

## UNIT 7 EXERCISES 6-10

TIME

- 2002B 8. **(D)** Since July has 31 days, Monday must be one of the last three days of July. Therefore, Thursday must be one of the first three days of August, which also has 31 days. So Thursday must occur five times in August.

2012A

9. **Answer (A):** There were  $200 \cdot 365 = 73000$  non-leap days in the 200-year time period from February 7, 1812 to February 7, 2012. One fourth of those years contained a leap day, except for 1900, so there were  $\frac{1}{4} \cdot 200 - 1 = 49$  leap days during that time. Therefore Dickens was born 73049 days before a Tuesday. Because the same day of the week occurs every 7 days and  $73049 = 7 \cdot 10435 + 4$ , the day of Dickens' birth (February 7, 1812) was 4 days before a Tuesday, which was a Friday.

2009B

10. **Answer (A):** The clock will display the incorrect time for the entire hours of 1, 10, 11, and 12. So the correct hour is displayed correctly  $\frac{2}{3}$  of the time.

The minutes will not display correctly whenever either the tens digit or the ones digit is a 1, so the minutes that will not display correctly are 10, 11, 12, ..., 19, and 01, 21, 31, 41, and 51. This is 15 of the 60 possible minutes for a given hour. Hence the fraction of the day that the clock shows the correct time is  $\frac{2}{3} \cdot (1 - \frac{15}{60}) = \frac{2}{3} \cdot \frac{3}{4} = \frac{1}{2}$ .