Chapter- 15

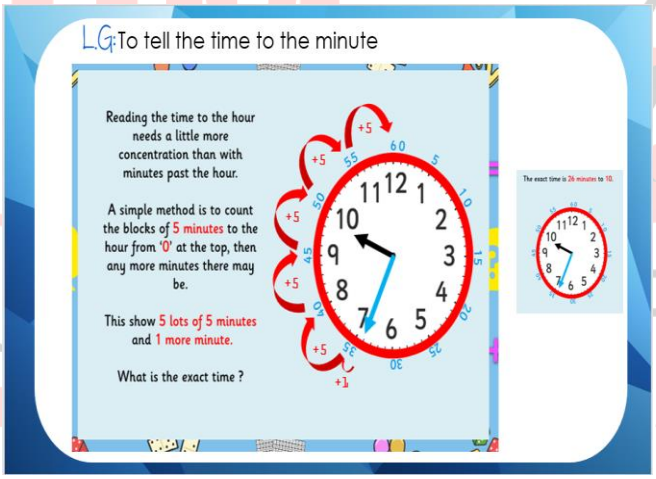
Time and calendar

STUDY NOTES

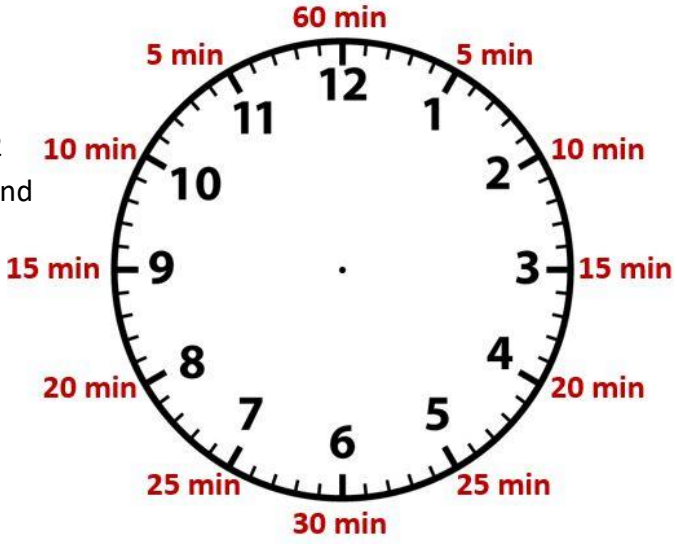
LEARN ABOUT:

- **Telling time correct to the nearest minutes**
- **Conversion of time**
- **Operations on time measures**
- **Calendar**

❖ TELLING TIME CORRECT TO THE NEAREST MINUTES-



The time taken by the minute hand to move from one number to another number is 5 minutes. To take one full round, the minute hand moves by 12 such numbers. So, the minute hand takes one round in 5 x 12 = 60 minutes.



Remember- 1 day = 24 hours

1 hour = 60 minutes

1 minute = 60 seconds

1 hour = 3600 seconds

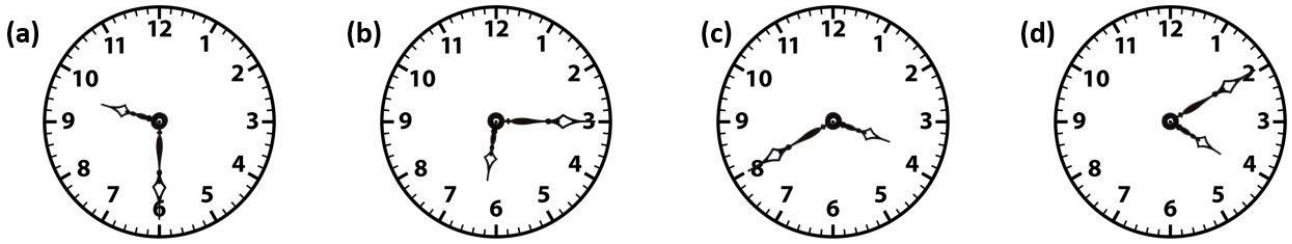
In the above figure the position of hour hand is nearest to two and the position of minute hand is on three. So as per the position of the minute hand, it is 3 x 5 =15 minutes. The time is here 2.15.

