e. 8 minutes 8 seconds
    8 minutes 8 seconds
    = 8 minutes + 8 seconds
    = 8 × 60 seconds + 8 seconds
    = 480 seconds + 8 seconds
    = 488 seconds
∴ 8 minutes 8 seconds = 488 seconds. **Ans.**

f. 2 hours
    2 hours = 2 × 60 minutes
          = 120 minutes
∵   1 minutes = 60 seconds
    So, 120 minutes = 120 × 60 seconds
              = 7200 seconds
∴ 2 hours = 7200 seconds   **Ans.**

Exercise-14.2

1. Convert into hours and minutes.

Ans. a. 75 minutes

∵   1 minutes = $\dfrac{1}{60}$ hours

so, 75 minutes = $75 \times \dfrac{1}{60}$ hours = 1 hours 15 min

∴   75 minutes = 1 hours 15 min.

$$60 \overline{)75} \quad \begin{array}{r} 1\ h \\ \hline 75 \\ -60 \\ \hline 15\ min \end{array}$$

b. 200 minutes

∵   1 minutes = $\dfrac{1}{60}$ hours

∴ 200 minutes = $200 \times \dfrac{1}{60}$ hours = 3 hours 20 minutes

∴ 200 minutes = 3 hours 20 min   **Ans.**

$$\begin{array}{r} 3 \\ 60 \overline{)200} \\ -180 \\ \hline 20 \end{array}$$

c. 600 minutes

∵   1 minutes = $\dfrac{1}{60}$ hours

∴ 600 minutes = $600 \times \dfrac{1}{60}$ hours = 10 hours

∴ 600 minutes = 10 hours.   **Ans.**

$$\begin{array}{r} 10 \\ 60 \overline{)600} \\ -60 \\ \hline 00 \\ -00 \\ \hline 00 \end{array}$$

d. 550 minutes

∵   1 min = $\dfrac{1}{60}$ hours

∴ 550 minutes = $550 \times \dfrac{1}{60}$ hours = 9 hours 10 minutes

∴ 550 minutes = 9 hours 10 minutes

$$\begin{array}{r} 9h \\ 60 \overline{)550} \\ -540 \\ \hline 10\ min \end{array}$$

e. 6600 minutes

∵   1 min = $\dfrac{1}{60}$ hours

∴ 6600 minutes = $6600 \times \dfrac{1}{60}$ hours = 110 hours

∴ 6600 minutes = 110 hours   **Ans.**

$$\begin{array}{r} 110 \\ 60 \overline{)6600} \\ -60 \\ \hline 60 \\ -60 \\ \hline 00 \\ 00 \\ \hline 00 \end{array}$$

f. 380 minutes

∵   1 minutes = $\dfrac{1}{60}$ hours

∴ 380 minutes = $380 \times \dfrac{1}{60}$ hours = 6 hours 20 minutes

∴ 380 minutes = 6 hours 20 minutes   **Ans.**

$$\begin{array}{r} 6 \\ 60 \overline{)380} \\ -360 \\ \hline 20 \end{array}$$

2. Convert into minutes and seconds.

Ans. a. 600 seconds

$\because$ 1 seconds $= \dfrac{1}{60}$ minutes

600 seconds $= 600 \times \dfrac{1}{60}$ minutes $= 10$ minutes

$\therefore$ 600 seconds $= 10$ minutes.   **Ans.**

b. 1500 seconds

1 second $= \dfrac{1}{60}$ min

$\therefore$ 1500 seconds $= 1500 \times \dfrac{1}{60}$ min $= 25$ min

$\therefore$ 1500 seconds $= 25$ minutes   **Ans.**

```
          2 5
   60) 1 5 0 0
      - 1 2 0
        3 0 0
      - 3 0 0
          0 0
```

c. 240 seconds

$\because$ 1 second $= \dfrac{1}{60}$ min

$\therefore$ 240 seconds $= 240 \times \dfrac{1}{60}$ min $= 4$ minutes

$\therefore$ 240 seconds $= 4$ minutes   **Ans.**

```
          4
   60) 2 4 0
      - 2 4 0
        0 0
```

d. 490 seconds

$\because$ 1 seconds $= \dfrac{1}{60}$ min

$\therefore$ 490 seconds $= 490 \times \dfrac{1}{60}$ min $= 8$ minutes and 10 seconds

