4 Time

Remember that

60 seconds = 1 minute (min)
60 minutes = 1 hour
24 hours = 1 day

EXERCISE 4.1

1 How many seconds are there in

(a) 3 minutes (b) 6 minutes (c) 16 minutes (d) 5 minutes
(e) 9 minutes (f) 25 minutes (g) 10 minutes 15 seconds
(h) 18 minutes 50 seconds (i) 12 minutes 10 seconds
(j) 1 hour 30 minutes (k) 2 hours 15 minutes
(l) 2 hours 25 minutes 30 seconds?

2 How many minutes are there in

(a) 2 hours (b) 5 hours (c) 8 hours (d) 3 hours 15 min
(e) 7 hours 10 min (f) 8 hours 12 min (g) 13 hours 20 min (h) 12 hours 6 min
(i) 20 hours 20 min?

3 Add.

(a)

min	sec
8	47
3	32
+2	44

(b)

min	sec
9	32
12	39
+6	42

(c)

min	sec
6	15
7	52
+8	38

(d)

min	sec
9	46
15	53
+8	35

4 Subtract.

(a)

min	sec
7	23
−3	28

(b)

min	sec
5	36
−2	49

(c)

min	sec
9	22
−6	47

(d)

min	sec
9	27
−5	38

5 Multiply.

(a)

min	sec
5	28
	×4

(b)

min	sec
5	54
	×9

(c)

min	sec
42	15
	×6

(d)

min	sec
3	28
	×4

6 Divide.

(a) 6)9 30 (b) 8)10 24 (c) 5)32 5 (d) 4)9 12

95 sec.

change to smallest unit.
9 min 30 sec.
in sec. is
(9×60)+30 = 570
÷6
95 sec.
∴ 1 min 35 sec

7 Add.

(a)

hr	min	sec
15	22	40
8	54	36
+6	12	21

(b)

hr	min	sec
17	37	40
8	45	52
+8	45	53

(c)

hr	min	sec
22	21	22
7	14	44
+5	29	16

8 Subtract.

(a)

hr	min	sec
19	22	28
−8	38	38

(b)

hr	min	sec
5	15	15
−2	42	55

(c)

hr	min	sec
17	35	10
−9	42	48

9 Multiply.

(a)

hr	min	sec
2	51	13
		×9

(b)

hr	min	sec
11	49	34
		× 12

(c)

hr	min	sec
12	40	21
		×8

10 Divide.

(a)

hr	min	sec
8)15	23	4

(b)

hr	min	sec
4)14	24	48

(c)

hr	min	sec
15)32	2	30

The twenty-four hour clock

We can tell the time on a normal clock or watch. We can also write any particular time of the day or night. For example, a quarter past four in the morning is written 4.15 a.m. and a quarter past four in the afternoon 4.15 p.m. Again, five minutes past seven in the morning is written 7.05 a.m. and five minutes past seven in the evening 7.05 p.m. A last example, ten minutes to eight in the morning is 7.50 a.m. and ten minutes to eight at night is 7.50 p.m.

EXERCISE 4.2

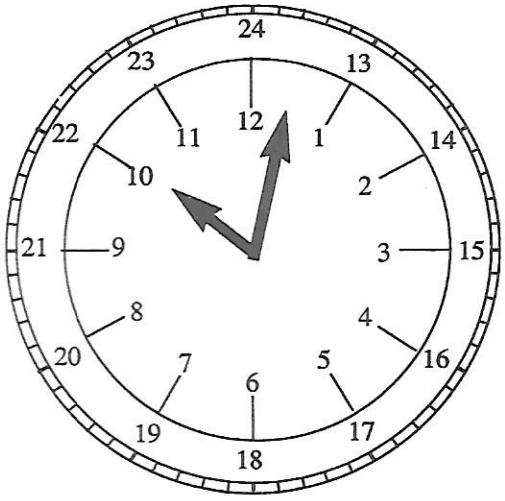
1 Write the following.

(a) a quarter past one in the afternoon
(b) half past six in the morning
(c) a quarter past midnight
(d) a quarter past midday
(e) five minutes past six in the morning
(f) five minutes to six in the morning
(g) twenty-five minutes past midday
(h) twenty-five minutes before midday

2 How many hours and minutes from:

a) 1.15 p.m. to 5.45 p.m.
(b) 1.45 p.m. to 5.15 p.m.
(c) 6.10 a.m. to 7.40 a.m.
(d) 8.30 a.m. to 1.30 p.m.
(e) 10.45 a.m. to 3.15 p.m.
(f) 11.45 p.m. to 12.15 a.m.
(g) 10.15 p.m. to 10.15 a.m.
(h) 6.36 a.m. to 1.12 p.m.
(i) 12.15 a.m. to 3.35 a.m.
(j) 1.06 a.m. to 2.18 p.m. ?

Another way of writing time or telling time is using the twenty-four hour clock. This system is generally used in military exercises and in airline, train and shipping schedules.



This clock face represents a twenty-four hour clock.