NOTE: 2.15 – 15 minutes past 2 or quarter past two

2.30 – 30 minutes past 2 or half past two

2.45 – 45 minutes past two or quarter two 3

Example : Look at the following clock and tell the time.



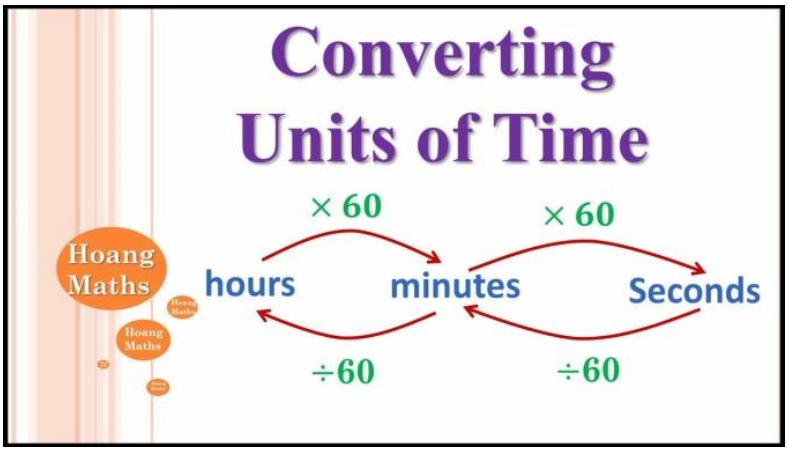
Position of the hour hand	Position of the minute hand	Number of minutes	Time	Method to tell the time
(a) Between 9 and 10	At 6	6 × 5 = 30	9 : 30	30 minutes past 9.
(b) Between 6 and 7	At 3	3 × 5 = 15	6 : 15	15 minutes past 6.
(c) Between 3 and 4	At 8	8 × 5 = 40	3 : 40	40 minutes past 3.
(d) Between 4 and 5	At 2	2 × 5 = 10	4 : 10	10 minutes past 4.

❖ CONVERSION OF TIME-

60 seconds = 1 minute

60 minutes = 1 hour

24 hours = 1 day



EXAMPLE-1

Convert 15 minutes 20 seconds into seconds.

SOLUTION-

1 minute = 60 sec.

15 minutes 20 sec. **= 15 x 60 + 20**

= 900 + 20

= 920 sec.

EXAMPLE-2

Convert 8 hours12 minutes into minutes.

SOLUTION-

1 hour = 60 minutes

8 hours 12 minutes **= 8 x 60 + 12**

= 492 minutes

EXAMPLE-3

Convert 125 seconds into minutes and seconds.

SOLUTION-

60 seconds = 1 minute

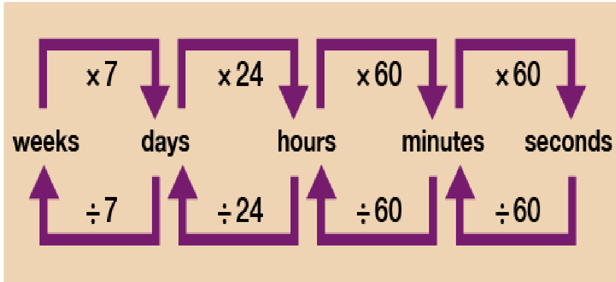
125 seconds = 125 ÷ 60

Here, the quotient 2 denotes the minutes and remainder

5 represents the seconds.

125 seconds = 2 minutes 5 seconds

$$
\begin{array}{r|l}
 & 2 \\
\hline
60 & 125 \\
- & 120 \\
\hline
 & 5
\end{array}
$$



EXAMPLE-4

Convert into hours.

