My GPS Fun With Lewis and Clark Journal

Exploring Spaces
Discovering Fun Places
Walking With History’s Faces

Name

A K-State Research and Extension-Atchison County 4-H project. To learn more about Geocaching and other community events, contact Diane Nielson, CEA at atchisoncoext@ksu.edu or 913-833-5450. Fitness PATH program funded by a National 4-H Council and Kraft Healthy Lifestyle grant. National 4-H Council and Kraft support 4-H healthy lifestyle programs.
Map Making

Lewis and Clark's journey lasted over 2 years. Their job was to draw a new map of the land from the Missouri River to the Pacific Ocean.

The picture below shows the only map they had to use. Can you find Kansas on this map?

Lewis and Clark's Route:
1804-1806

Fort Clatsop
(Oregon)

Bismarck,
N.Dakota

St. Louis,
Missouri

Can you find Kansas on this map? Place an X on the map where they camped on the 4th of July near Atchison, Kansas.

Campsite Location:
N ____________________________
W ____________________________

Date ____________________________

Who (Your Name) ____________________________

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This a picture of the new map that Lewis and Clark made. They added many details and corrected the old map. They did not have a GPS unit on their trip. They had to use their math skills to find the longitude and latitude coordinates.

Can you color the states that Lewis and Clark traveled during their journey? (Hint: Look at the Lewis and Clark Route map.)
Exploring The Lewis and Clark Trail

Using a GPS unit to explore the Lewis and Clark trail is fun. It is also a great way to play hard. Did you know that kids and teens should be physically active for at least 60 minutes every day. Limit your screen time and the time to have fun with friends and family. Be active. Design a map for friends and family to follow.

My Lewis Clark Map of Great Things To Explore and Discover

For a fun adventure just program the waypoints in your GPS and start walking with your friends and family.

#1 Start Here
N 39. ____________
W 095. ____________

#2 Look for
N 39. ____________
W. 095. ____________

#3 ID A Tree
N 39. ____________
W. 095. ____________

#4 ____________
Historic Site
N 39. ____________
W. 095. ____________

#5 ID A Flower
N 39. ____________
W. 095. ____________

#6 Half Way Point
Head back the way you came
N 39. ____________
W. 095. ____________

If you are not tired keeping walking the trail and see the sites.
Charting a continent

Where in the world?

Longitude and latitude are how in 1803-04 Lewis and Clark kept track of where they were on their journey.

**Degrees**

- Longitude is the east-west distance, expressed in degrees, from an imaginary line around the Earth that passes through Greenwich, England, and the North and South poles. Scientists named Greenwich as the starting point many years ago.

- Latitude: defines a point on the Earth’s surface in relation to how far north or south it is from the equator. It is also expressed in degrees. Combined with longitude, it describes a location on the Earth’s surface and allows the location to be plotted on a map.

Finding longitude

Finding longitude normally requires an accurate clock set to Greenwich time. Since the world rotates one time in 24 hours, all navigators have to do is check their clock at noon and count off the difference with Greenwich time. This chronometer was the single most expensive piece of equipment Lewis and Clark purchased — $757.75. Before the advent of radio time signals, it was the only clock that provided the time accurately enough for a trip at sea to determine its longitude.

Unfortunately, it required daily winding, and a mechanism failure could lead to dangerous conclusions.

Calculating latitude

Lewis and Clark plotted their latitude using a sextant to measure the angle of the sun at its highest point, or zenith. Using that angle, they looked up the current date in the Nautical Almanac of 1803. That gave them the number of degrees latitude they were north of the equator.

Using a sextant to find the angle of the sun

Sunlight reflects off the mirror, making an angle that can be measured.

Nighttime navigation

- A sextant is used to measure angles in the stars. The sextant is the instrument used to make these measurements.

Measuring distances

When Lewis and Clark wanted to find the bearing of an object, they used a sextant to determine the angle of an object. A sextant was used to measure the angle of an object.

- The sextant had a circular scale that allowed them to measure the angle between the object and the horizon.

- Then they used this angle to determine the distance to the object.

- The sextant was adjusted to the angle of the object, and the distance to the object was calculated using trigonometry.
Lewis and Clark wrote about 179 species of new plants and trees.

