

Practice 7-4

Applications of Linear Systems

Use a system of linear equations to solve each problem.

1. Your teacher is giving you a test worth 100 points containing 40 questions. There are two-point and four-point questions on the test. How many of each type of question are on the test?
2. Suppose you are starting an office-cleaning service. You have spent \$315 on equipment. To clean an office, you use \$4 worth of supplies. You charge \$25 per office. How many offices must you clean to break even?
3. The math club and the science club had fundraisers to buy supplies for a hospice. The math club spent \$135 buying six cases of juice and one case of bottled water. The science club spent \$110 buying four cases of juice and two cases of bottled water. How much did a case of juice cost? How much did a case of bottled water cost?
4. On a canoe trip, Rita paddled upstream (against the current) at an average speed of 2 mi/h relative to the riverbank. On the return trip downstream (with the current), her average speed was 3 mi/h. Find Rita's paddling speed in still water and the speed of the river's current.
5. Kay spends 250 min/wk exercising. Her ratio of time spent on aerobics to time spent on weight training is 3 to 2. How many minutes per week does she spend on aerobics? How many minutes per week does she spend on weight training?
6. Suppose you invest \$1500 in equipment to put pictures on T-shirts. You buy each T-shirt for \$3. After you have placed the picture on a shirt, you sell it for \$20. How many T-shirts must you sell to break even?
7. A light plane flew from its home base to an airport 255 miles away. With a head wind, the trip took 1.7 hours. The return trip with a tail wind took 1.5 hours. Find the average airspeed of the plane and the average windspeed.
8. Suppose you bought supplies for a party. Three rolls of streamers and 15 party hats cost \$30. Later, you bought 2 rolls of streamers and 4 party hats for \$11. How much did each roll of streamers cost? How much did each party hat cost?
9. A new parking lot has spaces for 450 cars. The ratio of spaces for full-sized cars to compact cars is 11 to 4. How many spaces are for full-sized cars? How many spaces are for compact cars?
10. While on vacation, Kevin went for a swim in a nearby lake. Swimming against the current, it took him 8 minutes to swim 200 meters. Swimming back to shore with the current took half as long. Find Kevin's average swimming speed and the speed of the lake's current.

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