



Celebrate Spring!

Vernal Equinox

In temperate climates—that is, climates which have varying temperatures and seasons—spring brings lots of changes to our world. The official first day of spring is called the **vernal equinox** and it usually occurs on or near March 21 in the northern hemisphere.

An **equinox** is a 24-hour period in which the daylight and nighttime hours are closest to being equal. It happens only twice per year—once in the spring and once in the fall. The reason for this is that for these two days the sun shines directly on Earth's equator (the imaginary line around Earth's center that separates the southern and northern hemispheres).

If you look on a globe, you can easily find the equator at **0 degrees latitude**. That means that the line will be marked with a zero. When the sun shines directly on that line, it causes the day to be divided almost equally between light and dark.

Already, in many places, by the time the equinox occurs flowers have begun sprouting, leaves have begun budding, grass has been greening. Also, animals and insects are coming out of hibernation. You might be seeing geese migrating back to the north, hearing spring peepers sing near ponds and other wetlands. A short walk will show you all the signs that winter is ending and the world is coming back to life.



Demonstrate the Vernal Equinox



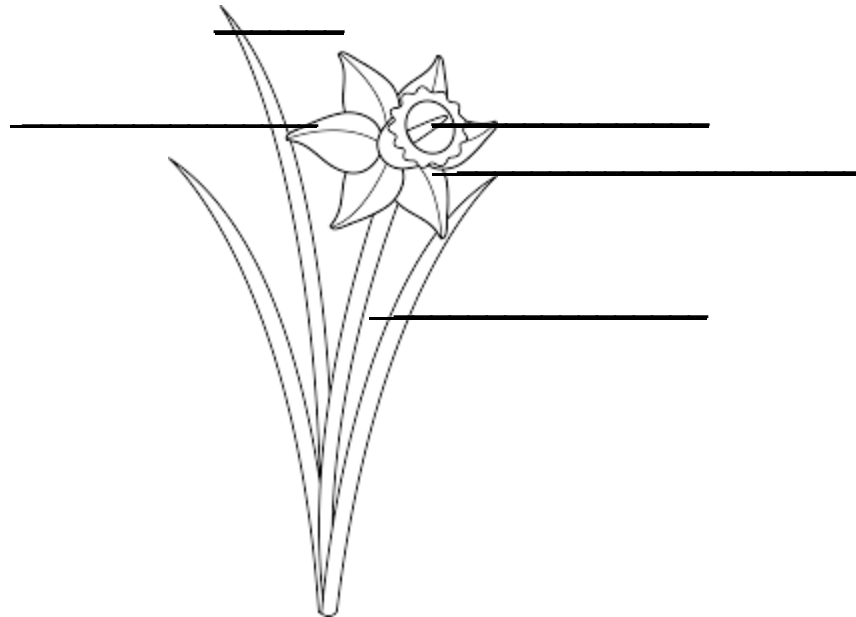
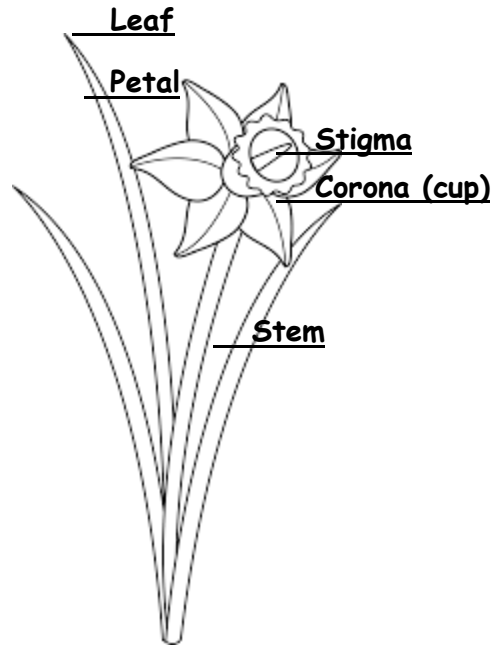
A good way to get a visual of the **vernal equinox** is to use a flashlight and a globe. Go into a dim room and shine your flashlight at the equator on your globe. Slowly turn the globe and watch the difference between the lighted parts and the shadowed parts. Then move the flashlight up towards the northern hemisphere (summer) and down towards the southern hemisphere (winter). This is a great way to see the differences in how the sun hits the earth at different times of year. You can see the light stays on the northern hemisphere for a longer time in summer and a shorter time in winter, which explains what happens in other seasons, too.

