

June - Bugs

Target Level: grades 3-6

The facts are created at a more advanced level but can easily be used for the entire homeschool family! Young children will soak up the information their older siblings are taught while all together.

Although the cards were created for June, they can be used for any month of the year!

Bug Books

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Calendar Connections

Helpful Items~these are the exact products we use~



We use this particular calendar, you can get it on Amazon here!





1 Entomology	2 Arthropods	3 Insects
Bugs. Insects. Creepy-crawlies. What ever you call them, do they fascinate you or do you scream at the sight of them? Chances are you encounter at least one bug everyday. There are more than a million different species of bugs all around the world and new ones are being discovered all the time. There are so many bugs that if you were to place all the bugs together and weigh them, they would weigh more than all the animals in our world combined! Think of itelephants, whales, gorillasall put together for their total weight and still bugs would outweigh them! That's A LOT of bugs! The study of bugs is called entomology and a scientist who studies bugs is called an entomologist.	With the large number of bugs that live in our world scientists needed to categorize each of them so they could be studied easier. Scientists decided to use features to group the bugs into their proper categories. All living things that people think of as "bugs" belong to the group called arthropods. The features that characterize an arthropod are (1) that their bodies have a hard covering and (2) that they have six of more legs. Within the group arthropod, "bugs" are broken down further into four different groups, also based on various features they contain. The four groups are: Insects, True bugs, Arachnids, and Myriapods.	Usually we think of all bugs as insects, but that isn't quite accurate. The features that characterize an insect from all other creatures are the fact that all of them have six legs and three body parts - a head, a thorax, and abdomen (which we will talk more about later!). Examples of insects include butterflies, beetles, and bees (no, insects don't all have to start with the letter "b"! There are also fruit flies and fleas!). Though many insects are considered pests (flies!) without insects we would starve to death as there would be nothing to pollinate flowering plants , many of which are food producing plants (apples, cucumber, tomato).
4 "True" Bugs	5 Arachnids	6 Myriapods
Within the class of Insects, scientists have broken the group down one step further. Like the insect class this group also contains creatures that possess six legs and a three-part body. The only difference is that this group has a beak, or proboscis, that they use to feed. This beak is a long tube-like mouthpart that is used to puncture food. It then acts as a straw to suck up what is inside. These bugs cannot chew or Some true bugs feed on plants, such as aphids, cicadas, and butterflies. Other true bugs, such as the assassin bug, bedbugs, and mosquitoes, feed on animals.	This class, by far, freaks the most people out! What bugs are included in this class? SPIDERS!!! There is one feature that characterizes arachnids – all of them have eight legs. Arachnids also have a body containing two parts – the abdomen and the cephalothorax. Arachnids also have two pair of other appendages. The first pair, the chelicerae (kuh-lis-er-uh), are used for feeding and defense. The second pair, the pedipalps (ped-uh-palp), are used for feeding and moving about.	Counting legs seems to be the way to go to determine which class insects are placed and it is not different for this class. However, counting the legs of this class may prove tricky as this class contains bugs with lots and lots and lots of legs!!! Centipedes and Millipedes are found in this class. "Centi" means 100, "milli" means 1,000 and "pede" means feet, so centipede means "100 feet" and millipede means "1,000 feet". These creatures have been misnamed, however, as centipedes can have more than 300 feet and millipedes can have as little as 80 feet! Myriapods also have bodies that consist of many segments and not your typical two or three part bodies found in other insects.



