

## Discounts

A discount card at a movie theater costs \$10. With that card, it only costs \$3 to attend a movie, instead of \$5. The card is valid for three months.

1. Use the same pair of axes for both of the graphs in this problem. Make a graph of the *total cost* (including the cost of the discount card if you got one) as a function of the *number of movies* you see:
  - a. if you have the discount card.
  - b. if you do not have the discount card.
2. What is the total cost of seeing  $n$  movies in three months
  - a. with the discount card?
  - b. without the discount card?
3.
  - a. If you saw 12 movies in three months, how much would you save by buying the discount card?
  - b. If you saw only 2 movies in three months, how much would you save by *not* buying the discount card?
4. **Report.** Write a report explaining how you would decide whether or not to buy the card. Do a complete analysis of the situation, using graphs, tables, and equations. Your discussion should include, but not be limited to, answers to the following questions:
  - What is the break-even point; that is, how many movies would you have to see in order to spend exactly the same amount with and without the discount card?
  - How would your decision be affected if the cost of the discount card were raised to \$12?
  - \* How would your decision be affected if the cost of the discount card were changed to \$ $D$ ?