$\therefore$ 490 seconds $= 8$ minutes and 10 seconds

```
          8
   60) 4 9 0
      - 4 8 0
        1 0
```

e. 820 seconds

$\because$ 1 second $= \dfrac{1}{60}$ minute

$\therefore$ 820 seconds $= 820 \times \dfrac{1}{60}$ minutes $= 13$ minutes 40 seconds

$\therefore$ 820 seconds $= 13$ minutes 40 seconds

```
          1 3
   60) 8 2 0
      - 6 0
        2 2 0
      - 1 8 0
          4 0
```

f. 1550 seconds

$\because$ 1 second $= \dfrac{1}{60}$ minutes

$\therefore$ 1550 seconds $= 1550 \times \dfrac{1}{60}$ minutes $= 25$ minutes 50 seconds

$\therefore$ 1550 seconds $= 25$ minutes 50 seconds   **Ans.**

```
          2 5
   60) 1 5 5 0
      - 1 2 0
        3 5 0
      - 3 0 0
          5 0
```

3. Convert into hour and minutes/seconds.

Ans. a. 14400 seconds

1 seconds $= \dfrac{1}{60}$ minutes

14400 seconds $= 14400 \times \dfrac{1}{60}$ minutes $= 240$ minutes

Now, $\because$ 1 minute $= \dfrac{1}{60}$ hours

$\therefore$ 240 minutes $= 240 \times \dfrac{1}{60}$ hours $= 4$ hours

```
          2 4
   60) 1 4 4 0 0
      - 1 2 0
        2 4 0
      - 2 4 0
          0 0
        - 0 0
          0 0
```

```
          4
   60) 2 4 0
      - 2 4 0
        0 0
```

∴   14400 seconds = 4 hours   **Ans.**

b.   27000 seconds

∵   1 second $= \dfrac{1}{60}$ minutes

$$\begin{array}{r} 450 \\ 60\overline{)27000} \\ -240 \\ \hline 300 \\ -300 \\ \hline 00 \\ -00 \\ \hline 00 \end{array}$$

∴   27000 seconds $= 27000 \times \dfrac{1}{60}$ minutes $= 450$ minutes

Now,

∵   1 minute $= \dfrac{1}{60}$ hours

$$\begin{array}{r} 7 \\ 60\overline{)450} \\ -420 \\ \hline 30 \end{array}$$

∴   450 minutes $= 450 \times \dfrac{1}{60}$ hours $= 7$ hours 30 minutes

∴   27000 seconds = 7 hours 30 minutes   **Ans.**

c.   36009 seconds

∴   1 seond $= \dfrac{1}{60}$ minutes

$$\begin{array}{r} 60 \\ 60\overline{)36009} \\ -360 \\ \hline 000 \\ -000 \\ \hline 09 \\ -00 \\ \hline 9 \end{array}$$

∴   36009 seconds $= 36009 \times \dfrac{1}{60}$ minutes $= 600$ minutes 9 second

Now,

600 minutes 9 seconds = 600 minutes + 9 seconds

                     $= 600 \times \dfrac{1}{60}$ hours + 9 seconds $\left(\because 1 \min = \dfrac{1}{60} \text{ hours} \right)$

                     = 10 hours + 9 seconds

                     = 10 hours 0 minutes 9 seconds   **Ans.**

d.   18005 seconds

∵   1 second $= \dfrac{1}{60}$ minutes

$$\begin{array}{r} 300 \\ 60\overline{)18005} \\ -180 \\ \hline 00 \\ -00 \\ \hline 05 \\ -00 \\ \hline 5 \end{array}$$

∴   18005 seconds $= 18005 \times \dfrac{1}{60}$ minutes $= 300$ minutes 5 seconds