7 Buggy Bodies	8 Exoskeleton	۹ Eyes
As we mentioned before, insects have two different types of bodies. Most insects are composed of three segments – a head (where the eyes and mouth are found), a thorax (where the legs and wings are found), and an abdomen (where the food is broken down). Some insects, however, are only composed of two parts – the cephalothorax (the head and thorax are combined) and the abdomen.	 What part of your body allows you to stand nice and tall? If you said 'skeleton' you are correct! Our bones help us stand and not be a blob on the floor. All insects wear their skeleton on the outside of their body. "Exo" is Greek for outside, so exoskeleton means "outside skeleton". This tough outer covering is made up of a material called chitin (kahy-tin). Because of this tough material, bugs need to shed their exoskeleton in order to grow bigger. As the inside of the insect grows, the exoskeleton begins to split. The insect works hard to escape the old exoskeleton. When it emerges, a new exoskeleton is already present. The new exoskeleton is soft at first, making the insect vulnerable, but it slowly hardens in the air. An insect may have to shed its exoskeleton many times before it is full grown. 	"My! What big eyes you have!" Although Red Riding Hood may have said that of her grandmother, we could say the same thing of bugs. Most bugs have big eyes. They are called compound eyes and they are made up of small units called ommatidia (om-uh-tid-ee-uh). Many of these hexagonal shaped units are packed close together to form the eye and create a kaleidoscope image which the bug sees. Compound eyes are great for detecting movement, but do not see specific items clearly. Some bugs have simple eyes which can only sense light and dark.
10 Antennae	11 Hearing	12 Feelings
and wondered what those long wiggly strands at the top of its head are? Many people call them "feelers", but the proper term is antennae. The antennae of insects are covered with tiny sensitive hairs and bumps. These bumps and hairs help the insect to "feel" and "smell". Antennae are used to "feel" the air as they can detect movement and alert the bug to what is around it. They also pick up smells that are in the air, alerting the bug to what food is in the area as well as any predators. Some insects can smell other insects from 6 ½ miles away!	Did you know that bugs have ears? Have you ever seen a bugs ears? You probably aren't looking in the right spot! Try looking on their wings, bellies or legs! A Katydids ears are small slits on its legs near its knees. Strange, huh? But despite the fact of where they are located, bugs can hear a much wider range of sounds than people. Some bugs can also sense noise with their feet as they feel the vibrations of the noise through the ground.	You would think with the bugs hard armor of its exoskeleton it wouldn't be able to feel much. The truth is they have an excellent sense of touch. How can this be? Growing out of its exoskeleton are tiny, sensitive hairs that feel whatever it touches. Hairs are also located around an insects mouth that are used to taste. Some insects, like butterflies, have these "taste" hairs on their feet so that they know when they have landed on something yummy to eat!



13 Wings Most insects have two pairs of wings, though a few have only one pair. Very few insects have no wings at all. There are four basic wing types: membranous wings, scaled wings, leather-like wings, and horny wings. Membranous wings are thin and transparent. If you look at them closely you are able to see the detailed network of veins. Capture a housefly to see this type of wing. Scaled wings have fragile scales that cover the wings. They are easy to rub off and look as if they are made of powder. Butterflies have this type of wing. Leather-like wings look like they are apart of the exoskeleton and are difficult to detect. This type of wing is a protective covering for a membranous pair that is found underneath. If you catch a grasshopper you will see this type of wing. The last type of wing, horny wings, are difficult to differentiate from leather-like wings. They, too, are used to protect membranous wings but are much tougher and cover the entire insect. A ladybug has this type of wing.	14 Camouflage Many insects are masters of disguise! Many insects use their disguise to hide from predators. When insects blend with their surroundings they are more difficult for their enemies to find. If they are a hunting bug and blend in with their surroundings they are better able to catch their prey. Look at the picture on the front. Can you find the pink orchid mantis? This creature tricks insects into landing on it looking for nectar – but it gets a different surprise instead! Some insects disguise themselves by replicating the looks of dangerous poisonous bugs to ward off their predators. Warning marks in the colors orange, yellow, and black are often an indication of danger in the insect world and many animals have learned to avoid them. Wasps, which are black and yellow striped, can sting and Monarch butterflies, which are orange and black, leave a terrible taste in the mouth and often make animals ill. Some insects mimic these colors and patterns and as a result many animals avoid them.	Somplete Metamorphosis Insects develop in one of two ways: either through complete metamorphosis or incomplete metamorphosis. Complete metamorphosis involves four stages: egg, larva, pupa, and adult. The most common example of an insect going through this type of metamorphosis is a butterfly. A female will lay an egg from which a caterpillar will hatch. This caterpillar is in the larva stage. Most insects in this stage bear a resemblance to a segmented worm. During this stage the larva eats and molts, eats and molts, and eats and molts until it enters the pupa stage. In this stage, the caterpillar weaves a chrysalis around itself. It is during this stage that an amazing change occurs. Once the change is complete it breaks out of its encasement and enters into the adult stage as a beautiful butterfly. Other insects that grow in this manner include flies, ants, and beetles.
16ncomplete Metamorphosis	17 Bitty Baby Bugs	18 Beetles

