Chapter- 20

Time

STUDY NOTES

At the end of this chapter, you will be able to:

- **Read and write time (12-hour and 24-hour clock time)**
- **Convert 12-hour clock time into 24-hour clock time and vice-versa.**
- **Convert days, hours and minutes -bigger to smaller units and vice-versa**
- **Carry out addition and subtraction of time.**

Enjoy the poem:

Telling time

Time will tell and you will see,

That telling time is so easy!

When your clock begins to chime,

Count carefully to know the time!

Small hand points to every hour,

Like a shining, guiding star!

Big hand points to minutes that race,

Across your clock's big smiling face!

Can you hear that soft tick-tock?

Sounds of seconds on the clock!

How merrily time seems to pass,

When we are having fun in class!

What is time?

The numbers 1 to 12 on a clock face show the hours.

The clock face is divided into 60 equal parts. Each part shows a minute.

The minute hand goes around the clock once in 1 hour.

1 hour = 60 minutes

The position of the hour hand tells us what hour it is.

The hour hand moves from one number to the next in 1 hour.

Units of time

Time is measured in seconds, minutes and hours.

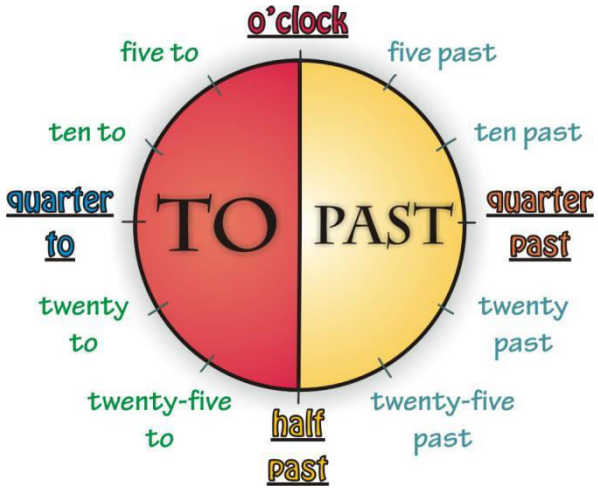
Larger units of time are days, weeks, months and years.

Units of Time
1 minute = 60 seconds
1 hour = 60 minutes
1 day = 24 hours
1 week = 7 days
1 month = about 4 weeks
1 year = 52 weeks
1 year = 12 months
1 year = 365 days
1 leap year = 366 days
1 decade = 10 years
1 century = 100 years
1 millennium = 1,000 years

Telling time to the nearest 5 minutes:

When the minute hand is at the left-hand side of the clock, say,

"It is ____minutes TO (the next hour).



When the minute hand is at the right-hand side of the clock, say,

"It is ____minutes PAST (the hour).

A.M. AND P.M.

When the hour hand of a clock goes around the clock face once, 12 hours will have passed. As a day has 24 hours, a clock shows the same time twice a day. So, we use a.m. or p.m. after the time to tell whether it is morning or evening.

- **A new day begins at 12 o'clock midnight and ends at 12 o'clock the next midnight.**
- **We use a.m. (ante meridiem) for the time from 12 midnight to 12 noon.**
- **We use p.m. (post meridiem) for the time from 12 noon to 12 midnight.**
- **We do not write a.m. or p.m. for 12 noon and 12 midnight.**

12 midnight ⟶ 12 noon ⟶ 12 midnight

a.m. (12 hours) p.m. (12 hours)

A day begins at 12 midnight and ends at midnight on the following day.

Changing 12-hour clock time to 24-hour clock time

If the time is between:

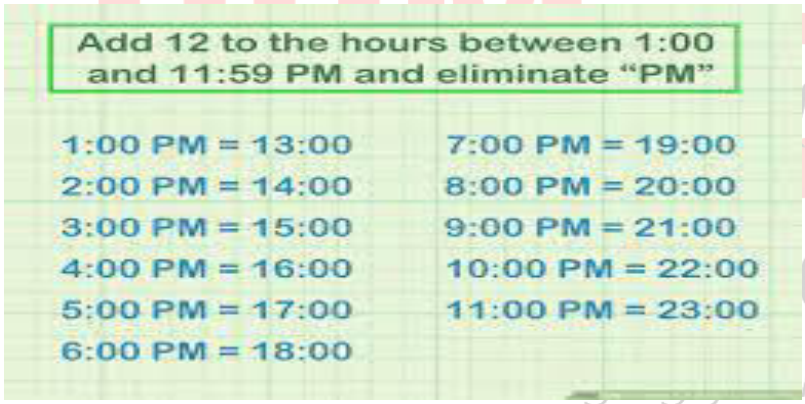
- **1:00 a.m. and 12:59 p.m., there will be no change in figures.**

  Remove the a.m. / p.m. and write hours after the given time.

- **1:00 p.m. and 11:59 p.m., add 12 hours to the given time.**

- **12 midnight and 12:59 p.m., subtract 12 hours from the given time.**

Example: Change to 24-hour clock time.
a) 2:15 a.m. b) 8:45 p.m. c) 12:48 a.m.
Solution:
a) 2:15 a.m. ⟶ 0215 hours
b) 8:45 p.m. ⟶ 8:45 + 12:00 ⟶ 2045 hours
c) 12:48 a.m. ⟶ 12:48 - 12:00 ⟶ 0048 hours



Changing 24-hour clock time to 12-hour clock time

If the time is between:

- **0000 and 0059 hours, and 12 hours and write a.m.**
- **0100 and 1159 hours, there will be no change in figures.**

  Just write a.m. after the given time.

