

Bring the class together and explain to them that they will be using the materials they have gathered to write a one-page essay about their discoveries on time. As support for their essay, remind them to use their worksheets in gathering information. Take a few moments to review and reflect some of the facts that they have learned, focusing on how they think the creation of time standards affected both people in Washington and across the United States.

Tell students that they will need to use their graphic organizer as a starting point, explaining how this outline will help them guide the paper that they are to write.

You may wish to work with a librarian to schedule a research session for the class and use the CBA as an opportunity to strengthen and enrich your students' skills in using sources. Research strategies can also be utilized to assist students in this process, such as the "Incredible Shrinking Notes" exercise at http://www.education-world.com/a_lesson/03/lp322-02.shtml.

POSSIBLE EXTENSION ACTIVITIES

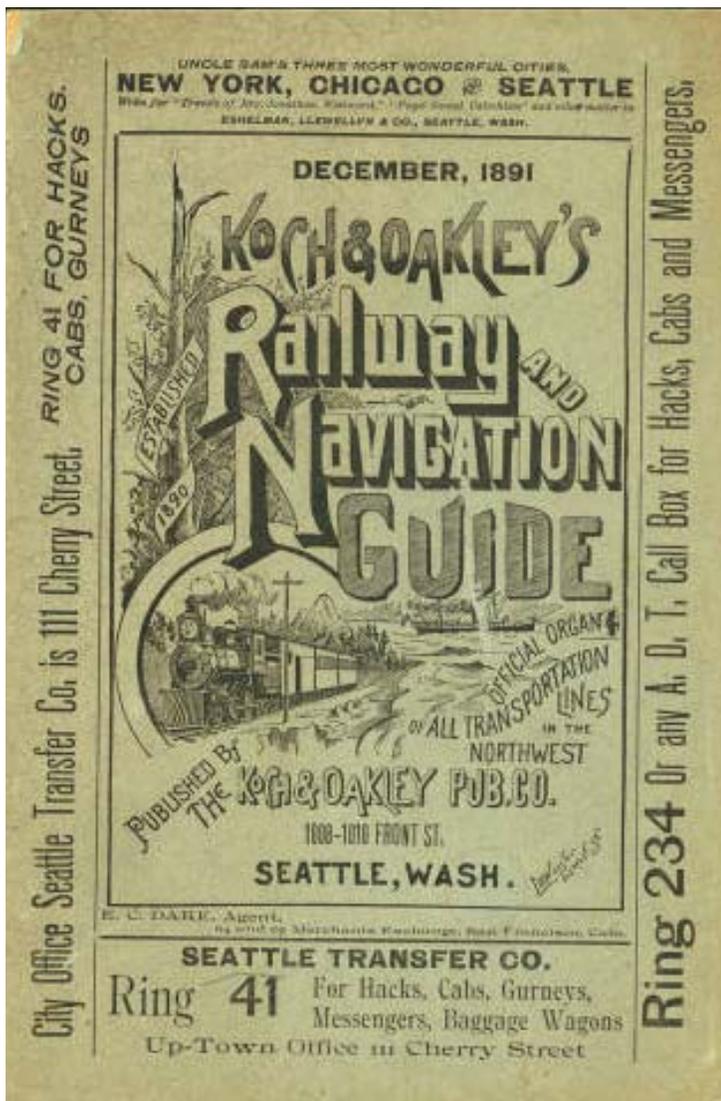
- Take the concept of how time changed history and build upon it to look at other periods in our history. The Lewis and Clark expedition can be used as one example of how long journeys were, prior to the invention of technology. This lesson plan can be used to bridge a lesson about Lewis and Clark with more modern topics in Washington state.
- Have students build other types of clocks and make comparisons between them. Two possible options would be a sand clock (or hourglass) or a sundial. Examinations of how the different clocks worked and their use by different peoples could be incorporated into a science curriculum or used to talk about time in a cross-cultural context for social studies. One internet resource for the evolution of time measurement through the ages is the NIST Physics Laboratory's "A Walk through Time" online exhibit, located at: <http://physics.nist.gov/GenInt/Time/time.html>.
- Use a History Lab field trip at the Washington State History Museum to fully build on the concept of time and the "Tools of the History Trade". Visit the History Lab website to fully explore possible student activities that engage them with this topic.