If an insect does not go through complete metamorphosis, it goes through a similar process called incomplete metamorphosis. The term "incomplete" does not mean there is something wrong, it just means that there are fewer stages. Incomplete metamorphosis involves three stages instead of four: egg,

nymph, and adult. When an insects hatches from an egg, it looks like a miniature version of the adult form. It will, however, lack wings and reproductive organs. While in this nymph stage, it will grow and molt several times until finally it develops wings and reproductive organs and will be considered an adult. Insects that grow in this manner include praying mantis, grasshoppers, and boxelder bugs.

As we read the previous two days, most insects begin their lives as an egg. Mother insects lay their eags in all kinds of places - on plants (butterflies), in the ground (crickets), and sometimes inside other animals (flies)! The eggs are made of the same material that makes up the exoskeleton, chitin (kahy-tin). This ensures the safety of the babies inside while they develop. When they are ready they hatch and begin fending for themselves. Most insects are independent from the moment they are born. There are a few insect moms that hang around and care for their young such as the tortoise beetle, the shieldbug, and (ewww!) cockroaches.

There are more beetles in this world than any other insect. Beetles comprise about 1/4 of all known animal species. They live in a variety of conditions and places including water, wood and soil. The Nebria beetle even lives in frigid temperatures! Some beetles, such as the Colorado potato beetle, can be pests and destroy farm crops. But many are helpful, including the ladybug. Ladybugs eat approximately 5,000 aphids during its lifetime. It's a good thing it has such a huge appetite for them, since a mama aphid can produce billions of babies in six months! We would soon

be overrun if it weren't for the ladybug!



19 Spiders	20 Scorpions	21 Underwater Bugs
arachnid and are distinguished from other insects by having eight legs. There are several other interesting facts about spiders that make them truly amazing creatures. All spiders have poison fangs, but only a few are dangerous to people including the Brazilian wandering spider and the black widow spider. These bites can be deadly it not treated. Spiders also have the incredible ability to make silk. They begin by producing liquid silk within their abdomens then spin it into threads by squeezing it out of their spinnerets, holes located in their abdomen. Spider silk is an extremely flexible substance, yet very strong. If you were to weave a rope out of spider silk the size of a garden hose, it would be stronger than a steel pipe of the same size, yet would remain as flexible as the rope. No wonder Spiderman can swing from building to building! Spiders use this silk to help capture its prey by weaving the silk into remarkable webs.	Did you know that these creatures are considered insects? Though they have claws that resemble a crayfish or lobster, they are actually apart of the arachnid class. So how many legs do they have? Eight! Scorpions vary in size from 0.35 inches to 8 inches in length. Scorpions are most recognized for their tell-tale segmented curved tail that end with a venomous stinger. Of the more than 1000+ different known scorpions, only 25 are deadly to humans. Something that is different from your typical arachnid is that scorpions give birth to live young. A scorpion is a good mama. As she gives birth, she catches her babies and places them on her back until they are strong enough to live on their own.	Have you ever looked in a bucket of water that has been sitting for a few days in the warm summer sun? If you have, you may have seen some small wiggly creatures squirming around. Those are more than likely mosquito larvae. Many bugs, such as dragonflies, damselflies, and mayflies begin their lives underwater. Damselflies actually have gills at the end of their abdomens to help it breath underwater. When these insects develop wings they loose their gills and can only breathe air and live on land. There are a couple of insects, however, that swim and hunt underwater. The diving beetle is a great swimmer and diver. It stores a bubble of air under its wings which it uses to breath with the use of holes through its exoskeleton. These holes are called spiracles. These amazing swimmers dive into the water to hunt and catch tadpoles and small fish.
22 Bees	23 Ants	24 Bad Bugs
Bees are what scientists call social insects. Bees depend on one another. Each bee performs a particular function within the hive: queen, drone, or worker. The largest group are the worker bees. All these bees are female. As their name implies they perform all the tasks necessary to keep the hive running – they build and maintain the hive, collect food for the hive, care for the eggs and larvae once they hatch and care for the queen. Talk about busy bees! Within each hive there is one bee who is the queen. She is the only ant that is able to lay eggs. Workers protect her fiercely. The last group of bees, drones, are all male. Their only job is to mate with the queen. Since drones are only good for this purpose, scientists have observed worker bees killing them or pushing the out of the hive when food becomes too scarce.	Ants are also considered social insects. Ants work together to build their home and form huge colonies. Like bees, different ants perform different functions within the colony. The female ants are generally the workers and soldiers, caring for the entire colony. Each colony has several males that are drones and one or more females that are queens. Ants can be found on every continent of the world, except for Antarctica. Their ability to survive in so many different locations is attributed to their ability to adapt to their environment, use the resources around them and defend themselves. Ants are fierce fighters and will bite and sometimes sting or spray a form of acid at its enemy.	Despite the fact that insects are relatively small in size, they can create an amazing amount of damage. Approximately one-fifth of all the crops grown in the world are eaten and destroyed by insects such as locusts (a type of grasshopper). Other bugs, such as mosquitoes and fleas, can pass on diseases such as typhus and malaria when they drink our blood. Cockroaches and flies carry germs in and on its body and spreads these germs when they come in contact with our food. In the past, more people have died from diseases spread by insects than any other cause. It is believed that the Black Plague, which killed nearly 100 million people, was carried and transferred by rat fleas.