Now,

300 minutes 5 seconds = 300 minutes + 5 seconds

                     $= 300 \times \dfrac{1}{60}$ hours + 5 seconds $= 5$ hours + 5 seconds

∴   18005 seconds = 5 hours 0 minutes 5 seconds   **Ans.**

e.   67500 seconds

∵   1 seconds $= \dfrac{1}{60}$ minutes

$$\begin{array}{r} 1125 \\ 60\overline{)67500} \\ -60 \\ \hline 75 \\ -60 \\ \hline 150 \\ -120 \\ \hline 300 \\ -300 \\ \hline 00 \end{array}$$

∴   67500 seconds $= 67500 \times \dfrac{1}{60}$ minutes $= 1125$ minutes

Now,

1125 minutes $= 1125 \times \dfrac{1}{60}$ hours

$$\begin{array}{r} 18 \\ 60\overline{)1125} \\ -60 \\ \hline 525 \\ -480 \\ \hline 45 \end{array}$$

          $\left(\because 1 \min utes = \dfrac{1}{60} \text{ hours} \right)$

         = 18 hours 45 minutes

∴   67500 seconds = 18 hours 45 minutes   **Ans.**

f.   75600 seconds

$\because$ 1 seconds $= \dfrac{1}{60}$ minutes

$\therefore$ 75600 seconds $= 75600 \times \dfrac{1}{60}$ minutes $= 1260$ minutes

Now,

1260 minutes $= 1260 \times \dfrac{1}{60}$ hours

$\left(\because 1 \text{ minutes } = \dfrac{1}{60} \text{ hours} \right)$

= 21 hours

$\therefore$ 75600 seconds = 21 hours.   **Ans.**

```
        1 1 2 5
 60) 7 5 6 0 0
      - 6 0
       1 5 6
     - 1 2 0
         3 6 0
       - 3 6 0
           0 0
         - 0 0
             0 0
```

```
          2 1
 60) 1 2 6 0
    - 1 2 0
        6 0
      - 6 0
          0 0
```

Exercise-14.3

1.   Add :

Ans.   a.   5 hours 40 minutes and 6 hours 25 minutes

hours	min
1	
5	4 0
+ 6	2 5
1 2	0 5

$\therefore$ 12 hours 5 minutes   **Ans.**

b.   6 hours 50 minutes and 8 hours 10 minutes

hours	min
1	
6	5 0
+ 8	1 0
1 5	0 0

$\therefore$ 15 hours 00 minutes   **Ans.**

c.   5 minutes 50 seconds and 5 minutes 40 seconds

min	sec
1	
5	5 0
+ 5	4 0
1 1	3 0

$\therefore$ 11 min 30 seconds   **Ans.**

d.   22 minutes 40 seconds and 23 minutes 15 seconds

min	sec
2 2	4 0
+ 2 3	1 5
4 5	5 5

$\therefore$ 45 minutes 55 seconds   **Ans.**

e.   10 years 8 months and 3 years 5 months

Years	Months
1	
1 0	8
+ 3	5
1 4	1

$\therefore$ 4 years 1 months   **Ans.**

f. 5 years 6 months and 9 years 6 months

```
     Years  Months
       1
       5      6
   +   9      6
   ─────────────
      1 5     0
```
∴ 15 years   **Ans.**

2.   Subtract :

Ans. a. 2 hours 40 minutes from 4 hours 10 minutes

```
     hours    min
       3       70
       4       1 0
       2       4 0
   ───────────────
       1       3 0
```
∴ 1 hours 30 minutes   **Ans.**

b. 10 hours 15 minutes from 11 hours

```
     hours    min
      10       70
      1 1      0 0
      1 0      1 5
   ───────────────
       0       5 5
```
∴ 55 minutes   **Ans.**

c. 15 minutes 50 seconds from 25 minutes 10 seconds

```
     min      sec
      24       70
      2 5      1 0
   −  1 5      5 0
   ───────────────
       9       2 0
```
∴ 9 hours 20 seconds   **Ans.**

