific Vocabulary

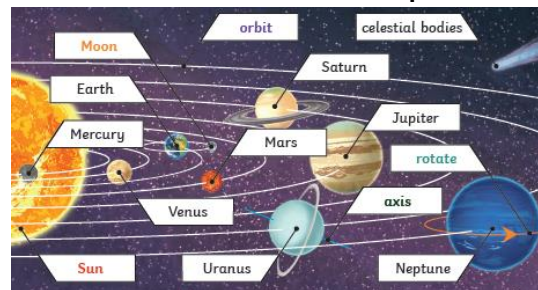
orbit	An orbit is a repeating path that one celestial body takes around another.
solar system	The solar system is made of the eight planets that orbit our sun it is also made of asteroids, moons, comets and lots, lots more.
astronomical	Astronomy is the study of outer space focusing on celestial bodies such as stars, comets, planets, and galaxies.
planet	There are 8 planets in our solar system, they are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.
lunar	Is anything related to the moon.
spherical	Something spherical is like a sphere in being round, or more or less round, in three dimensions.
crescent moon	It is a slither of the moon that is lit up and can be seen. It is less than half the moon.
gibbous moon	The best way to describe a gibbous moon is that the moon is three-quart lit up.
eclipse	An eclipse occurs when an astronomical object is temporarily obscured. A lunar eclipse is when the Earth moves between the sun and the moon, therefore blocking the sun's rays from striking the moon
rotation	Rotation is when the shape is turned around a point.
satellite	An object or body in space that orbits something else. For example, the Moon is a satellite for Earth.

Interesting Books



Important facts to know by the end of the Earth and space topic:

- **Know about and explain the movement of the Earth and other planets relative to the Sun.**
- **Understand the movement of the Moon relative to the Earth.**
- **Know and demonstrate how night and day are created.**
- **Describe the Sun, Earth and Moon (using the term spherical).**
- **Know information about the planets.**



Sticky Knowledge about Earth and space

- ❑ One million Earths could fit inside the sun – and the sun is considered an average-size star.
- ❑ An asteroid about the size of a car enters Earth's atmosphere roughly once a year – but it burns up before it reaches us.
- ❑ The sunset on Mars appears blue.
- ❑ The moon was once considered to be a planet but was reclassified as a dwarf planet in 2006.
- ❑ There is no atmosphere in space, which means that sound has no medium or way to travel to be heard.
- ❑ Earth, is the third planet from the sun and the only world known to support an atmosphere with free oxygen, oceans of liquid water on the surface and life.
- ❑ Venus is the hottest planet in the solar system and has an average surface temperature of around 450° C
- ❑ The sheer size of space makes it impossible to accurately predict just how many stars we have.
- ❑ Mercury, Venus, Earth and Mars are rocky planets. Jupiter, Saturn, Uranus and Neptune are mostly made up of gases although they have cores made of rock and metal.

Year 5/6: Electricity Knowledge Mat

Subject Specific Vocabulary

circuit	A path that an electrical current can flow around.
conductor	A material that lets electricity pass through them easily.
insulator	Plastic, wood, glass and rubber are good electrical insulators.
socket	A socket is a safe device to plug your electrical items into at home. Almost every room at home will have at least one socket.
series circuits	A series circuit is one that has more than one resistor, but only one path through which the electricity (electrons) flows.
cell/ battery	A device that stores chemical energy until it is needed. A cell is a single unit. A battery is a collection of cells.
voltage	Voltage is an the force that makes an electrical current move through the wires. The greater the voltage, the more the current will flow. It is measured in amps.
current	The flow of electrons, measured in amps.
electrons	Very small particles that travel around an electrical circuit.
positively-charged	Things that have lost electrons are called positively charged.
negatively - charged	Things that have taken electrons are called negatively charged.
fuses	These are safety devices. A fuse is a strip of wire that melts and breaks an electric circuit if it goes over a safe level.
Thomas Edison	An inventor that came up with a way of making the electric light bulb accessible for homes, industry and outside in the streets.
resistance	The difficulty that the electric current has when flowing around the circuit. This is measured in ohms.

