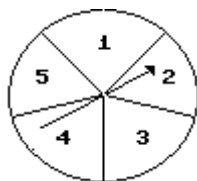


MATH FOR LIBERAL ARTS REVIEW 2

Use the theoretical probability formula to solve the problem. Express the probability as a fraction reduced to lowest terms.

- 1) A die is rolled. The set of equally likely outcomes is {1, 2, 3, 4, 5, 6}. Find the probability of getting a 6.
- 2) You are dealt one card from a standard 52-card deck. Find the probability of being dealt an ace or a 7.
- 3) Use the spinner below to answer the question. Assume that it is equally probable that the pointer will land on any one of the five numbered spaces. If the pointer lands on a borderline, spin again. Find the probability that the arrow will land on 3 or 4.



Use the empirical probability formula to solve the exercise. Express the answer as a fraction. Then express the probability as a decimal, rounded to the nearest thousandth, if necessary.

- 4) The table below represents a random sample of the number of deaths per 100 cases for a certain illness over time. If a person infected with this illness is randomly selected from all infected people, find the probability that the person lives 3-4 years after diagnosis.

Years after Diagnosis	Number deaths
1-2	15
3-4	35
5-6	16
7-8	9
9-10	6
11-12	4
13-14	2
15+	13

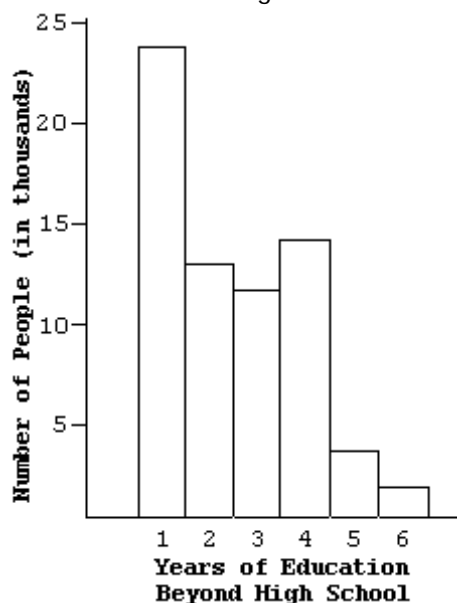
The exercise presents numerical information. Describe the population whose properties are analyzed by the data.

- 5) During 2001, 51% of households in City A were online.

Solve the problem.

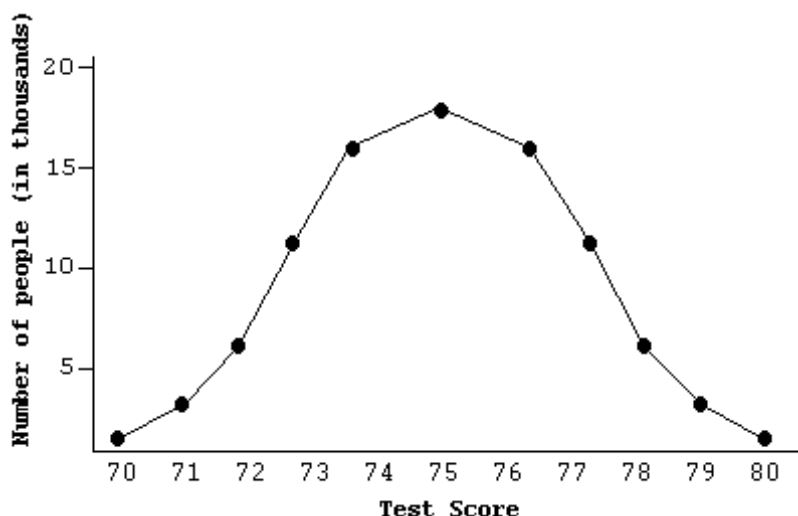
- 6) The city council of a small town needs to determine if the town's residents will support the building of a new library. The council decides to conduct a survey of a sample of the town's residents. Which one of the following procedures would be most appropriate for obtaining a sample of the town's residents?
 - A) Survey a random sample of librarians who live in the town.
 - B) Survey every 14th person who enters the old library on a given day.
 - C) Survey 400 individuals who are randomly selected from a list of all people living in the state in which the town is located.
 - D) Survey a random sample of persons within each neighborhood of the town.

7) Which one of the following is true according to the graph?



- A) If the sample is truly representative, then for a group of 50 people, we can expect about 32 of them to have one year of education beyond high school.
- B) The percent of people with years of higher education greater than those shown by any rectangular bar is equal to the percent of people with years of education less than those shown by that bar.
- C) The graph is based on a sample of approximately 62 thousand people.
- D) More people had 4 years of education beyond high school than 3 years.

8) The frequency polygon below shows a distribution of test scores.

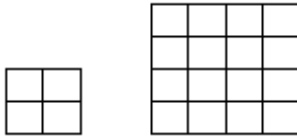


Which one of the following is true based on the graph?

