Name: _____ Period: _____ Date: _____

Unit 12 - Data Analysis and Probability Review Guide

Find the elements of the following matrices

$$M = \begin{bmatrix} 2 & 6 & 5 \\ -3 & 2 & -3 \\ -2 & 1 & 1 \end{bmatrix}$$

1. Find M_{12}=

2. Find M_{31} =

Solve Problems involving matrices

The Matrix below shows the number of students enrolled in Literature, English and History.

$$\begin{array}{c} \\ \mathbf{M} \\ \mathbf{F} \end{array} \begin{array}{c} \begin{array}{ccc} \mathbf{L} & \mathbf{E} & \mathbf{H} \end{array} \\ \begin{bmatrix} 220 & 224 & 210 \\ 353 & 300 & 250 \end{bmatrix} \end{array}$$

3. How many Females are enrolled in history?

4. How many males are enrolled in English?

5. How many are enrolled in History or Literature?

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Unit 12 - Data Analysis and Probability Review Guide

Construct a Frequency Distribution Table.

The following are score of class Z in statistics quiz:

20	19	18	19	17
35	30	40	30	17
25	10	33	27	18

6. Find the Range.

7. Compute for the intervals.

8. Find the Class Size.

9. Construct a frequency table.

10. Draw a frequency histogram.

Name: _____ Period: _____ Date: _____

Unit 12 - Data Analysis and Probability Review Guide

Solve problems involving measures of central tendency and variability.

The following are scores of 13 students in Algebra quiz: 3, 20, 18, 17, 6, 14, 11, 11, 15, 27, 23, 25, and 28.

11. Find the Mean.

12. Find the Median.

13. Find the Mode.

14. Find the Range.

15. Find the Variance.

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Unit 12 - Data Analysis and Probability Review Guide

Solve problems involving box-and-whisker plots.

The following are scores of 13 students in Algebra quiz: 3, 20, 18, 17, 6, 14, 11, 11, 15, 27, 23, 25, and 28

Given the same data from above

16. Find the Quartile 1.

17. Find the Quartile 3

18. What is the difference between the second and the third quartile?

19. What is the difference between the first and second quartile?

20. Draw box-and-whisker plots.

Name: _____ Period: _____ Date: _____

Unit 12 - Data Analysis and Probability Review Guide

Solve problems involving Samples and Surveys.

A Super market wants to conduct a survey about costumer service; the number of visitor of the super market per week is about 1000 visitor.

21. What type of data is needed in this study? (Quantitative, Qualitative)

22. What is the best way to conduct this survey? (Direct Interview, Indirect Interview, Observation, Experiment)

23. What is the best sampling technique to use in this survey? (Simple random, Purposive, Convenient)

24. Find the sample of the population at 5% margin of error.
Solution:

25. Find the sample of the population at 1% margin of error.
Solution:

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Name: _____ Period: _____ Date: _____

Unit 12 - Data Analysis and Probability Review Guide

Solve problems involving permutation and combination.

26. There are two math books, three science books and 1 English book in the shelf. In how many ways can the book be arranged if the two math book is next to each other.

27. How many different ways can the letter of the word "MATHEMATICS" be arranged?

28. How many 6 letter and number Password Can be made from A - Z and 0 - 9?

There are 10 males and 8 females. How many 5-member committees can be formed if

29. A committee is composed of all male members?

30. A committee is composed of 2 males and 3 females?

Name: _____ Period: _____ Date: _____

Unit 12 - Data Analysis and Probability Review Guide

Solve problems involving Theoretical and Experimental Probability.

31. What is the probability of getting 3 heads when tossing 3 coins?

32. What is the probability of drawing a number between 5 and 9 in a 52 card deck of card?

33. What is the probability of getting a double number in rolling a pair of dice?

From a deck of cards, four cards are drawn at random. What is the probability that

34. All cards are Red?

35. All cards are flower?

Name: _____ Period: _____ Date: _____

Unit 12 - Data Analysis and Probability Review Guide

Solve problems involving Probability of compound events.

The data below are the distribution of students in class Y and their preferred elective.

Gender/ elective	Robotics (R)	Foreign Language (F)	Baking (B)	Total
Male (M)	15	5	5	**25**
Female (F)	5	15	10	**30**
Total	**20**	**20**	**15**	**55**

36. $P(F \cup B)$

37. $P(M \cup R)$

38. $P(F \cap B)$

39. Inside a Jar there are 10 candies, 15 chocolates, and 5 gums. What is the probability that gums or candies will be selected?