Electrical symbols

Component	Symbol	Purpose
Cell (Battery)		Provides electrical energy
Power supply		Alternative to using cells
Wire		Allows current to travel
Bulb/light		Converts electrical energy into heat and light
Motor		Converts electrical energy into movement energy
Buzzer		Converts electrical energy into sound energy
Switch		Allows circuit to be opened or closed

Important facts to know by the end of the electricity topic:

- **Know that the brightness of a bulb is associated with the voltage.**
- **Compare and give reasons for variations in how components function.**
- **Use recognised symbols when representing a simple circuit in a diagram.**
- **Construct simple series circuits.**
- **Be able to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors.**

Sticky Knowledge about Electricity

- ❑ Electricity travels at the speed of light. That's more than 186,000 miles per second!
- ❑ Electricity comes from the power station, the wind, the sun, water and even an animal's pool!
- ❑ Electricity is a type of energy that build up in one place (static), or flow from one place to another (current electricity).
- ❑ Coal is the biggest source of energy for producing electricity. Coal is burned in furnaces that boils water and creates steam.
- ❑ A popular way of generating electricity is through hydropower. This is a process where electricity is made by water which spins turbines attached to generators.
- ❑ A bolt of lightning can measure up to 3,000,000 volts, and it lasts less than one second!
- ❑ Electric fields work in a similar way to gravity. Whereas gravity always attracts, electric fields can either attract or repulse.

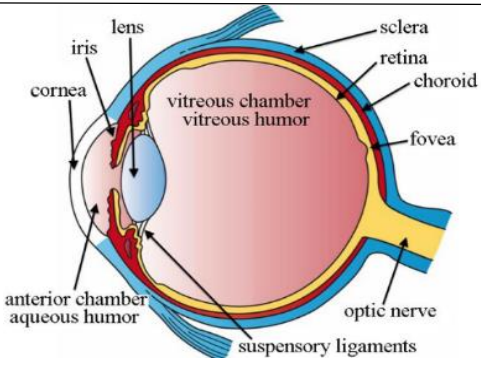
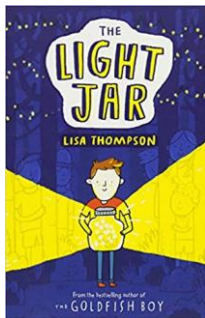
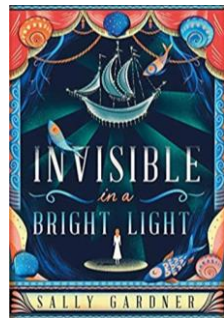
Year 5/6: Evolution and Inheritance Knowledge Mat

Subject Specific Vocabulary		Interesting Books	Sticky Knowledge about evolution and inheritance
adaptation	A trait or characteristic that changes to increase a living thing's chances of surviving and reproducing.		<input type="checkbox"/> Fossils of giraffes from millions of years ago show that they used to have shorted necks. They have gradually evolved through natural selection to have longer necks so that they can reach the top leaves of taller trees.
characteristics	The distinguishing features or qualities that are specific to a species.		<input type="checkbox"/> Eye colour, hair colour and the shape of your earlobes are all examples of inherited traits.
differences	This is how one species or characteristic may be different from another in terms of the way it looks, its structure or how it behaves.		<input type="checkbox"/> Fossils are the preserved remains, or partial remains of ancient animals and plants. Fossils let scientists know how plants and animals used to look millions of years ago. This is proof that living things have evolved over time.
similarities	This is how one species or characteristic may be the same of similar to another, sharing characteristics or showing very little variation.		<input type="checkbox"/> Evolution is the gradual process by which different kinds of living organism have developed from earlier forms over millions of years. Scientists have proof that living things are continuously evolving – even today!
environment	An environment contains many habitats and areas where there are both living and non-living things.		
evolution	Is adaptation over a very long time.	Important facts to know by the end of the evolution and inheritance topic:	
genes	Is the DNA an animal or human has that controls what traits or characteristics it has. This genetic information is passed on from parent to offspring.	<ul style="list-style-type: none"> Know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. 	
generation	Is a group of people born and living during the same time from the same family.		
inheritance	This is when characteristics are passed on to offspring from their parents.		
natural selection	The process where organisms that are better adapted to their environment tend to survive and produce more offspring.		
offspring	The young animal or plant that is produced by the reproduction of that species.		
variation	The differences between individuals within a species.		
Mary Anning	A famous fossil hunter famous for uncovering a marine reptile fossil called a Ichthyosaurus.		
Charles Darwin	An English scientist who is known for his theory of evolution by natural selection, in which he said that all living things are struggling to survive.		 <p>The Evolution of man</p>