WHAT TIME IS IT?

TIMETABLES AND RAILWAY GUIDES

What's a timetable?

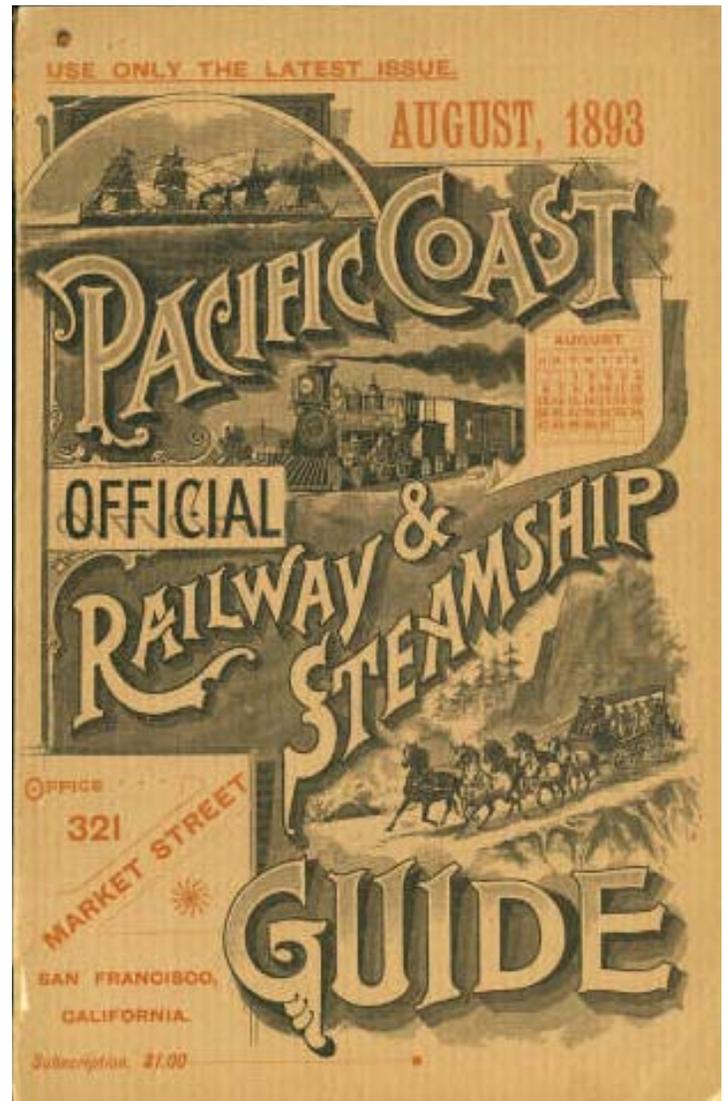
A timetable is a printed brochure, book, or card with tables inside. These tables tell travelers the schedule times of arrival and departure at stations along one or more railroad routes. Below are two covers from different timetables. These timetables are from the late 1800s. When you look at the covers, notice the different pictures on each one. Why do you think those pictures were used? Read the caption underneath each picture to find out more about it.



December 1891

Koch and Oakley's Railway and Navigation Guide

This timetable had information on both railroad and steamship travel. It also included a shippers' guide.



August 1893

Pacific Coast Official Railway & Steamship Guide

All forms of transportation were included in this timetable. Railroad, steamship, and stagecoach schedules were all listed.

Great Northern Railway Line.

Seattle & Montana Railway,
Fairhaven & Southern Railroad,
New Westminster & Southern Railway

A. L. Mohler, General Mangr. G. N. & M. C. Ry., St. Paul, Minn.
P. P. Shelby, Genl. Traffic Mgr., G. N. & M. C. Ry., St. Paul, Minn.
L. E. Johnson, Supt., Butte, Montana.
S. S. NEFF, Superintendent Seattle & Montana Railway. Office: Burke Building, Seattle, Wash.

F. I. Whitney, Genl. Pass. and Ticket Agt. G. N. Ry., St. Paul, Minn.
B. H. Langley, Genl. Frt. and Tkt. Agt., Montana Central Ry., Helena, Mont.
E. S. Jackson, Genl. Agt., Portland, Oregon.