d. 25 minutes 10 seconds from 50 minutes 5 second

```
     min      sec
      49       65
      5 0       5
   − 2 5       1 0
   ───────────────
      2 4      5 5
```
∴ 25 minutes 55 seconds.   **Ans.**

e. 18 years 6 month from 24 years.

```
     Years  Months
      23     12
      2 4    0 0
      1 8    0 6
   ───────────────
       5     0 6
```
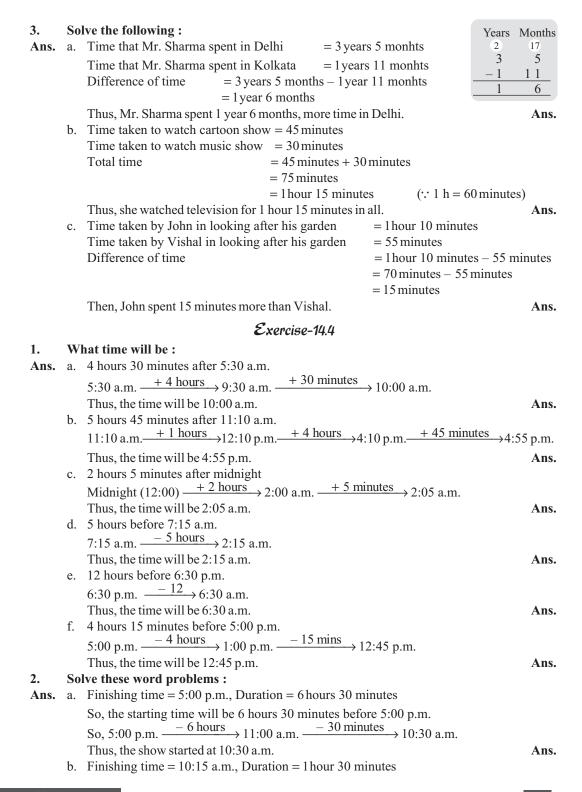∴ 5 years 6 months   **Ans.**

f. 5 years 8 months 9 years 6 month

```
     Years  Months
       8     18
       9      6
   −   5      8
   ───────────────
       3     1 0
```
∴ 3 years 10 months   **Ans.**

3. **Solve the following :**

Ans. a. Time that Mr. Sharma spent in Delhi = 3 years 5 monhts

	Years	Months
	2	17
	3	5
−	1	1 1
	1	6

Time that Mr. Sharma spent in Kolkata = 1 years 11 monhts

Difference of time = 3 years 5 months – 1 year 11 monhts

= 1 year 6 months

Thus, Mr. Sharma spent 1 year 6 months, more time in Delhi. **Ans.**

b. Time taken to watch cartoon show = 45 minutes

Time taken to watch music show = 30 minutes

Total time = 45 minutes + 30 minutes

= 75 minutes

= 1 hour 15 minutes (∵ 1 h = 60 minutes)

Thus, she watched television for 1 hour 15 minutes in all. **Ans.**

c. Time taken by John in looking after his garden = 1 hour 10 minutes

Time taken by Vishal in looking after his garden = 55 minutes

Difference of time = 1 hour 10 minutes – 55 minutes

= 70 minutes – 55 minutes

= 15 minutes

Then, John spent 15 minutes more than Vishal. **Ans.**

Exercise-14.4

1. **What time will be :**

Ans. a. 4 hours 30 minutes after 5:30 a.m.

5:30 a.m. $\xrightarrow{\text{+ 4 hours}}$ 9:30 a.m. $\xrightarrow{\text{+ 30 minutes}}$ 10:00 a.m.

Thus, the time will be 10:00 a.m. **Ans.**

b. 5 hours 45 minutes after 11:10 a.m.

11:10 a.m. $\xrightarrow{\text{+ 1 hours}}$ 12:10 p.m. $\xrightarrow{\text{+ 4 hours}}$ 4:10 p.m. $\xrightarrow{\text{+ 45 minutes}}$ 4:55 p.m.

