

Section 1.3 Notes Day 2

Recall: Polya's Four-Step Method

- 1. Understand the Problem 2. Devise a Plan 3. Carry out the plan 4. Look Back**

Read Section 1.3 Examples 4-6 in textbook

1) Solving a Problem by Making a List

Suppose you are an engineer programming the automatic gate for a 30-cent toll. The gate should accept exact change only. It should not accept pennies. How many coin combinations must you program the gate to accept?

Quarter	Dime	Nickel
1	0	1
0	3	0
0	2	2
0	1	4
0	0	6

5 coin combinations

2) Solving a Problem by Using a (Tree) Diagram

Your casual wardrobe is rather limited- just two pairs of jeans to choose from (one blue, one black) and three T-shirts to choose from (one beige, one yellow, one blue). How many different outfits can you form?

blue jeans ← beige
 yellow
 blue

black jeans ← beige
 yellow
 blue

blue beige
blue yellow
blue blue

black beige
black yellow
black blue

6 outfits

FCP $2 \cdot 3 = 6$

3) Using a reasonable Option to Solve a Problem with More than One Solution.

A sales director who lives in city A is required to fly to regional offices in cities B, C, D, and E. The diagram below shows the one-way airfares between any two cities. Give the sales director an order for visiting cities B, C, D, and E once, returning home to city A, for less than \$1460.

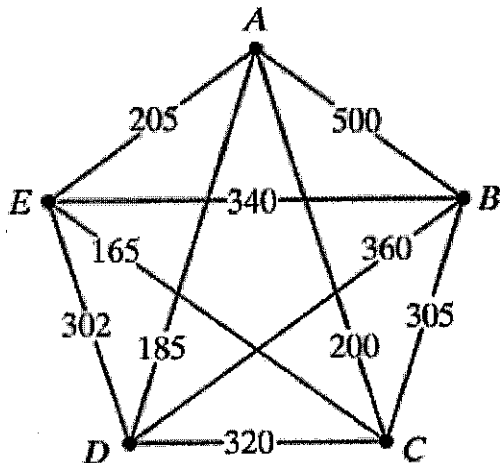


FIGURE 1.12

Plan: fly from A on cheapest route. From there on cheapest route to a city not yet visited, etc.

$$\begin{aligned}
 & \textcircled{A} - 185 - \textcircled{D} - 302 - \textcircled{E} - 165 - \textcircled{C} \\
 & \quad - 305 - \textcircled{B} - 500 - \textcircled{A} \\
 & \quad \quad \quad \$1457 < \$1460
 \end{aligned}$$

Answer: A D E C B A