25 Good Bugs	26 Strongest Bug	27 Biggest Bug
Despite a few bad bugs, there are many more that are helpful and necessary to our survival. Without bees spreading pollen between flowers we wouldn't have the colorful spring, delicious fruits and vegetables, or the endless supply of sweet honey. Without ladybugs our world would be overrun by billions of aphids. Insects have even been used for medical purposes. Maggots have been used to clean people's wounds. Maggots eat the dead flesh around the injury and also give off a natural antibiotic to help stop any further infection! Spiders' webs used to be used to bandage cuts. Webs also contain an antibiotic and helped stop infections.	Rhinoceros beetles are among some of the largest beetles found on earth reaching about 6 inches in length! Despite their size they are harmless to humans as they cannot bite or sting. They are the strongest beetle in the world as they can carry about 850 times their own weight. That would be comparable to a person carrying seventy-five cars! The horns located on the thorax are used for fighting and digging.	The Goliath Beetle, named after the famous giant of the Bible, is the largest insect in terms of size, weight, and bulk. Located in the tropical rain forests of Africa they feed mainly on tree sap and fruit. They can grow to be 4 ¼ inches long and weigh as much as 3 ½ ounces. Like the Rhinoceros beetle, they, too, are harmless and are often kept as pets by African children.
28 Littlest Bug	²⁹ Night Bugs	30 Weird Bugs
Tanzanian parasitic wasp. The wingspan (distance from wingtip to wingtip) of this insect measures 0.0079 inches! They weigh approximately 1/40,000 th of a gram! These insects are smaller than a housefly's eye (the picture located on the front of this card). These insects lay their eggs inside another insect by using their sting. To see one of the first pictures ever taken of this tiny insect go to <u>http://phys.org/news/2011-05-flight- artists-smallest-insect.html</u>	As night falls many bugs are just stirring. One of the most popular evening bugs are lightning bugs or fireflies. These insects use a special organ in their abdomen to flash light signals to communicate with each other. At times hundreds of lightning bugs will gather together in trees giving it a Christmas tree effect! The Luna Moth is also a creature of the evening - mainly to avoid being eaten by an enemy. Their wingspan measures 4 1/5 inches wide, making it one of the largest moths in the United States. Luna moths do not have a mouth as it only lives about a week and survives on the food it ate as a caterpillar.	Some insects are just plain weird looking! Take the spiny bush cricket, with spikes all over its body and purple eyes, you would think aliens had invaded the bug world! Then there is the giraffe weevil. No one knows exactly why it has such a long neck, but it certainly looks interesting! Sometimes its bug behavior that is odd. The flambeau butterfly sits on an alligators' eye and drinks its tears. That's one brave bug!



Go to the ant, you sluggard; consider its ways and be wise! It has no commander, no overseer or ruler; yet it stores its provisions in summer and gathers its food at harvest.

Proverbs 6:6-8

