

The Ninety-Nines, Inc.,® International Organization of Women Pilots®

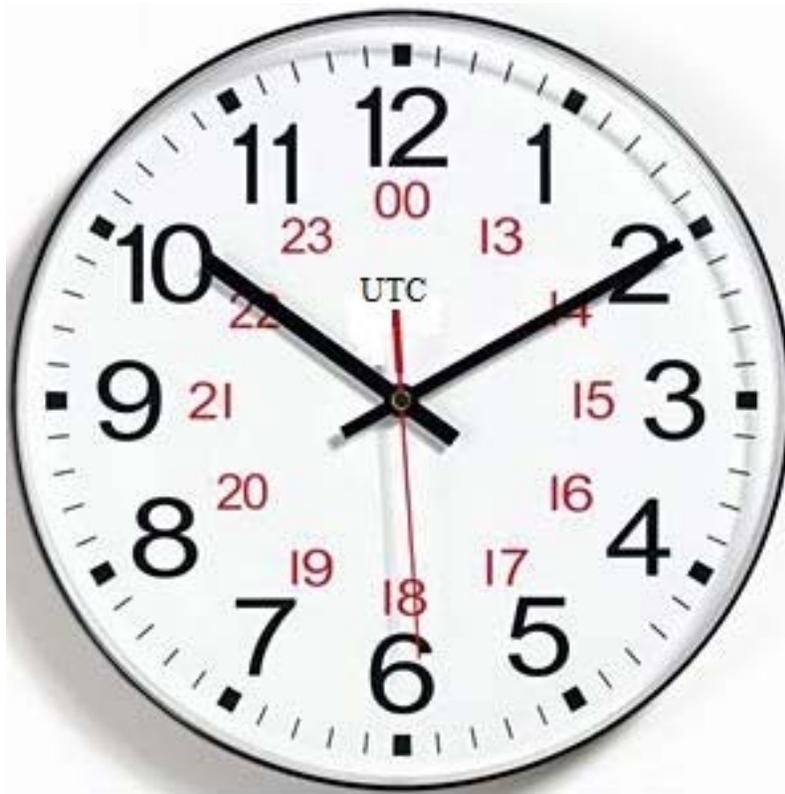
Aviation Adventure Guide

Module 9 - Time & Time Zones



Module 9

Time & Time Zones



The 24 Hour Clock: We all know that there are 24 hours in a day but we commonly divide our days into two 12-hour periods using “a.m.” for the morning hours and “p.m.” for the afternoon and evening hours. That way, we know which 8:00 we are talking about, e.g. 8:00 a.m. and 8:00 p.m.

Using the “24 hour clock” or “Military time” is another way of telling time. This method assigns each hour and minute a number from 0000 hours to 2359 hours. The first 2 numbers represent the hour, and the second 2 numbers represent minutes. When someone says “Meet me at the mall at 0830 hours” both of you should arrive at the same time at 8:30 a.m. in the morning.

Look at the chart to the right to see the conversion from a standard 12 hour clock to a 24 hour clock. You can also use the clock on the preceding page for a visual representation of the 24 hour clock.

Activity - 24 Hour Clock: Practice using the 24 hour clock by filling in the blanks in the activity chart below. For a “p.m.” time, just add 1200!

<u>12hr Time</u>	<u>24hr Time</u>
12 am (midnight)	0000hrs
1 am	0100hrs
2 am	0200hrs
3 am	0300hrs
4 am	0400hrs
5 am	0500hrs
6 am	0600hrs
7 am	0700hrs
8 am	0800hrs
9 am	0900hrs
10 am	1000hrs
11 am	1100hrs
12 pm (noon)	1200hrs
1 pm	1300hrs
2 pm	1400hrs
3 pm	1500hrs
4 pm	1600hrs
5 pm	1700hrs
6 pm	1800hrs
7 pm	1900hrs
8 pm	2000hrs
9 pm	2100hrs
10 pm	2200hrs
11 pm	2300hrs

