Chapter 8
Time

LOOKING BACK

You have already learnt how to read the time.

You also know when to use a.m. or p.m.

1. Say what time it is, using a.m. or p.m. :

Breakfast _____   Lunch at school _____   Bedtime _____

2. How much time has passed from 3:45 p.m. to 7:15 p.m.?

3. If Reena starts doing her home-work at 10:30 a.m. and finishes 40 minutes later, at what time does she finish her home-work ?

4. What is the time 3 hours 15 minutes after 8:30 a.m. ?

5. How many days are there between 26th August and 8th September ? (both days inclusive).

6. What is the date 16 days after 25th April ?

7. What is the date 23 days before 14th December?

8. Find the time duration between :

    (a) 8:25 p.m. to 3:15 a.m.   (b) 7:25 a.m. and 1:30 p.m.

24- Hour Clock

We know that, in a 12-hour clock, the same time is shown twice a day. We use a.m. or p.m. to tell what part of the day it is. For example 6 :00 a.m. (morning) or 6:00 p.m. (evening).

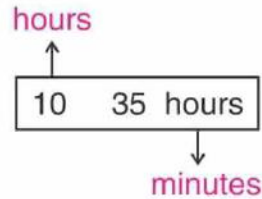In a 24-hour clock, this is not so as the same time is not shown twice a day.

12-hour clock	12 midnight	— 12 noon	— 2 midnight
24-hour clock	0000 hours	— 1200 hours	— 0200 hours

12-hour clock	24-hour clock
12 mid-night	0000 hours
12:01 a.m.	0001 hours
12:30 a.m.	0030 hours
2:00 a.m.	0200 hours
4:00 a.m.	0400 hours
10:20 a.m.	1020 hours
12 noon	1200 hours
12:58 p.m.	1258 hours

hours
↑
| 10 | 35 | hours |
↓
minutes

1000 hours is read as 'ten hundred hours' in the 24-hours clock. 1120 hour clock. 1120 hours is read as 'eleven twenty hours'.

12-hour clock	24 hour clock	
1:00 p.m.	1300 hours	(12 + 1 : 00)
3:20 p.m.	1520 hours	(12 + 3 : 20)
6:45 p.m.	1845 hours	(12 + 6 : 45)
9:30 p.m.	2130 hours	(12 + 9 : 30)
11:58 p.m.	2358 hours	(11 + 11 : 58)
12 : 00 midnight	2400 hours	(12 + 12 : 00)
	or 0000 hours	

Testing Time 8.1

1. **Rewrite using the 24-hour clock :**
   (a) The plane was delayed and landed at 12:10 a.m.
   (b) A man goes for a walk at 6:30 a.m. everyday.
   (c) The night show at the threatre starts at 9:30 p.m.
   (d) Swati's school begins at 8:15 a.m.

2. **Is it daylight or darkness ?**
   (a) 0945 hours _____   (b) 1730 hours _____
   (c) 2220 hours _____   (d) 0040 hours _____

3. **What is the time ?**
   (a) 1 hour after 1650 hours.   (b) 2 hours before 1225 hours.
   (c) 1 hour after 1050 hours.   (d) 4 hours after 2300 hours.

ADDITION AND SUBTRACTION OF MEASURES OF TIME

Adding Measures of Time

(a) Mohit played for 2 hours 30 minutes before lunch and 3 hours 55 minutes after lunch. How long did he play ?

Here, we would need to add to find out how much time he played.

	2 hours	30 minutes	30 min + 55 min = 85 min
+	3 hours	55 minutes	
	6 hours	25 minutes	1 hour 25 min

Answer : Mohit played for 6 hours and 25 minutes in all.

(b)		1 hour	20 min	40 sec	40 sec + 40 sec = 80 sec
	+	2 hours	30 min	40 sec	
		3 hours	51 min	20 sec	1 min 20 sec

Subtracting Measures of Time

(a) On Tuesday Pihu took 3 hours 10 minutes to complete her home-work. On Wednesday, she took 2 hours 40 minutes to do her home-work. How much longer did she take on Tuesday?

Here, we need to subtract to find out how much longer did she take on Tuesday ?

