

32. Mr. Daniels has some money invested at 5% per year. If he adds \$200 to what he has, the new total will return the same amount each year at 4% as his original investment does at 5%. How much does he have invested at 5%?
33. The Omer Fund invested part of \$150,000 at 6% and the remainder at 4%. If it had invested twice as much at 6% and the rest at 4%, it would have increased its income by \$1200. How much was invested at 6%?
34. A filler pipe can fill a tank in 10 hours, while an outlet pipe can empty the tank in 15 hours. How long will it take to fill the empty tank with both pipes operating?
35. Julie's motorboat cruises at 20 miles per hour in still water. It takes her twice as long to go 90 miles upstream as it does to return 75 miles downstream. What is the speed of the current?
36. Mrs. Sigura drove 90 miles to visit her brother. She averaged 15 miles per hour more on the return trip than she did on the trip going. If her total travel time was  $3\frac{1}{2}$  hours, what was her average rate on the return trip?
37. Jane sailed 6 miles across a lake in  $1\frac{1}{2}$  hours less than it took Sally to walk 12 miles around the lake to meet her. If Jane's rate was 6 miles per hour greater than Sally's rate, what was the rate of each?
38. When an electric current is 35 amperes, the electromotive force is 315 volts. Find the force when the current is 50 amperes if the force varies directly as the current.
39. One cubic centimeter of gold weighs 19.3 grams, while a cubic centimeter of silver weighs 10.5 grams. Which is heavier and by how much -- a cube of gold 1.2 centimeters on an edge or a cube of silver 1.4 centimeters on an edge?
40. The length of a shadow of a vertical object at a given time and location varies with the height of the object casting the shadow. A boy 5 feet 6 inches tall casts a shadow of 12 feet 9 inches. If the shadow of a nearby tree measures 153 feet at the same time, how tall is the tree?
41. The volume of a gas is 75 cubic feet under 7 lbs., pressure. What is its volume at the same temperature when the pressure is 15 lbs. ?
42. The weight of a body at or above the earth's surface varies inversely as the square of the body's distance from the earth's center. What does a 445.5-lb., projectile weigh 500 miles out from the earth's surface? (Use 4000 miles as the earth's radius)
43. The frequency of a note an octave above a given note is twice that of the given note. How does the wavelength of the higher note compare with that of the lower note?
44. In the formula 
$$H = \frac{I^2 R t}{4}$$
, R remains constant. If I is tripled, and t is made 4 times as large, how is H changed?
45. The safe load on a horizontal beam supported at its ends varies directly as the square of the beam's depth and inversely as its length between supports. A beam 9.6 meters long and 4 centimeters deep bears 2170 grams. What load can one 3.5 meters long and 5 centimeters deep bear?