Imagine you are a truck driver and your office is in Seattle. Your boss gives you the following work schedule. Trace your driving route on the map. In the blanks, write the name of the highway you would use to get to that stop and how many miles you traveled.

1. Pick up raspberry jam from a processor in Everett.
   Highway _____  for about _____ miles
2. Pick up fresh apples at a fruit packing plant in Wenatchee.
   Highway _____  for about _____ miles
3. Deliver the apples and the jam to a supermarket in Spokane.
   Highway _____  for about _____ miles
4. Pick up a load of wheat flour near Pullman.
   Highway _____  for about _____ miles
5. Drop off flour in Pasco; pick up sweet corn.
   Highway _____ & _____ & _____  for about _____ miles
6. Deliver corn to processing plant in Ellensburg.
   Highway _____  for _____ miles
7. Pick up hay and deliver to port of Seattle for shipment to Japan.
   Highway _____  for about _____ miles
8. What is the total number of miles traveled? _____ miles
9. How many different highways did you travel? _____
10. How many cities did you visit? _____

**Agriculture - From Field to Table**

(ag·ri·cul·ture (ag´rə kul´chor), n. growing plants and animals for food and other uses)
Agriculture starts with the growing and harvesting of food, fibers, forests, and flowers. Agriculture is important to each of us because we all eat food. Farms and ranches produce the food we eat, the cotton t-shirts, jeans, and leather shoes we wear. Important ingredients such as fuel for our cars, soap, glue, many medicines, tires, books, and thousands of other things we use in our daily lives are also produced by farms and ranches.

America’s farmers are the world’s most productive. They produce 16% of the total world food production on just 10% of the world’s land. US farmers grow more food using fewer resources than ever before. In Washington State 39,500 farms create a $46 billion food and agriculture industry. That represents 13% of our state’s economy. We lead all other states in the production of raspberries, hops, mint oil, cherries, apples, pears, concord grapes, and carrots for processing.

**Genetic Science in Agriculture**

**Genes** are distinct portions of a cell’s DNA. Genes are coded instructions that determine a particular characteristic such as red hair or blue eyes. Plants and animals also pass genetic traits to their descendants.

Farmers have been improving plants and animals since agriculture began by selecting the best individuals to use as parents for the next generation. This process involves the crossing of thousands of genes with the hope of randomly passing on desirable traits. It is a hit-or-miss process. Unfortunately, undesirable traits might also result. For instance, when farmers selected for heavily muscled pigs it also resulted in easily stressed pigs and meat that could be tough.

Using new technology, scientists can now identify the specific genes that carry a certain trait and that single trait can be passed on. This more precise science eliminates passing along undesirable traits.

**GMO (Genetically Modified Organism)**

GMO refers to a living organism that has been genetically altered to change some trait. In agriculture, the most widely modified trait is tolerance to herbicide (weed killer), followed by insect resistance.

Why do we use this technology? It is precise genetic gain. It results in higher yields, higher quality crops, yet it saves money because farmers use fewer and less toxic chemicals.

Corn, soybeans, and cotton are the most advanced in GMO technology. In the future, using this technology we will be able to affect traits like drought resistance, nitrogen uptake, and nutritional quality.

Extensive food safety testing is required of all GMO crops before they can be grown for the public.
Climate depends mainly on **latitude**. Latitude governs the angle of the sun's rays, length of day, and even prevailing winds. Washington lies between 45˚ North and 49˚ North. That puts it in the temperate climate zones (between 30˚ and 60˚ latitude). Our basic zones are Maritime and Steppe. Maritime is generally along coasts and has large amounts of rainfall and moderate temperatures. The Steppe Zone is located inland with an average rainfall of 10 - 20 inches. It has hot summers and cold winters. Within the Steppe Zone, Washington has two other zones: Desert, which has less than 10 inches of rainfall, and the Highlands. The Highlands Zone is found in any mountainous area and temperature and precipitation vary with elevation, not latitude. Our different climate areas are a main reason our state produces such a wide variety of crops. Use the precipitation map to help answer the questions.

1. Outline Washington’s wettest area. It is really a rain forest!
2. Which side of the Cascade Mountains gets the most rain? West or East?
3. Where is the Maritime Zone? Where is the Steppe Zone?
4. Most of the wheat is grown in Eastern Washington. Does that crop need a lot of rain?
5. Draw a circle around the desert. Why is this area our most productive agricultural region in the state? Hint: take a peek at page 4
6. Does this precipitation map give clues about where the Highland Zones are located?