40. What is the probability of drawing a red card or a king?

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Unit 12 - Data Analysis and Probability Review Guide

ANSWER

Find the elements of the following matrices

$$M = \begin{bmatrix} 2 & 6 & 5 \\ -3 & 2 & -3 \\ -2 & 1 & 1 \end{bmatrix}$$

1. Find M_{12}= 6

2. Find M_{31} = -2

Solve Problems involving matrices

The Matrix below shows the number of students enrolled in Literature, English and History.

$$\begin{array}{c} \\ \mathbf{M} \\ \mathbf{F} \end{array} \begin{array}{c} \begin{array}{ccc} \mathbf{L} & \mathbf{E} & \mathbf{H} \end{array} \\ \begin{bmatrix} 220 & 224 & 210 \\ 353 & 300 & 250 \end{bmatrix} \end{array}$$

3. How many Females are enrolled in history? 250
4. How many males are enrolled in English? 224
5. How many are enrolled in History or Literature? 1033

Construct a Frequency Distribution Table.

The following are score of class Z in statistics quiz:

20	19	18	19	17
35	30	40	30	17
25	10	33	27	18

6. Find the Range.

Solution:

40 -10 = 30

7. Compute for the intervals.

Solution:

1+3.3log (15) =4.8 or 5

8. Find the Class Size.

Solution:

30/5 =6

9. Construct a frequency table.

Class Intervals	Frequency
10-15	1
16-21	7
22-27	2
28-33	3
34-39	1
40-45	1

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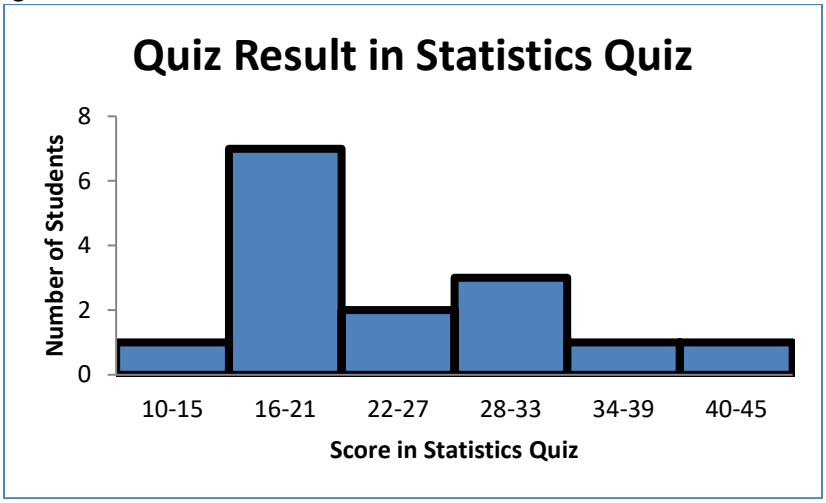
Unit 12 - Data Analysis and Probability Review Guide

10. Draw a frequency histogram.



Solve problems involving measures of central tendency and variability.

The following are scores of 13 students in Algebra quiz: 3, 20, 18, 17, 6, 14, 11, 11, 15, 27, 23, 25, and 28.

11. Find the Mean.
Solution:

$$\bar{x} = \frac{3+20+18+17+6+14+11+11+15+27+23+25+28}{13} = 16.8$$

12. Find the Median.
Solution:
3, 6, 11, 11, 14, 15, **17**, 18, 20, 23, 25, 27, 28
The median is 17
13. Find the Mode.
Solution:
3, 6, **11, 11**, 14, 15, 17, 18, 20, 23, 25, 27, 28
The mode is 11
14. Find the Range.
Solution:
R = 28 -3 =25
15. Find the Variance.
Solution:

X	$\lvert X - mean \rvert$	$(X - mean)^2$
3	13.8	190.44
6	10.8	116.64
11	5.8	33.64
11	5.8	33.64
14	2.8	7.84

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15	1.8	3.24
17	0.2	0.04
18	1.2	1.44
20	3.2	10.24
23	6.2	38.44
25	8.2	67.24
27	10.2	104.04
28	11.2	125.44
13		**732.32**

$$S_N^2 = \frac{\sum(x-\bar{x})^2}{N-1} = \frac{732.32}{12} = 61.02$$

Solve problems involving box-and-whisker plots.

The following are scores of 13 students in Algebra quiz: 3, 20, 18, 17, 6, 14, 11, 11, 15, 27, 23, 25, and 28

Given the same data from above

16. Find the Quartile 1.

Solution:

3, 6, 11, 11, 14, 15, 17, 18, 20, 23, 25, 27, 28

13/4 =3.25 or 3

Q1 = 11

17. Find the Quartile 3

Solution:

3, 6, 11, 11, 14, 15, 17, 18, 20, 23, 25, 27, 28

3(13)/4 =9.75 or 10

Q3 = 23

18. What is the difference between the second and the third quartile?

Solution:

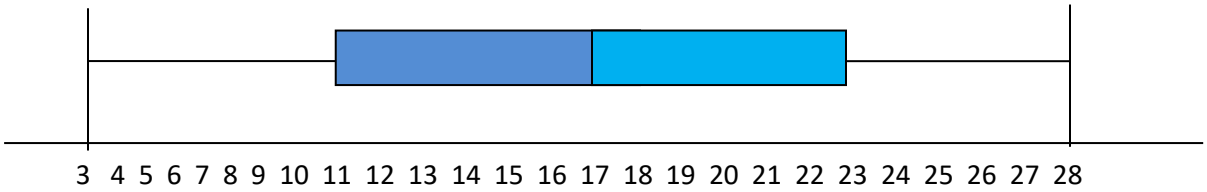
Q1 = 11 and Q2 = 17; 17 - 11 = 6

19. What is the difference between the first and second quartile?

Solution:

Q2 = 17 and Q3 = 23; 23 - 17 = 6

20. Draw box-and-whisker plots.



Solve problems involving Samples and Surveys.

