Development of the Common Standard Curricula on International Transport and Logistics Basic Training for ASEAN Member States under Sustainable Human Resource Development in Logistics Services

Chapter 4
Time Difference
and
Calculation of Transportation Time

Summarized by FMFF/Wong Kim Chuan

Development of the Common Standard Curricula on International Transport and Logistics Basic Training for ASEAN Member States under Sustainable Human Resource Development in Logistics Services

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3. Time Differences

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5. International Date Line

6. Calculation of Transportation Time

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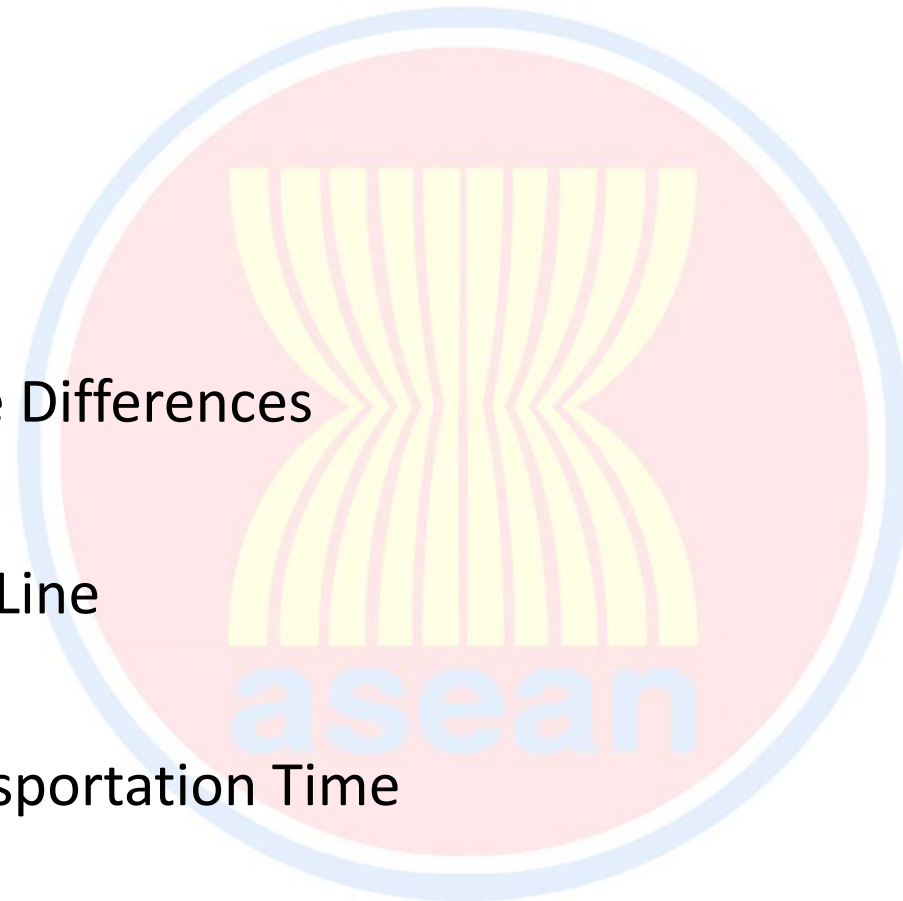
Objective

❑   Upon completing this unit, the participant will be able to

■   Calculate time differences, and

■   Calculate transportation times between any given points.

Introduction

- To standardize manner of time in each country's local time expressed, the world divided 24 time zones with Greenwich Meridian serves as the point of reference or origin.

- Transportation time is the total time from departure at origin until arrival time at destination.
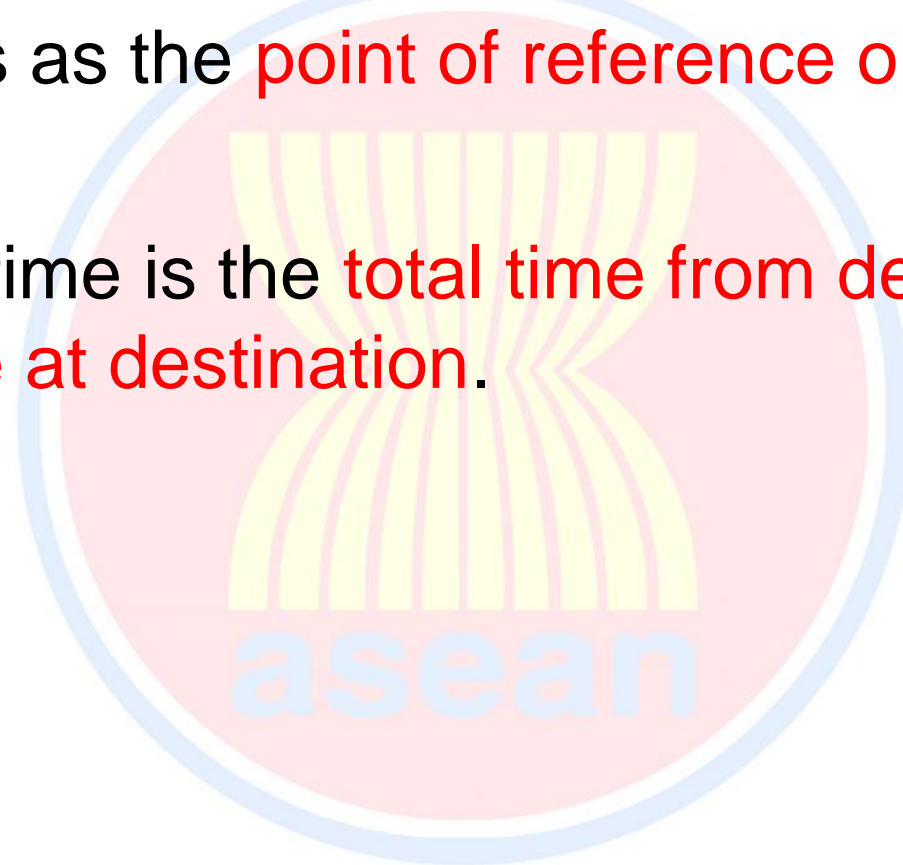
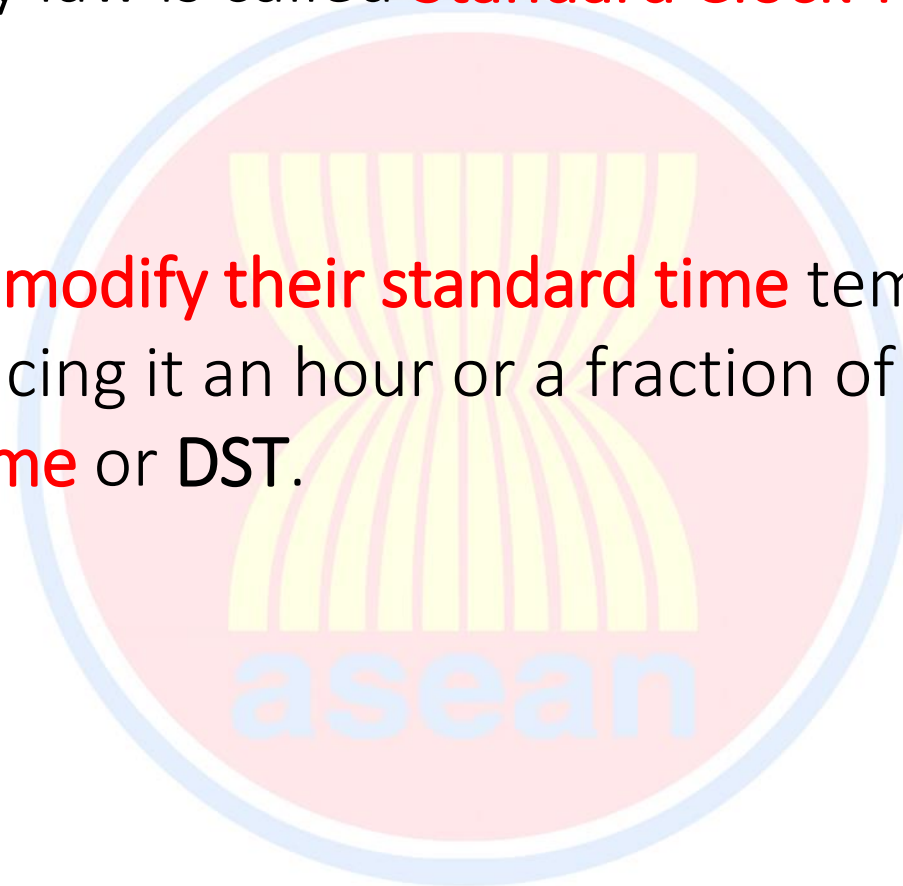# Time Difference

Standard Time and Daylight Saving Time

❑ To maintain the same local time within national boundaries or group of islands, fixed by law is called Standard Clock Time or Standard Time.