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The Rain Shadow

Some parts of Washington receive over 100 inches of rain each year. As moist air from the ocean blows east it must rise over our mountain ranges. The air cools as it rises. Cold air cannot hold as much moisture so the clouds must release their moisture in the form of precipitation (rain, sleet, snow, or hail). This results in an area that receives less precipitation on the other side of the mountains (the rain shadow). Where are the rain shadow areas West of the Cascades?
PUGET SOUND LOWLANDS
Most of our urban population is concentrated in this region, but there is rich soil in these lowlands that stretches from the Puget Sound to the base of the Cascades. This area is perfect for that fabulous milk maker, the dairy cow, as well as for raspberries, vegetable seed, produce, tulips, nursery products and shellfish.

OLYMPIC PENINSULA
The Olympic Mountains provide timber and recreation. Forest products like an evergreen shrub named salal, are collected and shipped nationwide to florists. Lavender is a favorite floral crop from this region.

CASCADE MOUNTAINS
The Cascades have spectacular peaks and lots of timber and recreation areas. The lower elevations provide grazing areas for cattle as well as land that grows timothy hay and apples.

WILLAPA HILLS
The coastal hills are ideal for growing Christmas trees. Trees are harvested in the fall and bundled in large stacks. This region also produces cranberries, oysters, and is home to many farmers markets and community supported agriculture (CSA) operations.

COLUMBIA BASIN
The dry region east of the Cascades is a huge lava plateau with rich soils. The heart of the basin receives less than 10 inches of precipitation yet this region is our most productive agricultural region. The reason is irrigation. The Columbia River and its tributaries provide water for a region that has ideal conditions for alfalfa, potatoes, corn, mint, grapes, apples, cherries, and many other crops.

We also have deep-water ports. Place the ports of Seattle, Tacoma, Vancouver, Longview, Grays Harbor, and Port Angeles on the map below.

The climate, physical features, and geography change as you cross Washington, dividing our state into distinct regions.

How many regions are there?
How many counties does our state have?
Washington leads the nation in the production of several crops (2011 crop data). Identify the counties or regions that are named below.

1. Red Raspberries – 92.3% of US supply – Delicious and nutritious, grown for eating fresh, in jams, jellies, or pies. Raspberries can be harvested mechanically. Whatcom county leads the state with over 90% of this crop. www.red-raspberry.org

2. Hops – 79.2% – Hops are used to flavor beer. The Yakima valley produces three-fourths of the state’s hops. The dry climate along with lots of irrigation water from the Yakima River create ideal conditions for this crop. www.yakimahops.com

3. Mint Oil – Grant and Adams counties lead the state in production of mint. Every pound of oil will flavor 30,000 sticks of gum or 1000 tubes of toothpaste. Of the total US supply, Washington produces:
   - 78.7% Spearmint Oil
   - 26.1% Peppermint Oil (2nd in nation)

4. Sweet Cherries – 58.6% – Cherries are one of the fastest maturing fruits. In just 60 days blossoms mature into sweet and tasty fruit. They are picked, packed, and shipped to markets in the U.S. and more than 42 countries around the world. Leading cherry counties are Yakima, Grant, Chelan, Benton, and Okanogan. www.nwcherries.com

5. Apples – 57.4% – Apples are the crop that consumers most often link with Washington state. Five areas all share ideal growing conditions – weather, soil, and water. These areas can be seen at www.bestapples.com/growers/regions/index.shtml (Okanogan, Lake Chelan, Wenatchee Valley, Columbia Basin, and Yakima Valley)

6. Pears – 47.9% – The pear has been grown by man for more than four thousand years. Washington pears are picked by hand and are prized for their flavor and long storage life. Yakima county has the most acres of pears, followed by Chelan, Okanogan, Grant, and Douglas. www.usapears.com

7. Concord Grapes – 37.3% – These are the grapes used to make grape juice, jams, and jellies. We also grow 23% of Niagara grapes which are used to make white grape juice. All these grapes are harvested by machine. Yakima, Benton, and Franklin counties grow the most concord grapes.

8. Processing Carrots – 35.6% – Carrots provide 30% of the Vitamin A in the US diet. Carrots are sliced or diced to be frozen or canned. Benton, Franklin, and Grant counties grow these carrots. Carrots for the fresh market are grown in both Western and Eastern Washington.

Make Your Own Bar Graph:
(Using the crop percentages given above)
Washington is blessed with great soil and a climate for growing many different crops. That's not all! Our mighty rivers and ocean ports help us move all kinds of products throughout the Pacific Rim at an affordable cost. That means that wheat trucked from Montana and potatoes grown in Idaho, as well as items from our own state, can travel by water to ports around the globe.

**A Water Stairway**

The Columbia and Snake Rivers form a highway for boats and barges. This could not happen without a series of 8 locks and dams that make a stairway in the river. Between the port of Clarkston and the Pacific Ocean the rivers drop over 700 feet. Like a water stairway, the locks allow boats to move up and down the rivers.