(i) 7 days (ii) 2 days 8 hours

SOLUTION-

(i) 1 day = 24 hours

7 days = 7 x 24 = 168 hours

(ii) 1 day = 24 hours

2days 8 hours = 2 x24 + 8 = 56 hours

EXAMPLE-5

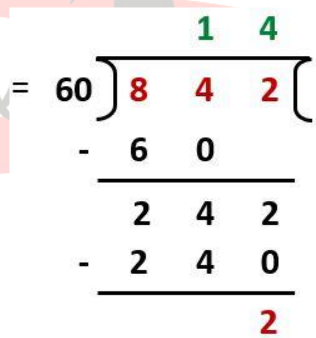
Convert 842 minutes into hours and minutes.

SOLUTION-

60 minutes = 1 hour

842 minutes = 842 ÷ 60

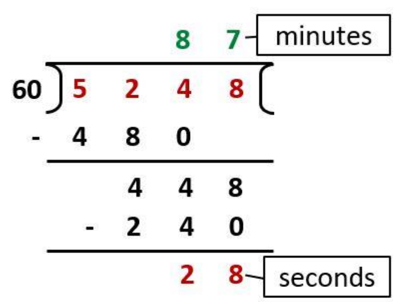
= 14 hours 2 minutes



EXAMPLE-6

Convert 5,248 seconds into hours, minutes and seconds.

SOLUTION-



Step – 1: First convert seconds into minutes.

60 seconds = 1 minute

5,248 seconds = 5,248 ÷ 60 minutes

= 87 minutes 28 seconds

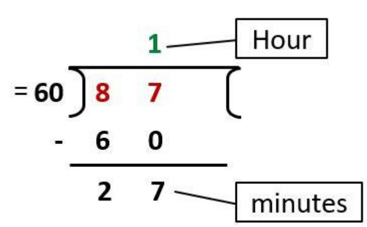
Step – 2: Now, convert 87 minutes into hours

(87 minutes is more than 60 minutes, we can convert it into hours and minutes.)

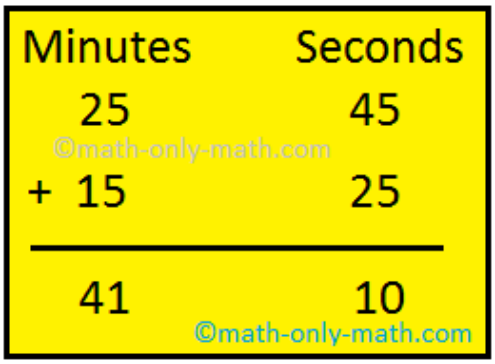
60 minutes = 1 hour

87 minutes = 87 ÷ 60 = 1 hour 27 minutes

= 1 hour 27 min 28 sec



❖ OPERATIONS ON TIME MEASURES-



EXAMPLE-1

Add 10 minutes 50 seconds and 15 minutes 40 seconds.

SOLUTION-

Step-1: Add the seconds first. 50 + 40 = 90 seconds

90 sec = 60 sec + 30 sec = 1 minute 30 seconds

Write 30 under the second's column and carry over 1 to minute's column.

	Sec.
	50
+	40
	90

Step-2: Add the minutes. 10 + 15 + 1 (carry over)

= 26 minutes.

Write 26 under the minute's column.

10 minutes 50 seconds + 15 minutes 40 seconds

= 26 minutes 30 seconds

	Min.	Sec.
	1	
	10	50
+	15	40
	26	**30**

EXAMPLE-2

Add 3 hours 40 minutes 20 seconds, 6 hours 24 minutes 30 seconds and 7 hours 30 minutes 40 seconds.

SOLUTION-

Step-1: Add the seconds first. 20 + 30 + 40 = 90 seconds.

90 seconds = 60 sec + 30 sec = 1 minute 30 seconds

Write 30 under the second's column and carry over 1 to minute's column.

