9 A 5% solution of salt, weighing 160 lb, is to be reduced to a 4% solution. How many pounds of water must be added? How many gallons of water must be added, if one gallon weighs 8.35 lb?

10 The two sides of a right triangle are 3 and 4 inches long respectively. How much must the longer leg be extended in order that the hypotenuse may become 2 inches longer?

11 Find the 11th term and the sum of the first 11 terms of the progression 1, $\frac{1}{3}, 2, \frac{2}{3}$.

12 The cost of a certain article is 4¢ a pound; if $p$ is the price paid for $n$ pounds, what is the equation connecting $n$ and $p$? Draw the graph of that equation.

13 A projectile weighing $w$ pounds, whose diameter is $d$ inches, strikes a wrought iron plate when moving at the rate of $v$ feet per second. The depth of penetration $p$ (in inches) is given by the formula

$$p = \frac{v}{608.3} \sqrt{\frac{w}{d}} - 0.14d$$

Find $p$ when $d = 12.5$, $w = 1250$ and $v = 2016$.

14 An automobile, after traveling at the rate of 30 miles an hour for 3 hours, has an accident which delays it $\frac{1}{2}$ hour; it then continues its journey at the rate of 20 miles an hour. At what rate must another car, which started from the same place 2 hours later, travel in order to overtake the first car in 5 hours? [Solve either algebraically or graphically.]