- **1200 and 1259 hours, there will be no change in figures.**

  Write p.m. after the given time.

- **1300 and 2359 hours, subtract 12 hours and write p.m.**

Example: Change to 12-hour clock time.

b) 0045 hours **b) 0820 hours** **c) 1240 hours**

d) 1800 hours

Solution:

a) 0045 hours → 00:45 + 12:00 → 12:45 a.m.

b) 0820 hours → 8:20 a.m.

c) 1240 hours → 12:40 p.m.

d) 1800 hours → 18:00 - 12:00 → 6:00p.m.

Conversion of time:

1 year = 12 months	1 day= 24 hours
1 year = 365 or 366 days	1 hour = 60 minutes
1 week = 7 days	1 minute = 60 seconds

To convert days to hours, multiply the number of days by 24.

To convert hours to day, divide the number of hours by 24.

To convert hours to minutes, multiply the number of hours by 60.

To convert minutes to hours, divide the number of minutes by 60

To convert minutes to seconds, multiply the number of minutes by 60.

To convert seconds to minutes, divide the number of seconds by 60.

Conversion of time - bigger units:

We know that:

- **January, March, May, July, August, October and December have 31 days.**
- **April, June, September and November have 30 days.**
- **February has 28 or 29 days (29 days in a leap year).**
- **A year has 365 or 366 days (366 days in a leap year).**

For conversion, we use:

30 days = 1 month

365 days= 1 year

7 days = 1 week

Example: Convert 4 years 5 days into days.

Solution:

4 years 5 days= 4 × 365 days + 5 days

= 1460 days + 5 days = 1465 days

Example: Convert 95 days into

a) Weeks and days b) months and days

Solution:

a) 95 days = 95 ÷ 7 weeks 13 weeks 4 days

b) 95 days = 95 ÷ 30 months = 3 months 5 days.

Addition and subtraction of time:

Example: Add 22 minutes 25 seconds and 15 minutes 45 seconds.

Solution:

Step-1 Add the seconds first, 25 + 45 = 70 seconds

70 seconds = 60 seconds + 10 seconds

= 1 minute + 10 seconds

Write 10 in the seconds column and carry

Over 1 minute to the minute's column.

Step-2 Add the numbers in the minutes column.

22 + 15 + 1 = 38 minutes

minutes			seconds	
	1			
2	2		2	5
+ 1	5		4	5
3	8		1	0

Ans. 38 minutes 10 seconds

Example: Subtract 15 minutes 40 seconds from 50 minute 25 seconds.

Step-1 40 seconds > 25 seconds. So regroup

minutes			seconds	
4	9		8	5
~~5~~	~~0~~		~~2~~	~~5~~
1	5		4	0

50 minutes to 49 minutes + 60 seconds.

60 seconds + 25 seconds = 85 seconds

Subtract 40 seconds from 85 seconds.

85 seconds - 40 seconds = 45 seconds

3	4		4	5

Step-2 Subtract 15 minutes from 49 minutes

49 minutes - 15 minutes = 34 minutes

Answer: 34 minutes 45 seconds

Story sum:

Example: Sudhir was born on 4th May 2006 and his sister Seema was born on 2nd August 2010. Who is elder and by how much?

Solution: Clearly, 4th May 2006 comes earlier than 2nd August 2010.

So, Sudhir was born earlier than his sister Seema.

Therefore, Sudhir is elder to Seema.

Month	July	Aug
Days	28 + 1	

Period from 4th May 2006 to 3rd May 2010 = 4 years

Period from 4th May to 3rd July = 2 months

Period from 4th July 2010 to 1st August 2010

= (28+1) days = 29 days

Total period by which Sudhir is elder

= 4 years 2 months 29 days.

POINTS TO REMEMBER

1. A day begins at 12 midnight and ends at 12 midnight on the following day.
2. Time between 12 midnight and 12 noon is denoted by a.m.
3. Time between 12 noon and 12 midnight is denoted by p.m.
4. The time 12 midnight is written as 00:00 hour and 12 noon is written as 12:00 hour.
5. To convert 24-hour clock time to 12-hour clock time, we subtract 12 if the given time is more than 12.
6. To convert 12 hour clock time to 24 hour time, we add 12 if the time is shown is p.m.
7. 1 day = 24 hours; 1 hour = 60 minutes and 1 minute - 60 seconds.

LET'S LINK:

A year has 365 days but a leap year has 1 extra day, that is, a leap year has 366 days.
The reason for this is that the earth completes one revolution around the sun in $365\frac{1}{4}$ Days.
An ordinary year has $365\frac{1}{4}$ Days.
Four quarters for four years are put together $\left[\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}=\frac{4}{4}\right]$ to make an extra day.
This 1 day is added to the leap year. That is why every fourth year is a leap year with one extra day.
Hence, there are 366 days in a leap year.