We tell the time from midnight to the following midnight by using the fact that 24 hours make one day and each new day begins after midnight. We also use four digits to write the time, the first two being the hours digits and the last two the minutes digits.

How do we write the time then?

1 a.m. is written 0100 hours
2 a.m. is written 0200 hours
11 a.m. is written 1100 hours
and so on.

1 p.m. is written 1300 hours
5 p.m. is written 1700 hours
and so on.

How do we write 12 o'clock midday and 12 o'clock midnight?
How do we write times like 1.05 p.m., 11.15 a.m., 12.35 a.m. using the twenty-four hour clock?
We know that the last two digits are the minutes digits. Therefore

1.05 p.m. is 1305 hours
11.15 a.m. is 1115 hours
12.35 p.m. is 1235 hours
However, 12.35 a.m. is 0035 hours.

EXERCISE 4.3

1 Write the following using the twenty-four hour clock.

(a) 5.00 a.m.
(b) 5.00 p.m.
(c) 2.24 a.m.
(d) 2.35 p.m.
(e) 12.20 a.m.
(f) 12.20 p.m.
(g) 3.05 a.m.
(h) 4.01 p.m.

2 How many hours and minutes from

(a) 0120 hrs to 0830 hrs (b) 1340 hrs to 1910 hrs (c) 1120 hrs to 0620 hrs
(d) 1515 hrs to 0015 hrs (e) 0518 hrs to 1010 hrs (f) 0720 hrs to 1315 hrs
(g) 1510 hrs to 1510 hrs (h) 1655 hrs to 0615 hrs?

Thirty days have September
April, June and November.
All the rest have thirty-one
Except for February alone
Which has but twenty-eight days clear
And twenty-nine in each leap year.

The Earth takes $365\frac{1}{4}$ days to complete each orbit around the sun. This is one year.

For convenience, we say every year has 365 days, and every fourth year we add one day (to make 366 days) and call it a leap year. So 1992 was a leap year, and the next one is 1996. The extra day is added into February. Notice that the number of every leap year is exactly divisible by 4.

EXERCISE 4.4

1 If 1996 is a leap year, write down the next four leap years after that.

2 How many days in these months?

(a) January (b) March (c) April (d) June
(e) July (f) August (g) December

3 How many days, inclusive of these starting and finishing dates?

(a) 1 January to 30 June 1993 (b) 15 February to 31 March 1996
(c) 3 May to 30 September 1992 (d) 1 February to 31 December 1993
(e) 4 September to 25 December 1994 (f) 15 June to 31 October 1992
(g) 6 August to 30 November 1993

REVIEW EXERCISE 4

1 Add together 5 hours 10 minutes, 13 hours 45 minutes and 2 hours 25 minutes.

(A) 20 hrs 20 min (B) 21 hrs 20 min (C) 21 hrs 10 min (D) 21 hrs 2 min — (A) (B) (C) (D)

2 A man takes 3 hours 22 minutes to walk a certain distance.
His son takes 4 hours 5 minutes. How much longer does the son take?

(A) 7 hrs 27 min (B) 1 hr 43 min (C) 0 hrs 43 min (D) 1 hr 17 min — (A) (B) (C) (D)

3 Divide 14 hours 15 minutes by 10.

(A) 1 hr 4 min (B) 1 hr 25 min (C) 1 hr 20 min (D) 1 hr 10 min — (A) (B) (C) (D)

4 Write down half past twelve in the afternoon, using a.m. or p.m.

(A) 12.00 a.m. (B) 12.15 p.m. (C) 12.30 a.m. (D) 12.30 p.m. — (A) (B) (C) (D)

5 How many hours and minutes from 11.40 a.m. to 7.10 p.m?

(A) 4 hrs 30 min (B) 18 hrs 50 min (C) 6 hrs 30 min (D) 7 hrs 30 min — (A) (B) (C) (D)

6 Using the twenty-four hour clock, write down 12.03 a.m.

(A) 1203 hrs (B) 1230 hrs (C) 0003 hrs (D) 1303 hrs — (A) (B) (C) (D)

7 How much time elapses between 0410 hours and 1505 hours?

(A) 11 hrs 5 mins (B) 19 hrs 15 mins (C) 10 hrs 55 mins (D) 19 hrs 10 min — (A) (B) (C) (D)

8 A clock loses half a minute every hour. If it is put right at 6.00 a.m. on Sunday, what time will it show the following Sunday when the correct time is 7.00 a.m?

(A) 6.35 a.m. (B) 7.35 a.m. (C) 6.45 a.m. (D) 6.00 a.m. — (A) (B) (C) (D)

9 A bus travels at 60 km/h. How many seconds does it take to travel 1 km?

(A) 1 second (B) 60 seconds (C) 10 seconds (D) 100 seconds — (A) (B) (C) (D)

10 How many days from 1 February 1992 to 31 August 1992 inclusive?

(A) 209 (B) 210 (C) 212 (D) 213 — (A) (B) (C) (D)