Discovering Flora

Draw a picture of your favorite flower.

My Flower Sketch

Location:
N_________________________
W_________________________
Date_______________________
Who (Your Name)_________________
Lewis and Clark wrote about 179 species of new plants and trees.

Discovering Flora

How many different trees did you see on the trail today? Make a list of each tree you see today.

<table>
<thead>
<tr>
<th>Color of tree</th>
<th>How tall is the tree?</th>
<th>The leaf looks like:</th>
<th>Name</th>
<th>Location</th>
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Lewis and Clark wrote about 179 species of new plants and trees.

Discovering Flora

Draw a picture of a leaf from a tree you saw today.

My Leaf Sketch

Location:
N ____________________________
W ____________________________
Date __________________________
Who (Your Name) __________________________
Using Proportion to Find Height

A proportion comparing two shadow lengths to two heights will always be equal.

The two objects and their shadows form similar triangles. The matching sides of similar triangles have equal ratios, therefore this information can be used to find the height of an unknown.

\[ \frac{\text{man's shadow}}{\text{tree shadow}} = \frac{\text{man's height}}{\text{tree height}} \]

\[ \frac{4}{12} = \frac{2}{x} \]

\[ 4x = 2 \cdot 12 \]

\[ \frac{4x}{4} = \frac{24}{4} \]

\[ x = 6 \]

The tree is 6m tall.
Lewis and Clark discovered 122 species of animals, birds and fish on during the expedition. Coyotes were new to the explorers. On September 18, 1804, Clark wrote, I killed a Prairie Wolf about the size of a gray fox bushey tail and ear like a wolf, Some fur.

Discovering Fauna

If you see a new animal, bird, fish or insect on the trail today, make notes about what you see.
Lewis and Clark discovered 122 species of animals, birds and fish on during the expedition.

**Discovering Fauna**

How many animals, birds, fish or insects did you see on the trail today? Make a list of each one you see today.

<table>
<thead>
<tr>
<th>Animal</th>
<th>Bird</th>
<th>Fish</th>
<th>Insect</th>
<th>Location</th>
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</tbody>
</table>
**Journal Notes**

**Lewis and Clark on the Nature Trail**

<table>
<thead>
<tr>
<th>Name:</th>
<th>Temperature:</th>
<th>Weather Conditions: (cloudy, sunny, windy, calm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td></td>
<td></td>
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</tbody>
</table>

Describe the things you observe and infer on the Nature Trail. Use the "Nature Trail" field guide to identify things you will most likely see on the trail.

<table>
<thead>
<tr>
<th><strong>Birds</strong></th>
<th><strong>Animals, Animal Tracks, and Animal Signs</strong></th>
<th><strong>Flowers and Grasses</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Color, size, nest or box, location-flying, in a tree)</td>
<td>(Mammal, reptile, amphibian, tracks, rubs, scat, trails, homes)</td>
<td>(Color, shape, size, location)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Trees</strong></th>
<th><strong>Insects and Spiders</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Tree shape and size, leaf color, shape and size, bark smooth or rough, seeds, fruit or nuts, thorns)</td>
<td>(Color, shape of body, with or without wings, number of legs)</td>
</tr>
</tbody>
</table>

Make one inference about your observations: ________________________________________
Supplies For an Expedition

Once he was named by President Thomas Jefferson to head the Corps of Discovery, Meriwether Lewis began preparations for the long trip ahead. Much of that preparation involved education; in the months prior to his departure, Lewis would learn astronomy, botany, navigation, medicine and biology, among other scientific disciplines.

In addition, Lewis spent his time accumulating all the supplies that the expedition was going to need. He wrote list after list of provisions, which included guns, ammunition, medical supplies and scientific instruments. While still on the East Coast, Lewis accumulated almost two tons of goods using the $2,500 Congress had allocated for the expedition.

The following list is only a sampling of the supplies taken west by the Corps of Discovery, but it should give a sense of what an undertaking the expedition was.