❑ Certain countries modify their standard time temporary during summer by advancing it an hour or a fraction of an hour is called Daylight Saving Time or DST.

Daylight Saving Time

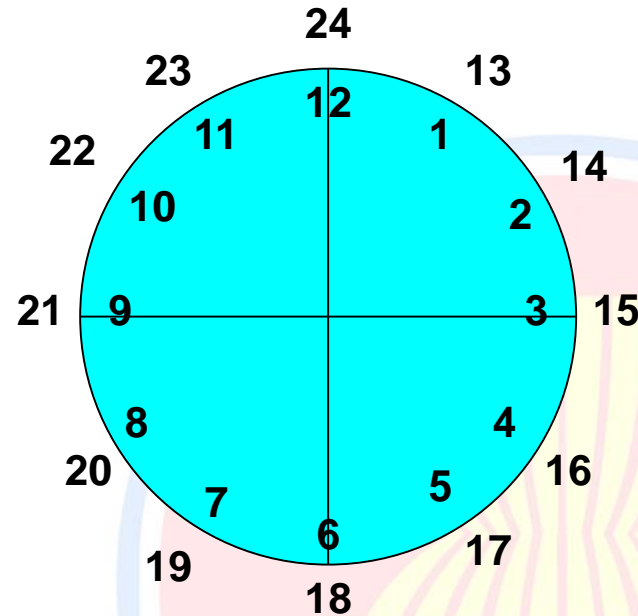## 7.3.2. COUNTRIES ALPHABETICALLY LISTED

UNITED KINGDOM (GB)
Amounts shown are expressed in Pound Sterling (GBP)

0. GENERAL INFORMATION

- IATA Area : 2
- Capital : London (LON)
- Local Time : GMT
- Daylight Saving Time : GMT + 1: Starts on the last Sunday in March and ends on the last Sunday in October.

24-hour clock & 12-hour clock

- Airline time-tables generally based on 24-hour clock.

- 24-hour clock, time expressed from **0001 to 2400.**

- Certain countries use other method, dividing a day into two (2) 12-hour periods.

24-hour clock & 12-hour clock
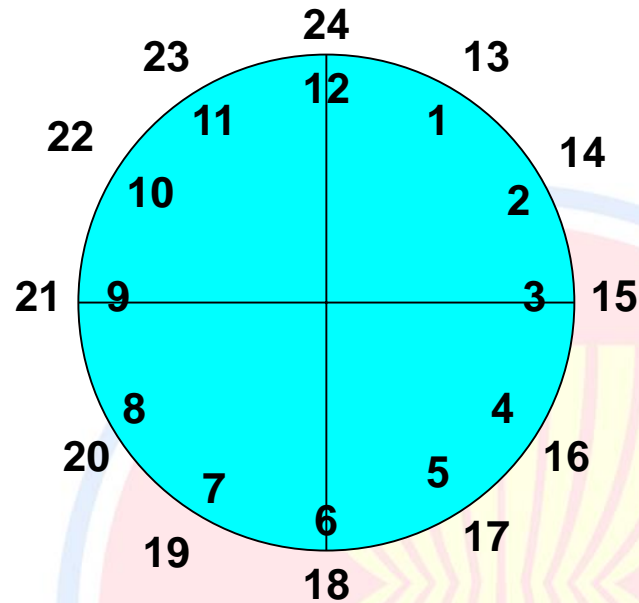
- 12-hour periods, time expressed in "before noon" times or "**a.m**" (Latin "**a**nte **m**eridiem") and "after noon" times or "**p.m**" (Latin "**p**ost **m**eridiem").

- Midnight = 2400 or 12:00 a.m. / Noon = 1200 or 12:00 p.m. or 12:00 noon.

- 2045 = 8:45 p.m. / 0830 = 8:30 a.m.

# Time zones, Greenwich Meridian

- With the objectives of **standardizing** the manner in which each country's **local time** is expressed, the world has been divided into **24 time zones**, each of 15^0 Longitude. The time difference between **one zone** and the next is exactly **1 hour**.

Time zones, Greenwich Meridian

- The time zone that serves as the **point of reference** or origin of this system is situated between 7 ^{0} 30' longitude west and 7 ^{0} 30' longitude of east of **Greenwich Meridian** (longitude 0 ^{0}).

- The time in this time zone is called **Greenwich Mean Time (GMT) / Universal Time Coordinated (UTC)**.

- The time in all other zones can thus be expressed by referring to **Greenwich Mean Time (GMT) / Universal Time Coordinated (UTC)**.

Greenwich Meridian
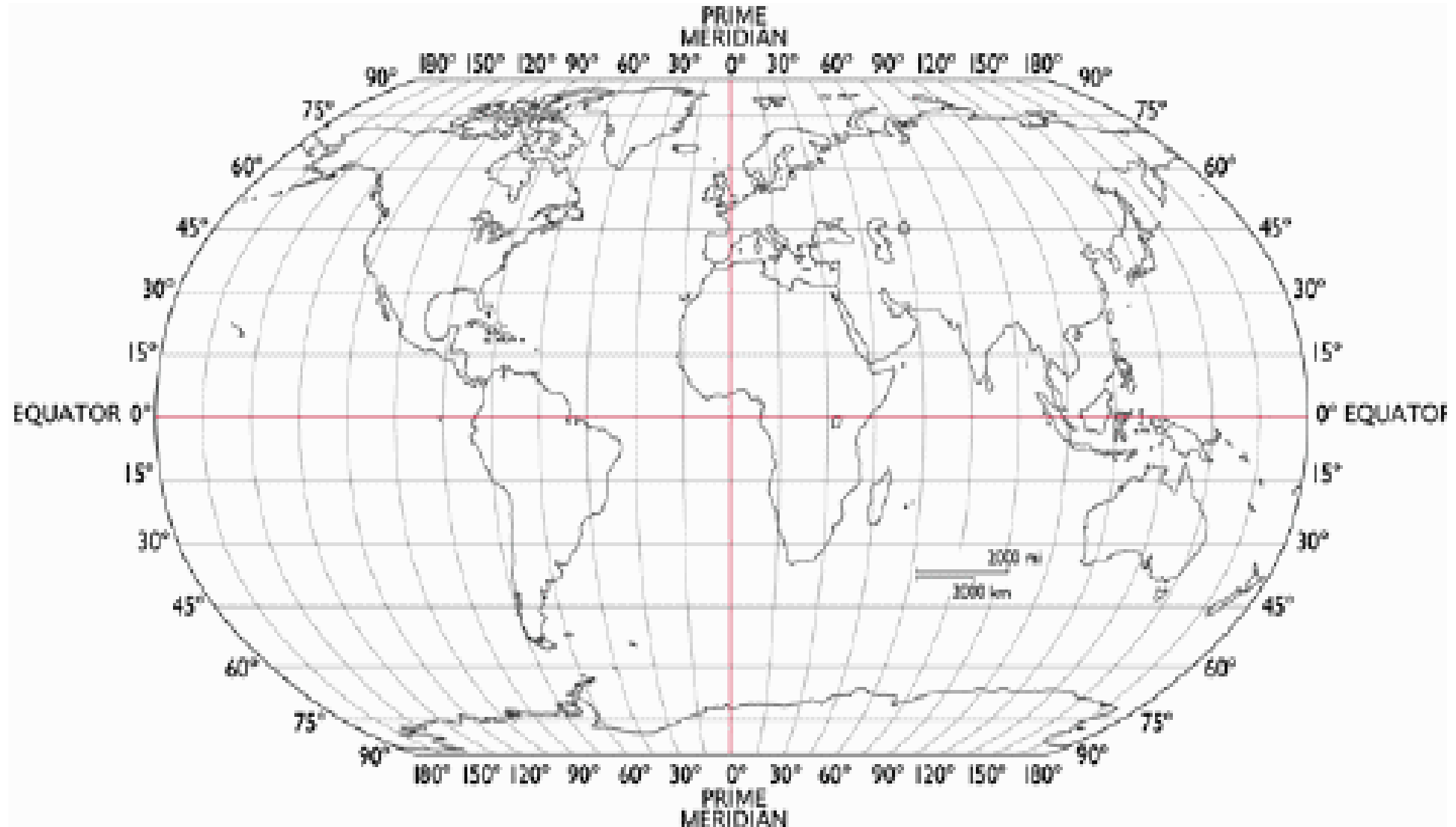
International Date Line

