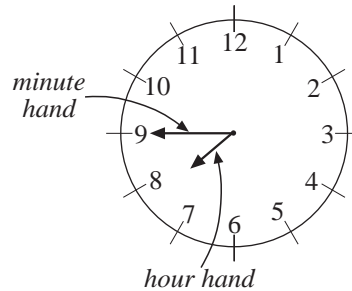


14 Time and Timetables

14.1 Telling the Time

In this section we look at different ways of writing times; for example, '7:45' is the same time as 'quarter to eight'.

On a clockface, this can be represented as shown here:



Also remember that

one hour = 60 minutes

so that

half an hour = 30 minutes

quarter of an hour = 15 minutes

three quarters of an hour = 45 minutes



Example 1

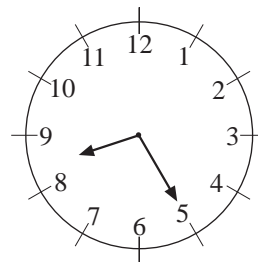
Write each time using digits and show the position of the hands on a clockface:

- (a) twenty five past eight,
- (b) quarter to ten.

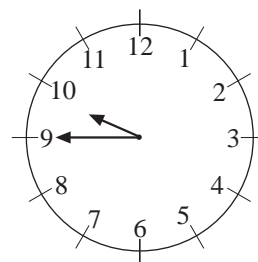


Solution

- (a) Twenty five past eight using digits is
8:25



- (a) Quarter to ten can be thought of as:
15 minutes to 10 o'clock
or
45 minutes past 9 o'clock
so, using digits, quarter to ten is
9:45

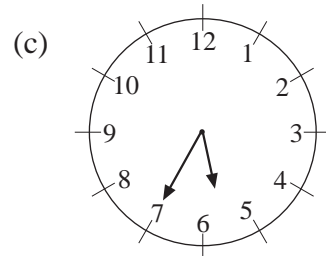
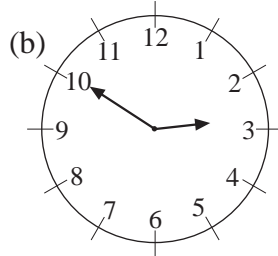
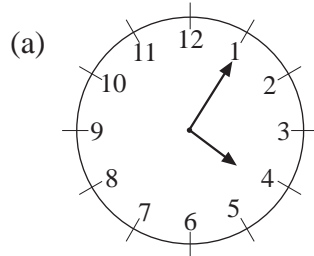




Example 2

Write each of the times shown on these clocks:

- (i) in words, and (ii) using digits.



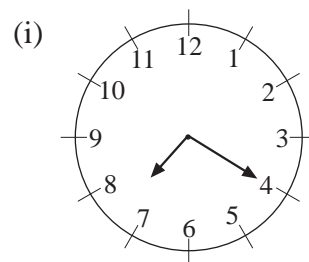
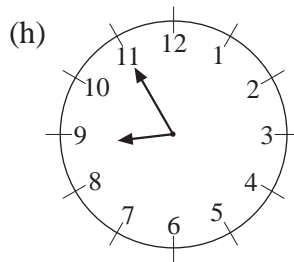
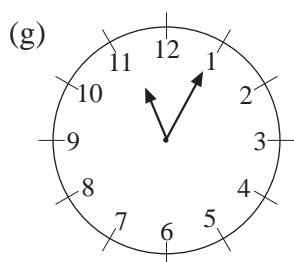
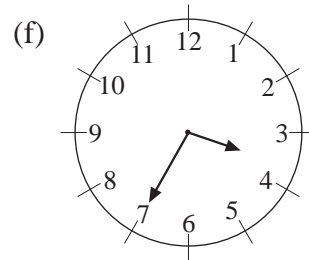
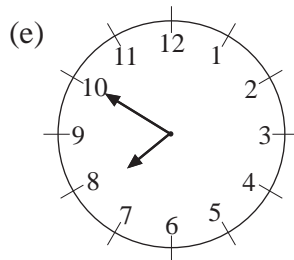
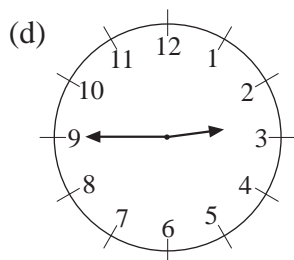
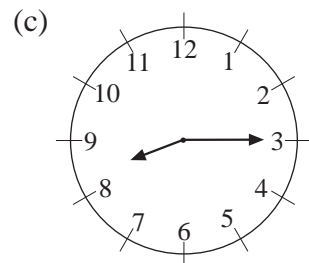
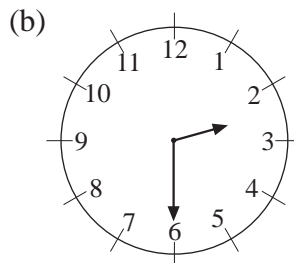
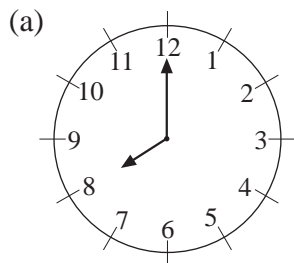
Solution

- (a) (i) Five past four (ii) 4:05
 (b) (i) Ten to three (ii) 2:50
 (c) (i) Twenty five to six (ii) 5:35

