

3. Kwan hiked up a hill at 4 km/h and back down at 6 km/h. His total hiking time was 3 h. How long did the trip up the hill take him?

	Rate \times Time = Distance		
Up	?	?	?
Down	?	?	?

4. Jenny had driven for 2 h at a constant speed when road repairs forced her to reduce her speed by 10 mi/h for the remaining 1 h of her 152 mi trip. Find her original speed.

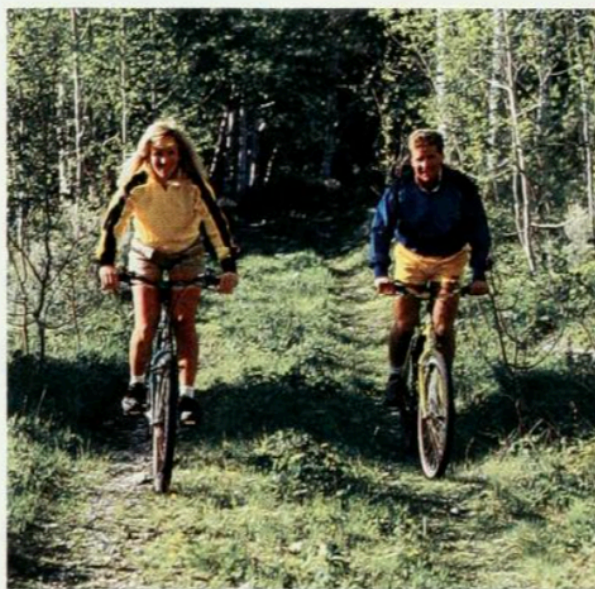
	Rate \times Time = Distance		
At original speed	?	?	?
At slower speed	?	?	?

Problems

- A** 1–4. Complete the solutions of Oral Exercises 1–4.

Solve.

5. Two jets leave Denver at 9:00 A.M., one flying east at a speed 50 km/h greater than the other, which is traveling west. At 11:00 A.M. the planes are 2500 km apart. Find their speeds.
6. At 7:00 A.M. Joe starts jogging at 6 mi/h. At 7:10 A.M. Ken starts off after him. How fast must Ken run in order to overtake him at 7:30 A.M.?
7. At 9:30 A.M. Andrew left Exeter for Portsmouth, cycling at 12 mi/h. At 10:00 A.M. Stacy left Portsmouth for Exeter, cycling at 16 mi/h. The distance from Exeter to Portsmouth is 20 mi. Find the time when they met.



8. It takes a plane 40 min longer to fly from Boston to Los Angeles at 525 mi/h than it does to return at 600 mi/h. How far apart are the cities?
9. A bus traveled 387 km in 5 h. One hour of the trip was in city traffic. The bus's city speed was just half of its speed on open highway. The rest of the trip was on open highway. Find the bus's city speed.
10. It took Cindy 2 h to bike from Abbott to Benson at a constant speed. The return trip took only 1.5 h because she increased her speed by 6 km/h. How far apart are Abbott and Benson?

- B** 11. Jerry spent 2.5 h biking up Mount Lowe, rested at the top for 30 min, and biked down in 1.5 h. How far did he bike if his rate of ascent was 3 km/h less than his rate of descent?

12. Jan can run at 7.5 m/s and Mary at 8.0 m/s. On a race track Jan is given a 25 m head start, and the race ends in a tie. How long is the track?
13. If Gina leaves now and drives at 66 km/h, she will reach Alton just in time for her appointment. On the other hand, if she has lunch first and leaves in 40 minutes, she will have to drive at 90 km/h to make her appointment. How far away is Alton?
14. An ultralight plane had been flying for 40 min when a change of wind direction doubled its ground speed. The entire trip of 160 mi took 2 h. How far did the plane travel during the first 40 min?
15. A ship must average 22 knots (nautical miles per hour) to make its 10-hour run on schedule. During the first four hours bad weather caused it to reduce speed to 16 knots. What should its average speed be for the rest of the trip to maintain its schedule?
16. Jamie ran two laps around a track in 99 s. How long did it take him to run each lap if he ran the first lap at 8.5 m/s and the second at 8.0 m/s?



In Exercises 17 and 18, cars *A* and *B* travel the same road. *A*'s speed is r km/h, and *B*'s speed is s km/h ($r < s$). When will *B* overtake *A* in each situation? Let $t = A$'s time.

- C** 17. *A* and *B* start at the same time, but *A* starts p km in front of *B*.
 18. *A* and *B* start at the same place, but *A* starts q hours before *B*.

Suppose that cars *A* and *B* described above are d km apart.

19. If *A* and *B* start toward each other at the same time, how much later will they meet?
20. If *A* and *B* drive in opposite directions, how far apart will they be after t hours?

Mixed Review Exercises

Solve.

1. $64 = -8x$

2. $4(x + 2) = 32$

3. $(x - 6)(x + 9) = (x + 6)(x - 2)$

4. $-5x = -\frac{10}{18}$

5. $x - 7 = |2 - 10|$

6. $(x - 4)(x + 3) = (x - 6)(x + 4)$

7. Solve for x : $\frac{bx - 6}{2} = 3$

8. Solve for x : $a = 3x + 5$