- An **imaginary north-south line** through the Pacific Ocean, east and west of which the date line differs (east being 1 day earlier).

- The **International Date Line** must be considered as a wall which **cannot be crossed** when calculating time differences.

- Calculation always be done by using the **GMT/UTC time zone as the reference**.

International Date Line

West → Rotation Of The Earth From West To East → East

| GMT/UTC | Today/Tomorrow | International Date Line | Yesterday/Today | GMT/UTC |

+1 +2 +3 +4 +5 +6 +7 +8 +9 +10 +11 +12 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1
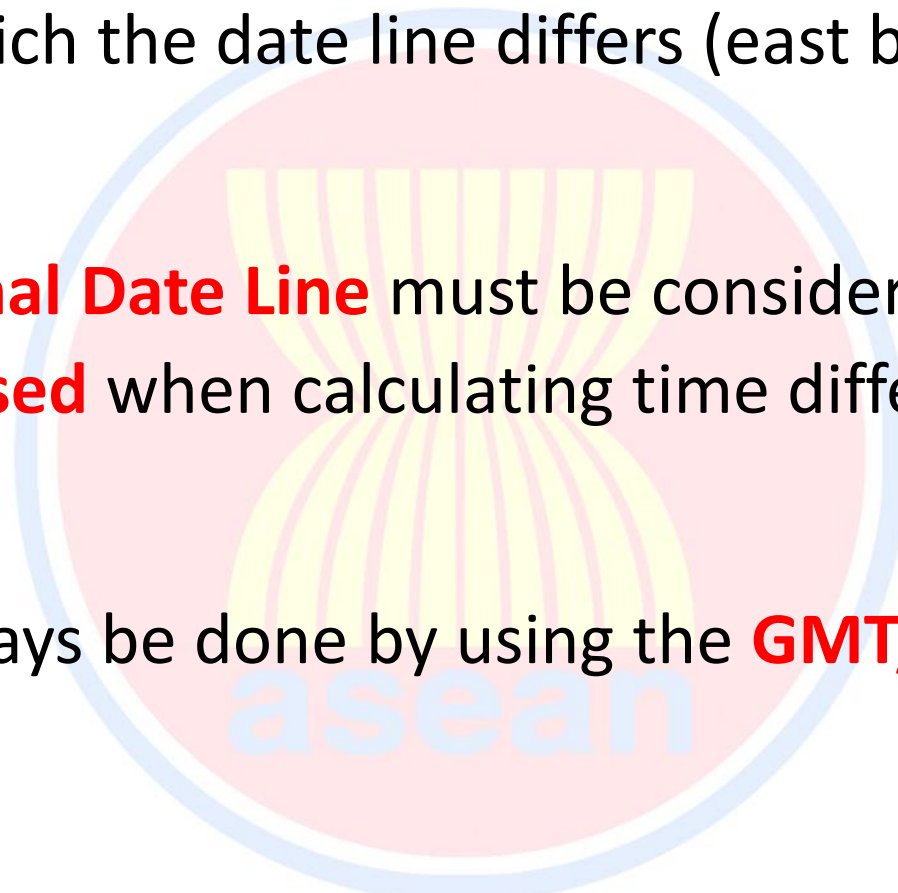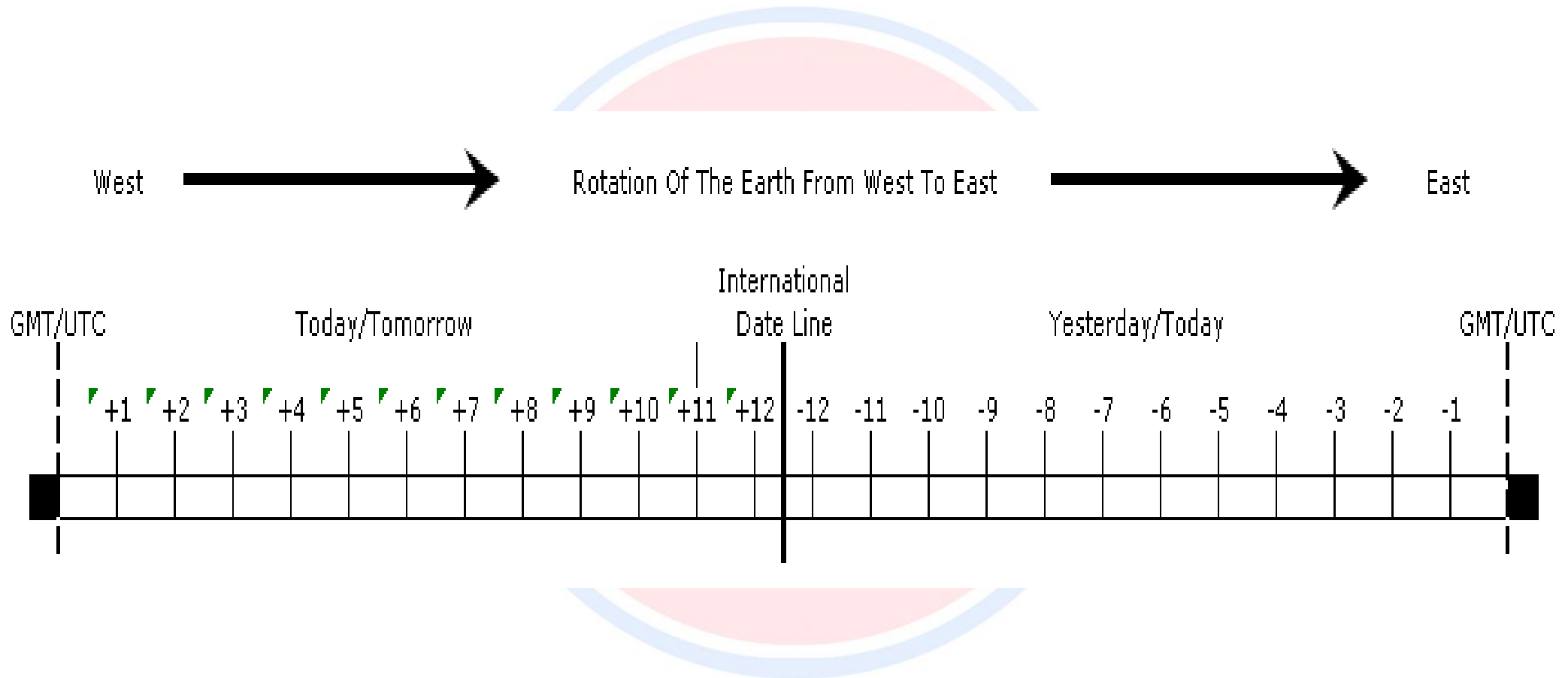
International Date Line

International Date Line

- Example : The distance between Nadi (NAN), Fiji and Apia (APW) Samoa is only 1,255 km but when it is Monday in Nadi, it is Sunday in Apia.