A Super market wants to conduct a survey about costumer service; the number of visitor of the super market per week is about 1000 visitor.

21. What type of data is needed in this study? (Quantitative, Qualitative)

Quantitative

22. What is the best way to conduct this survey? (Direct Interview, Indirect Interview, Observation, Experiment)

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Unit 12 - Data Analysis and Probability Review Guide

Indirect Interview

23. What is the best sampling technique to use in this survey? (Simple random, Purposive, Convenient)

Convenient Sampling

24. Find the sample of the population at 5% margin of error.

Solution:

$$n = \frac{1000}{1 + 1000(0.05)^2} = 285.7 \text{ or } 286$$

25. Find the sample of the population at 1% margin of error.

Solution:

$$n = \frac{1000}{1 + 1000(0.01)^2} = 909.01 \text{ or } 909$$

Solve problems involving permutation and combination.

26. There are two math books, three science books and 1 English book in the shelf. In how many ways can the book be arranges if the two math book is next to each other.

Solution:

(2 math book), three science book and 1 English book = 5!, the probability of 2 math books = 2!

(5!)(2!) =240

27. How many different ways the letter of the word "MATHEMATICS" be arranged?

Solution:

M =2, A =2, T = 2, E = 1,H =1 ,I =1, C = 1 ,S = 1

$_{11}P_{11} = \frac{11!}{2!2!2!1!1!1!1!1!} = 4989600$

28. How many 6 letter and number Password Can be made from A - Z and 0 - 9?

Solution:

$_{36}P_6 = \frac{36!}{(36-6)!} = 1402410240$

There are 10 males and 8 females. How many 5-member committees can be formed if

29. A committee is composed of all male members?

Solution:

n =10, r= 5

$$_{10}C_5 = \frac{10!}{(10-5)!\,5!} = 25$$

30. A committee is composed of 2 males and 3 females?

Solution:

n = 10, r = 2

$$_{10}C_2 = \frac{10!}{(10-2)!\,2!} = 45$$

n = 8, r =3

$$_8C_3 = \frac{8!}{(8-3)!\,3!} = 56$$

(45)(56) =2520 committees.

Solve problems involving Theoretical and Experimental Probability.

31. What is the probability of getting 3 heads in tossing 3 coins?

Solution:

n(S) = 8, n(E) = 1 P(E) =1/8

32. What is the probability of drawing a number between 5 and 9 in a 52 deck of card?

Unit 12 - Data Analysis and Probability Review Guide

Solution:
n(S) = 52, n(E) = 3X4 = 12, P(E) = 12/52 or 3/13
33. What is the probability of getting a double number in rolling a pair of dice?
Solution:
n(S) = 36, n(E) = 6, P(E) = 6/36 or 1/6
From a deck of cards, four cards are drawn at random. What is the probability that
34. All cards are Red?
Solution:
n(S) = $_{52}C_4$ =270725, n(E)= $_{26}C_4$ =14950, P(E) = 14950/270725 or 46/833
35. All cards are flower?
Solution:
n(S) = $_{52}C_4$ =270725, n(E) = $_{13}C_4$ =715, P(E) = 715/270725 or 11/4165

Solve problems involving Probability of compound events.

The data below are the distribution of students in class Y and their preferred elective.

Gender/ elective	Robotics (R)	Foreign Language (F)	Baking (B)	Total
Male (M)	15	5	5	**25**
Female (F)	5	15	10	**30**
Total	**20**	**20**	**15**	**55**

36. $P(F \cup B)$
Solution:
$P(F \cup B)$ = 20/55 +15/55 = 35/55 or 7/11

37. $P(M \cup R)$
Solution:
$P(M \cup R)$ = 25/55 + 20/55 - 15/55 = 30/55 or 6/11

38. $P(F \cap B)$
Solution:
$P(F \cap B)$= 10/55 or 2/11

39. Inside a Jar there are 10 candies, 15 chocolates and 5 gums. What is the probability that gums or cadies will be selected?
Solution:
$P(E_1 \cup E_2)$ = 10/30 + 5/30 = 15/30 or 1/2

40. What is the probability of drawing a red card or a king?
Solution:
$P(E_1 \cup E_2)$ = 26/52 + 4/52-2/52 = 28/52 or 7/13

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