MONTANA CENTRAL RAILWAY.

E'ST BOUND		Dis.	Dec. 22, 1891. No. 16	WEST BOUND	
No. 2 Exp.	No. 4			Exp. No. 3	Exp. No. 1
3 20PM	7 30AM	0	Lv. Butte Ar	7 00PM	11 40AM
3 42PM	8 05AM	8	Woodville	6 34PM	11 18AM
3 44PM	8 08AM	9	Marie	6 31PM	11 16AM
3 48PM	8 13AM	11	Trask	6 25PM	11 12AM
4 00PM	8 27AM	18	Elk Park	6 10PM	11 02AM
4 17PM	8 43AM	24	Lake Wilder	5 38PM	10 46AM
4 22PM	8 49AM	26	Bernice	5 30PM	10 40AM
4 32PM	9 00AM	30	Basin	5 15PM	10 30AM
4 50PM	9 21AM	38	Boulder	4 50PM	10 13AM
5 12PM	9 50AM	44	Portal	4 28PM	9 50AM
5 16PM	9 54AM	47	Wickes	4 20PM	9 44AM
5 26PM	10 05AM	50	Corbin	4 01PM	9 32AM
5 31PM	10 10AM	52	Jefferson	3 52PM	9 27AM
5 44PM	10 25AM	57	Alhambra	3 25PM	9 14AM
5 46PM	10 28AM	58	Clancy	3 20PM	9 12AM
5 57PM	10 35AM	62	Kirkendall	3 12PM	9 04AM
5 59PM	10 37AM	63	Montana City	3 10PM	9 02AM
6 07PM	10 45AM	67	East Helena	3 03PM	8 53AM
6 20PM	11 00AM	73	Ar Helena Lv	2 50PM	8 40AM
	11 10AM		Lv Helena Ar	2 40PM	
		74	H.&R.M. cross'n		
		75	Red Mount Jun		
		76	N.P. crossing		
		77	F.G. Junction		
	11 25AM	81	Iron	2 22PM	
	11 45AM	90	Silver	2 04PM	
	12 11PM	102	Mitchell	1 33PM	
	12 18PM	104	Wood Siding	1 26PM	
	12 28PM	107	Gleason	1 16PM	
	12 35PM	111	Wolf Creek	1 09PM	
	12 52PM	119	Craig	12 52PM	
	1 10PM	124	Mid Canon	12 32PM	
	1 30PM	132	Hardy	12 13PM	
	1 47PM	142	Cascade	11 58AM	
	2 31PM	156	Ulm	11 28AM	
	2 47PM	171	Great Fls. (ws)	10 00AM	
	2 50PM	171	ArGtFls(es)Lv	10 45AM	
	5 30AM	1234	Minneapolis	4 55PM	
	6 05AM	1245	St. Paul	4 15PM	

NEIHART BRANCH.

No. 31 Mixed Mn W Fri	No. 23 Ex Sn	Dis.	STATIONS No. 16	No. 24 Ex Sn	No. 32 Mixed Mn W Fri
7 30AM	7 00AM			0	LvGreat FallsAr
7 55AM	7 25AM	6	Field	9 55AM	5 00PM
8 15AM	7 45AM	10	Allen	9 35AM	4 40PM
	8 15AM	15	Sand Coulee	9 15AM	
8 15AM		10	Lv. Allen Ar		4 40PM
8 35AM		14	Swift		4 20PM
9 10AM		22	Buelah		3 40PM
		26	Belt		
9 45AM		28	Armington		3 05PM
10 30AM		39	Riceville		2 15PM
11 10AM		46	Logging Creek		1 35PM
12 01PM	9 30AM	53	Monarch	4 00PM	1 00PM
1 45PM	10 45AM	67	Ar. Neihart Lv	2 45PM	11 45PM

SEATTLE & MONTANA RAILWAY.