	3 hours	10 minutes	We cannot subtract 40 minutes from 10 minutes, so
−	2 hours	40 minutes	regroup 1 hour to 60 minutes
	2 hours	70 minutes	
−	2 hours	40 minutes	
		30 minutes	

(b)		15 years	8 months	Regroup 1 years to 12 months.
	−	7 years	9 months	
		14 year	20 months	
	−	7 years	9 months	
		7 years	11 months	

8 months + 12 months
= 20 months

Testing Time 8.2

1. Add :

(a) 8 min 35 sec + 4 min 25 sec

(b) 7 hr 40 min + 4 hr 10 min

(c) 3 hr 8 min 30 sec + 4 hr 49 min 40 sec

(d) 18 min 55 sec + 2 min

(e) 6 hr 30 min + 5 hr 30 min

2. **Subtract :**

(a) 8 min 40 sec – 7 min 30 sec   (b) 14 min – 6 min 35 sec

(c) 9 hr 20 min – 3 hr 45 min   (d) 8 hr 15 min – 3 hr 5 min

3. **Solve the following :**

(a) A girl practised for her school education competition for 45 minutes on one day and 55 minutes on the next day. How long did she practise in all ?

(b) A postman delivered parcels for 3 hours 25 minutes and letters for 2 hours 35 minutes. For how long was he on the duty ?

(c) A boy went to school for 12 years 6 months and college for 5 years and 8 months. How long had he gone for studies?

(d) A passenger train from Kolkata to Patna takes 6 hours 10 minutes. The Rajdhani Express takes 4 hours 35 min. Find the difference of time.

FINDING THE STARTING TIME OR FINISHING TIME

To Find the Finishing Time :

Rakesh started the marathon race at 7:30 a.m. He Finished 3 hours 32 minutes later. What time did he finish ?

Starting time   7:30 a.m.

Finishing time   after 3 hours 32 minutes.

To find out what time Rakesh finished the marathon, add the elapsed time to the starting time.

Starting time + Elapsed time + Finishing time

Now, count forward to find the finishing time

7 :30 + 3 hours 32 minutes = ?

Count in parts   7 :30 a.m. + 3 hours = 10.30 a.m.

10:30 a.m. + 32 min = 0:60 a.m. = 11:02 a.m.

Answer : Rakesh finished the marathon at 11 :02 a.m.

To Find the Starting Time :

Suman woke up at 7 : 30 a.m. after sleeping for 8 hours 45 minutes. What time did she go to bed?

Here, we have the finishing time and elapsed time, but not the starting time.

Finishing time – Elapsed time = Starting time

We have to **count backwards** from the finishing time to find the starting time ?

7 : 30 a.m.	—	8 hours 45 minutes	= ?
7 : 30 a.m.	–	7 hours	= 12 : 30 a.m.
12 : 30 a.m.	–	1 hour	= 11 : 30 p.m.
11 : 30 p.m.	–	45 minutes	= 10 : 45 p.m.

Answer : Suman had gone to bed at 10 : 45 p.m.

Testing Time 8.3

1. **Fill in the missing information. Use a.m. or p.m.**

Starting time	Elapsed time	Finishing time
(a) 9 : 30 a.m.	5 hours 45 minute	_____
(b) _____	7 hours 25 minutes	10 : 10 p.m.
(c) 11 : 15 a.m.	2 hours 45 minutes	_____
(d) _____	3 hours 20 minutes	3 : 20 a.m.
(e) 1 : 05 p.m.	4 hours 40 minutes	_____
(f) _____	5 hours 15 minutes	6 : 00 p.m.

CALCULATING DAYS

Sometimes it is needed to find out how many days a certain event or an activity have took place.

To Find the Finishing Date

Reena started reading a book on 7th May. She finished 34 days later,. On which date did she finish ?

Starting date	7th May
Duration	34 days
Finishing time	?

Starting date + Duration = Finished date

Count forward to find the finishing date. Count in parts.

7th May to 31st May = 25 days (31 – 7 = 24 + 1 = 25 days)

1st June to 9th June = days (25 + 9 = 34 days)

Answer : Reena finished reading the book on 9th June.

To Find the Starting Date

Rohit returned from his 45-day holiday on 10th October. When did his holiday begin?

Return date	10th October
Duration off holiday	45 days
Finishing time	?