- The time difference between these 2 islands is 23 hours.

    NAN   GMT + 12   APW   GMT – 11

    Nadi is 23 hours ahead of Apia.

- When local time in is 1000 hours on Monday, the local time in Apia is 1100 hours on Sunday.

International Date Line

- Crossed EASTBOUND, a day is "Gained". (Point ahead of GMT to point behind GMT), eg. Nadi to Apia.

- Crossed WESTBOUND, a day is "Lost". (Point behind GMT to point ahead of GMT), eg. Apia to Nadi.
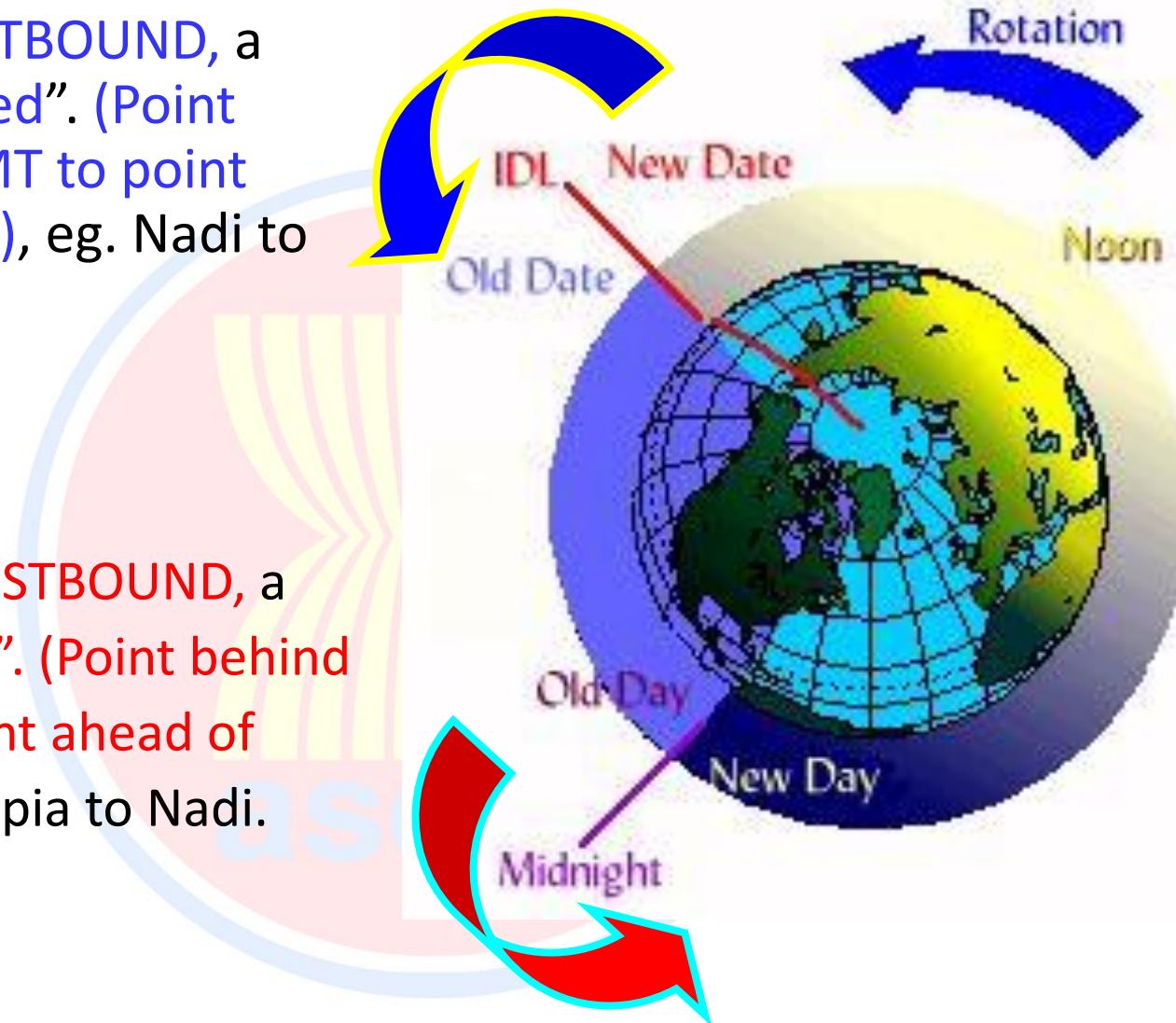
Greenwich Meridian & International Date
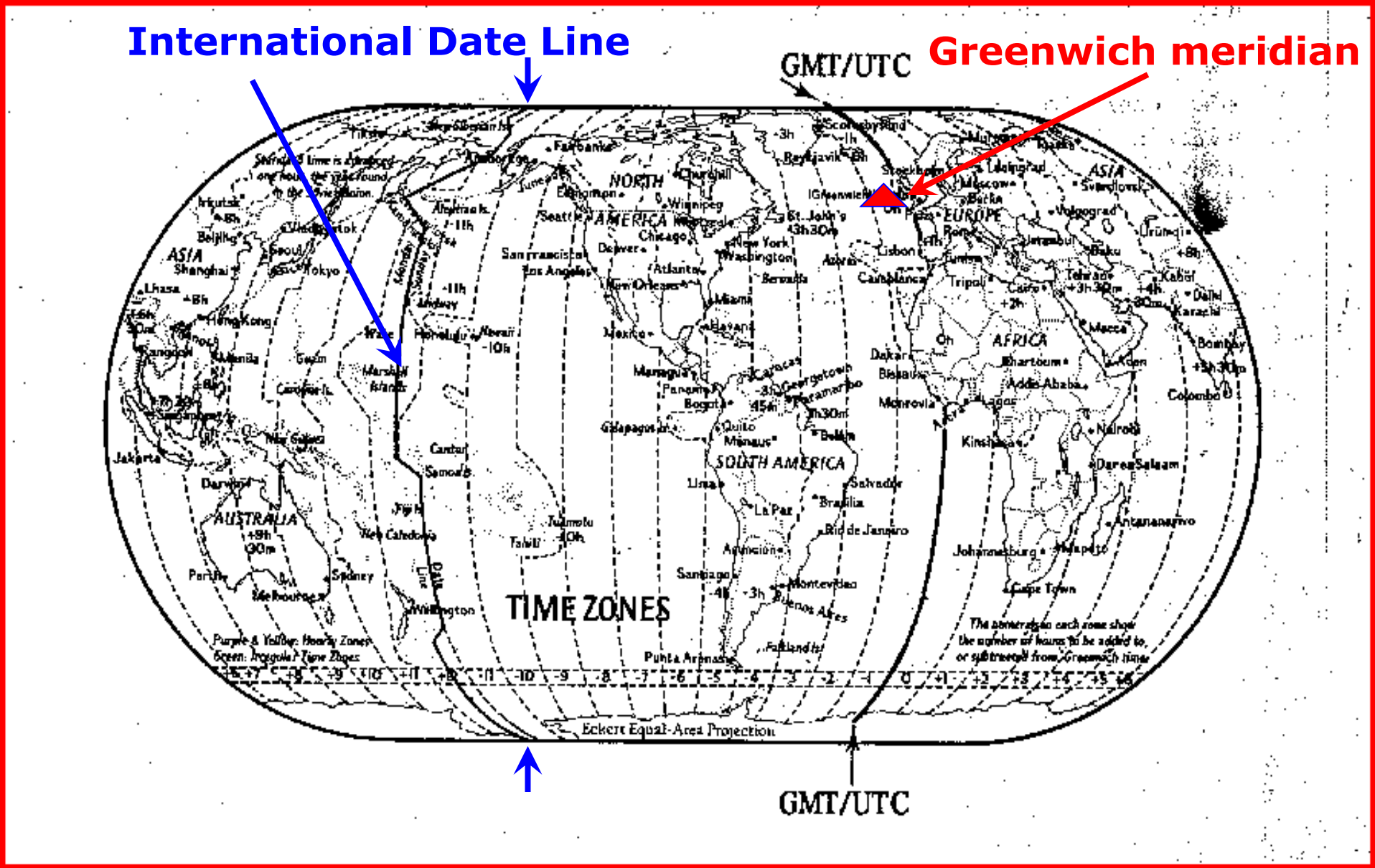
Earth's Rotation Speed

- Fasten your seat belt … REAL FAST!