- A) More people had a score of 77 than a score of 73.
- B) More people had a score of 75 than any other, and as the deviation from 75 increases or decreases, the scores fall off in a symmetrical manner.
- C) The graph is based on a sample of approximately 15 thousand people.
- D) The percent of scores above any given score is equal to the percent of scores below that score.

Describe the error in the visual display shown.

9)



The volume of our sales has doubled!!!

Find the mean for the group of data items. Round to the nearest hundredth, if necessary.

10) 78, 78, 87, 71, 91, 78

Find the mean for the data items in the given frequency distribution. Round to the nearest hundredth, if necessary.

11)

Score	Frequency
x	f
1	5
2	2
3	1
4	6
5	7
6	10
7	9
8	12
9	11
10	11

Find the median for the group of data items.

12) 97, 97, 91, 47, 72, 97

Find the mode for the group of data items. If there is no mode, so state.

13) 97, 97, 94, 57, 80, 97

Find the midrange for the group of data items.

14) 96, 96, 93, 44, 71, 96

A group of data items and their mean are given. Find a. the deviation from the mean for each of the data items and b. the sum of the deviations in part a.

15) 46, 46, 48, 51, 51, 51, 52, 53, 56, 56; Mean = 51

Find a. the mean b. the deviation from the mean for each data item: and c. the sum of the deviations in part b.

16) 155, 162, 164, 169, 170

17) 153, 160, 162, 167, 168

Find the standard deviation for the group of data items (to the nearest hundredth).

18) 15, 16, 17, 18, 19

Find the a. mean and b. standard deviation for the data set. Round to two decimal places.

19)

Country	Number of Television Sets per 100 people
A	66
B	36
C	71
D	51
E	56

Provide an appropriate response.

20) If an adult male is told that his height is within 2 standard deviations of the mean of the normal distribution of heights of adult males, what can he assume?

Suppose that prices of a certain model of new homes are normally distributed with a mean of \$150,000. Use the 68-95-99.7 rule to find the percentage of buyers who paid:

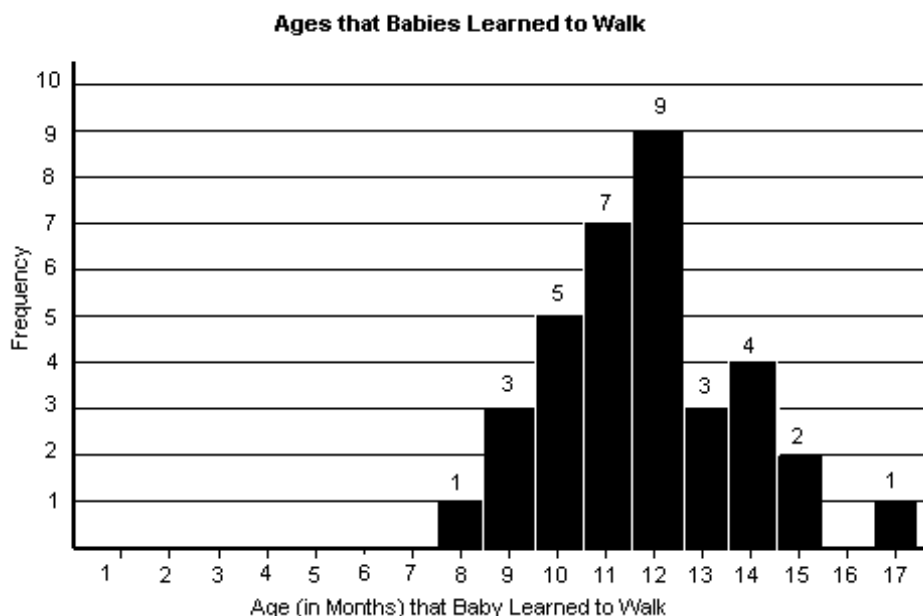
21) between \$150,000 and \$152,200 if the standard deviation is \$1100.

A set of data items is normally distributed with a mean of 60. Convert the data item to a z-score, if the standard deviation is as given.

22) data item: 69; standard deviation: 6

Solve the problem.

23) The histogram shows the ages (in months) that babies learned to walk. Use this histogram to solve the problem.



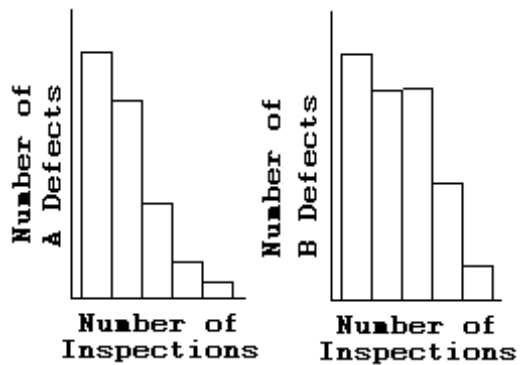
(i) Find the median age that a baby learned to walk.

(ii) Find the first quartile by determining the median of the lower half of the data.

24) A survey was conducted of 424 teenagers. Thirty-five percent of the teenagers said they occasionally smoked cigarettes. a. Find the margin of error for this survey. b. Write a statement about the percentage of teenagers who occasionally smoke cigarettes.

