

74. A rowing team can maintain a speed of 15 miles per hour in still water. The team's daily training session includes a 5-mile run up the Red Cedar River and the return downstream.
- Write an expression for the team's time on the upstream leg in terms of the speed of the current.
 - Write an expression for the team's time on the downstream leg.
 - Write an expression for the total time for the training run.
75. Two pilots for the Flying Express parcel service receive packages simultaneously. Orville leaves Boston for Chicago at the same time Wilbur leaves Chicago for Boston. Each selects an air speed of 400 miles per hour for the 900-mile trip. The prevailing winds blow from east to west.
- Write an expression for Orville's flying time in terms of the wind speed.
 - Write an expression for Wilbur's flying time.
- ~~X~~ Who reaches his destination first? By how much time (in terms of the wind speed)? → Sect. 2.3
76. On New Year's Day a blimp leaves its berth in Carson, California, and heads north for the Rose Bowl, 23 miles away. There is a breeze from the north at 6 miles per hour.
- Write an expression for the time required for the trip, in terms of the blimp's speed.
 - Write an expression for the time needed for the return trip.
 - Which trip takes longer? By how much time (in terms of the speed of the blimp)?
77. To grow enough hay for her horses a farmer needs to set aside a rectangular field of area 600 square yards.
- Write an expression for the length of the field in terms of its width.
 - Write an expression for the perimeter of the field in terms of its width. Do all fields of area 600 square yards have the same perimeter?
 - If fencing costs \$10 per yard, write an expression for the cost of fencing the field.
78. A rectangular solar panel must have an area of 200 square feet in order to collect enough energy to heat a hot water tank.
- Write an expression for the width of the panel in terms of its length.
 - Write an expression for the perimeter of the panel in terms of its length. Will the solar panel have the same perimeter for any dimensions that give an area of 200 square feet?
 - Write an expression for the cost of the frame for the solar panel if the frame costs \$5 per foot.
79. According to the building code, sleeping rooms in public residences such as prisons and dormitories must have a volume of 900 cubic feet. Assume the length of a dorm room is 2 feet longer than its width.
- Write an expression for the height of the room in terms of its width.
 - Write an expression for the surface area of the room that must be painted. (Include the walls and ceiling but not the floor. Neglect doors and windows.)