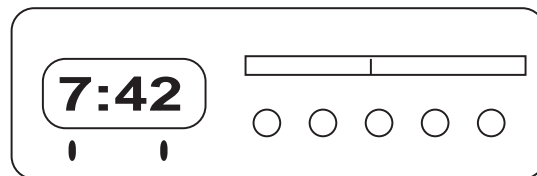


Exercises

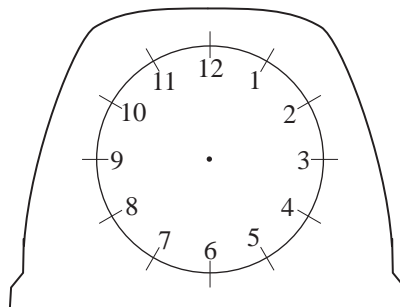
1. Write the times shown on each of these clocks in words and digits:



2. Draw these times on clock faces:
- (a) ten past five (b) ten to nine (c) quarter to seven
 (d) quarter past twelve (e) half past ten (f) twenty to nine
 (g) ten to two (h) twenty five to six (i) twenty past four
3. Draw these times on clock faces:
- (a) 4:00 (b) 5:30 (c) 7:15
 (d) 8:20 (e) 2:45 (f) 3:50
 (g) 1:55 (h) 6:05 (i) 11:35
4. Write these times in words:
- (a) 9:30 (b) 4:00 (c) 4:25
 (d) 8:45 (e) 7:35 (f) 9:05
5. Write these times using digits:
- (a) eight o'clock (b) quarter to seven
 (c) ten past five (d) half past six
 (e) ten to three (f) five to four
 (g) twenty five to nine (h) twenty to three
6. This picture shows the time on Vicki's radio clock:



- (a) Draw a picture to show where the hands would be on this clock:

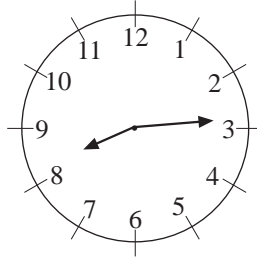
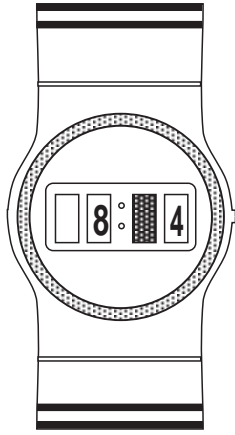


- (b) Write the time in words.

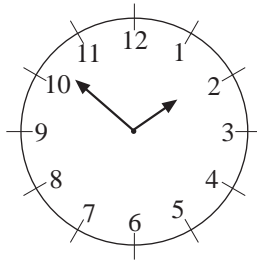
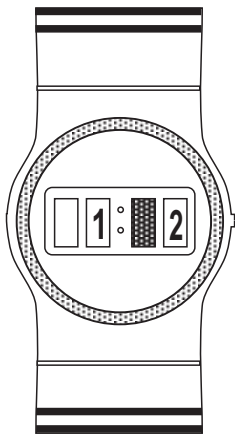
7. Daniel's digital watch has gone wrong and shows a grey blob instead of the first digit of the minutes.

Use the ordinary clock to tell Daniel what the missing digit is for each of the times shown below:

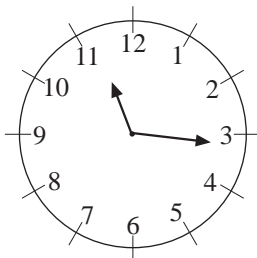
(a)



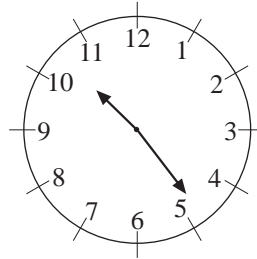
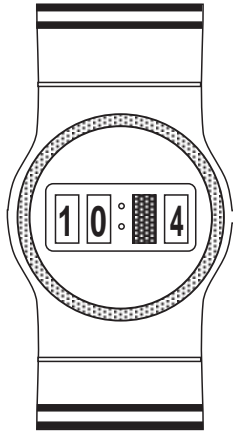
(b)



(c)



(d)



8. Halim looks at his watch and sees that the time is 7:46.
- Write this time in words.
 - What will be the time 10 minutes later?
9. A bus leaves school at five minutes past four and Tony gets off 20 minutes later. What is the time when Tony gets off the bus? Write your answers in words and in figures.

14.2 12- and 24-hour Clocks

The 24-hour clock system can be used to tell if times are in the morning or the afternoon. Alternatively, times can be given as 'a.m.' or 'p.m.'



Example 1

Write these times in 24-hour clock time:

- (a) 3.06 a.m. (b) 8:14 p.m.



Solution

- (a) As this is an 'a.m.' time it remains the same but with a zero in front of the 3,
0306
- (b) As this is a 'p.m.' time, add 12 to the hours to give
2014



Example 2

Write these times using 'a.m.' or 'p.m':

- (a) 1428 (b) 0742



Solution

- (a) As the hours figure, 14, is greater than 12, subtract 12 and write as a 'p.m.' time:

2:28 p.m.

- (b) As the hours figure, 07, is less than 12, simply remove the zero and write as an 'a.m.' time:

7:42 a.m.