Fr't No. 6 Dly ex Sundy	Pass No. 2 Daily	Miles	Schedule No. 1 Dec. 7, 1891 STATIONS	Pass. No. 5 Daily	Fr't No. 1 Dly ex Sun
2 15PM	9 30AM	0	Lv Seattle Ar	6 05PM	2 45PM
2 30PM	9 45AM	4	Boulevard	5 50PM	2 30PM
2 35PM	9 50AM	5	Ballard	5 47PM	2 25PM
2 45PM	9 57AM	8	Meadow Point	5 40PM	2 15PM
3 05PM	10 13AM	15	Richmond Beach	5 24PM	1 53PM
3 15PM	10 20AM	17	Edmonds	5 17PM	1 43PM
3 53PM	10 48AM	29	Mukilteo	4 50PM	1 03PM
4 07PM	11 00AM	33	Everett	4 38PM	12 45PM
4 25PM	11 13AM	39	Marysville	4 25PM	12 25PM
5 00PM	11 45AM	50	Silvana	3 57PM	11 45AM
5 30PM	11 57AM	56	Stanwood	3 45PM	11 10AM
6 05PM	12 14PM	63	Fir	3 27PM	10 25AM
6 35PM	12 27PM	68	Mt. Vernon	3 15PM	9 53AM
6 55PM	12 37PM	72	Burlington	3 05PM	9 28AM
7 10PM	12 45PM	75	Belleville	2 58PM	9 10AM
7 30PM	12 55PM	78	F. & S. June	2 48PM	8 45AM
7 46PM	1 03PM	82	Desmond	2 42PM	8 25AM
7 53PM	1 08PM	83	Alger	2 38PM	8 18AM
8 05PM	1 13PM	85	Samish Lake	2 33PM	8 03AM
8 25PM	1 23PM	89	Chuckanut	2 25PM	7 40AM
8 33PM	1 26PM	90	Welbon	2 20PM	7 30AM
8 40PM	1 29PM	91	Quarry	2 17PM	7 23AM
8 50PM	1 35PM	94	Happy Valley	2 10PM	7 08AM
9 00PM	1 38PM	95	Fairhaven	2 07PM	7 00AM
9 10PM	1 42PM	97	B. B. & B. C. er	2 03PM	6 50AM
9 15PM	1 45PM	98	Ar Whatcom Lv	2 00PM	6 45AM
Mixed No. 4 Daily					Mixed No. 3 Daily
2 00PM		98	Lv Whatcom Ar		1 45PM
2 13PM		101	Ft. Bellingham		1 33PM
2 20PM		103	Marietta		1 25PM
2 25PM		104	Brennan		1 20PM
2 34PM		106	Ferndale		1 13PM
2 45PM		109	Sand Pit		1 03PM
2 57PM		112	Custer		12 50PM
3 25PM		119	Blaine		12 23PM
3 28PM		120	Dougllass. B. C.		12 20PM
3 38PM		123	Hazelmere		12 08PM
3 41PM		124	Royal City Spur		12 05PM
3 57PM		128	Cloverdale		11 47AM
4 07PM		130	Clayton		11 37AM
4 20PM		133	Port Kells		11 28AM
4 47PM		140	Bon Accord		11 00AM
4 55PM		142	Liverpool		10 50AM
4 57PM		143	Brownsville		10 47AM
5 00PM		144	S. Westminster l		10 45AM

Through cars between Seattle and South Westminister trains connect at New Westminster with Electric Railway for Vancouver, B. C.

BARKER BRANCH.

No. 35 Mixed Wed. Fri only	UP TRAINS	STATIONS No. 16	No. 36 Mixed Thurs Sat only
4 45PM	53 Lv	Monarch	Ar 9 00AM
5 45PM	64 Ar	Baker	Lv 8 00AM

December 1891

Koch and Oakley's Railway and Navigation Guide (page 104)

This inside page from the Railway and Navigation Guide shows arrival and departure times for trains on the Montana Central Railway and the Seattle and Montana Railway.



KEEPING TIME

HOW RAILROADS REPLACED THE SUN

HOW DO YOU TELL TIME?

Do you wear a watch? Do you look at a clock? Almost all Americans wear watches or use some sort of timepiece. Our lives are built around keeping **schedules** for school, work, and play. As people cross the country, time changes and they must change their watches to local time.

It wasn't always like this. Time hasn't always been measured in minutes or hours. In the days of covered wagon travel, time was kept by noting where the sun was located in the sky. High noon varied from place to place as the earth revolved around the sun.

