

## UNIT 6 EXERCISES 11-15

## SPEED TIME

2002A

11. Mr. Earl E. Bird leaves his house for work at exactly 8:00 A.M. every morning. When he averages 40 miles per hour, he arrives at his workplace three minutes late. When he averages 60 miles per hour, he arrives three minutes early. At what average speed, in miles per hour, should Mr. Bird drive to arrive at his workplace precisely on time?
- (A) 45      (B) 48      (C) 50      (D) 55      (E) 58

- 2011A 12. A power boat and a raft both left dock  $A$  on a river and headed downstream. The raft drifted at the speed of the river current. The power boat maintained a constant speed with respect to the river. The power boat reached dock  $B$  downriver, then immediately turned and traveled back upriver. It eventually met the raft on the river 9 hours after leaving dock  $A$ . How many hours did it take the power boat to go from  $A$  to  $B$ ?
- (A) 3      (B) 3.5      (C) 4      (D) 4.5      (E) 5
- 2017A 12. There are 10 horses, named Horse 1, Horse 2, ..., Horse 10. They get their names from how many minutes it takes them to run one lap around a circular race track: Horse  $k$  runs one lap in exactly  $k$  minutes. At time 0 all the horses are together at the starting point on the track. The horses start running in the same direction, and they keep running around the circular track at their constant speeds. The least time  $S > 0$ , in minutes, at which all 10 horses will again simultaneously be at the starting point is  $S = 2520$ . Let  $T > 0$  be the least time, in minutes, such that at least 5 of the horses are again at the starting point. What is the sum of the digits of  $T$ ?
- (A) 2      (B) 3      (C) 4      (D) 5      (E) 6
- 2012A 13. Paula the painter and her two helpers each paint at constant, but different, rates. They always start at 8:00 AM and all three always take the same amount of time to eat lunch. On Monday the three of them painted 50% of a house, quitting at 4:00 PM. On Tuesday, when Paula wasn't there, the two helpers painted only 24% of the house and quit at 2:12 PM. On Wednesday Paula worked by herself and finished the house by working until 7:12 PM. How long, in minutes, was each day's lunch break?
- (A) 30      (B) 36      (C) 42      (D) 48      (E) 60

- 2017A 13. Driving at a constant speed, Sharon usually takes 180 minutes to drive from her house to her mother's house. One day Sharon begins the drive at her usual speed, but after driving  $\frac{1}{3}$  of the way, she hits a bad snowstorm and reduces her speed by 20 miles per hour. This time the trip takes her a total of 276 minutes. How many miles is the drive from Sharon's house to her mother's house?
- (A) 132      (B) 135      (C) 138      (D) 141      (E) 144
- 2004A 15. Brenda and Sally run in opposite directions on a circular track, starting at diametrically opposite points. They first meet after Brenda has run 100 meters. They next meet after Sally has run 150 meters past their first meeting point. Each girl runs at a constant speed. What is the length of the track in meters?
- (A) 250      (B) 300      (C) 350      (D) 400      (E) 500