12 hour time	24 hour time	12 hour time	24 hour time
4:53 a.m.			1616
10:27 p.m.		12:08 p.m.	
	1315		2008
9:30 a.m.		1:35 a.m.	
	0023		0333
	0752		1020
2:45 p.m.		5:56 a.m.	
	2319	7:17 p.m.	
6:00 p.m.			1527

World Time Zones and Universal Time Coordinated (UTC): When you watch television you have probably heard an announcer say that something will be on TV to watch at a certain time “Mountain Time” or “Eastern Time”. These are called time zones and they exist all over the world. If you think about where you live, the sun is straight overhead around noon. It is the same everywhere else. But because the earth rotates, the sun cannot be directly overhead of everyone, all over the world at the same exact instant. We have made this adjustment by creating time zones.

In aviation, time is often referred to as it relates to “Greenwich Mean Time” which is also called “Zulu Time” or “Universal Time Coordinated ” or “UTC”. Since airplanes can fly through many time zones on a single flight, pilots and air traffic controllers need to use a standard time zone to avoid confusion about what time a certain event (e.g. take-off, arrival or other Air Traffic Control (ATC) direction) will take place. If a pilot puts in her flight plan for departure at 1300 hours no one really knows her departure time because the time zone was not specified. It could really be *any* time. So, in aviation, we all use Zulu time (UTC) to operate in the same time zone.

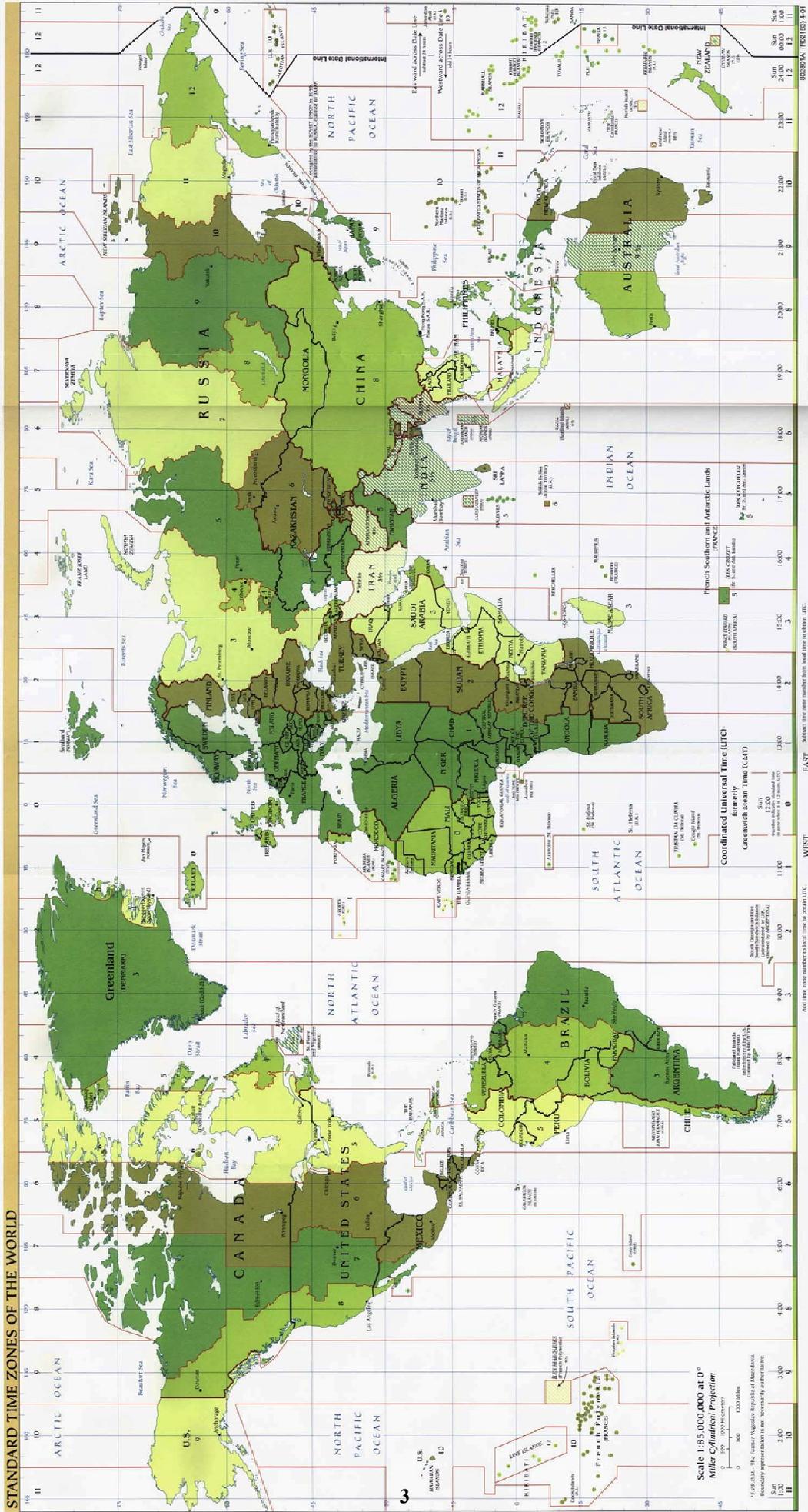
The continental United States is divided into 4 time zones. The chart below will help show you each time zone in relation to UTC.