Exercises

1. Convert these times to 24-hour clock times:

- | | | |
|----------------|----------------|----------------|
| (a) 9:42 a.m. | (b) 11:28 p.m. | (c) 11:14 a.m. |
| (d) 7:13 p.m. | (e) 9:21 p.m. | (f) 4:18 p.m. |
| (g) 10:05 a.m. | (h) 12:15 a.m. | (i) 12:15 p.m. |

2. Write these times in 24-hour clock time:

- | | |
|---|-------------------------------------|
| (a) quarter to eight in the morning, | (b) ten minutes to midnight, |
| (c) ten past nine in the evening, | (d) five to seven in the morning, |
| (e) quarter past five in the afternoon, | (f) half past two in the afternoon. |

3. Write these 24-hour clock times in 12-hour clock times, using 'a.m.' or 'p.m.':

- | | | |
|----------|----------|----------|
| (a) 1204 | (b) 0822 | (c) 1842 |
| (d) 1330 | (e) 1440 | (f) 2305 |
| (g) 1735 | (h) 1605 | (i) 0342 |

4. Write these 24-hour clock times in words, as in question 2:

- | | | |
|----------|----------|----------|
| (a) 1430 | (b) 1555 | (c) 0745 |
|----------|----------|----------|

5. Insert 'a.m.' or 'p.m.' into each sentence so that it makes sense:

- Joshua woke up at 6:45.
- Miles came home from school at 3:55.
- Andy started his night shift at 10:15.
- Grace ate her lunch at 11:45.
- James went to bed at 8:55.
- Heidi cooked a meal at 5:15.

6. Here are the timings for a school day.
Convert them to 24-hour clock times.

<i>Registration</i>	8:55 a.m.
<i>Lesson 1</i>	9:05 a.m.
<i>Lesson 2</i>	10:05 a.m.
<i>Lesson 3</i>	11:05 a.m.
<i>Lunch</i>	12:05 p.m.
<i>Lesson 4</i>	1:05 p.m.
<i>Lesson 5</i>	2:05 p.m.
<i>Day ends</i>	3:05 p.m.

7. A train leaves at 0020. Write this time in words.
8. Shamil leaves home at 0900 and returns 7 hours later. Write the time that Shamil gets home in 24-hour clock time, and in 12-hour clock time using 'a.m.' or 'p.m.'.

14.3 Units of Time

In this section we explore the different units of time.

1 minute	=	60 seconds
1 hour	=	60 minutes
1 day	=	24 hours
1 week	=	7 days
1 year	=	365 days (366 days in a leap year)
January	has	31 days
February	has	28 days (29 days in a leap year)
March	has	31 days
April	has	30 days
May	has	31 days
June	has	30 days
July	has	31 days
August	has	31 days
September	has	30 days
October	has	31 days
November	has	30 days
December	has	31 days

**Example 1**

How many hours are there in May?

**Solution**

$$\begin{aligned} \text{Number of hours in May} &= 31 \times 24 \\ &= 744 \text{ hours} \end{aligned}$$

**Example 2**

25 February is a Friday. What will be the date on the next Friday:

- (a) if it is *not* a leap year,
 (b) if it *is* a leap year?

**Solution**

- (a) You could write out the next 7 days like this:

Friday	25	
Saturday	26	<i>or</i>
Sunday	27	$25 + 7 = 32$
Monday	28	$32 - 28 = 4$
Tuesday	1	So the next Friday will be 4 March.
Wednesday	2	
Thursday	3	
Friday	4	

- (b) Using the addition method:

$$25 + 7 = 32$$

$$32 - 29 = 3$$

So, in a leap year, the next Friday will be 3 March.



Exercises

1. How many hours are there in a week?
2. How many hours are there in:
 - (a) September,
 - (b) February (2 answers needed),
 - (c) one year (2 answers needed)?
3. How many minutes are there in:
 - (a) one day,
 - (b) one week?
4. How many seconds are there in:
 - (a) one hour,
 - (b) one day?
5. If 25 March is a Friday, what will be the date on the following Friday?
6. Sasha goes on holiday on Monday 20 June. She returns 14 days later. On what date does she return from her holiday?
7. If 3 October is a Monday:
 - (a) what day of the week will 1 November be,
 - (b) what will be the date of the first Monday in November?
8. Hannah goes to the bank every Tuesday. The last time she went was on Tuesday 20 October.
 - (a) What will be the dates of her next 2 visits to the bank?
 - (b) On the second Tuesday in November she is ill and goes to the bank on Wednesday instead. What is the date of that Wednesday?
9. This year Mike's birthday is on a Saturday in June. What day will his birthday be on next year if:
 - (a) next year is a leap year,
 - (b) next year is *not* a leap year?
10. In 1998, Christmas Day was on a Friday. Name the day of the week for Christmas Day in:
 - (a) 1997,
 - (b) 2000.

11. (a) For how many days have you been alive?
 (b) How many *hours* is this?
 (c) How many *minutes* is this?
 (d) How many *seconds* is this?
 (e) David has been alive for approximately 1 892 160 000 seconds.
 In which year do you think he was born?

14.4 Timetables

In this section we consider how to extract information from timetables.



Example 1

London		Bristol Parkway - Cardiff - Swansea Cheltenham - Bath - Bristol									
Sundays from 26 July											
London Paddington	d	1903	1915	1930	2000	2030	2100	2130	2200	2215	
Reading	d	1935	1945	2003	2030	2100	2130	2200	2230	2245	
Didcot Parkway	d	1949	–	2017	2044	2114	2144	2214	2244	2259	
Swindon	d	2009	2015	2036	2103	2133	2203	2233	2303	2319	
Kemble	a	2022	–	–	–	–	–	2250	–	–	
Stroud	a	2037	–	–	–	–	–	2305	–	–	
Stonehouse	a	2042	–	–	–	–	–	2310	–	–	
Gloucester	a	2053	–	–	–	–	–	2323	–	–	
Cheltenham Spa	a	2108	–	–	–	–	–	2335	–	–	
Chippenham	d	–	–	2049	–	2145	–	2245	–	2332	
Bath Spa	a	–	2035	2105	–	2157	–	2257	–	2343	
Bristol Parkway	d	–	–	–	2129	–	2229	–	2329	–	
Bristol Temple Meads	a	–	2051	2117	–	2211	–	2311	–	2357	
Weston-super-Mare	a	–	2110	–	–	–	–	–	–	0018	
Newport	a	–	–	–	2149	–	2249	–	2353	–	
Hereford	a	–	–	–	–	–	–	–	–	–	
Cardiff Central	a	–	–	–	2205	–	2305	–	0014	–	
Bridgend	a	–	–	–	2225	–	2325	–	0034	–	
Port Talbot Parkway	a	–	–	–	2237	–	2337	–	0046	–	
Neath	a	–	–	–	2244	–	2344	–	0053	–	
Swansea	a	–	–	–	2257	–	2357	–	0106	–	

a: arrives d: departs

Use the train timetable above to answer these questions:

- (a) If you catch the 1915 from London Paddington, at what time would you arrive in Weston-super-Mare?
 (b) Ted arrives in Chippenham at 2245. At what time did he leave London Paddington?
 (c) Tina catches the 2205 at Cardiff Central. At what time does she arrive in Neath?



Solution

- (a) The 1915 from London Paddington arrives at Weston-super-Mare at 2110.

Sundays from 26 July			
London Paddington	d	1903	1915
Reading	d	1935	1945
Didcot Parkway	d	1949	–
Swindon	d	2009	2015
Kemble	a	2022	–
Stroud	a	2037	–
Stonehouse	a	2042	–
Gloucester	a	2053	–
Cheltenham Spa	a	2108	–
Chippenham	d	–	–
Bath Spa	a	–	2035
Bristol Parkway	d	–	–
Bristol Temple Meads	a	–	2051
Weston-super-Mare	a	–	2110
Newport	a	–	–

- (b) To arrive in Chippenham at 2245 Ted must have left London Paddington at 2130.

Sundays from 26 July								
London Paddington	d	1903	1915	1930	2000	2030	2100	2130
Reading	d	1935	1945	2003	2030	2100	2130	2200
Didcot Parkway	d	1949	–	2017	2044	2114	2144	2214
Swindon	d	2009	2015	2036	2103	2133	2203	2233
Kemble	a	2022	–	–	–	–	–	2250
Stroud	a	2037	–	–	–	–	–	2305
Stonehouse	a	2042	–	–	–	–	–	2310
Gloucester	a	2053	–	–	–	–	–	2323
Cheltenham Spa	a	2108	–	–	–	–	–	2335
Chippenham	d	–	–	2049	–	2145	–	2245
Bath Spa	a	–	2035	2105	–	2157	–	2257
Bristol Parkway	d	–	–	–	2129	–	2229	–

- (c) The 2205 from Cardiff Central arrives in Neath at 2244.

Sundays from 26 July					
London Paddington	d	1903	1915	1930	2000
Reading	d	1935	1945	2003	2030
Didcot Parkway	d	1949	–	2017	2044
Swindon	d	2009	2015	2036	2103
Kemble	a	2022	–	–	–
Stroud	a	2037	–	–	–
Stonehouse	a	2042	–	–	–
Gloucester	a	2053	–	–	–
Cheltenham Spa	a	2108	–	–	–
Chippenham	d	–	–	2049	–
Bath Spa	a	–	2035	2105	–
Bristol Parkway	d	–	–	–	2129
Bristol Temple Meads	a	–	2051	2117	–
Weston-super-Mare	a	–	2110	–	–
Newport	a	–	–	–	2149
Hereford	a	–	–	–	–
Cardiff Central	a	–	–	–	2205
Bridgend	a	–	–	–	2225
Port Talbot Parkway	a	–	–	–	2237
Neath	a	–	–	–	2244
Swansea	a	–	–	–	2257



Exercises

1. The table below gives the timetable for a ski train that runs from London Waterloo International:

London Waterloo International	depart	0857
Ashford International	depart	1006
Moùtiers	arrive	1657
Aime la Plagne	arrive	1723
Bourg-St-Maurice	arrive	1742

- (a) At what time does the train leave Ashford International?
- (b) At what time does the train arrive at Bourg-St-Maurice?
- (c) Where does the train arrive at 1657?
- (d) John arrives at London Waterloo International at five past nine. Can he catch the train?
2. The timetable below gives the times of early morning trains from Norwich to London Liverpool Street:

NORWICH	Dep	0500	0520	0530	0600	0630	0655	0710	0755	0805	0835	0905
Diss	Dep	0518		0547	0618	0647	0713	0728	.....	0823	0852	0922
Stowmarket	Dep	0531	.....	0558	0630	0658	0725	0740	.....	0835	0903	0933
IPSWICH	Arr	0541	0553	0610	0641	0709	0736	0751	0828	0846	0913	0944
	Dep	0543	0553	0612	0642	0710	0737	0752	0830	0847	0915	0945
Manningtree	Dep	0553	.....	0620	0652	0721	.....	0802	.....	.....	0925	.....
COLCHESTER	Dep	0604	0610	0632	0704	0732	.....	0812	.....	0906	0935	1003
Chelmsford	Dep	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1020
LIVERPOOL STREET	Arr	0653	070	0721	0756	0826	0848	0903	0933	0955	1025	1054

- (a) At what time does the 0630 from Norwich arrive at Liverpool Street?
- (b) Jason arrives by train at Liverpool street at 0903. At what time did he catch the train at Diss?
- (c) If you catch the 0655 from Norwich, at what time do you arrive at Ipswich?
- (d) Alex arrives at Ipswich station at 0900 and catches the next train to Liverpool Street. At what time does he arrive at Liverpool Street?
- (e) Scott catches the 0612 at Ipswich. At what time does he arrive at Manningtree?