A lock and dam work together. The dam holds back water creating a pool. The lock is a rectangular water chamber near the dam with watertight gates at each end.

To lower a boat or barge, the lock is filled with water to the upstream level. The barge moves into the lock. The upstream gate closes and water is drained out of the lock, lowering the barge to the downstream level. The downstream gate opens and the barge leaves the lock.

Boats can also travel the other direction moving from lower to higher water levels. Through locks, boats can travel past dams, waterfalls and other obstacles.

**That's A Lot of Wheat!**

In 2011, Washington farmers produced 10,072,800,000 pounds of wheat. How many tons is that? Nearly 85% of the crop is exported. Barges are the most efficient transportation to deep water ports.

3500 tons of wheat shipped on 1 barge

= 35 rail cars  = 117 Semi Trucks
Pumpkins are not just a pretty or scary face. They are healthy to eat, have a rich history, and are also used as decorations. Pumpkins are a member of the gourd family, which includes cucumber, honeydew melons, cantaloupe, watermelons, and zucchini. They have been grown in North America for thousands of years and are grown on every continent except Antarctica.

Pumpkins are grown and processed into canned pumpkin and canned pie mixes. Pumpkins can also be grown for decorative reasons. They can range in size from less than one pound to more than 1,000 pounds (the current Guinness world record is 2,009 pounds). A common use for them is to carve them into Jack-O-Lanterns, but did you know that the tradition originated in Ireland with the carving of turnips?

Before corn was a staple food source for the Native Americans, they used pumpkins to help them through the winters. They discovered many ways to use the pumpkin in their diets. They would boil, roast, or fry the inner meat. The blossoms were added to soups and the seeds made a tasty snack.

Eating pumpkins can provide your body with vitamins A, C, K, and E. It is also a good source of other minerals such as magnesium, potassium, and iron. The bright orange color of the pumpkin tells you that it is full of beta-carotene. Beta-carotene is converted to vitamin A in the body, which helps bones, cell development, and also helps promote healthy eyesight.

There are many ways to get pumpkins in your diet or in your home. You can visit a farmer’s market, look for them at your local grocery store, or visit a pumpkin patch in your area. Take a look at pickyourown.org for you-pick farms near you.

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Pumpkin Poem

One day I found two pumpkin seeds.
I planted one and pulled the weeds.
It sprouted roots and a big, long vine.
A pumpkin grew; I called it mine.
The pumpkin was quite round and fat.
(I really am quite proud of that.)
But there is something I’ll admit
That has me worried just a bit.
I ate the other seed, you see.
Now will it grow inside of me?
(I’m so relieved since I have found
That pumpkins only grow in the ground!)

Author: Unknown

Circle all the nouns
Underline the verbs
Cross out the adjectives.

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Agritourism is growing in popularity across the US. The term agritourism means any activity that attracts visitors to a farm or ranch. The types of activities on the farm may include picking fruits and vegetables, riding horses, tasting honey, learning about cheese making, or shopping at the farm stand. Agritourism provides farmers the opportunity to share and educate visitors about their way of life, and to earn extra money.
What’s so special about wheat? Wheat has been a staple in our food supply for over 12,000 years. All parts of the wheat kernel, from the outer bran to the inner germ, supply nutritious ingredients in a variety of breads, cakes, cereals, pastas and more. Wheat is a delicious part of healthy eating, low in fat and high in complex carbohydrates that fuel our bodies with long-lasting energy.

Wheat was first grown in the US in 1602 as a hobby crop. The first Northwest wheat crop was planted in 1825 at Fort Vancouver, Washington. Today, the Northwest produces 91 percent of US white wheat. Washington is the 4th largest wheat producing state in the nation with more than 2 million acres in production (1 acre is about the size of a football field).

Most wheat is milled into flour. Thousands of years ago, milling wheat into flour involved crushing the wheat and other grains between stones. This was a difficult and slow process. Those stones have evolved into machinery that turns the wheat into a fine powder. At one point in history there were as many as 160 flour mills in Washington. Today there are less than ten.

Washington wheat is marketed around the world, especially to nations in the Middle East, Japan, Taiwan and South Korea. If 85% of it is exported, how much do we use domestically? A farmer’s livelihood depends on the wheat market. Prices are constantly changing depending on world supply and the needs of the consumers. Once the wheat has been harvested and sold, it is time to think about next year’s crop.

The bulk of Washington wheat, about 85-90%, is exported. There are three main modes of transportation used to get our grain to the Pacific Northwest ports along the Columbia River: trucks, barges and trains. Over 60% of Washington’s wheat exports travel by barge from ports along the 400-mile Columbia-Snake river system to Portland.

Visit: [www.myamericanfarm.org](http://www.myamericanfarm.org)
to play on-line games and explore fun family activities.

It’s all about agriculture.