Year 5/6

Odd Years

Year 5/6: Light Knowledge Mat

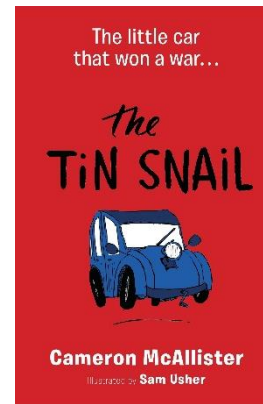
Subject Specific Vocabulary		Sticky Knowledge about Light	
light wave	One of the characteristics of light is that it behaves like a wave. Light can be defined by its wavelength and frequency. The frequency is how fast the wave vibrates up and down.		<input type="checkbox"/> Light will travel in a completely straight line until it hits an object that will bend it. The light that is in a straight line are called 'light waves'.
light source	Light, or illumination, is a form of energy that travels in waves, like sound. You can find different sources of light, such as a candle or the Sun.		
concave	It is a lens that curves inwards and reflects light differently as a result.		
convex	It is a lens that curves outwards and reflects light differently as a result.		
filters	A filter is a transparent material that absorbs some colours and allows others to pass through.	Important facts to know by the end of the light topic: <ul style="list-style-type: none"> • Know that light travels in straight lines. • Understand that because light travels in straight lines then objects are seen because they give out or reflect light into the eye. • Know that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. • Know that light travels in straight lines and therefore shadows have the same shape as the objects that cast them. 	<input type="checkbox"/> Space does not have any light. We can see things in space due to light bouncing off of the objects in space.
lens	A lens is a curved piece of glass or plastic designed to refract light in a specific way.		<input type="checkbox"/> Light doesn't travel as fast when it has to pass through mediums that are different, such as air, water or glass.
retina	The retina is at the back of your eye and it has light-sensitive cells called rods and cones.		<input type="checkbox"/> Light that we see from the sun actually left the sun ten minutes before we see it.
cornea	The cornea is thin, clear and covers your eye. It's important because it helps you see by focusing light as it enters the eye.		<input type="checkbox"/> Light can be controlled and produced in so many ways. A camera can control the amount of light that comes into the camera lens. We also use light in televisions, medical systems, copy machines, telescopes and satellites.
iris	By opening and closing the pupil, the iris can control the amount of light that enters the eye.	Interesting Books <div>   </div>	<input type="checkbox"/> Light is used by plants to convert the light into energy as their 'food'. The process is called 'photosynthesis' and converts carbon dioxide through the energy of the light.
pupil	The pupil can be compared with the shutter of a camera. It is surrounded by the iris which is the coloured part of the eye.		<input type="checkbox"/> The law of reflection states that the angle of incidence is equal to the angle of reflection. Whenever light is reflected from a surface, it always obeys this law.
refraction	This is when light bends as it passes from one material to another e.g. from air to water.		
prism	A 3D solid shape. A transparent prism separates out visible light into all colours of the spectrum.		
shadow	An area of darkness where light has been blocked.		

Year 5/6: Forces Knowledge Mat

Subject Specific Vocabulary

friction	Friction is a force between two surfaces that are sliding, or trying to slide, across each other.
gravity	Gravity is a force which tries to pull two objects toward each other.
air resistance	Air resistance is a type of friction between air and another material. For example, when an aeroplane flies through the air.
water resistance	If you go swimming, there is friction between your skin and the water particles.
levers	A lever can be described as a long rigid body with a fulcrum along its length.
pulleys	Pulley is a simple machine and comprises of a wheel on a fixed axle, with a groove along the edges to guide a rope or cable.
gears	Gears are wheels with teeth that slot together. When one gear is turned the other one turns as well.
parachute	A parachute is a device used to slow down an object that is falling towards the ground. As the parachute opens, the Air resistance increases.
weight	The measure of the force of gravity on an object. Measured in Newtons.
mass	A measure of how much matter or 'stuff' is inside an object.
Galileo	Galileo developed the telescope to enable close observation of the night sky.
Isaac Newton/newtons	During his lifetime Newton developed the theory of gravity and made a breakthroughs in the area of optics such as the reflecting telescope. He named the measure of weight after himself.

