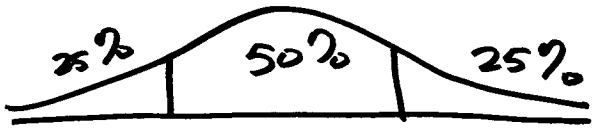
1. Frozen pizza must be stored at temperatures between -20 and -2 degrees Celsius to remain usable. Suppose the freezer units belonging to a large grocery store chain (like Ralph's or Vons) produce storage temperatures that are normally distributed with a mean of -5 degrees Celsius and a standard deviation of 12 degrees Celsius. Please answer the following questions about the seafood being sold to customers.

   a. What percent of freezers are too warm or too cold to properly store pizza? (3 points)
      A. 25.4%
      B. 28.0%
      C. 49.3%
      D. 50.7%
      E. none of the above

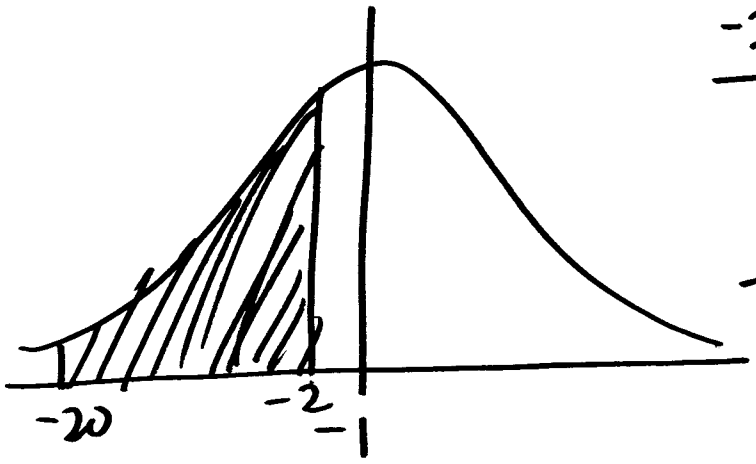
   b. What values of freezer temperatures represent the 25th and 75th percentiles for this distribution? (2 points each percentile value, 4 points total) SHOW YOUR WORK.

75th $+.65 = \frac{x-(-5)}{12}$ solve for $x = +2.8°$

25th $-.65 = \frac{x-(-5)}{12}$ solve for $x = -12.8°$



   c. Suppose the thermometers used to measure the temperature of the freezer units are inaccurate and actually all of the freezer units are 4 degrees warmer than reported above. What percentage of their freezers are capable of properly storing ice cream now? (3 points)



$\frac{-2-(-1)}{12} = \frac{-1}{12} = -.0833 \approx -.10$

area = 7.97%

$\frac{-20-(-1)}{12} = \frac{-19}{12} = -1.58 \approx -1.60$

area = 89.04%

$\frac{89.04-7.97}{2} = 40.94\%$

2. Here is unemployment data from 10 countries:

Country	Unemployment Rate
United States	8.7
Sweden	9.6
Germany	12.4
France	12
Great Britain	7
Italy	21.3
Ireland	12.1
Japan	2.8
Canada	11
Australia	2.1

a. Find the mean unemployment rate (2 points)

A. less than 9.0
B. 9.9
C. 10.3
D. 21.3
E. None of the above

b. Find the median unemployment rate (3 points)

A. 9.55
B. 9.9
C. 10.3
D. 14.15
E. None of the above

c. Find the standard deviation of unemployment rate (4 points)

A. less than 5.0
B. 5.2
C. 5.5
D. greater than 5.7
E. None of the above

d. ~~Find the Z-score for the United States using information from the table~~ above, the standard normal table, ~~and from parts a and c. (4 points)~~

OMIT

3. The total sales price for 50 computers plus delivery to a department from the UCLA student store:

total sales price = (50*computer price) + $200

Which statement below is correct about the distribution of sales prices of 50 computers after the student store has added its delivery charge of $200?

A. The mean of the distribution will change, but the median will remain the same
B. The range will remain the same but the standard deviation will change.
C. The mean and standard deviation will change, and the median and inter-quartile range will change.
D. The mean and median of the distribution will change, but the standard deviation will remain the same.
E. All of the above are false.

4.(5 points) Explain how the relation between the mean and the median provides information about the symmetry or skewness (asymmetry) of the distribution (pattern) of any histogram of data. BE BRIEF.

1) Identify that in symmetrical distributions mean = median

2) Identify that in distributions w/ a long right handed tail mean > median

3) Identify that in distributions w/ a long left handed tail mean < median

5.(2 points each part) Identify each study as being either observational or experimental by checking off the appropriate column.

Observational	Experimental	
✓		a. Psychiatrists examined some randomly selected prison records. They found inmates whose mothers smoked during pregnancy were 10 times more likely to be incarcerated for murder.
✓		b. A researcher finds that people who are more hostile have higher rates of heart disease than people who are less hostile.
✓		c. A researcher stood at a randomly selected busy intersection to see if the color of an automobile a person drives is related to running red lights.
	✓	d. Human subjects were randomized into two groups. One group was given an herbal remedy, the other group a placebo. After six months, the number of colds or flus each group had were compared.
	✓	e. Subjects are assigned to one of four groups. Each group is placed on one of four special diets -- a low fat diet, a high-fat diet, a low calorie diet, and a regular diet. After six months, the blood pressures of the groups are compared to see if diet has any effect on blood pressure.