3. The timetable below gives information about trains from London Waterloo to Paris:

Waterloo International	0508	0619	0723	0753	0823	0853	0953	1023	1053	1157
Ashford International	0616	0719	0823	.....	0923	.....	1053	.....	.....	.....
Calais-Fréthun	.....	0856	.....	.....	.....	.....	.....	.....	.....	1429
Lille Europe	.....	.....	.....	.....	.....	1150	.....	.....	.....	.....
Paris Nord	0923	1023	1123	1147	1223	1253	1353	1417	1453	1556

- (a) Scott arrives in Paris at 1123. At what time did he leave Waterloo?
- (b) Chelsea arrives in Paris at 1223. At what time did she leave Ashford?
- (c) Jai wants to go from Waterloo to Lille Europe. Which train should he catch?
- (d) Halim wants to arrive in Calais-Fréthun before 9:00 a.m. Which train should he catch?
4. Mike is in Brussels and wants to return to Ashford. He looks at this train timetable:

Brussels to Waterloo

Brussels Midi	0856	1102	1302	1456	1702	1756	1856	2102
Lille Europe	0937	1142	1342	1536	1742	1836	1936	2142
Ashford International	0938	1141	1341	1536	1741	1837	1938	.....
Waterloo International	1047	1247	1447	1639	1843	1939	2039	2239

- (a) At what time should he catch a train if he wants to arrive in Ashford at 1741?
- (b) Which train should he *avoid* if he wants to go to Ashford?
- (c) If he catches the 1456, at what time does he arrive in Ashford?
- (d) He catches the 1456, but falls asleep and does not get off at Ashford. At what time does he get to Waterloo?
5. Use the following timetable to answer these questions:
- (a) Rachel catches the 1600 at Reading. At what time does she arrive in Bristol?
- (b) Emma catches the 1330 at London Paddington. At what time does she arrive in Bristol?
- (c) Hannah arrives in Newport at 1545. At what time did she leave Reading?
- (d) Ben arrives at Neath at 1451. At what time did he leave Swindon?

London		Bristol Parkway - Cardiff - Swansea Cheltenham - Bath - Bristol								
Sundays from 26 July										
London Paddington	d	1152	1200	1230	1300	1330	1400	1430	1500	1530
Reading	d	1222	1230	1301	1330	1403	1430	1500	1530	1600
Didcot Parkway	d	–	1244	1314	–	1417	–	1514	1544	1614
Swindon	d	1252	1303	1333	1358	1437	1458	1533	1603	1633
Kemble	a	–	1320	–	–	–	–	1559	–	–
Stroud	a	–	1335	–	–	–	–	1614	–	–
Stonehouse	a	–	1340	–	–	–	–	1619	–	–
Gloucester	a	–	1353	–	–	–	–	1632	–	–
Cheltenham Spa	a	–	1409	–	–	–	–	1644	–	–
Chippenham	d	–	–	1346	–	1449	–	1545	–	1645
Bath Spa	a	–	–	1358	–	1501	–	1557	–	1701
Bristol Parkway	d	–	1329	–	1424	–	1524	–	1629	–
Bristol Temple Meads	a	1324	–	1412	–	1515	–	1611	–	1713
Weston-super-Mare	a	–	–	1432	–	1543	–	1651	–	1751
Newport	a	–	1349	–	1445	–	1545	–	1649	–
Hereford	a	–	–	–	1605	–	1720	–	1820	–
Cardiff Central	a	–	1412	–	1508	–	1608	–	1705	–
Bridgend	a	–	1432	–	1528	–	1628	–	1725	–
Port Talbot Parkway	a	–	1444	–	1540	–	1640	–	1737	–
Neath	a	–	1451	–	1547	–	1647	–	1744	–
Swansea	a	–	1504	–	1559	–	1659	–	1757	–

6.

Penzance - Plymouth - Torbay - Exeter - Taunton - Reading		London								
Sundays										
Penzance	d	–	–	–	–	–	0832	–	0926	0926
St Erth	d	–	–	–	–	–	–	–	0937	0937
Camborne	d	–	–	–	–	–	–	–	0948	0948
Redruth	d	–	–	–	–	–	0855	–	0955	0955
Truro	d	–	–	–	–	–	0907	–	1007	1007
St Austell	d	–	–	–	–	–	0924	–	1024	1024
Par	d	–	–	–	–	–	0932	–	1032	1032
Bodmin Parkway	d	–	–	–	–	–	0943	–	1043	1043
Liskeard	d	–	–	–	–	–	0955	–	1055	1055
Plymouth	d	–	–	0830	0844	0844	1020	1042	1123	1123
Totnes	d	–	–	0857	0910	0910	1050	1108	1150	1150
Paignton	d	–	–	–	0940	0940	1015	1059	1140	1140
Torquay	d	–	–	–	0946	0946	1021	1105	1145	1145
Newton Abbot	d	–	–	0910	0958	0958	1103	1121	1203	1203
Teignmouth	d	–	–	0916	1004	1004	1041	–	–	–
Dawlish	d	–	–	0921	1009	1009	1046	–	–	–
Exeter St Davids	d	0800	0815	0939	1022	1022	1124	1140	1224	1224
Tiverton Parkway	d	0814	0829	0953	0958	0958	1043	–	1238	1238
Taunton	d	0828	0843	1006	1045	1045	1148	1230	1252	1252
Bristol Temple Meads	a	0902	–	1040	–	–	–	1312	–	1325
Castle Cary	d	–	–	–	–	–	–	–	–	–
Westbury	d	–	0929	–	1132	–	–	–	1338	–
Pewsey	d	–	0945	–	–	–	–	–	–	–
Newbury	a	–	1004	–	–	–	–	–	–	–
Reading	a	1000	1034	1135	1226	1227	1316	1424	1432	1430
Gatwick Airport	a	1131	1231	1331	1431	1431	1511	–	1631	1631
Heathrow Terminal 1	a	1100	1200	1300	1330	1330	1430	–	1600	1530
London Paddington	a	1043	1115	1213	1305	1305	1359	1500	1514	1514