	Sec.
	20
	30
+	40
	90

Step- 2: Add the minutes. 40 + 24 + 30 + 1 (carry over)

95 minutes = 60 min + 35 min = 1 hour 35 minutes

Write 35 under the minute's column and carry over 1 to the hour's column.

	Min.
	1
	40
	24
+	30
	95

Step-3: Add the hours. 3 + 6 + 7 +1 (carry over) = 17 hours
Write 17 hours the under hour's column.
3 hours 40 minutes 20 seconds
+ 6 hours 24 minutes 30 seconds
+ 7 hours 30 minutes 40 seconds
= 17 hours 35 minutes 30 seconds.

	Hr.	Min.	Sec.
	1	1	
	3	4 0	20
	6	2 4	30
+	7	3 0	40
	17	**3 5**	**30**

EXAMPLE-3

Add 4 days 16 hours 40 minutes, 3 days 10 hours 20 minutes and 10 days 20 hours 10 minutes.

SOLUTION-

Step-1: Add the minutes. 40 + 20 + 10 = 70 minutes
= 60 minutes + 10 minutes = 1 hour 10 minutes

Step-2: Add the hours. 16 + 10 + 20 + 1 (carry over)
= 47 hours = 24 hours + 23 hours = 1 day 23 hours

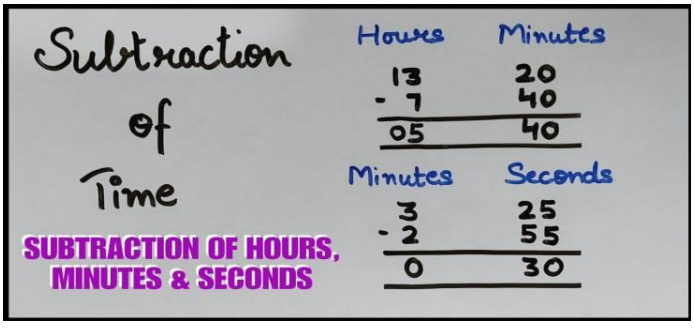
Step-3: Add the days. 4 + 3 + 10 + 1 (carry over)
= 18 days

	min.
	40
	20
+	10
	70

	hour
	1
	16
	10
+	20
	47

	Hr.	Min.	Sec.
	1	1	
	4	16	20
	3	10	30
+	10	20	40
	18	**2 3**	**10**

EXAMPLE-4



Find the difference between 8 hours 16 minutes 15 seconds and 6 hours 24 minutes 30 seconds.

SOLUTION-

Step-1: Start with seconds.
Since 15 < 30, borrow 1 minute.
1 minute + 15 seconds = 75 seconds
75 – 30 = 45 seconds

	sec.
	75
-	30
	45

Step-2: Subtract the minutes. 16 minutes have become 15 minutes since we borrowed 1 minute.
15 < 24. Borrow 1 hour from 8 hours. (60 + 15) – 24 = 51 minutes.

	Min.
	75
-	24
	51

Step-3: Subtract the hours. 7 -6 = 1 hour

	Hr.	Min.	Sec.
	8	16	15
-	6	24	30
	1	**2 3**	**45**

❖ CALENDAR-

A calendar shows the dates, weeks and months of a particular year. It also gives information about holidays and festivals.

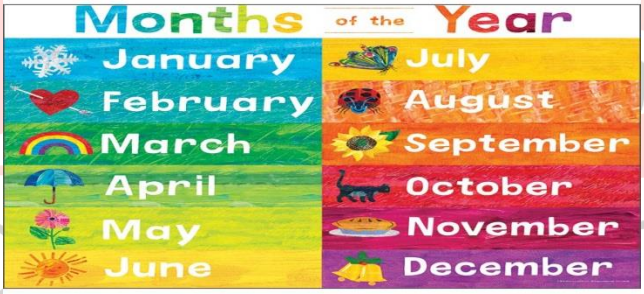
We know that 7 days = 1 week, 12 months = 1 year

WEEK-

A week contains 7 days.

