

2.4 PROJECT

SET THEORY AND ALLOCATION OF RESOURCES

According to the job interviewing coaches Jeff & Mike *The Interview Guys*,

Analytical skill is the ability for an individual to solve complex issues by gathering and then analyzing the information that is available to them through a variety of other skills including critical thinking, research, and attention to detail.

In this activity, you will solve a seemingly complex allocation of resources problem by using a mathematical model involving Venn diagrams.

A medium-size tech company has to staff 3 distinct departments: Social Media Outreach (SM), Information Technology (IT), and Web Development (WD). The fast-paced and innovative environment at the company may require an employee to be part of more than one department.

The company has the following staffing requirements.

- The total number of employees in the three departments must be exactly 40.
 - There must be exactly 16 employees in Information Technology and exactly 20 employees in Social Media Outreach.
 - No employee can work in Information Technology and Social Media Outreach without also being a part of Web Development.
 - There must be exactly 8 employees working in both Social Media Outreach and Web Development.
 - Exactly 4 employees will be required to work in Web Development and Social Media Outreach but not in Information Technology.
 - Exactly 2 employees work in Information Technology and Web Development but not in Social Media Outreach.
1. Draw a three-set Venn diagram representing the three departments and their overlap.
 2. Determine the number of employees in each of the regions of the Venn diagram from part 1.

The company decides to add another department named Customer Experience (CE). This department can only share employees with Social Media Outreach.

3. Draw a four-set Venn diagram that models this situation.
4. After adding the Customer Experience department, the total number of employees increases from 40 to 50. Knowing that 6 people work in the CE department only, determine how many employees now work in CE and SM departments at the same time.