Record your findings here:

Season	Equator	Northern Hemisphere	Southern Hemisphere
Spring			
Summer			
Fall			
Winter			

Label the Flower

Flowers are another sign of spring, and one of the first colorful additions to our world is the daffodil. Below is a labeled daffodil, showing all the flower's parts. Study it, then fill out your own flower chart.



Understanding Leaf Buds



Believe it or not, the buds we see on the trees in spring are due to a process that actually began in fall, one that has been developed by trees over tens of thousands of years. In autumn, as the days get shorter and cooler, the tree sets itself up to go dormant for the winter. At the same time, it sets itself up to bud in the spring.

As the amount of sunlight the tree receives gets less and less, the tree drops its leaves and creates a hardened bud that protects the growing tissue inside until the amount of sunlight increases. This hardened bud is set up to burst forth with the new growth when the days get longer and warmer. The tree requires a certain number of cold days in between the state of going dormant and the waking state. Once that requirement has been met, it is ready to produce the leafy buds we recognize in spring.



Fruit-producing trees also flower in the spring. If you look closely at the picture above, you can see the pink part of the flower peeking out through the bud. These flowers are signs of fruits to come. In the right conditions, the flower will fall off as the days warm and the fruit will begin to grow to maturity.

Tree Growth Activities



Before the leaves truly burst forth, go outside and gather a branch or two that is just beginning to bud (this works quite well with forsythia, which will burst into flower). Bring the branches into your classroom, cut the stems at an angle, and place them in a vase or jar of water. Check your branches every day, keeping track of how long it takes your buds to form into full leaves. Use a ruler to measure the bud size each day.

Day 1	Size	Changes in appearance
Day 2		
Day 3		
Day 4		
Day 5		
Day 6		
Day 7		

Trees use spring rains for nourishment to help the process of budding. Trees and other plants take in water and nutrients through their roots, sort of sucking them up into the rest of the plant so that the whole thing is fed. You can watch this process through a simple experiment involving a celery stick, some water, and a little food coloring.