- Earth's rotation speed depends upon location on the earth:

- North Pole - 0 km/hour 0 MPH
- South Pole - 0 km/hour 0 MPH

- Equator - 1670 km/hour 1035 MPH
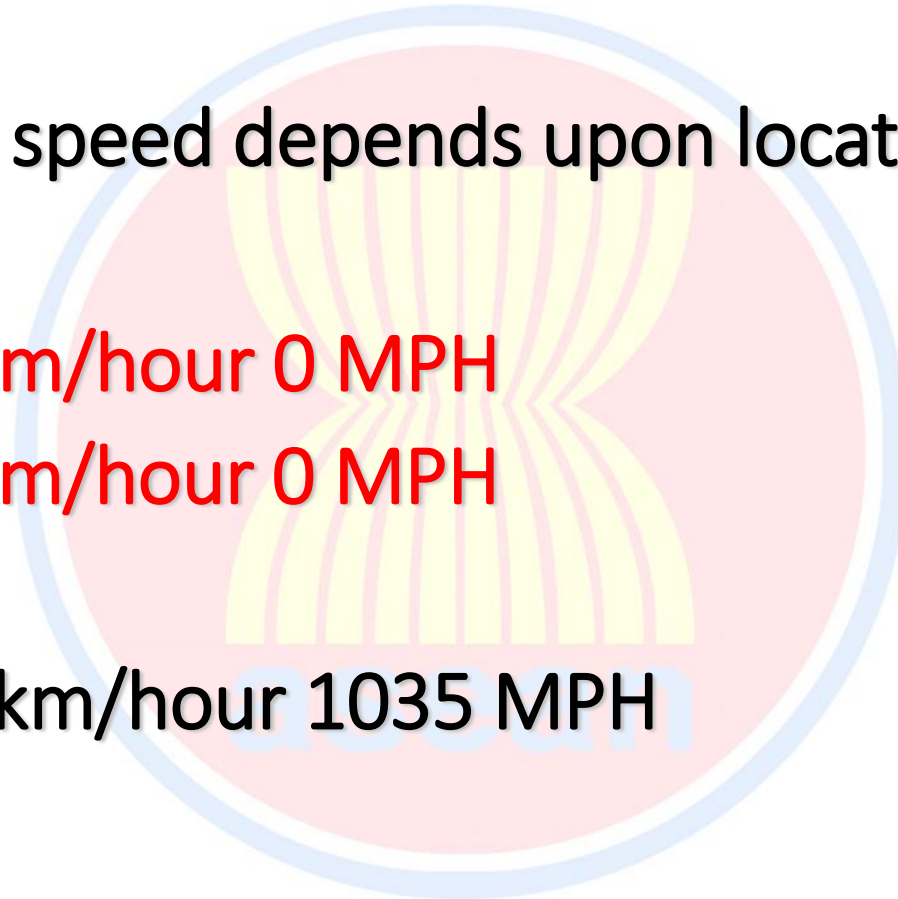
Calculation of Time Difference

The Time Scale

West **Rotation of Earth from West to East** East

GMT/UTC

International Date Line

| - 1 2 | - 1 1 | - 1 0 | - 9 | - 8 | - 7 | - 6 | - 5 | - 4 | - 3 | - 2 | - 1 | + 1 | + 2 | + 3 | + 4 | + 5 | + 6 | + 7 | + 8 | + 9 | + 1 0 | + 1 1 | + 1 2 |
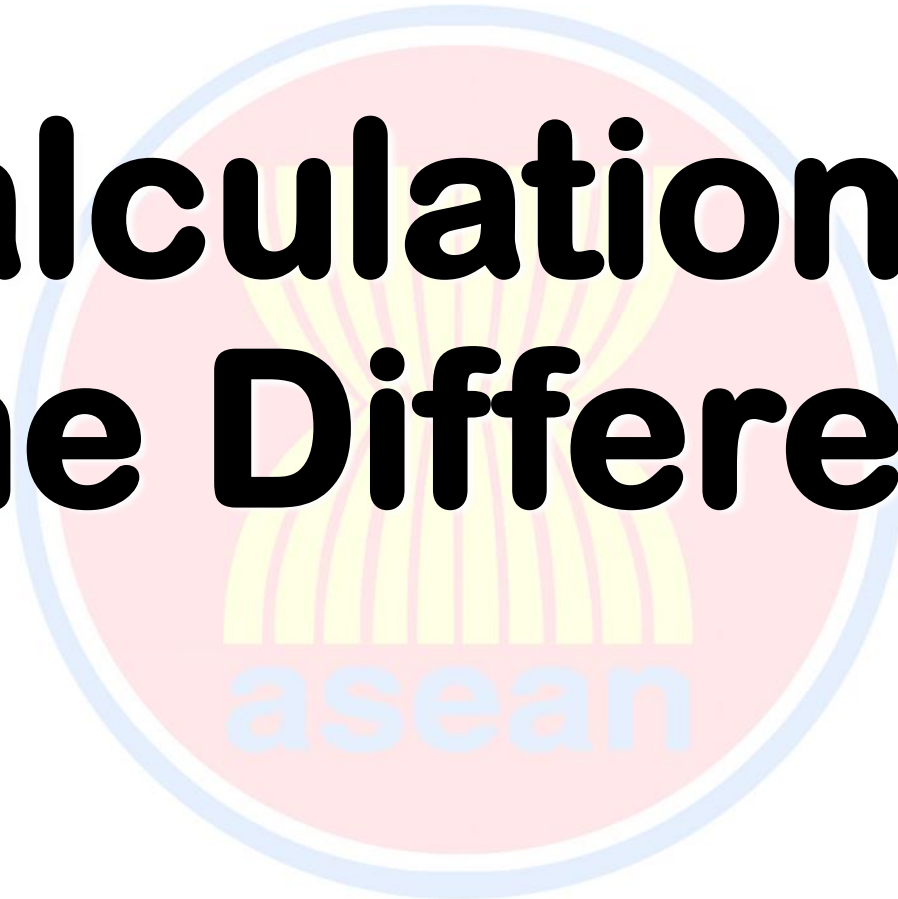
International Date Line
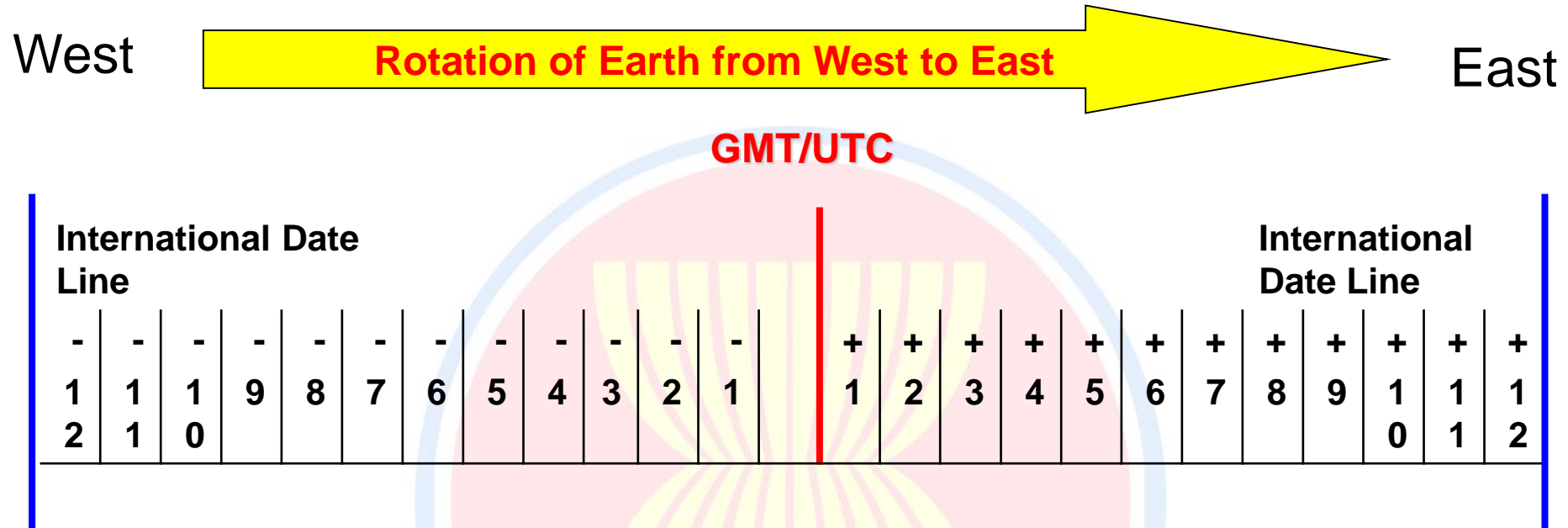
❑ Each block = 1 hour.

