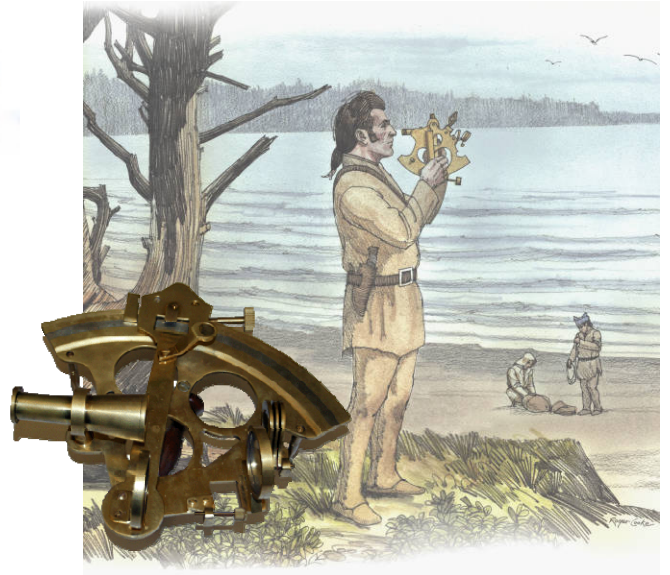


LEWIS & CLARK IN COLUMBIA RIVER COUNTRY

STUDENT WORKSHEET

Name _____



The painting to the right, *Clark's Survey*, by Roger Cooke shows William Clark looking at the ocean by using a sextant (device pictured right). Washington State Historical Society Collection.

SPEED EQUATION:	Speed = $\frac{\text{distance}}{\text{time}}$	Units: $\frac{\text{miles}}{\text{hour}}$ (or MPH) or $\frac{\text{meters}}{\text{second}}$ (or mps)
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1. Actual measured hallway distance :		2. Convert the distance from feet and inches to miles . [HINT: 1 mile = 5280 feet]	
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3. Record the measured walking **times** from the trials.

Trial #1	Trial #2	Trial #3	Trial #4	Trial #5	Trial #6

3. Calculate the average speed from the data collected.	SHOW ALL WORK				
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4. Convert the time from minutes and/or seconds to hours .	SHOW ALL WORK hours				
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5. Speed is measured by the rate of distance per unit of time taken to travel it.	HINT: Divide the total miles by the total time to determine MPH.	miles from #3			
		time from #6	miles	hours	
(mph)					

6. Record the length of Lewis & Clark's trip.	miles	Calculate the number of times you would have to walk the length of the hallway to match the length of Lewis and Clark's journey.	HINT: Take the length of the trail and divide it by the length of the hallway
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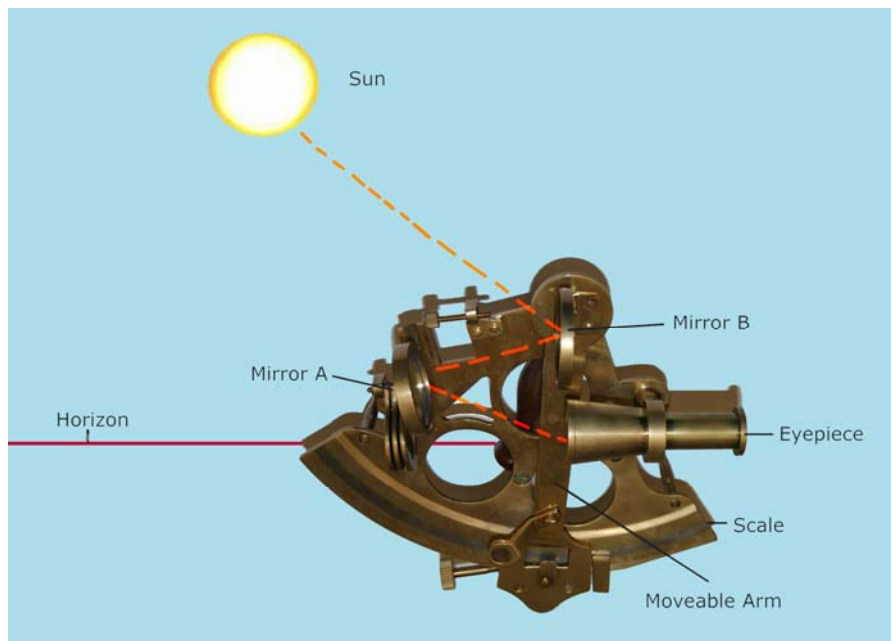
7. How long did Lewis and Clark's journey take?		months		Days (assuming 30 days per month)
8. Divide total distance by the total time to determine MPH. HINT: 1 day = 24 hours	Use miles from #6		miles	
	Use days from #7		= hours	(mph)
9. What assumption is made here when calculating the speed of their travel?				

How does a sextant work?

Lewis and Clark used several tools to help them in their journey to the Pacific Ocean. Among these tools was a sextant, a device used to calculate the angle between two objects.

This angle is calculated with the use of two mirrors. The diagram on the right displays how these mirrors were used. One of the mirrors (A) is half-silvered which allows some light to pass through its surface. In order to navigate, you use this mirror (A) to look at the horizon.

Mirror B is attached to a moveable arm. This is the mirror where light from an object (the sun in this diagram) reflects.



You can move the arm to a position where the sun's reflection off Mirror B also reflects off Mirror A and through the eyepiece. When this happens, you can see one object (in this case, the sun) superimposed on the other (the horizon). The scale can then be used to read the angle between the two objects.

This tool was so useful to Lewis and Clark because of its accuracy. An angle can be measured to the nearest ten seconds. (A degree is divided into 60 minutes; a minute is divided into 60 seconds.) This reading can calculate lunar distance, longitude and where the viewer is located on the earth.

Why is it called a sextant?

This tool is one sixth of a circle and "sex" is the Latin word for six.