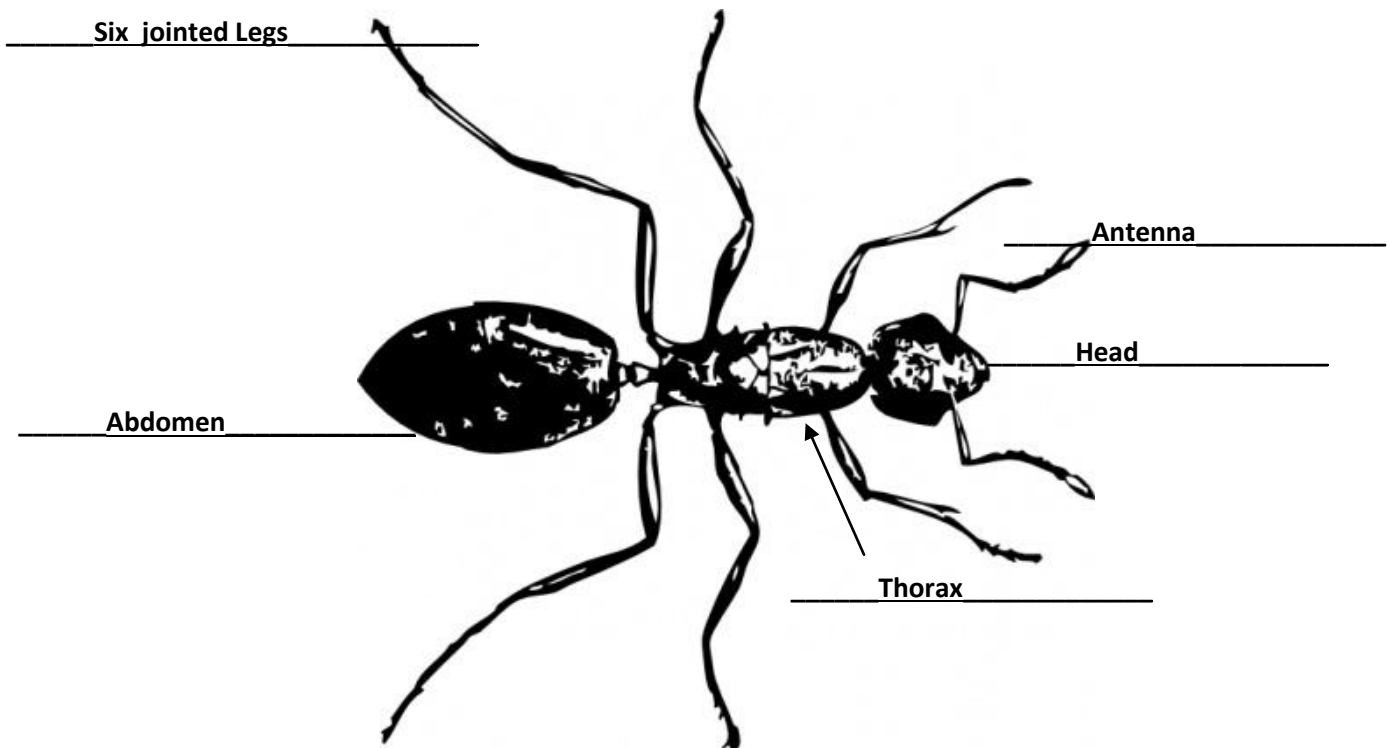


All you have to do is fill a jar about halfway with water and add a few drops of blue or red food coloring. Cut the end from your celery stick and place it in the jar. Then check it every day. The leaves will begin to turn the color of your water as the plant draws the water into itself. Track the changes here.

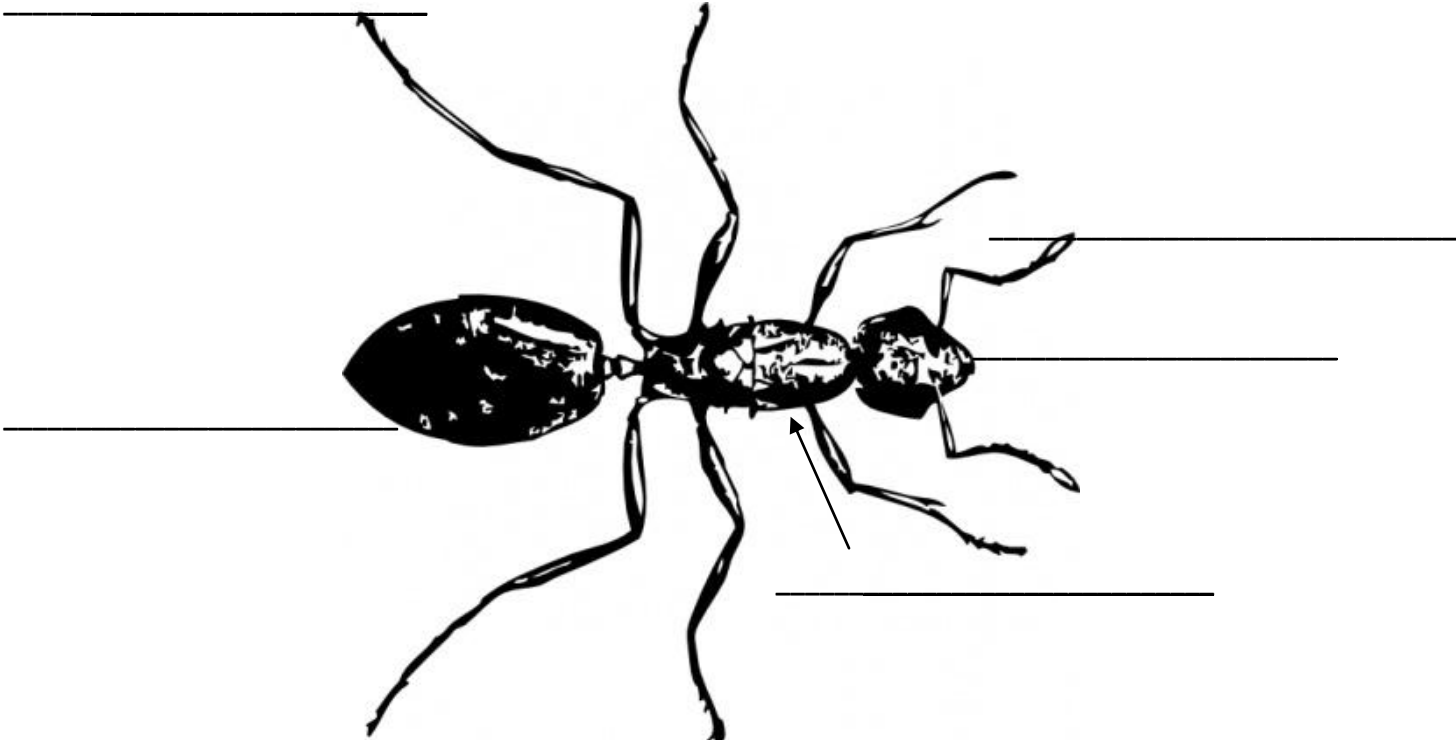
Day	Changes
Day 1	
Day 2	
Day 3	
Day 4	
Day 5	