❑ Count blocks between 2 points to find time difference.

Calculation of time difference

❑   If the local time at **both points is ahead of GMT or behind GMT, Deduct the smaller from the larger figure.**

❑   PEN GMT + 8, TYO GMT + 9,

= 9 – 8

= Time difference 1 hour (TYO 1 hour ahead of PEN)

❑   SFO GMT – 8, ORD GMT – 5,

= 8 – 5

= Time difference 3 hours (ORD 3 hours ahead of SFO)

Calculation of time difference

❑ If the local time is **ahead of GMT at one point and behind GMT at the other, Add both figures together.**

❑ PEN GMT + 8, SFO − 8

= 8 + 8

= Time difference 16 hours (PEN is 16 hours ahead of SFO)

Calculation of time difference

- Penang GMT + 8

- When GMT is 0100 hours, what is Penang local time?
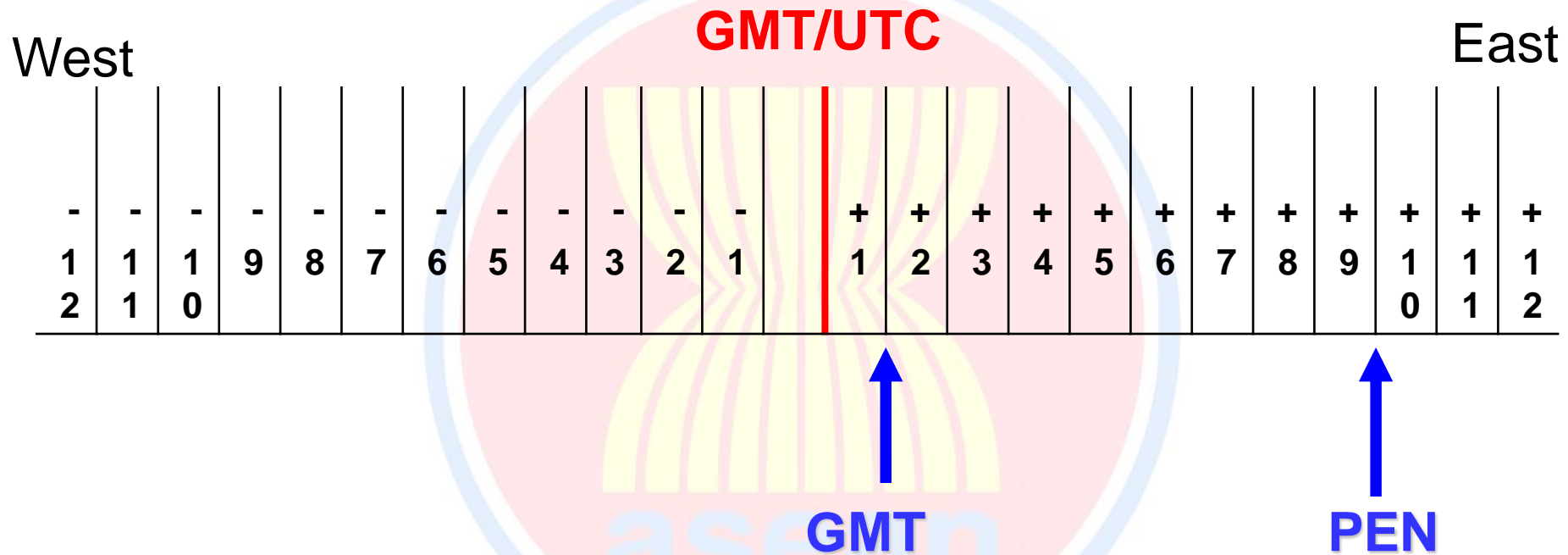
0100 + 0800 = PEN 0900 or 9:00 a.m.

Calculation of time difference

- Tokyo (TYO) GMT + 9, Frankfurt (FRA) GMT + 1

- When it is 1500 hrs local time in TYO, what is FRA local time?

- 9 -1 = TYO is 8 hours ahead of FRA

- 1500 – 0800 = 0700 hours or 7:00 a.m. in FRA.

West   **GMT/UTC**   East

-12	-11	-10	9	8	7	6	5	4	3	2	1	+1	+2	+3	+4	+5	+6	7	+8	9	+10	+11	+12

FRA

9 – 1 =
Difference 8 hours

TYO

Q & A
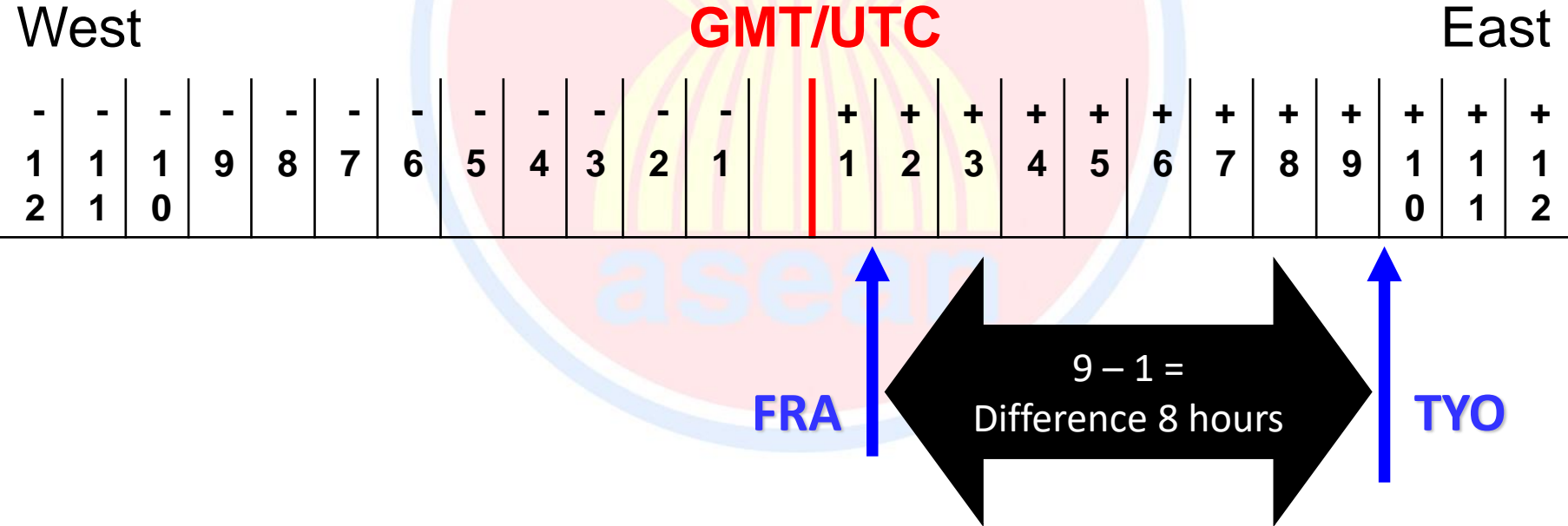
Calculation of time difference

- Madrid (MAD) GMT + 1, Vancouver (YVR) GMT - 7

- When it is 0500 hrs local time on 15th October in MAD, what is local time & date in YVR?