Use the timetable to answer these questions:

- David catches the 0939 at Exeter St Davids. At what time does he arrive in London?
- Stewart arrives in London at 1514. At what time did he leave St Erth?
- Helen wants to travel from Camborne to Plymouth. What is the earliest time she can get there by train?
- Misha arrives in Reading at 1432. At what time did she leave Truro?

7. Use the following bus timetable to answer these questions:

- What bus should you catch from Glasgow to be at Clydebank by 1:00 p.m?
- You arrive at the bus stop in Tarbet at 1300. At what time could you arrive in Connel?
- If you leave Glasgow at 1000, at what time will you arrive in Oban?
- If you catch the 1233 bus from Anniesland, where will you get off the bus in Dalmally?

GLASGOW	Buchanan Bus Stn	0815	1000	–	1215	1800
Hillhead	Gt Western Rd at Kersland St	0825	1010	–	1225	1810
Gartnavel	Gt Western Rd Bus Stop	0829	1015	–	1229	1814
Anniesland	Cross	0833	1019	–	1233	1818
Drumchapel	Drumry Roundabout	0841	1026	–	1241	1826
Clydebank	Gt Western Rd at Kilbowie Rd	0844	1029	–	1244	1829
Dumbarton	Barloan Toll	0855	1043	–	1255	1840
Balloch	Layby near Roundabout	0900	1048	–	1300	1845
Luss	Bypass	0911	1100	–	1311	1856
Tarbet	Hotel	0921	1111	–	1321	1906
Arrochar	Braeside Stores	0925	–	–	1325	1910
Cairndow	War Memorial	0944	–	–	1344	1928
INVERARAY <i>arr</i>	Front Street	1000	–	–	1405	1945
INVERARAY <i>dep</i>	Front Street	1010	–	–	1415	1955
TYNDRUM <i>arr</i>	Little Chef	–	1200	–	–	–
TYNDRUM <i>dep</i>	Little Chef	–	–	1215	–	–
Dalmally	opp Glen Orchy Hotel	1035	–	–	1440	2020
Dalmally	opp Police Station	–	–	1233	–	–
Taynuilt	Hotel	1054	–	1252	1459	2039
Connel	Bypass at Bridge	1104	–	1304	1509	2049
OBAN	Railway Station	1115	–	1315	1520	2100

8. This timetable gives the times of departures of the ferry between Penzance and St Mary's on the Isles of Scilly, for 1998.

Mondays to Fridays, daily	
6 April to 2 October	Depart Penzance 0915 Depart St Mary's 1630
Saturdays only	
4 April to 2 May 11 July	Depart Penzance 0915 Depart St Mary's 1630
9 May & 16 May 6 June to 4 July 5 Sept to 3 October	Depart Penzance 1100 Depart St Mary's 1500
23 May & 30 May 18 July to 29 August	Depart Penzance 0630 and 1345 Depart St Mary's 0945 and 1700
Sundays only	
30 August	Depart Penzance 0915 Depart St Mary's 1630
Monday, Wednesday, Friday, Saturday	
5 October to 31 October	Depart Penzance 0915 Depart St Mary's 1630

- (a) What was the date of the only Sunday in 1998 on which you could catch the ferry?
- (b) At what time did the ferry leave Penzance on Saturday 6 June?
- (c) At what time did the ferry leave St Mary's on Wednesday 14 October?
- (d) Was there a ferry on Thursday 15 October?
- (e) On how many days were there *two* return journeys instead of the usual one?
9. The table gives the flight numbers and times of flights to and from the Isles of Scilly from Newquay, Plymouth and Southampton.

To ISLES OF SCILLY			From ISLES OF SCILLY		
Newquay (Flight time 30 mins)					
5Y201	0930	TWTh	5Y200	0830	TWTh
5Y203	1000	M FS	5Y202	0900	M FS
5Y205	1445	M W FS	5Y204	1330	M W FS
5Y207	1745	T Th	5Y206	1630	T Th
Plymouth (Flight time 45 mins)					
5Y301	1335	M W F	5Y300	1220	M W F
Southampton (Flight time 90 mins)					
5Y501	1000	M F	5Y500	0800	M F
M - Mon, T - Tues, W - Wed, Th - Thurs, F - Fri, S - Sat, Su - Sun					

The left hand side of the table gives flights *to* the Isles of Scilly and the right hand side gives flights *from* the Isles of Scilly.

- On which days can you fly from Southampton to the Isles of Scilly?
- On which day are there no flights from any of these airports to the Isles of Scilly?
- If you catch the 1000 from Newquay, at what time do you arrive in the Isles of Scilly?
- Khan arrives in the Isles of Scilly at 1130. Where did he fly from?
- What is the latest time that you could land in the Isles of Scilly?

