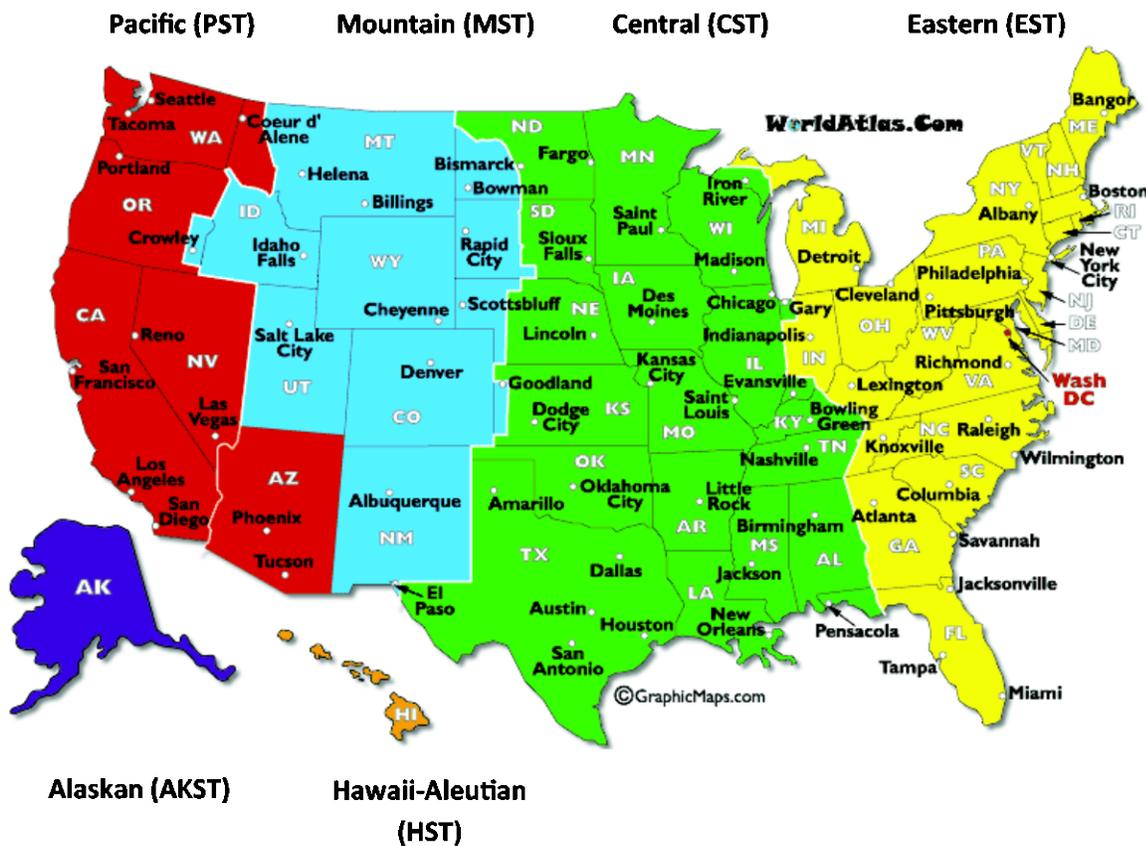


MATHCOUNTS® Problem of the Week Archive

Time Changes – November 6, 2017

Problems

Due to timekeeping confusion on the American railroads in the mid-19th century, a system of standard time zones was proposed. In 1918 the Standard Zone Time and Daylight Saving Time were established in the Standard Time Act. Later, the Uniform Time Act of 1966 was passed promoting the adoption of uniform time within the standard time zones. The map below shows six of the U.S. time zones.



From east to west, the time zones are Eastern Standard Time (EST), Central Standard Time (CST), Mountain Standard Time (MST), Pacific Standard Time (PST), Alaskan Standard Time (AKST) and Hawaii-Aleutian Standard Time (HST). Notice that in some cases a state can be in multiple time zones. **Over the course of Luther's summer break, he visited four of the six time zones shown. What is the minimum number of states that Luther could have visited?**

When Daylight Saving Time is not being observed, the time difference between neighboring time zones is -1 hour from east to west. For example, when the current time is 1 p.m. in Washington, DC the current time is 12:00 noon in Dallas, 11 a.m. in Denver and 10 a.m. in San Francisco. **If the current local time is 2:16 p.m. EST in Washington, DC, what will be the current local time (MST) 432 minutes from now in Albuquerque, NM?**

To celebrate her birthday, Celia flew from her home in Boston, MA to visit her best friend in Los Angeles, CA. Celia took a direct flight, which departed the airport in Boston at 9:25 a.m. EST. According to the airline, the flying time from Boston to Los Angeles is 6½ hours. At what time (PST) did Celia's flight land in Los Angeles if it arrived 10 minutes ahead of schedule?

The Uniform Time Act of 1966 also mandated that Daylight Saving Time be observed nationwide beginning the last Sunday in April and ending the last Sunday in October. In 1986, the federal law was amended, changing the starting date to the first Sunday in April. Again in 2007 the federal government extended Daylight Saving Time, changing the ending date to the first Sunday in November. In each time zone, Daylight Saving Time begins at 2:00 a.m. on the first Sunday in April, at which time 1 hour is "lost," and 2:00 a.m. EST becomes 3:00 a.m. EDT (Eastern Daylight Time). Similarly, CST becomes CDT, MST becomes MDT, etc. When Daylight Saving Time ends at 2:00 a.m. on the first Sunday in November in each time zone, 1 hour is "gained."

Lauryn works in Seattle, WA and is attending a conference in Miami, FL. Lauryn took a direct flight that left Seattle on November 5, 2011 at 10:40 p.m. PDT and arrived in Miami on November 6, 2011 at 6:15 a.m. EST. If Daylight Saving Time ended and standard time resumed at 2:00 a.m., Sunday, November 6th, how many minutes did Lauryn's flight from Seattle to Miami take?