Time Zone	Location	UTC difference - standard time	UTC difference - day light savings time
Eastern	East Coast U.S. (New York)	-5 hours	-4 hours
Central	East-Central U.S. (Texas)	-6 hours	-5 hours
Mountain	West Central U.S. (Wyoming)	-7 hours	-6 hours
Pacific	West Coast U.S. (California)	- 8 hours	-7 hours

Activity - Time Zones: Look at the Time Zone Map on the next page to determine the time zone in which you live.

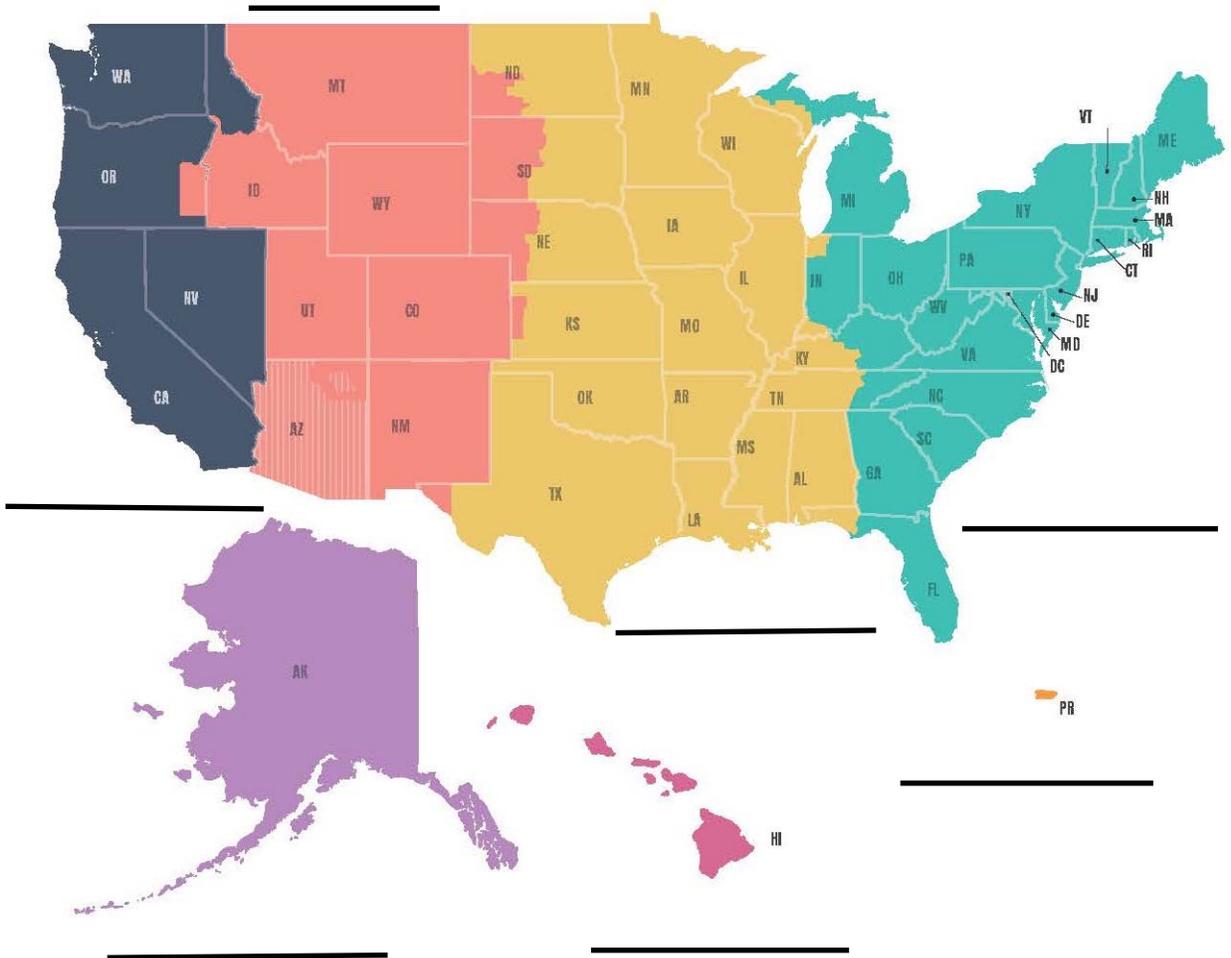
My time zone is: _____

STANDARD TIME ZONES OF THE WORLD



World Time Zone Map provided by: www.vidiani.com

Activity: Identify each time zone throughout the United States.



Time Zone Choices:

Alaskan

Eastern

Central

Hawaiian

Mountain

Pacific



CONVERTING LOCAL TIME TO ZULU TIME OR UTC: UTC time is also called Zulu time or abbreviated “Z”. When we talk about converting time, it is always in reference to UTC. For example: if we are in the Eastern Time Zone, standard time, we would say that we are “UTC-5”. Simply, this means if we want to know what time it is locally, we subtract 5 from the UTC time given to us. (1830 Z - 5 = 1330 hours or 1:30 pm) Since we subtract 5 from UTC to get the local time, then we add 5 to local time using the 24 hour clock time to get the UTC time. (1:30 pm = 1330 hours + 5 = 1830 Z).

REMEMBER: *Using the 24 hour clock, the first 2 numbers are the hour and the last 2 numbers are the minutes. We always write our 24 hour clock time using 4 numbers, even if the first number is 0.*

What if we cannot subtract from the UTC time given to us because the hours number is too small? Let’s look at this example. We are still using a time zone of UTC-5. If the time to convert is 0230 Z, we cannot subtract 5 hours from 02 hours so we ADD 24 hours to the 02 hours the same way we borrow when we do normal math subtraction of a large number from a smaller number. In this example we would have 02 +24 = 26 hours. The 30 from above is our minutes so we have 2630 - 5 hours = 2130 hours or 9:30 pm.

You can convert any time zone to and from UTC if you know the conversion factor (UTC +/- the conversion factor number).

Activity - Time Conversion: Fill in the blank - Convert the missing times from Eastern Daylight Time (EDT) (UTC-4) to 24 hour clock (Military Time) and to UTC or Zulu Time (Z).