Thus, the time will be 4:55 p.m. **Ans.**

c. 2 hours 5 minutes after midnight

Midnight (12:00) $\xrightarrow{\text{+ 2 hours}}$ 2:00 a.m. $\xrightarrow{\text{+ 5 minutes}}$ 2:05 a.m.

Thus, the time will be 2:05 a.m. **Ans.**

d. 5 hours before 7:15 a.m.

7:15 a.m. $\xrightarrow{\text{– 5 hours}}$ 2:15 a.m.

Thus, the time will be 2:15 a.m. **Ans.**

e. 12 hours before 6:30 p.m.

6:30 p.m. $\xrightarrow{\text{– 12}}$ 6:30 a.m.

Thus, the time will be 6:30 a.m. **Ans.**

f. 4 hours 15 minutes before 5:00 p.m.

5:00 p.m. $\xrightarrow{\text{– 4 hours}}$ 1:00 p.m. $\xrightarrow{\text{– 15 mins}}$ 12:45 p.m.

Thus, the time will be 12:45 p.m. **Ans.**

2. **Solve these word problems :**

Ans. a. Finishing time = 5:00 p.m., Duration = 6 hours 30 minutes

So, the starting time will be 6 hours 30 minutes before 5:00 p.m.

So, 5:00 p.m. $\xrightarrow{\text{– 6 hours}}$ 11:00 a.m. $\xrightarrow{\text{– 30 minutes}}$ 10:30 a.m.

Thus, the show started at 10:30 a.m. **Ans.**

b. Finishing time = 10:15 a.m., Duration = 1 hour 30 minutes

So, the starting time will be 1 hours 30 minutes before 10:15 a.m.

then 10:15 a.m. $\xrightarrow{\;-\;1\;\text{hour}\;}$ 9:15 a.m. $\xrightarrow{\;-\;30\;\text{minutes}\;}$ 8:45 a.m.

Thus, Independence day celebration started at 8:45 a.m. **Ans.**

c. Starting time = 6:55 a.m., Duration = 1 hour 5 minutes

So, the Finishing time will be 1 hour 5 minutes after 6:55 p.m.

then 6:55 p.m. $\xrightarrow{\;+\;1\;\text{hour}\;}$ 7:55 p.m. $\xrightarrow{\;+\;05\;\text{minutes}\;}$ 8:00 p.m.

Thus, she finished her homework at 8:00 p.m. **Ans.**

Exercise-14.5

1. **Fill in the missing entries in the table :**

Ans.

	Starting date	Duration	Finishing date
a.			
b.	12th March	20 days	**31 March**
c.	25th July	18 days	**11th August**
d.	**14th April**	39 days	May 22nd
e.	**25th June**	54 days	17th August
f.	**6th November**	45 days	20th December

2. **Solve the following :**

Ans. a. Finishing date = 1st March

Starting date = 1st January

Number of days in January = 31

Number of days in February = 28

So, total duration = 31 + 28

= 59

Thus, they stayed for 59 days. **Ans.**

b. Starting date = 4th July

Duration = fornight = 15 days

So, the finishing will be 15 days after 4th July

4th July $\xrightarrow{\;+\;15\;\text{day}\;}$ 19th July

Thus, the finishing date is 19th July.

c. Finishing date = 21st March

Duration = 3 weeks = 21 days

So, the starting date will be 21 days before 21th March.

21th March $\xrightarrow{\;-\;21\;\text{day}\;}$ 28 February.

Thus, startingdate was 28 February. **Ans.**

Exercise-14.6

1. **Convert the temperatures given in the Celsius scale to the Fahrenheit scale.**

Ans. a. 0°C

$= [(0 \times 9) \div 5 + 32]\,°F$

$= [0 \div 5 + 32]\,°F$

$= [0 + 32]\,°F$

$= 32\,°F$ **Ans.**

b. 25°C

$= [(25 \times 9) \div 5 + 32]\,°F$

$= [225 \div 5 + 32]\,°F$

$= [45 + 32]\,°F$

$= 77°F$ **Ans.**