

# MTH 28.5 LECTURE NOTES (Ojakian)

## Topic 9: Applications of Solving Equations

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### OUTLINE

References: 2.2

1. Applications of Solving equations
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1. Applications

- (a)

**PROBLEM 1.**

- i. Ten more than a number is 13. What is the number?*
- ii. Find a number that equals 20 when multiplied by 5.*

- (b) Strategy for solving word problems

- i. Choose a variable to represent one of the unknowns.
- ii. Represent any other unknowns with expressions using the same variable.
- iii. Translate the words into an equation about this variable (this is “*modeling the problem by an equation*”).
- iv. Solve the equation.
- v. Answer the original question.

## 2. Problems

First write down an equation to model the problem, then solve the equation.

- (a) When a number is divided by 4, the result is 52. What is the number?
  
- (b) When a number is divided by 4, the result is 50. What is the number?
  
- (c) Vic drinks  $\frac{2}{3}$  cups of prune juice a day. How many cups does he drink in a week?  
(give your answer as a mixed number)
  
- (d) The perimeter of a square is 32 meters. How long is each side?
  
- (e) Vic eats 3 apples on Saturday and 7 apples on Sunday. What is the average number of apples Vic ate each day on the weekend?
  
- (f) Suppose there are two numbers and one of them is seven more than the other. If the sum of the numbers is 42, what are the two numbers?
  
- (g) Suppose a number is doubled and then 5 is added to it. If the result is 47, then what is the number?
  
- (h) As of 2014, artists U2 and Stevie Wonder have won the same number of Grammy awards. Mariah Carey has received a total of five Grammy awards. If the total number of Grammys won by all three artists is 49, determine how many U2 and Stevie Wonder have won.
  
- (i) The fare for a single MTA ride is now (in 2024) about 3 dollars. An unlimited card for a month is about 132 dollars.
  - i. How much do 10 single fare rides cost?
  - ii. If Vic has 99 dollars, how many MTA rides can he take?
  - iii. If you use the MTA every day in a month, what is cheaper: To buy an unlimited card, or to pay the 3 dollar fare each time?  
(it does not matter which month you consider, so say 30 days in a month)
  - iv. If you use the MTA twice every day in a month, what is cheaper: To buy an unlimited card, or to pay the 3 dollar fare each time?