Interesting Books



Important facts to know by the end of the forces topic:

- **know what gravity is and its impact on our lives.**
- **identify and know the effect of air resistance.**
- **identify and know the effect of water resistance.**
- **identify and know the effect of friction.**
- **explain how levers, pulleys and gears allow a smaller force to have a greater effect.**
- **know who Isaac Newton and Galileo were.**

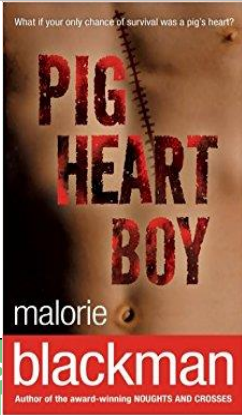
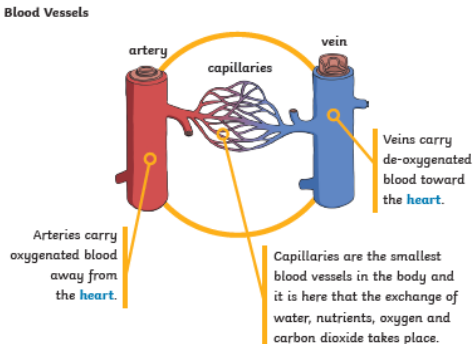
Examples of forces In action:



Sticky Knowledge about Forces

- ☐ Frictional force is any force that is caused due to friction. An example of this might be when you put on the brakes on your bike.
- ☐ Gravity is the pulling force acting between the Earth and a falling object, for example when you drop something. Gravity pulls objects to the ground.
- ☐ Surface resistance is the force on objects moving across a surface, such as an ice-skater skating on ice.
- ☐ Any kind of force is really just a push or a pull.
- ☐ Air resistance is the force on an object moving through air, such as a plane moving through the sky. Air resistance affects how fast or slowly objects move through the air
- ☐ Water resistance is the force on objects floating on or moving in water.
- ☐ Magnetic force is an invisible force created by electrons. Magnetic force controls magnetism and electricity.

Year 5/6: Animals including Humans (Circulatory System) Knowledge Mat

Subject Specific Vocabulary		Interesting Book	Sticky Knowledge about the circulatory system
blood vessels	Blood vessels are a series of tubes inside your body. They move blood to and from your heart.		<input type="checkbox"/> Your heart will beat about 115,000 times each day. Your heart pumps about 2,000 gallons of blood every day.
drugs	A drug is a chemical that is not food and that affects your body. Some drugs are given to people by doctors to make them healthy.		<input type="checkbox"/> The entire trip around your body only takes blood about 20 seconds in total. Blood is what is used to transport oxygen, waste, nutrients, and more throughout the body.
alcohol	A liquid drug produced from grains, fruits or vegetables when they are put through a process of fermentation.		<input type="checkbox"/> The circulatory system includes the heart, blood vessels and blood, and is vital for fighting diseases and maintaining proper temperature.
Cardiovascular	The blood circulatory system (cardiovascular system) delivers nutrients and oxygen to all cells in the body.	Imp blackman now Author of the award-winning NOUGHTS AND CROSSES circulatory system topic:	<input type="checkbox"/> Because your heart is crucial to your survival, it's important to keep it healthy with a well-balanced diet and exercise, and avoid things that can damage it, like smoking.
ultrasound	An ultrasound machine uses sound waves to take pictures of the inside of the body.		<input type="checkbox"/> Your heart affects every part of your body. That also means that diet, lifestyle, and your emotional well-being can affect your heart.
cardiologists	A cardiologist is a doctor with special training and skill in finding, treating and preventing diseases of the heart and blood vessels.	<ul style="list-style-type: none"> • Identify and name the main parts of the human circulatory system. • Know the function of the heart, blood vessels and blood. • know the impact of diet, exercise, drugs and life style on health. • Know the ways in which nutrients and water are transported in animals, including humans. 	
capillaries	Capillaries are very thin blood vessels. They bring nutrients and oxygen to tissues and remove waste products.		
pulse	Your heart has to push so much blood through your body that you can feel a little thump in your arteries each time the heart beats		
ventricles	The ventricles are the two lower chambers in the heart.		
circulatory system	A system which includes the heart, veins, arteries and blood, transporting nutrients around the body.		
nutrients	Substances that animals need to stay alive and healthy.		

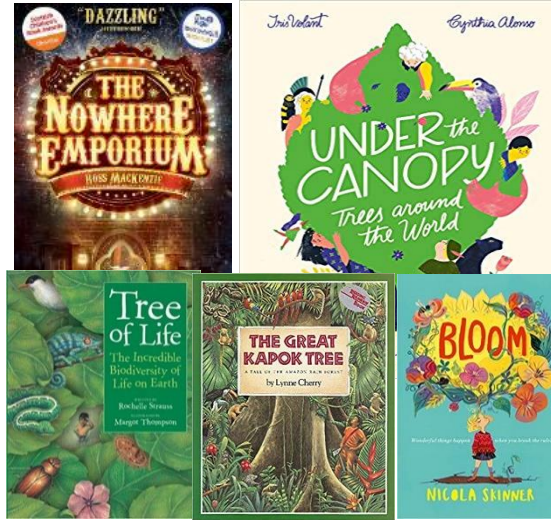
Year 5/6: Living Things and Their Habitats (Life Cycles) Knowledge Mat