Determining time based on the sun's position had worked well for hundreds of years. Nothing more was needed when people traveled no faster than a team of horses could run or a fast ship could sail. But when railroads came to the West, it changed the face of time.



WHAT IS THAT ?

You're looking at a sundial. A sundial is a device that uses the sun to tell the time. It is made of a plate with numbers and a pointer that casts a shadow. It shows the time of day by the movement of the shadow across the numbers.



Wellington, Washington was the site of one of the worst train disasters in U.S. railroad history. On March 1, 1910, two Great Northern trains were swept off the tracks by an avalanche killing 96 people. Before the coming of railroad, travel often stopped when weather became poor. The railroad used men and equipment to fight the snow. Sometimes, these efforts were more successful than others.

Washington State Historical Society Collections.

DOES A MINUTE MATTER?

Because of technology, it became important to know exactly what time it was, down to the minute. This was because two trains might be traveling on the same set of tracks going in different directions. Most of the trains in the United States ran on what was called a single-track line. If both trains were moving towards one another at the same time, it could result in a heads-on **collision**. This was the sort of accident that every railroad worker feared most.

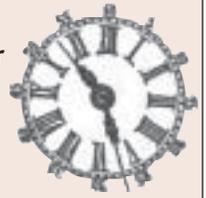


Courtesy of NASA.



What's a *TIME ZONE*?

A time zone is a region or place that has the same time everywhere in it. There are 24 standard time zones in the world, each with a space of one hour.



The United States has five time zones: Pacific, Mountain, Central, Eastern and Atlantic. Washington state is in the Pacific standard time zone.

Have you ever been late somewhere? How did it make you feel? Imagine if being late could make you get stuck somewhere far away from home. Many travelers were afraid of that happening to them. This was because there were 56 time zones in the United States. So many different time zones caused confusion. This often caused people to miss their trains or barely make it to the station in time to catch them.

Railroad managers wanted only to schedule trains so that **passengers** could travel safely. The only way to do this was to find a way to solve the problem of time. Together, without any help from the government, American railroad managers decided to introduce time zones.

HOW FAR IS AN HOUR?

November 18, 1883 became known as "The Day of Two Noons". On this day, every clock at each railroad station was reset as noon was reached within each time zone. Some states, like Mississippi, asked the people who lived there to set their watches and clocks at home to match their local station.

Instead of 56 time zones, this helped create just five zones- Pacific, Mountain, Central, Eastern, and Atlantic. These time zones took their names from the railroads that crossed those parts of the country.

Not everyone was happy with the change. Some people thought that railroads were trying to take control of all parts of life. One newspaper, the *Indianapolis Daily Sentinel*, said:

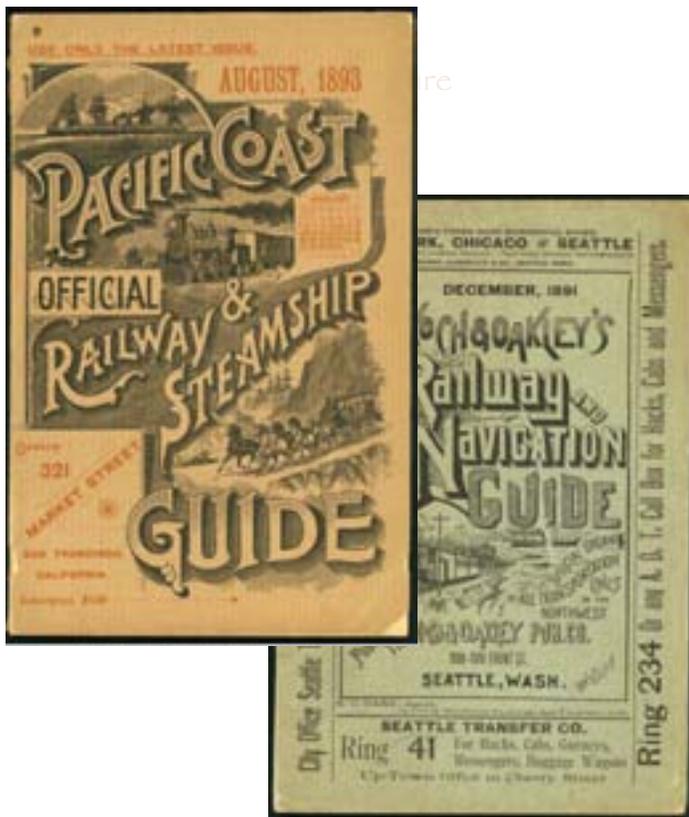
"Railroad time is to be the time of the future. The sun is no longer to boss the job. People- 55,000,000 of people- must eat, sleep and work as well as travel by railroad time." There were people who refused to change their clocks and watches. In time, however, this would change as Americans learned how useful the new time standards were.