12-hr	24-hr	Zulu
<u>3:00pm EDT</u>	_____	_____
<u>6:54am EDT</u>	_____	_____
<u>1:30am EDT</u>	_____	_____
<u>12:05pm EDT</u>	_____	_____
_____	<u>2148</u>	_____
_____	_____	<u>2005 Z</u>
_____	<u>0715</u>	_____
<u>11:16pm EDT</u>	_____	_____
<u>2:37am EDT</u>	_____	_____
_____	<u>1058</u>	_____

Activity: There are different names for many time zones around the world. See how many you can find in the puzzle. The word list is below.

S	F	J	Y	M	K	P	E	F	X	B	G	Y	J	W	I	W	A	P	D
K	D	V	I	S	E	N	O	R	F	O	L	K	C	A	L	L	O	A	W
U	M	I	N	T	D	S	T	Y	J	L	P	O	L	K	Y	V	Y	K	A
U	C	N	I	A	T	N	U	O	M	O	S	T	Z	E	L	L	P	I	L
H	T	U	S	E	Y	C	H	E	L	L	E	S	J	O	I	L	L	S	T
C	A	S	E	Y	C	H	N	K	I	D	L	M	O	G	M	P	Z	T	P
A	Q	W	R	T	A	L	A	S	K	A	E	Y	H	U	A	I	M	A	N
A	S	M	S	F	G	M	J	I	M	M	A	T	E	A	O	N	B	N	A
X	N	Y	E	V	U	I	T	A	H	I	S	N	K	T	H	C	T	A	I
T	H	A	N	I	S	T	Z	A	L	A	T	A	N	G	O	O	T	H	L
A	R	N	O	D	E	O	C	T	V	T	E	H	A	N	I	A	T	L	A
P	O	M	Z	O	N	K	S	I	I	O	R	N	E	O	K	E	F	T	R
A	H	A	E	E	S	E	N	D	C	A	N	E	P	A	L	R	Y	S	T
C	I	R	M	W	I	G	L	L	T	U	V	S	E	A	P	O	R	O	S
I	F	R	I	E	S	S	S	I	O	U	L	U	Z	O	N	K	A	L	U
F	B	O	T	R	G	R	I	A	R	M	T	O	D	C	E	O	T	Y	A
I	H	O	R	I	S	K	I	J	N	D	O	F	G	E	E	A	M	A	E
C	I	G	L	E	R	T	L	O	I	J	A	P	A	N	K	S	O	U	T
I	N	T	H	I	B	E	S	E	P	F	U	Z	L	T	N	E	R	G	S
A	T	N	D	K	V	M	N	O	W	T	H	A	Y	R	A	T	A	A	L
K	O	E	S	O	M	I	E	U	C	H	T	I	M	A	Y	E	L	R	A
N	N	D	J	O	D	M	A	V	C	I	T	N	A	L	T	A	M	A	E
S	G	S	Y	M	A	R	A	V	O	I	A	T	I	O	N	A	D	P	V
G	A	L	A	P	A	G	O	S	E	N	T	U	R	E	S	I	S	B	E

ALASKA
BOLIVIA
EASTERN
JAPAN
MYANMAR
ORAL
SEYCHELLES
UTC
ZULU

AMAZON
CASEY
FIJI
KOREA
NEPAL
PACIFIC
TANGO
VICTOR

ATLANTIC
CENTRAL
GALAPAGOS
LIMA
NORFOLK
PAKISTAN
TIME ZONES
WAKE

AUSTRALIAN
CHUUK
DAYLIGHT SAVINGS
MOUNTAIN
NOVEMBER
PARAGUAY
TONGA
YANKEE

Food for thought and discussion: Have you ever heard of the term “jet lag”? What do you think it is?



Who do think gets jet lag most often?

What do you think you can do to get over jet lag faster?

Have you ever had jet lag? If so, how did you feel?

