2.4 - Applications

Example. On the first three exams in a history class, you make an 85%, 94%, and a 73%. The final exam is counts as two exams. What would you need to score on the final in order to average a 90%?
Example. Jackie can paint a house in 4 hours. Cletus can paint the same house in 3 hours. How long would it take for them to complete the house together?
**Example.** We have a limitless supply of pure acid and of a 15% acid solution. If we must obtain 20 liters of a 40% acid by mixing pure acid and the 15% acid solution, how much of each should be mixed?
**Example.** A right triangle has a hypothenuse of 13 inches. If the perimeter of the triangle is 30 inches, what are the side lengths?
**Example.** A circular water puddle grew in radius by 3 inches. The resulting change in the area of the puddle $53\pi$ square inches. What was the original radius of the circular puddle?
**Example.** You have $10,000 to invest and two choices of accounts in which to invest; one gives 6% simple interest and the other gives 10% simple interest. How much should you initially invest in order to make $4,200 in interest after 5 years?

**Example.** If you invest $2000 at 6% for a year and $8,000 at 10% for a year, what is the effective interest rate?
Example. A bullet is shot directly up in the air with an initial velocity of 200 m/s. The equation relating the height of the bullet and time elapsed is

\[ h = -10t^2 + 500t + 490 \]

When does the bullet reach 1000 meters? When does it hit the ground?
Example. A rectangular piece of cardboard with area 192 square inches has a square with side 3 inches cut from each corner, and the resulting piece is folded into a box. If the volume of the box is 128 cubic inches, what was the original dimension of the box?
**Example.** Robin Banks left a bank at 52 mph. Officer Willie Catchup arrived at the bank 15 minutes behind Robin leaving and chases him at 60 mph. The state line is 100 miles away. Will Robin get caught (does Willie catch up)?