- 1 + 7 = MAD is 8 hours ahead of YVR.

	Date	Hours	Minutes
MAD	15	05	00
Minus (-)		08	00
YVR	14	21	00

0500 - 0800 = -0300 = 2400 - 2100 hrs or 9:00 p.m. on 14th October in YVR.

Calculation of time difference

- Penang (PEN) GMT + 8, Los Angeles (LAX) GMT - 8

- When it is 1500 hrs local time on 25th January in LAX, what is local time & date in PEN?

- 8 + 8 = LAX is 16 hours behind PEN.

	Date	Hours	Minutes
LAX	25	15	00
Plus (+)		16	00
PEN	25	31	00
	26	07	00

→ 31 hours – 24 hours (1 day) = 0700 hour

→ **1500 + 1600 = 3100 - 2400 (1 day) = 0700 hrs or 7:00 a.m. on 26th January in PEN.**

Calculation of time difference

- Penang (PEN) GMT + 8, Los Angeles (LAX) GMT - 8

- When it is 1500 hrs local time on 25th January in PEN, what is local time & date in LAX?

- 8 + 8 = PEN is 16 hours ahead of LAX.

	Date	Hours	Minutes
PEN	25	15	00
Minus (-)		16	00
LAX	24	23	00

- 1500 - 1600 = -0100 hrs

- **2400 – 0100 = 2300 hrs or 11:00 p.m. on 24th January in LAX.**

Calculation of Transportation Time
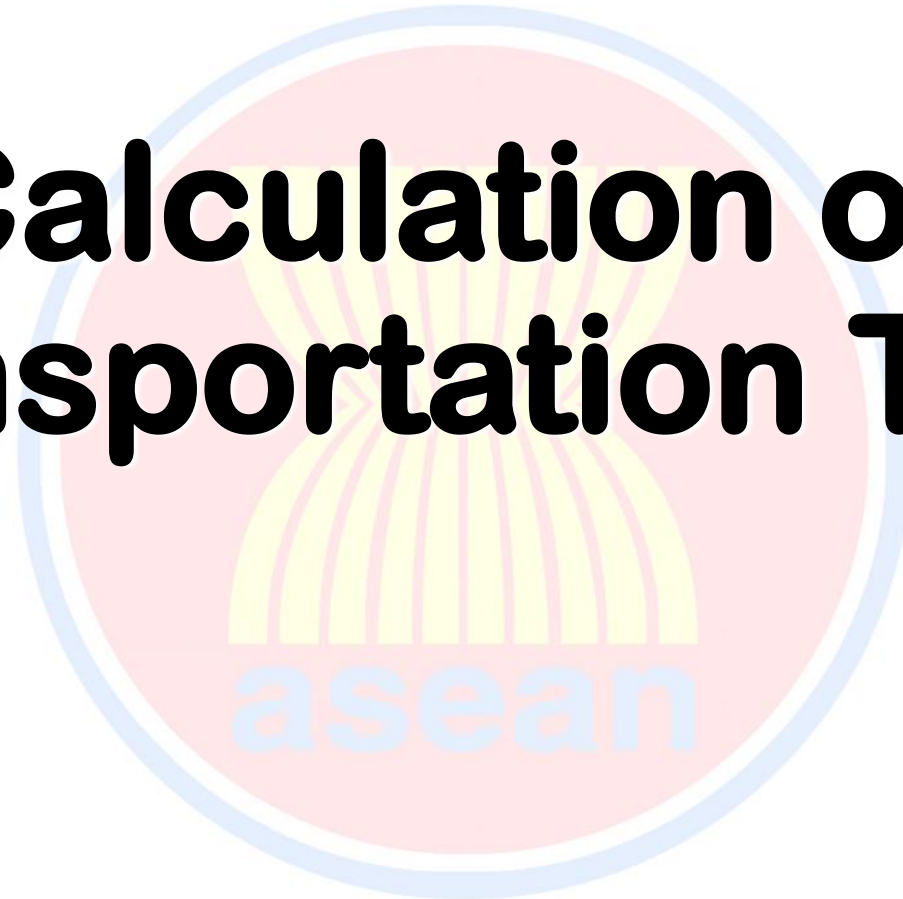
Calculation of Transportation Time

❏ Transportation time is the number of hours from the time of departure from the airport of origin until the time of arrival at the airport of final destination, includes transit and/or transfer times.

Transportation time =

Arrival – Transit/transfer – Departure

❏ In airline timetables, departure and arrival times are always expressed in **local time**.

Steps of Calculating Transportation Time

1. Ascertain the local time applicable at departure and arrival cities.

2. Convert arrival and departure times to GMT/UTC.

- **Deduct the number of hours from the local time when it is ahead of GMT (+).**

- **Add the number of hours to the local time when it is behind GMT (-).**

3. Arrival time minus departure time = transportation time.

Steps of Calculating Transportation Time

- GMT: **BKK + 7**   PEN + 8

- TG429 departs BKK at 1940 on Wed, 27 Jun local time.

- TG429 arrives PEN at 2225 on Wed, 27 Jun local time.

- What is the total transportation time?

Step 1:

Ascertain the local time applicable at departure & arrival cities.

- **BKK + 7**

- PEN + 8

Steps of Calculating Transportation Time

- GMT: BKK + 7   PEN + 8

- TG429 departs BKK at 1940 on Wed, 27 Jun local time.

- TG429 arrives PEN at 2225 on Wed, 27 Jun local time.

- What is the total transportation time?

Step 2:

Convert arrival and departure times to GMT/UTC.

- **Deduct the number of hours from the local time when it is ahead of GMT (+).**

- **Add the number of hours to the local time when it is behind GMT (-).**

- **BKK = GMT + 7 = 1940 - 0700 = 1240 on Wed, 27 Jun**

- PEN = GMT + 8 = 2225 - 0800 = 1425 on Wed, 27 Jun

Steps of Calculating Transportation Time

- GMT: BKK + 7   PEN + 8

- TG429 departs BKK at 1940 on Wed, 27 Jun local time.

- TG429 arrives PEN at 2225 on Wed, 27 Jun local time.

- What is the total transportation time?

Step 3:

Arrival time minus departure time = transportation time

- Departure time = 1240 on Wed, 27 Jun GMT

- Arrival time = 1425 on Wed, 27 Jun GMT

	Date	Hours	Minutes
Arrival	27	14	25
Departure	27	12	40
Transportation	0	01	45

Q & A

Calculating Transportation Time

- GMT: HKG + 8   FRA + 1

- CX289 departs HKG at 2345 on Wed, 27 Jun local time.

- CX289 arrives FRA at 0600 on Thu, 28 Jun local time.

- What is the total transportation time?