10. The following timetable gives details of flights from the Isle of Man to Heathrow:

Isle of Man to London Heathrow

Flight Number	Operation Dates	Days	Routes	Depart - Arrive	
JE301	30SEP - 16OCT98	123456-	IOM - LHR	0700 - 0815	
JE301	19OCT - 24OCT98	123456-	IOM - LHR	0700 - 0815	
JE301	17OCT - 17OCT98	-----6-	IOM - LHR	0700 - 0815	
JE305	30SEP - 23OCT98	12345 --	IOM - LHR	1440 - 1540	
JE307	30SEP - 23OCT98	12345 -7	IOM - LHR	1755 - 1900	
JE309	04OCT - 18OCT98	-----7	IOM - LHR	0740 - 0900	
JE311	03OCT - 10OCT98	-----6-	IOM - LHR	1755 - 1855	
JE311	24OCT - 24OCT98	-----6-	IOM - LHR	1755 - 1855	
JE311	17OCT - 17OCT98	-----6-	IOM - LHR	1755 - 1855	
JE307	25OCT - 25OCT98	-----7	IOM - LHR	1755 - 1900	
JE313	25OCT - 25OCT98	-----7	IOM - LHR	1040 - 1200	

Days
 1 = Monday
 2 = Tuesday
 3 = Wednesday
 4 = Thursday
 5 = Friday
 6 = Saturday
 7 = Sunday

- What is the flight number of the plane that arrives at Heathrow at 0900, and on which day?
- On which day does the 1755 flight have the shortest journey time?
- How many flights are there to Heathrow on Sunday 25 October?
- What is the *earliest* departure time on Wednesday 21 October?
- What is the *latest* arrival time on Saturday 10 October?

14.5 Time Problems in Context

In this section we consider further problems involving time, travel and also rates of pay.



Example 1

The timetable below gives the times of buses from Glasgow to Edinburgh:

GLASGOW	Buchanan Bus Stn	1445	1500	1515	1530	1545
Eurocentral	Gt A8 Interchange	–	–	–	1550	–
Harthill	Service Area	1510	1525	1540	1600	1610
Newbridge East	A8 opp RACAL	1531	1546	1601	1621	1631
Ratho	Sation Road End	1532	1547	1602	1622	1632
Ingliston Showground	West Entrance	1534	1549	1604	1624	1634
Corstorphine	Drum Brae	1538	1553	1608	1628	1638
Corstorphine	Station Road End	1540	1555	1610	1630	1640
Corstorphine	Zoo Park	1542	1557	1612	1632	1642
Murrayfield	Corstorphine Rd, Ice Rink	1545	1600	1615	1635	1645
Edinburgh	Haymarket	1548	1603	1618	1638	1648
Edinburgh	Shandwick Place	1550	1605	1620	1640	1650
EDINBURGH	St Andrew Sq Bus Station	1555	1610	1625	1645	1655

- How long does it take for the 1500 from Glasgow to get to Ratho?
- How long does it take for the 1545 from Glasgow to get to Edinburgh Haymarket?
- How long does it take the 1540 from Harthill to get to Murrayfield?



Solution

- The 1500 arrives at Ratho at 1547.
This is 47 minutes later than 1500, so the journey takes 47 minutes.
- The journey starts at 1545 and ends at 1648.
From 1545 to 1600 is 15 minutes.
From 1600 to 1648 is 48 minutes.
The total time is $15 + 48 = 63$ minutes or 1 hour 3 minutes.
- The journey starts at 1540 and ends at 1615.
From 1540 to 1600 is 20 minutes.
From 1600 to 1615 is 15 minutes.
The total time is $20 + 15 = 35$ minutes.



Example 2

The table gives the time differences between the UK and some other countries:

<i>Austria</i>	1 hour	ahead
<i>Honduras</i>	6 hours	behind
<i>Samoa</i>	11 hours	ahead
<i>Tanzania</i>	3 hours	ahead

- What time is it in *Austria* when it is 3.00 p.m. in the UK?
- What time is it in *Samoa* when it is 5.00 p.m. in the UK?
- When it is 5.00 p.m. in *Tanzania*, what time is it in the UK?
- If it is 4.00 p.m. in *Honduras*, what time is it in *Tanzania*?



Solution

- In Austria the time is 1 hour ahead of the UK, so it will be 4.00 p.m.
- In Samoa the time is 11 hours ahead of the UK, so it will be 4.00 a.m. the next day.
- In Tanzania the time is 3 hours ahead of the UK, so it will be 2.00 p.m.
- In Honduras the time is 6 hours behind the UK.
In the UK the time will be 10.00 p.m.
In Tanzania the time is 3 hours ahead of the UK, so it will be 1.00 a.m.



Exercises

- The timetable below gives the times of some buses from Glasgow to Edinburgh:

GLASGOW	Buchanan Bus Stn	1015	1030	1045	1100	1115
Eurocentral	Gt A8 Interchange	–	–	–	–	–
Harthill	Service Area	1040	1055	1110	1125	1140
Newbridge East	A8 opp RACAL	1101	1116	1131	1146	1201
Ratho	Station Road End	1102	1117	1132	1147	1202
Ingliston Showground	West Entrance	1104	1119	1134	1149	1204
Corstorphine	Drum Brae	1108	1123	1138	1153	1208
Corstorphine	Station Road End	1110	1125	1140	1155	1210
Corstorphine	Zoo Park	1112	1127	1142	1157	1212
Murrayfield	Corstorphine Rd, Ice Rink	1115	1130	1145	1200	1215
Edinburgh	Haymarket	1118	1133	1148	1203	1218
Edinburgh	Shandwick Place	1120	1135	1150	1205	1220
EDINBURGH	St Andrew Sq Bus Station	1125	1140	1155	1210	1225

Use the timetable to answer these questions:

- (a) You catch the 1030 from Glasgow. How long will it take to get to Harthill?
- (b) You catch the 1100 from Glasgow. How long does it take to get to Ratho?
- (c) You catch the bus at Harthill and arrive in Edinburgh at 1225. How long did the journey take?
- (d) You arrive in Edinburgh at 1210, having travelled from Harthill. How long did the journey take?
- (e) Do all the buses take the same time to get from Glasgow to Edinburgh?

