Part 4.6: Mixed Questions

1. A company expects its sales to be between \$20 million and \$60 million, but it expects them to be approximately \$30 million.
    a. Choose a distribution to model this situation and justify your choice of distribution.
    b. Find the probability the sales will be less than \$25 million.
    c. Find the probability the sales will be between \$25 million and \$45 million.
2. The length of a rugby practice is always between 40 minutes and 1 hour. Most of the time the practices are approximately 55 minutes long.
    a. Choose a distribution to model this situation and justify your choice of distribution.
    b. Find the probability the practice will be less than 50 minutes.
    c. Find the probability the practice will be more than 45 minutes.
3. The battery life of an iPad is advertised to be 10 hours, and from my experience it always lasts more than 8 hours and less than 13 hours, depending on what I am doing.
    a. Choose a distribution to model this situation and justify your choice of distribution.
    b. What is the probability the battery lasts more than 11 hours?
    c. What is the probability the battery lasts between 9 and 11 hours?
4. The number of calories I consume in a day is normally between 1100 and 2500. The standard adult diet is approximately 2000 calories.
    a. Choose a distribution to model this situation and justify your choice of distribution.
    b. Find the probability I consume less than 1500 calories.
    c. Find the probability I consume more than 2300 calories.
    d. What are the mean and the standard deviation for this distribution?
    e. In the 10% of days that I eat the most, how many calories do I consume?
5. The cost of chicken breast at the supermarket is always between \$10 and \$25 a kilo, but is most often \$19.50 a kilo.
    a. Choose a distribution to model this situation and justify your choice of distribution.
    b. What is the probability the price is more than \$21 a kilo?
    c. What is the probability the price is between \$15 and \$18 a kilo?
    d. On the cheapest 20% of days, what price is it under?
6. The length of a pencil before it is sharpened for the first time is 19 cm and it becomes unusable when it is less than 8 cm. The normal length of a pencil is approximately 15 cm.
    a. Choose a distribution to model this situation and justify your choice of distribution.
    b. A pencil becomes difficult to use if it is less than 10 cm long. What is the probability a pencil is difficult to use?
    c. What range of lengths are the pencils between 90% of the time?
7. Looking at the graph below for a company's expenditure, choose a distribution to model this situation and justify your choice of distribution. The expenditure is in thousand dollar amounts.