Step 1:

Ascertain the local time applicable at departure & arrival cities.
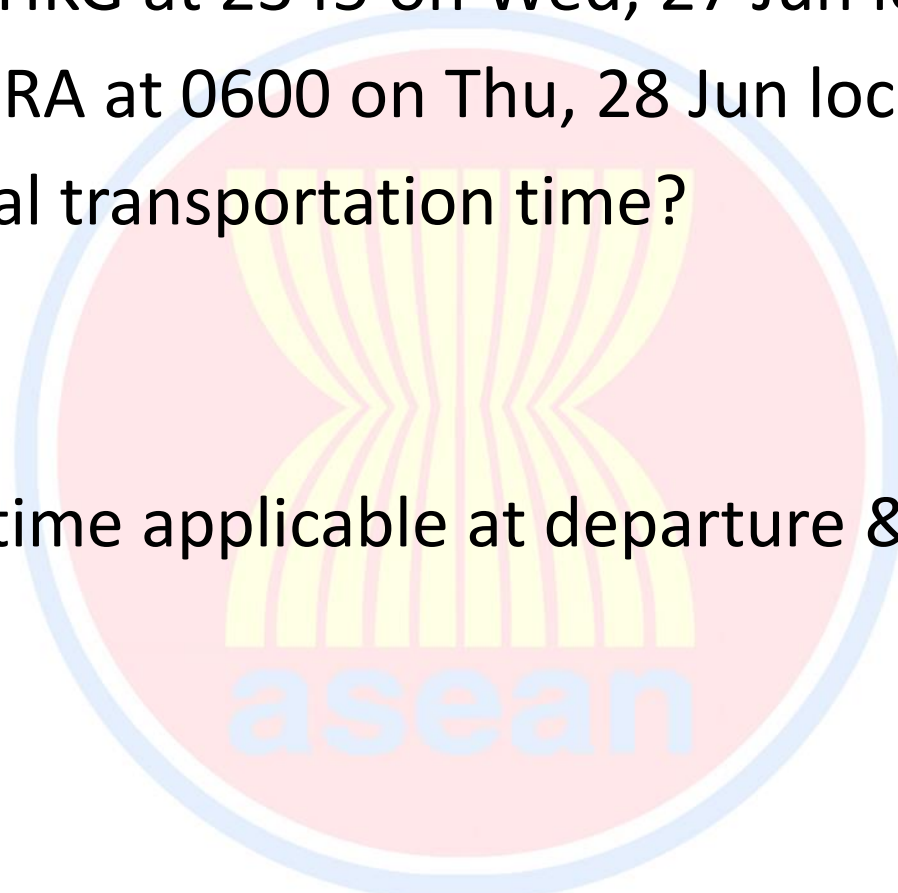
- HKG + 8

- FRA + 1

Calculating Transportation Time

- GMT: HKG + 8   FRA + 1

- CX289 departs HKG at 2345 on Wed, 27 Jun local time.

- CX289 arrives FRA at 0600 on Thu, 28 Jun local time.

- What is the total transportation time?

Step 2:

Convert arrival and departure times to GMT/UTC.

- **Deduct the number of hours from the local time when it is ahead of GMT (+).**

- **Add the number of hours to the local time when it is behind GMT (-).**

- HKG = GMT + 8 = 2345 - 0800 = 1545 on Wed, 27 Jun

- FRA = GMT + 1 = 0600 - 0100 = 0500 on Thu, 28 Jun

Calculating Transportation Time

- GMT: HKG + 8   FRA + 1

- CX289 departs HKG at 2345 on Wed, 27 Jun local time.

- CX289 arrives FRA at 0600 on Thu, 28 Jun local time.

- What is the total transportation time?

Step 3:

Arrival time minus departure time = transportation time

- Departure time = 1545 on Wed, 27 Jun GMT

- Arrival time = 0500 on Thu, 28 Jun GMT

	Date	Hours	Minutes
Arrival	28	05	00
Departure	27	15	45
Transportation	0	13	15

Calculating Transportation Time

- GMT: SFO - 8   PEN + 8

- KE218 departs SFO at 0235 on Wed, 27 Jun local time.

- KE218 arrives PEN at 0815 on Fri, 29 Jun local time.

- What is the total transportation time?

Step 1:
- Ascertain the local time applicable at departure & arrival cities.

- SFO – 8
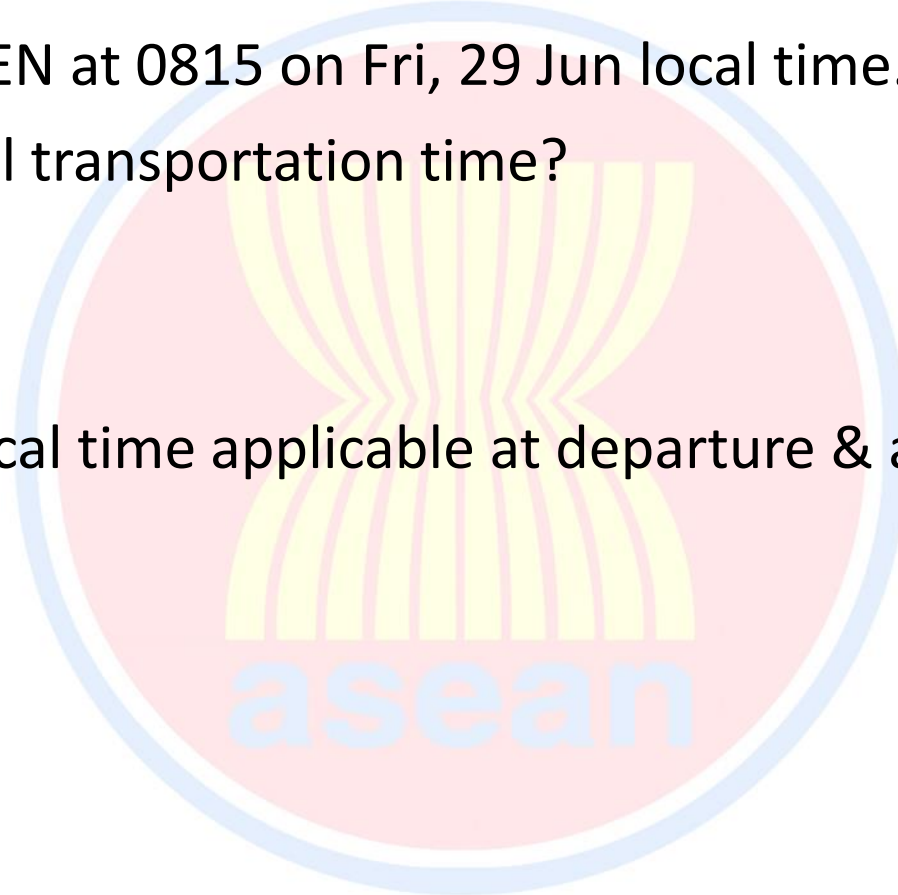
- PEN + 8

Calculating Transportation Time

- GMT: SFO - 8   PEN + 8

- KE218 departs SFO at 0235 on Wed, 27 Jun local time.

- KE218 arrives PEN at 0815 on Fri, 29 Jun local time.

- What is the total transportation time?

Step 2:

Convert arrival and departure times to GMT/UTC.

- **Deduct the number of hours from the local time when it is ahead of GMT (+).**

- **Add the number of hours to the local time when it is behind GMT (-).**

- SFO = GMT – 8 = 0235 + 0800 = 1035 on Wed, 27 Jun

- PEN = GMT + 8 = 0815 – 0800 = 0015 on Fri, 29 Jun

Calculating Transportation Time

- GMT: SFO - 8   PEN + 8

- KE218 departs SFO at 0235 on Wed, 27 Jun local time.

- KE218 arrives PEN at 0815 on Fri, 29 Jun local time.

- What is the total transportation time?

Step 3:

Arrival time minus departure time = transportation time

- Departure time = 1035 on Wed, 27 Jun GMT

- Arrival time = 0015 on Fri, 29 Jun GMT

	Date	Hours	Minutes
Arrival	29	00	15
Departure	27	10	35
Transportation	01	13	40

→ 37 hours 40 minutes.

Bibliography

- IATA/FIATA International Cargo Agent Training Programme, Cargo Introductory Course, Edition 1.8.

- IATA TACT CD, February 2010 Edition.

- ASEAN Federation of Forwarders Association (AFFA), IFM 102 Air Freight Forwarding Operations.

- Federation of Malaysian Freight Forwarders (FMFF) FIATA Diploma Course

- All websites mentioned in this unit.