FIND OUT MORE!

Prerau, David. *Seize the Daylight: The Curious and Contentious Story of Daylight Savings Time*. 2005: Thunder's Mouth Press.

Schwantes, Carlos. *Railroad Signatures across the Pacific Northwest*. 1996: University of Washington Press.

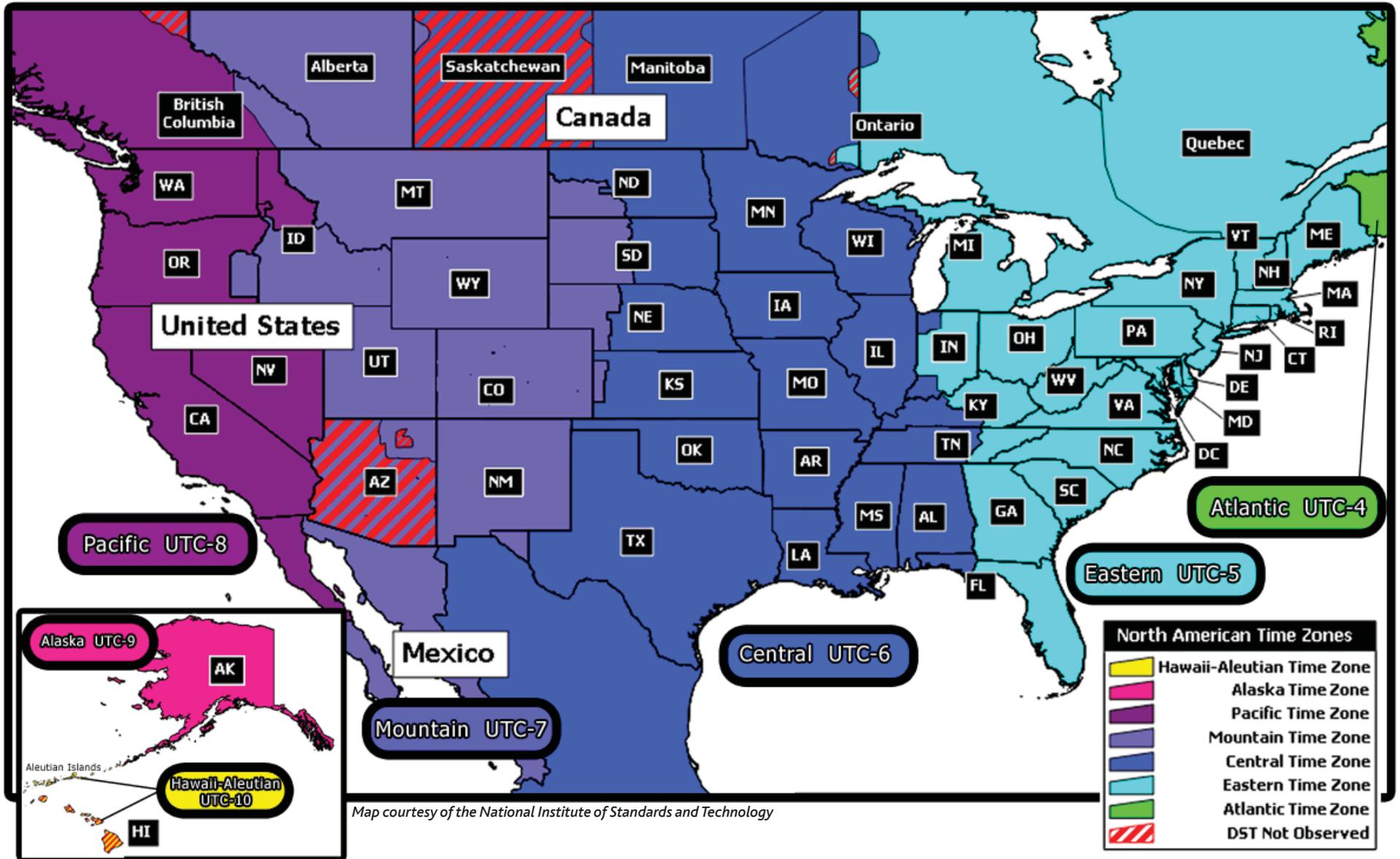
Washington State Historical Society Collections.