Mathematical instruments:

- surveyor's compass
- hand compass
- quadrants
- telescope
- thermometers
- 2 sextants
- set of plotting instruments
- chronometer (needed to calculate longitude)

Camp Supplies:

- 150 yards of cloth to be oiled and sewn into tents and sheets
- pliers
- chisels
- 30 steels for striking to make fire
- handsaws
- hatchets
- whetstones
- iron corn mill
Supplies For an Expedition

What Foods Do You Think Lewis and Clark Would Eat If They Were Taking A Trip Today?

- two dozen tablespoons
- mosquito curtains
- 10 1/2 pounds of fishing hooks and fishing lines
- 12 pounds of soap
- 193 pounds of "portable soup" (a thick paste concocted by boiling down beef, eggs and vegetables)
- three bushels of salt
- writing paper, ink and crayons

Presents for Indians:

- 12 dozen pocket mirrors
- 4,600 sewing needles
- 144 small scissors
- 10 pounds of sewing thread
- silk ribbons
- ivory combs
- handkerchiefs
- yards of bright-colored cloth
- 130 rolls of tobacco
- tomahawks that doubled as pipes
- 288 knives
- 8 brass kettles
- vermilion face paint
- 33 pounds of tiny beads of assorted colors

Clothing:

- 45 flannel shirts
- coats
- frocks
- shoes
- woolen pants
- blankets
- knapsacks
- stockings

Arms and Ammunition:

- 15 prototype Model 1803 muzzle-loading .54 caliber rifles
- knives
- 500 rifle flints
- 420 pounds of sheet lead for bullets
- 176 pounds of gunpowder packed in 52 lead canisters
- 1 long-barreled rifle that fired its bullet with compressed air, rather than by flint, spark and powder
Supplies For an Expedition

What Books Do You Think Lewis and Clark Would Read If They Were Taking A Trip Today?

Medicine and Medical Supplies:

- 50 dozen Dr. Rush's patented "Rush's pills"
- lancets
- forceps
- syringes
- tourniquets
- 1,300 doses of physic
- 1,100 hundred doses of emetic
- 3,500 doses of diaphoretic (sweat inducer)
- other drugs for blistering, salivation and increased kidney output

Traveling Library:

- Barton's Elements of Botany
- Antoine Simon Le Page du Pratz's History of Louisiana
- Richard Kirwan's Elements of Mineralogy
- A Practical Introduction to Spherics and Nautical Astronomy
- The Nautical Almanac and Astronomical Ephemeris
- a four-volume dictionary
- a two-volume edition of Linnaeus (the founder of the Latin classification of plants)
- tables for finding longitude and latitude
- map of the Great Bend of the Missouri River

Journals of Lewis & Clark

President Thomas Jefferson asked Lewis and Clark to keep a record of the things they saw or did on the trip. On July 4, 1804, Captain Clark wrote this entry.

Ushered in the day by a discharge of one shot from our bow piece, proceeded on, passed the mouth of a bayou leading from a large lake on the S.S., which has the appearance of being once the bend of the river, and reaches parallel for several miles. We came to on the L.S. to refresh ourselves [the abbreviation "S.S." stands for "starboard," or the right-hand side when one is facing forward on a ship. "L.S." means "larboard," or left-hand side]. Joseph Fields got bitten by a snake, and was quickly doctored with bark by Captain Lewis. We passed a creek twelve yards wide, on the L.S., coming out of an extensive prairie reaching within two hundred yards of the river. As this creek has no name, and this being the Fourth of July, the day of the Independence of the United States, we called it "Fourth of July 1804 Creek." We dined on corn. Captain Lewis walked on shore above this creek and discovered a high mound from the top of which he had an extensive view. Three paths came together at the mound. We saw great numbers of goslings today which were nearly grown. The lake is clear and contains great quantities of fish and geese and goslings. This induced me to call it Gosling Lake. A small creek and several springs run into the lake on the east side from the hills. The land on that side is very good.
Supper Search

What's your favorite camping food? Perhaps roasted hot dogs or s'mores with extra chocolate. When the Corps of Discovery cooked along the trail, they had little choice about what to eat. At first, they hunted elk, beaver and deer. On the prairie, buffalo was plentiful. After they crossed the mountains, they ate salmon. In between those times, they foraged for berries, roots and greens that Sacagawea showed them. And in desperate times, they shot a horse, traded for wild dogs and dug into Lewis' infamous "Portable Soupe" which was dried chunks of beef broth that they mixed with river water. So the next time you cook out, enjoy your variety of foods, and roast an extra marshmallow in honor of Lewis and Clark. In the puzzle below, search for Corps of Discovery supper items.

