Question1

A flight company wants to plan its flights from city O to 4 destination cities A, B, C and D. The company's fleet includes 10 large B777 aircraft, 15 medium-sized A330 aircraft and 2 small aircraft A320.

The following information is available provided the flight conditions and the number of passengers are fixed.

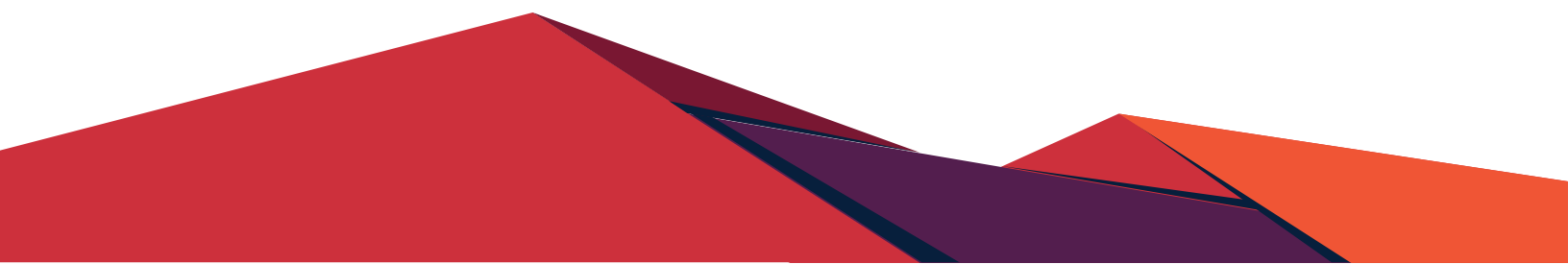|	City	Flight Cost ($)	Flight Revenue ($)	Average Flight Duration (Hour)
B777	A	6000	5000	1
	B	7000	7000	2
	C	8000	10000	5
	D	10000	18000	10
A330	A	1000	3000	2
	B	2000	4000	4
	C	4000	6000	8
	D	-	-	20
A320	A	2000	4000	1
	B	3500	5500	2
	C	6000	8000	6
	D	10000	14000	12

The table information is for a round trip route.

Consider the following constraints:

1) Cities A, B and C should have 4 flights a day and city D, 2 flights a day.

2) The flight ceiling of each aircraft is 18 hours a day.

Calculate the objective functions for the following formula and optimal requests.

A) Minimize costs

B) Maximizing profits

C) Minimize the total flight time

Question 2

2) The budget of the corporate marketing department is $ 150,000. Marketing executives plan to increase the company's customer base, consuming this budget in the form of advertisements in newspapers and television. Experience has shown that the number of ads is related to the increase in customer directly (but not linear). If we know that the cost of each newspaper and TV ad is $ 1,000 and $ 10,000, respectively, also the maximum possible number of advertisements in newspapers and television is 30 and 15, respectively, as well as the effectiveness of the ads (customer attracted per ad is as follows:

	Number of ads	Number of new customers
Newspaper	1-10	900
	11-20	600

TV	21-30	300
	1-5	10000
	6-10	5000
	11-15	2000

By specifying the number of ads of each type, help the company reach the maximum number of customers if:

A) without additional condition

B) The total number of commercials should not exceed 30, and also if we know that according to the agreement made with the Radio and Television, if the number of TV commercials exceeds 12, using any additional commercials on TV will cost the company 20% less.