Use the histograms shown to answer the question.

25)



Can the number of A defects or the number of B defects be described using the normal distribution?

Express the fraction as a percent.

26) $\frac{13}{80}$

Write the decimal as a percent.

27) 0.083

Express the percent as a decimal.

28) 76.4%

Solve the problem.

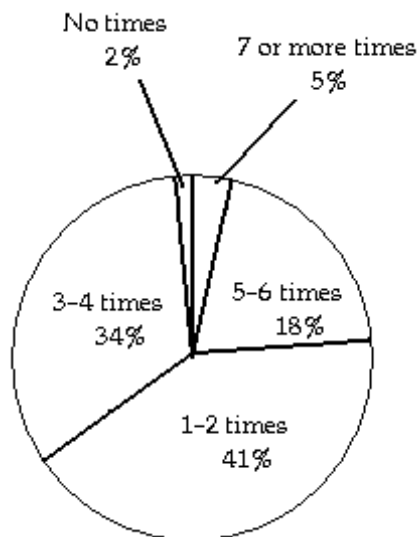
29) What number is 22% of 17?

30) 22 is 5% of what number?

31) 20% of what number is 90?

32) 133 is what percent of 70?

The circle graph shows the number of times a group of survey respondents watched the news in the past week. Use the chart to answer the question.



- 33) If the number of respondents in the study was approximately 42,000, how many stated that they watched the news 5-6 times in the last week?

Use the table to calculate the income tax owed.

2008 Marginal Tax Rates, Standard Deductions, and Exemptions

Tax Rate	Single	Married Filing Separately	Married Filing Jointly	Head of Household
10%	up to \$8025	up to \$8025	up to \$16,050	up to \$11,450
15%	\$8026 to \$32,550	\$8026 to \$32,550	\$16,051 to \$65,100	\$11,451 to \$43,650
25%	\$32,551 to \$78,850	\$32,551 to \$65,725	\$65,101 to \$131,450	\$43,651 to \$112,650
28%	\$78,851 to \$164,550	\$65,726 to \$100,150	\$131,451 to \$200,300	\$112,651 to \$182,400
33%	\$164,551 to \$357,700	\$100,151 to \$178,850	\$200,301 to \$357,700	\$182,401 to \$357,700
35%	more than \$357,700	more than \$178,850	more than \$357,700	more than \$357,700
Standard Deduction	\$5450	\$5450	\$10,900	\$8000
Exemptions (per person)	\$3500	\$3500	\$3500	\$3500

- 34) Married couple filing jointly with two dependent children

Gross Income: \$94,000

Adjustments: none

Deductions:

\$12,000 mortgage interest

\$5000 charitable contributions

\$2500 student loan interest

Tax credit: \$2000

Solve the problem.

- 35) A dress regularly sells for \$130. The sale price is \$84. Find the percent decrease of the sale price from the regular price.

The principal P is borrowed at simple interest rate r for a period of time t . Find the simple interest owed for the use of the money. Assume 360 days in a year and round answer to the nearest cent.

36) $P = \$180$
 $r = 4\%$
 $t = 2$ years

The principal P is borrowed at simple interest rate r for a period of time t . Find the loan's future value, A , or the total amount due at time t . Round answer to the nearest cent.

37) $P = \$160$
 $r = 8\%$
 $t = 3$ years

The principal P is borrowed and the loan's future value, A , at time t is given. Determine the loan's simple interest rate, r , to the nearest tenth of a percent.

38) $P = \$170$
 $A = \$205.70$
 $t = 3$ years

Answer Key

Testname: MATH 1332REVIEW2

- 1) $\frac{1}{6}$
- 2) $\frac{2}{13}$
- 3) $\frac{2}{5}$
- 4) $\frac{35}{100}$; 0.35
- 5) households in City A
- 6) D
- 7) D
- 8) B
- 9) The length of a side has doubled, but the area has been multiplied by 4.
- 10) 80.5
- 11) 6.74
- 12) 94
- 13) 97
- 14) 70
- 15) -5, -5, -3, 0, 0, 0, 1, 2, 5, 5; 0
- 16) a. 164 b. -9, -2, 0, 5, 6 c. 0
- 17) a. 162 b. -9, -2, 0, 5, 6 c. 0
- 18) 1.58
- 19) a. 56 b. 13.69
- 20) His height measurement is in the same range as about 95% of the other adult males whose heights were measured.
- 21) 47.5%
- 22) 1.5
- 23) (i) median = 12;
(ii) first quartile = 10.5
- 24) a. $\pm 4.9\%$ b. There is a 95% probability that the true population percentage lies between 30.1% and 39.9%.
- 25) Neither is normal.
- 26) 16.25 %
- 27) 8.3%
- 28) 0.764
- 29) 3.74
- 30) 440
- 31) 450
- 32) 190%
- 33) 7560 respondents
- 34) \$6272.50
- 35) 35.4%
- 36) \$14.40
- 37) \$198.40
- 38) 7%