Subject Specific Vocabulary

Interesting Books

Sticky Knowledge about Life Cycles

habitat	The natural home or environment of an animal, plant, or other organism.
gestation	Gestation, in mammals, the time between conception and birth, during which the embryo is developing in the uterus.
classification	This is the grouping together of similar species of plant, animal and other organisms.
fertilisation	The process of the male and female sex organs fusing together.
reproduction	It is the way different plants and animals make new plants and animals. The reproduction system differs in plants and animals.
life cycle	The changes a living thing goes through, including reproduction.
adolescence	It is the age between thirteen and nineteen. The 'teen' element gives rise to the word 'teenager'. It is a time that humans mature quite rapidly.
puberty	The physical stage of development between childhood and adulthood.
toddler	Is the period that a young child starts to walk and become more independent.
childhood	The stage of development before becoming a human.
adulthood	The stage of development when a human is fully grown and mature.
life expectancy	The length of time, on average, that a human or animal is expected to live for.



Important facts to know by the end of the life cycles topic:

- **know the life cycle of different living things, e.g. mammal, amphibian, insect bird.**
- **know the differences between different life cycles.**
- **know the process of reproduction in plants.**
- **know the process of reproduction in animals.**
- **create a timeline to indicate stages of growth in humans.**

- ❑ The years between 6 and 14 - middle childhood and early adolescence - are a time of important developmental advances that establish children's sense of identity.
- ❑ Many insects have four stages in their life cycle: egg or the unborn stage; larva – young stage; pupa – inactive no feeding) stage; and, adult stage.
- ❑ In general, the life cycles of plants and animals have three basic stages including a fertilized egg or seed, immature juvenile, and adult. However, some organisms may have more than 3 life cycle stages, and the exact names of each stage can slightly differ depending on the species.
- ❑ The early years, especially the first three years of life, are very important for building the baby's brain. A child's brain develops rapidly during the first five years of life, especially the first three years. It is a time of rapid cognitive, linguistic, social, emotional and motor development.



Year 5/6: Living Things and Their Habitats (Animal Classification) Knowledge Mat

Subject Specific Vocabulary

micro-organism	Micro-organisms are tiny. They are so small they can only be seen with a microscope.
vertebrates	A vertebrate animal is one that has a backbone.
invertebrates	An Invertebrate animal does not have a backbone and 97% of creatures belong to this group.
species	This is the grouping together of similar species of plant, animal and other organisms.
fungi	Fungi are a group of living organisms which are classified in their own kingdom. This means they are not animals, plants, or bacteria.
bacteria	Bacteria are tiny little organisms that are everywhere around us.
algae	Is a single or multi-cellular organism that has no roots, stems or leaves and is often found in water.
mammals	Mammals are also warm blooded animals. They breath air and have a backbone.
reptiles	Are animals that are cold-blooded, lay eggs and their skin is covered with scales.
amphibians	All amphibians begin their life in water with gills and tails. Examples are frogs & newts.
birds	Birds have feathers and wings. They lay eggs and are warm-blooded animals.
insects	A type of very small animal with six legs, a body divided into three parts and usually two pairs of wings or more.
fish	A fish is a scaly skinned creature with a spine that swims in water and breathes using gills.

Interesting Books



Important facts to know by the end of the living things and their habitats topic:

- **Be able to classify living things into broad groups according to observable characteristics and based on similarities and differences.**
- **know how living things have been classified.**
- **Give reasons for classifying plants and animals based on specific characteristics.**

Sticky Knowledge about living things and their habitats

- ☐ The largest vertebrate is the blue whale, which can grow to over 100 feet long and 400,000 pounds.
- ☐ The smallest vertebrate is thought to be a tiny frog called the Paedophryne amauensis. It only grows to about 0.3 inches long.
- ☐ Vertebrates tend to be much more intelligent than invertebrates.
- ☐ Vertebrate animals can be either warm or cold-blooded. A cold-blooded animal cannot maintain a constant body temperature. The temperature of their body is determined by the outside surroundings.
- ☐ An invertebrate is an animal that does not have a backbone. 97% of all animal species are invertebrates.
- ☐ Frogs can breathe through their skin.
- ☐ There are a wide variety of interesting ocean animals that are invertebrates. These include sponges, corals, jellyfish, anemones, and starfish.