MONTHS-

There are 12 months in a year and each month contains either 30 or 31 days. But the month of February contains either 28 days or 29 days.



The year in which February has 29 days is called a **leap year**.

Number of Days in Each Month

January	31 days	July	31 days
February	28/29 days	August	31 days
March	31 days	September	30 days
April	30 days	October	31 days
May	31 days	November	30 days
June	30 days	December	31 days

YEAR-

There are 365 days in a year and 366 days in a leap year.

LEAP YEAR-

A year which is exactly divisible by 4 is known as a leap year.

It comes once in every four years. The next leap year will be 2020.

EXAMPLE-1

Will 2036 be a leap year?

SOLUTION-

Let us divide 2036 by 4.

Since, 2036 is completely divisible by 4,

It is a leap year.

```
      5  0  9
  4 ) 2  0  3  6 (
    - 2  0
      -------
      0  0  3
    -    0  0
      -------
         0  3  6
    -       3  6
      -------
            0  0
```

EXAMPLE-2

How many days are there from 5^{th} April to 28^{th} May?

SOLUTION-

Number of days in April = 30

Number of days from 5^{th} April to 30^{th} April = 30 – 5 = 25 days

Now, number of days from 5^{th} April to 28^{th} May = 25 + 28 = 53 days

EXAMPLE – 3

Look at the calendar given below. Answer the questions follow:

2017

JANUARY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

FEBRUARY

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

MARCH

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

APRIL

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

MAY

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

JUNE

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

JULY

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

AUGUST

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

SEPTEMBER

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

OCTOBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

NOVEMBER

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

DECEMBER

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

a) Christmas is falling on what day?

Ans. Monday

b) What will be the date on the last Sunday of June?

Ans. The last Sunday will be 25th of June.

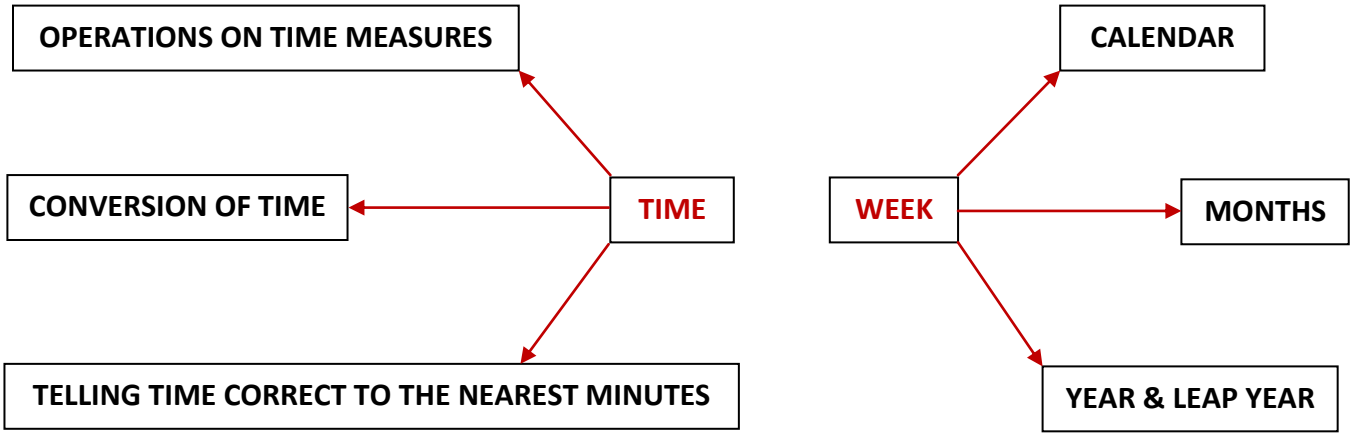
c) How many Fridays are there in the month of September?

Ans. There are 5 Fridays i.e. 1st, 8th, 15th, 22nd and 29th.

d) How many Saturdays and Sundays are there in the month of August?

Ans. 10

MIND MAP-



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