Lenka Melinda F

2241720074

Class 1I / 13

D-IV Informatics Engineering

**Critical Thinking**

**PPT 5 Advanced Problem Solving Skills**

**Assignment**

1. Assignment 1

* Perfect Pots is a company that manufactures ornamental plant pots. The company's expenses (rent, insurance, etc.) are $15,000 per year.
* They employ four administrative staff (manager, accountant, sales director and secretary) with a total income of $85,000 per year.
* The pots for sale are made by a number of skilled workers; each of which can make up to 5000 pots in a year and generate an income of up to $20,000 per year.
* Materials, labor, and other capital are worth $1000 per 10,000 pots.
* What is the profit variance of the company when viewed based on the number of pots made and sold based on the selling price of the pot (assuming the company only makes pots for customers who order only)?

1. The first variation
2. Assignment 2

* The graph in the right shows the types of charitable foundations in the UK that accept donations from the public. The total donations made by the community as a whole are estimated at £11 billion Euros.
* While the types of donation sources for "medical charities" are shown in the pie chart below:
* Answer the questions on the next slide and provide a brief explanation for each of your answers:

1. Which types of charitable foundations do individual donors make the largest average contribution?
2. Which types of charitable foundations do individual donors make the smallest average amount of donations?
3. What is the estimated total income of medical research charitable foundations?
4. It has been reported elsewhere that 6% of all charitable foundations receive 90% of the total donations, but "medical research" which is the recipient of the largest benefit, receives 17% of the donations. Explain about this!

**PPT 6 Advanced Problem Solving Techniques**

**Exercise**

Combination Problems Mathematical, Probability and Decision Trees

1. There are two ways I go to work, both involve a two-part journey.

* I can cycle to the bus stop; it usually takes 5 minutes, or 15 minutes if the railroad crossing is closed on the road, which happens on 10%of occasions.
* A bus takes an average of 5 minutes to arrive. I took the first bus, which may have been a slow bus that took 30 minutes or a fast bus that took 15 minutes. Chances of I get a slow bus is 20%.
* Or, I could drive to the Park and Ride parking lot.
* Driving normally takes 15 minutes, but about half the time there is a traffic jam and it takes 20 minutes.
* When I get to Park and Ride, sometimes I get the bus right away, but there's a 60% chance I'll have to wait 10 minutes for the next bus.
* The bus took 10 minutes to take me to work.

1. What is my shortest time to start work?

The shortest time that 'I' can travel is 20 minutes. 20 minutes counted from 5

minutes for me to cycle to the bus stop and while at my bus stop the bus comes

together with me arrived at the bus stop then boarded a fast bus with time

15 minutes [5 minutes + 15 minutes = 20 minutes]. So I don't have to wait for 5

minutes for the bus to come. But if I come earlier before the bus comes,

and have to wait for 5 minutes then the shortest time taken is

25 minutes

1. On average, what is my best option for going to work and how much time do I need?

The average of cycling

1. Cycling (no trains pass + fast bus + waiting for bus)

5 + 5 + 15 = 25 minutes

(Chance of getting a fast bus x chance of there is no trains pass)

80 x 90 / 100 = 72%

Total = 25 x 72% = 18 minutes

1. Cycling (no trains pass + slow bus + waiting for bus)

5 + 30 + 5 = 40 minutes

(Chance of getting a slow bus x chance of there is no trains pass)

20 x 90 / 100 = 18%

Total = 40 x 18% = 7,2 minutes

1. Cycling (trains pass + fast bus + waiting for bus)

15 + 15 + 5 = 35 minutes

(Chance of getting a fast bus x chance of there is trains pass)

80 x 10 / 100 = 8%

Total = 35 x 8% = 2,8 minutes

1. Cycling (trains pass + slow bus + waiting for bus)

15 + 30 + 5 = 50 minutes

(Chance of getting a slow bus x chance of there is trains pass)

20 x 10 / 100 = 2%

Total = 50 x 2% = 1 minutes

AVERAGE = 1 + 18 + 7,2 + 2,8 = 29 minutes

The average of driving = 5 + 10,5 + 6 + 12 = 33,5 minutes

The best option is to use a bicycle by only traveling for 29 minutes, with various possibilities or opportunities that exist. Meanwhile, if drive, it will take me about 33 minutes to his journey.

1. What is the probability that the first trip option takes 40 minutes or more?

First trip option

1. Cycling (no trains pass + slow bus + waiting for bus)

5 + 30 + 5 = 40 minutes

(Chance of getting a slow bus x chance of there is no trains pass)

20 x 90 / 100 = 18%

1. Cycling (trains pass + slow bus + waiting for bus)

15 + 30 + 5 = 50 minutes

(Chance of getting a slow bus x chance of there is trains pass)

20 x 10 / 100 = 2%

Probability = 18% + 2% = 20%

So, there is a 20% chance if 'I' use the first trip option which takes 40 minutes or more

**PPT 7 Critical Reasoning (1)**

**Exercise**

1. Look for a rule as a term and condition, identify the conditional conditions that exist, determine whether it is a necessary or sufficient condition. Draw with flow chart
2. Find articles that use statistical data to support claims or claims. Make one or more critical comments about the way the data is interpreted and presented, and provide a thorough assessment of the claims made on the strength of the evidence.

**Task**

Suppose a new team of analysts has reassessed a shale gas deposit based on new evidence and technological improvements. Extrac9on costs remain the same, but the team now es9mates that there are:

* no harm from Level C results (returns $2 million)
* only 30% chance of a Level B result ($7 million return)
* 40% chance of Level A returns ($12 million return)
* 25% chance of ge\_ng Level AA results ($24 million return)
* 5% chance of AAA Level results ($40 million return).

A rival company called YGN has bid $10 million for the extrac9on rights. Calculate possible new returns, using a decision tree if that helps you. Then decide which of the following can most reliably be inferred from the data.

1. On economic grounds alone, the Zenergies should accept YGN's offer.
2. On economic grounds alone, the Zenergies should decline Yangen's offer and con9nue extrac9on.
3. It makes no difference economically which decision the Zenergies make.