2. The timetable below is for the Eurostar train that travels from Disneyland Paris (France) to Waterloo:

Disneyland Paris to Waterloo	
Disneyland Paris	1935
Ashford International	2037
Waterloo International	2139

How long is the journey time from Disneyland to:

- (a) Ashford International,
- (b) Waterloo International?

(Note that France is 1 hour ahead of UK time.)

3. The timetable below is for the North York Moors Railway.

Grosmont dep.	0950	1050	1150	1250	1350	1450	1550	1650
Goatland arr.	1005	1105	1205	1305	1405	1505	1605	1705
Goatland dep.	1010	1110	1210	1310	1410	1510	1610	1710
Newtondale	1023	1123	1223	1323	1423	1523	1623	1723
Levisham arr.	1036	1136	1236	1336	1436	1536	1636	1736
Levisham dep.	1040	1140	1240	1340	1440	1540	1640	1740
Pickering arr.	1100	1200	1300	1400	1500	1600	1700	1800

- (a) Do all the journeys take the same time?
- (b) For how long do the trains stay at Goathland?
- (c) How long does it take to get from Grosmont to Newtondale?
- (d) How long does it take to get from Grosmont to Levisham?
- (e) For how long do the trains stay at Levisham?

4. Use the timetable below to answer the questions which follow:

Saturdays								
London Paddington	d	1135	1145	1235	1335	1535	1635	1700
Reading	d	1200	1210	1300	1400	1605	1705	1730
Newbury	d	–	–	–	–	–	1721	–
Pewsey	d	–	–	–	–	–	1740	1855
Westbury	d	–	1256	1346	1445	1650	1802	–
Castle Cary	d	–	1313	–	1503	–	1819	–
Bristol Temple Meads	d	–	–	–	–	–	–	–
Taunton	d	–	1335	1423	1529	1726	1841	–
Tiverton Parkway	d	–	1348	1502	1542	1738	1853	–
Exeter St Davids	d	1337	1404	1450	1600	1754	1909	–
Dawlish	d	1403	1423	1537	1646	1829	1921	–
Teignmouth	d	1409	1429	1543	1651	1834	1926	–
Newton Abbot	d	1415	1437	1512	1620	1814	1933	–
Torquay	a	1426	1448	1616	1711	1835	1955	–
Paignton	a	1433	1500	1623	1717	1841	2000	–
Totnes	d	–	1454	1526	1634	1829	1947	–
Plymouth	d	1436	1523	1558	1705	1902	2020	–
Liskeard	d	1502	1552	1628	1729	1926	–	–
Bodmin Parkway	d	1514	1604	1638	1741	1941	–	–
Par	d	–	1615	1652	1847	1953	–	–
St Austell	d	1530	1623	1658	1757	2001	–	–
Truro	d	1548	1641	1716	1815	2019	–	–
Redruth	d	1600	1653	1731	1827	2031	–	–
Camborne	d	–	1700	1738	1834	2038	–	–
St Erth	d	1614	1711	1751	1846	2051	–	–
Penzance	a	1630	1722	1805	1900	2107	–	–

- (a) How long does it take for the 1635 from London Paddington to get to Plymouth?
- (b) Adrian catches a train at 2:00 pm at Reading. How long does it take him to get to Truro?
- (c) Sam catches the last train from Totnes to Penzance. How long does his journey take?
- (d) Clare catches the 1445 from Westbury to Plymouth. At what time does she arrive in Plymouth?
- (e) Which train has the shortest journey time from London to Penzance?
5. The timetable below is for the overnight ski train from London to the French Alps:

London Waterloo International	(Friday) depart	1957
Ashford International	(Friday) depart	2107
Moûtiers	(Saturday) arrive	0552
Aime la Plagne	(Saturday) arrive	0625
Bourg-St-Maurice	(Saturday) arrive	0645

How long does it take to travel:

- (a) from Waterloo to Moûtiers,
- (b) from Ashford to Aime la Plagne,
- (c) from Waterloo to Bourg-St-Maurice?

6. Use the information given in Example 2 to answer these questions:
- (a) What will be the time in Honduras when it is 7:00 am in the UK?
 - (b) What will be the time in the UK when it is 7:00 pm in Honduras?
 - (c) What is the time in Tanzania when it is 10:00 pm in the UK?
 - (d) What is the time in the UK when it is 10:00 pm in Samoa?
7. The flight from London to Stockholm (Sweden) takes $2\frac{1}{2}$ hours. The time in Sweden is 1 hour ahead of the UK.
- (a) If you leave London at 1000, what will be the local time when you land at Stockholm?
 - (b) If you leave Stockholm at 1745, what will be the local time when you land in London?
8. A flight leaves Kuala Lumpur at 1100 and lands in London at 1710. The time in Kuala Lumpur is 8 hours ahead of the time in London. How long does the flight take?
9. Shainee earns £4 per hour on weekdays, £4.50 per hour on Saturdays and £6 per hour on Sundays.

The table below lists the hours he worked on each day of one week:

<i>Day</i>	<i>No. hours worked</i>
Monday	4
Tuesday	2
Wednesday	8
Thursday	10
Friday	3
Saturday	5
Sunday	2

How much money did Shainee earn that week?

10. Ben earns £5 per hour for the first 40 hours he works and £7.50 per hour for any hours of overtime. One week he earned £290. How many hours overtime did he work?