Count back 45 days from 10 October.

10th October	to 1st October	=	10 days
30th September	to 1st September	=	30 days
21th August	to 27st August	=	5 days
	total	**=**	**45 days**

Answer: Rohit started his holiday on 27th August.

Testing Time 8.4

1. **Fill in the blanks :**

	Starting date	Duration (Elapsed time)	Finishing date
(a)	3rd March	47 days	_____
(b)	_____	40 days	24th June
(c)	19th November	25 days	_____
(d)	_____	28 days	10th January
(e)	21 st December	26 days	_____
(f)	_____	13 days	2nd April

2. **Solve the following :**

(a) Pihu's birthday party started at 11 : 45 a.m. and finished 3 hours 40 minutes later. When did her friends leave ?

(b) Rohit's school sports day is on March 20th. He wants to start practising 30 days earlier. When should he start ? (Take February to have 28 days.)

(c) Mayank joined a 2-week driving class that got over on 3rd September. When did it begin?

(d) Riya started an embroidery piece on Independence Day. If she completed it in 25 days, on what day she finished it ?

RELATIONSHIP BETWEEN HOURS AND MINUTES

$$1 \text{ hour} = 60 \text{ minutes}$$

To convert hours to minutes, you are converting from a bigger to a smaller unit. So multiply.

(a)   3 hours = ? minutes

$$3 \times 60 = 180 \text{ minutes}$$

Answer : 3 hours = 180 minutes.

(b)   7 hours 14 min = ? minutes

               7 hours = $7 \times 60 = 420$ minutes

               420 min + 14 = 434 min

Answer : 7 hours 14 minutes = 434 minutes.

To convert minutes to hours, you are converting from a smaller unit to a bigger one. So divide.

(a)   360 minutes = ? hours

              $360 \div 60 = 6$ hours

Answer : 360 minutes = 6 hours.

(b)   2060 minutes = ?

              $2060 \div 60 = 34$ hours 20 minutes

Relationship between Seconds and Minutes

        1 minute = 60 seconds

To convert minutes to seconds, you are converting from a bigger unit to a smaller unit. So multiply.

(a)   4 minutes = ? seconds

              $4 \times 60 = 240$

Answer : 4 minutes = 240 seconds.

(b) $9\frac{1}{2}$ minutes = ? seconds $9.5 \times 60 = 570.00$

        9 minutes = 540 seconds or $9\frac{1}{2}$ minutes = 570 seconds

        $\frac{1}{2}$ minute = 30 seconds

                 570 seconds

Answer : $9\frac{1}{2}$ minutes = 570 seconds.

To convert seconds to minutes, you are converting from a smaller unit to a bigger unit. So divide.

(a)   360 second = ? minutes

        $360 \div 60$ = 6 minutes

Answer : 360 seconds = 6 minutes

(b)   3,380 second = ? minutes

        $3380 \div 60$ = 56 minutes 20 seconds

Answer : 3,380 seconds = 56 minutes 20 seconds.

Testing Time 8.5

1. **Convert to minutes :**

   (a) 9 hours   (b) 13 hours   (c) 8 hours   (d) 8 hr 20 min

2. **Convert to hours :**

   (a) 720 min   (b) 1300 min   (c) 1320 min   (d) 4100 min

3. **Fill in the blanks :**

   (a) 15 minutes = _____ seconds   (b) 9 minutes _____ = seconds

   (c) 27 minutes = _____ seconds   (d) 11 minutes _____ = seconds

4. **Fill in the blanks :**

   (a) 93 minutes = _____ minutes _____ seconds

   (b) 280 minutes = _____ minutes _____ seconds

   (c) 840 minutes = _____ minutes _____ seconds

   (d) 1335 minutes = _____ minutes _____ seconds

   (e) 1560 minutes = _____ minutes _____ seconds

5. **Solve the following :**

   (a) An advertisement on television lasted for 30 seconds. If the same advertisement is shown daily for 10 days, for how many minutes will it be shown ?

   (b) It takes Veena 38 seconds to climb up the steps of her house. In one week if she spends 504 seconds doing this, how many minutes has she spent climbing up the steps?

   (c) A television had 12 minutes of advertisements in it. How many seconds were the advertisements for?