Insects

As the days get warmer, you will notice more and more insects every time you go outside. That's because many insects go dormant or hibernate for the winter, much like skunks, bears, frogs, and turtles do. Even the spiders get more active as the days warm and lengthen. If you pay close attention, you will notice there are spider webs just about everywhere in the spring, sometimes growing in number from one day to the next. Gnats and other flying insects come out. Then the bats wake up, yawn, stretch, and start hunting! And ants? They are suddenly everywhere.



Label the Ant



Birds

Another sure sign of spring is the return of summer birds. Geese, cranes, and many songbirds that migrated south for the winter suddenly come back. Birds migrate because their summer homes don't provide enough food for them to survive. They also need warmer places to nest, because baby birds are hatched with only a fine down covering them and are unable to keep themselves warm in cold climates.

Birds come back to their summer homes as the days warm up and more food becomes available. Insects, berries, and seeds all return in the spring, bringing with them the abundant food supplies birds need to survive.

This means that summer in temperate climates is much more colorful than leaves and flowers provide. It's also much noisier. Have you ever noticed that when you walk outside on a spring morning, there is so much more noise than a winter morning? That's because there are so many more birds singing.

Another reason for all the noise is that spring begins mating season. For birds that stuck around all winter, they know it is safe now to lay fertilized eggs, so they are singing to attract a mate. It generally takes about a month for an egg to hatch, so by the time the little ones are hatched the days and nights have gotten warm enough for it to live.

Studying birds is a lot of fun. Following is a bird study sheet to help you learn more about the birds you see.

BIRD REPORT

Classifications	
My bird:_____	Scientific (Latin) name:_____
Family_____	_____
Genus_____	Kingdom_____

Field Markings	
Size_____	Male Color_____
Tail Shape_____	_____
Beak Shape_____	Female Color_____
Wing shape_____	_____
Foot shape_____	Juvenile_____

Field Markings	
Size_____	Male Color_____
Tail Shape_____	_____
Beak Shape_____	Female Color_____
Wing shape_____	_____
Foot shape_____	Juvenile_____

Behavior	
Food preferences _____	Song_____
_____	Flight habits_____
Habitat_____	_____
Nest type_____	Clutch total_____
Clutches per year_____	Fledgling period_____
Migratory habits_____	Where it winters _____
_____	Molting period_____