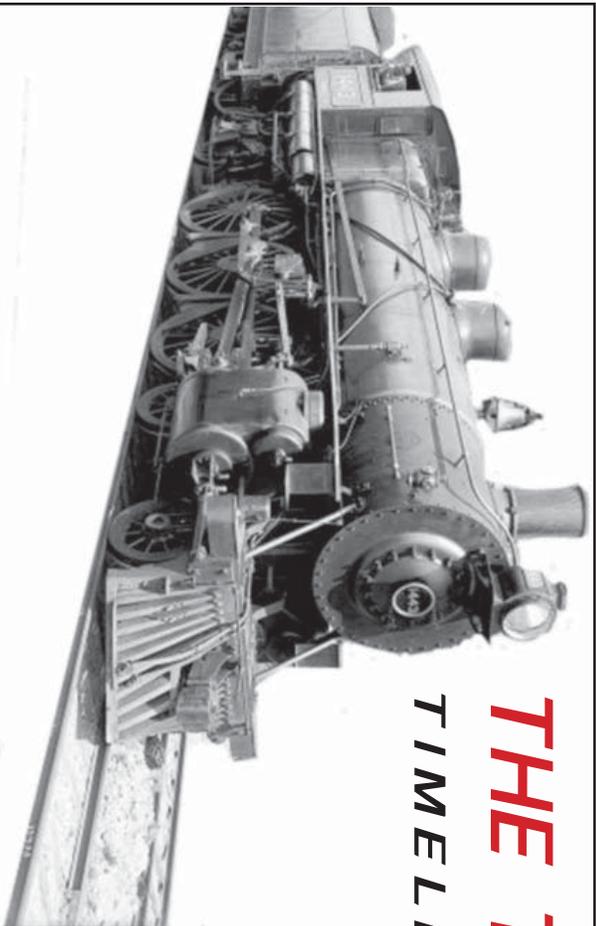


Timetables like the one above were created for railway travelers. These timetables helped them plan their trips.

by David Jepsen,
adapted for student use by Gwen Perkins,
Washington State History Museum, 2007

UNITED STATES TIME ZONES





THE TIME MACHINE TIMELINE ORGANIZER

NAME: _____

USE THE TIMELINE BELOW TO
KEEP TRACK OF IMPORTANT
DATES IN THE HISTORY OF
RAILROADS.

1862

The Pacific Railroad Act
is passed.



1800

1830

1860

1890

1920

KEEPING TIME WORKSHEET

NAME: _____



To answer these questions, look at the map above.

1. What time zone is Seattle, Washington in? _____
2. According to the clock on the map, what time is it in Seattle? _____
3. What time zone is New York, New York in? _____
4. According to the clock on the map, what time is it in New York? _____
5. Name two of the other time zones you see on this map. _____

Now, use your imagination and pretend that you live in the early 1800s. Imagine that time zones have not been invented yet. Think about the things that you learned from your reading.

6. How do you tell time? _____
7. What problems do you have without any time zones? _____

8. Who found the solution to these problems? What was it? _____

WHAT TIME IS IT?

TIMETABLE WORKSHEET

NAME: _____

1. What railway line is this timetable for?

2. List three cities that the Seattle and Montana Railway line stopped at.

3. Looking at the Seattle and Montana Railway, how many miles was it from Meadow Point to Ballard?

_____ --- _____ = _____

(miles of Meadow Point)

(miles of Ballard)

(your answer)

4. How many stations does the Barker Branch have?

5. If you lived in Montana City and you wanted to go to St. Paul, what train would you catch?

6. Why do you think a **passenger** would need a timetable like this?

7. Why do you think a **railroad worker** would need a timetable like this?

