# Weekly Homework 11

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## Task 11-1

We have engaged with the tasks.

## Task 11-2

We have engaged with the tasks.

## Task 11-3

### a) Equivalence Classes

- **Failing Grades (F)**

    - Class 1: Score $< 20$ in Exam 1 (E1 $< 20$)
    - Class 2: Score $< 20$ in Exam 2 (E2 $< 20$)

- **Passing Grades (D)**

    - Class 3: E1 $\geq 20$ and E2 $\geq 20$ Total Score $< 60\%$

- **Grade C**

    - Class 4: $60\% \leq$ Total Score $< 75\%$

- **Grade B**

    - Class 5: $75\% \leq$ Total Score $< 90\%$

- **Grade A**

    - Class 6: Total Score $\geq 90\%$

## b) Test Cases

| Test Case | Exam 1 Score (E1) | Exam 2 Score (E2) | Total Score | Grade |
|-----------|-------------------|-------------------|-------------|-------|
| 1 | 15 | 25 | 40 | F |
| 2 | 25 | 15 | 40 | F |
| 3 | 25 | 30 | 55 | D |
| 4 | 30 | 35 | 65 | C |
| 5 | 35 | 45 | 80 | B |
| 6 | 35 | 57 | 92 | A |

Table 1: Test Cases for University Course Grading

## c) Boundary Values/Transitions

- **Transition between Failing Grades (F) and Passing Grades (D)**

  - Test Case 1 (F): E1 = 19, E2 = 30 (Total = 49, Grade = F)
  - Test Case 2 (D): E1 = 20, E2 = 30 (Total = 50, Grade = D)
  - Test Case 3 (F): E2 = 30, E2 = 19 (Total = 49, Grade = F)
  - Test Case 4 (D): E1 = 30, E2 = 20 (Total = 50, Grade = D)

- **Transition between Passing Grades (D) and Grade (C)**

  - Test Case 5 (D): E1 = 29, E2 = 29 (Total = 58, Grade = D)
  - Test Case 6 (C): E1 = 30, E2 = 30 (Total = 60, Grade = C)

- **Transition between Failing Grades (F) and Passing Grades (C)**

  - Test Case 7 (F): E1 = 19, E2 = 45 (Total = 64, Grade = F)
  - Test Case 8 (D): E1 = 20, E2 = 45 (Total = 65, Grade = C)

- **Transition between Grade (C) and Grade (B)**

  - Test Case 9 (C): E1 = 29, E2 = 44 (Total = 73, Grade = C)
  - Test Case 10 (B): E1 = 35, E2 = 40 (Total = 75, Grade = B)

- **Transition between Failing Grades (F) and Passing Grades (B)**

  - Test Case 11 (F): E1 = 19, E2 = 57 (Total = 76, Grade = F)
  - Test Case 12 (D): E1 = 20, E2 = 57 (Total = 77, Grade = B)

- **Transition between Grade (B) and Grade (A)**

  - Test Case 13 (B): E1 = 34, E2 = 54 (Total = 88, Grade = B)
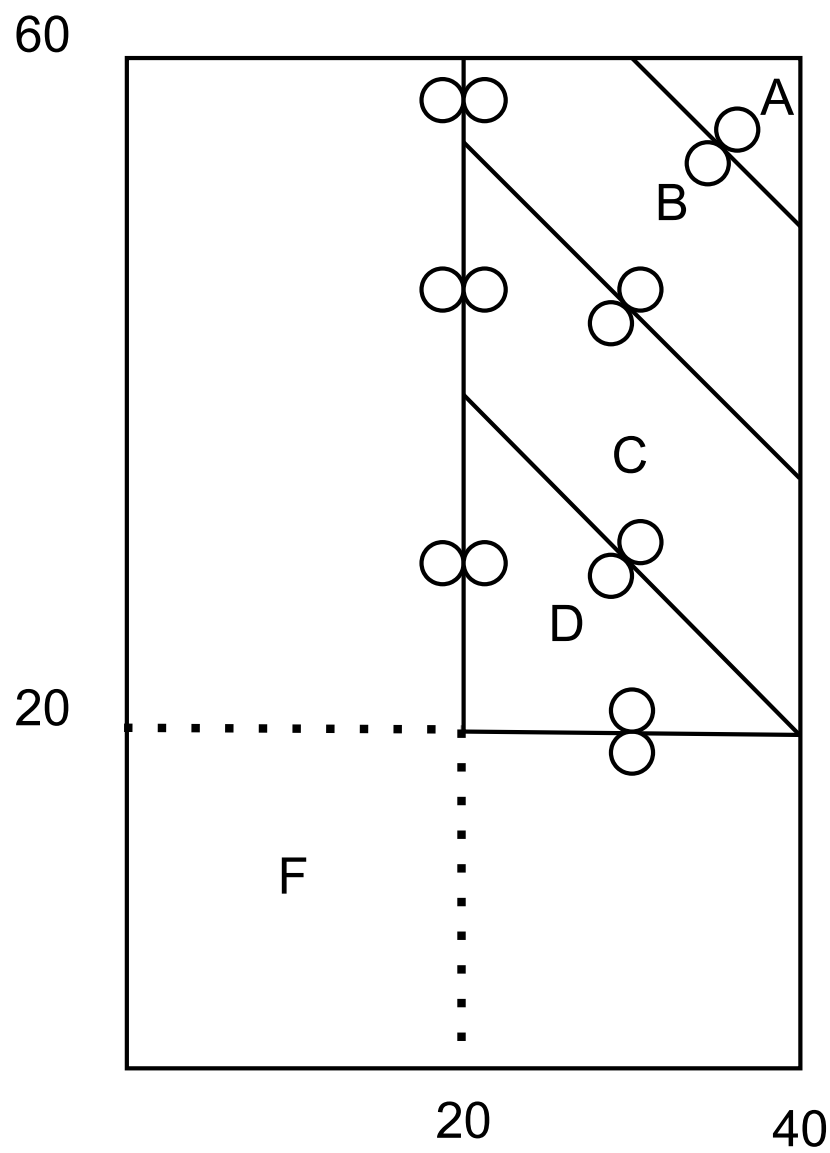  - Test Case 14 (A): E1 = 35, E2 = 55 (Total = 90, Grade = A)

Figure 1: 2D space for both grades with Boundary Transitions