BEAVER
CHOKECHERRY
ELK
PORTABLE SOUP
BUFFALO TONGUE
DEER
GRAPES
ROOTS
COLT
DOG
GREENS
SALMON
Celebrations on the trail

Fourth of July

1804: Near Atchison, Kansas,
we passed a creek... as it has no
name and as it is the 4 of July.
Capts. Ramsey & Independence
of the U.S. — John Ordway

1805: Whiskey runs out near
the Great Falls.
our week being at an end
the evening, we gave the men
a drink of spirits, & being
the last of our stock, and
some of them appeared a
little sensible of its effects
the drink was poured and
they danced very merrily
again in the evening when
a heavy shower of rain
put an end to that part of
the amusement they
collected their natches and
and the jokes and were
extremely merry until late at
night.
we had a very comfortable
dinner of bacon, beans, and
eggs and flour and buffalo beef...
in short we had no just cause
to count the sumptuous feasts of our
countrymen on this day — Meminette
Lewica, after pouring the Great Falls.

Birthdays

Aug. 1, 1804: Clark farsizes up on
34th birthday near Council Bluffs.
This being my birthday I order a Saddle of fat
Venison, as Elk Fleece & a Beetroot to be cooled
and a Dessert of Carrots, Sweet potatoes,
and grapes of a Superior quality. — William Clark

Aug. 18, 1804: Lashes, then dances
at Lewis's 30th birthday in Iowa.
had a Dance which lasted until 11 o'clock.
the Day of Capts. Lewis Birthday by all the men.
(Jefferson Davis) hired a horse, or a horse!
and ran a gantlet four consecutive days with the
whole Corps whippin' him on his back.

Aug. 1, 1805: Clark turns 50
Of the year.
about noon Capt. Clark killed a mountain
sheep or a bison. We stopped at this place to dine...
and being Captain Clark's birthday he ordered
some flour to be served out to the party, which
with the mountain sheep made us an excellent
meal. — Joseph Whitehouse

Aug. 18, 1805: Lewis's Inaugurates
a Day in the Northwest
 County, Montana.
This day I completed my thirty-first year, and
considered that I had in all human probability
now passed about half the period which I am to remain
in this sublunary world. I reflected that I had as
yet not but little, any little, to the further
happiness of the human race, or to advance
the Information of the succeeding generation. I viewed
with regret that there was a great deal
in ignorance, and now more so the want of that
Information which these years would have given me
had they been judiciously expended. But since
they are past and cannot be recalled. I dash from
the glories of the past and resolved in future to
redeem my exertions and at least endeavor to
promote those objects of human existence,
by giving them the aid of that portion
of talents which nature and fortune have bestowed
on me. On this future, I am for nothing; as I have
heretofore lived for myself. — Meriwether Lewis

Corps finds time for festivities

The main holidays the Corps
day of celebration was
Christmas, New Year's Day. The
holidays of the Corps were:
Christmas, New Year's Day and
the birthdays of Capt. Meriwether Lewis
and William Clark, both in August.


New Year's Day

1805: Men dance for Indian villagers
we fixed a Stove & drank a Glass. About 9 O.C.
then went up to the 1st village of Mandans
to dance as it had been their request.

1806: Boiled elk at Fort Clatsop, Oregon
This morning I was at work on our
day of the month, a day which we
by our party in front of our quarters to usher
in the new year, we fix a Stove & drink a Glass.

1804: Flag raised over Fort Mandan,
North Dakota
I was awakened before Day by a
fire charge from the fire arm of all
our party & a Song which the whole
party joined in. Over the fire we
would sing the Happy New Year song
of Christ in Feast, had we any thing
either to raise our Spirits or even strictly
attend the party, our officers.

1805: Christmas
Gifts exchanged at
Fort Clatsop, Oregon
at day light this morning we
were visited by the discharge
of the fire arm of all our
party & a Song which the whole
party joined in.

1805: Tobacco for the Mandans
of the Northwest
we gave them Tobacco to raise
their Spirits.

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