الملف حل مراجعة نهائية ريفيل الجزء الثالث

روابط مواقع التواصل الاجتماعي بحسب الصف السابع

روابط مواد الصف السابع على تلغرام

التربية الاسلامية	اللغة العربية	اللغة الانجليزية	الرياضيات

المزيد من الملفات بحسب الصف السابع والمادة رياضيات في الفصل الثالث

Part (2): 10 MCQ (5 marks per question)

Outcome: Use organized lists, tables, or tree diagrams to find the sample space , of a compound event. **Textbook #558 questions 6-11**

6) A number cube labeled 1 through 6 is rolled and the spinner shown is spun once. The spinner has four equal-size sections. This experiment is repeated 60 times. The relative frequency for getting a sum of 5 was $\frac{1}{5}$.**What is the difference between the number of expected outcomes and the number of actual outcomes?**
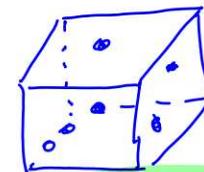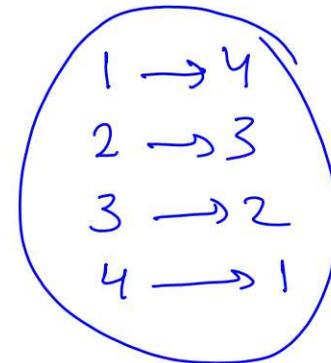
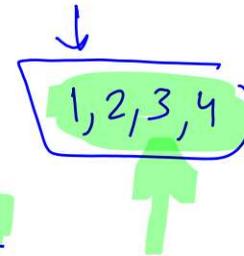relative frequency $= \frac{1}{5}$

$\frac{1}{5} = \frac{x}{60}$

$1,2,3,4$

or $x = \frac{1}{5} \times 60 = 12$
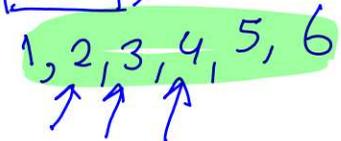
$P(\text{sum of } 5) = \frac{4 \div 4}{24 \div 4} = \frac{1}{6}$

$\frac{1}{6} = \frac{x}{60}$ or $x = \frac{1}{6} \times 60$

$= 10$

$1 \longrightarrow 4$
$2 \longrightarrow 3$
$3 \longrightarrow 2$
$4 \longrightarrow 1$

$4 \times 6 = 24$

$1, 2, 3, 4, 5, 6$

difference $= 12 - 10 = \boxed{2}$

Outcome: Use organized lists, tables, or tree diagrams to find the sample space , of a compound event. **Textbook #558 questions 6-11**

7) Olivia tosses a two–sided counter and then spins a spinner with six equal–size sections labeled 1 through 6. One side of the counter is red. The other side is yellow. She performs this experiment 80 times. The relative frequency of tossing red and spinning a number greater than three was 2/5. **What is the difference between the number of expected outcomes and the number of actual outcomes?**

$$P(\text{red and \# greater than 3}) = \frac{2}{5}$$

$$\frac{2}{5} = \frac{x}{80} \Rightarrow x = \frac{2}{5} \times 80 = 32$$

$$\frac{1}{4} = \frac{x}{80}$$

$$P(\text{real and number greater than 3})$$

$$= \frac{3 \div 3}{12 \div 3} = \frac{1}{4}$$

$$\frac{1}{4} \times 80 = 20$$

difference $= 32 - 20 = 12$
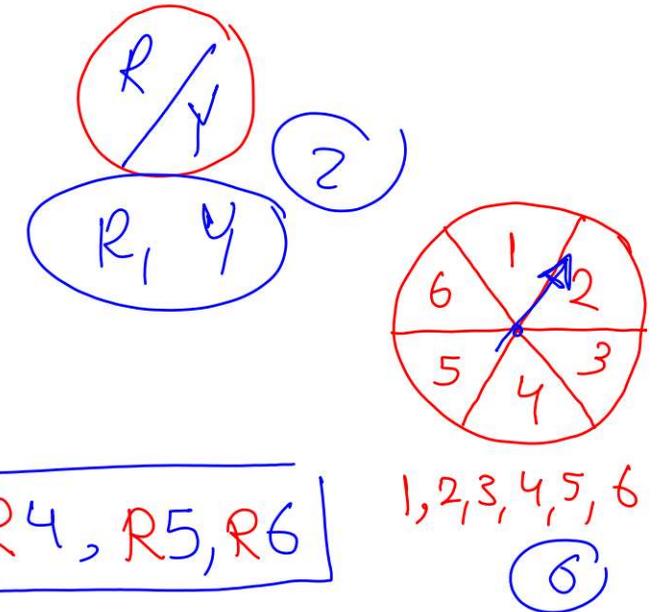
R / Y

R, Y   2

③ R4, R5, R6   1,2,3,4,5,6

total outcomes $= 2 \times 6 = 12$

6 1
5   2
4 3

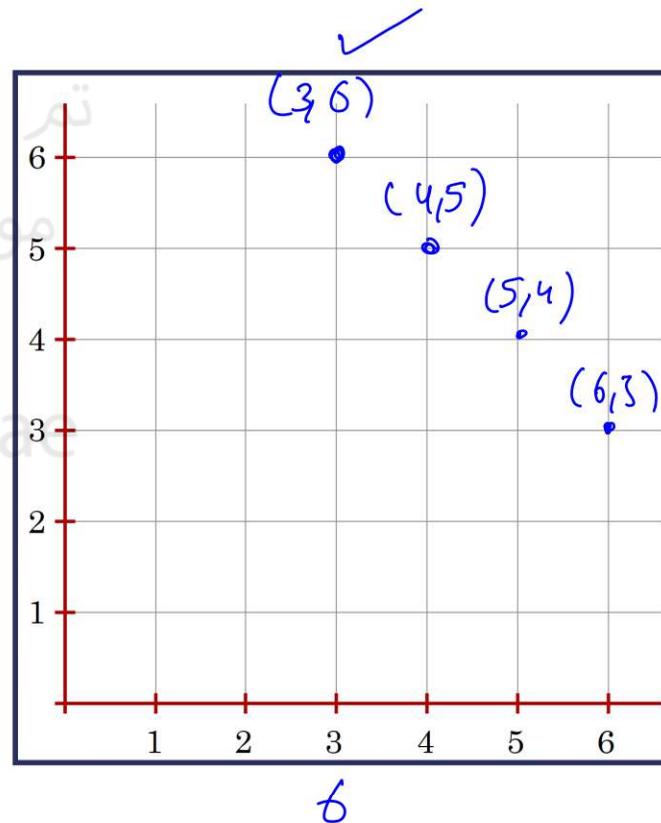**Outcome:** Use organized lists, to find the sample space and probability of a compound event   **Textbook #552,553 Examples 3,4**

Ex.3) Two number cubes labeled 1 through 6 are rolled, what is the probability of rolling a sum of 9?

$$\text{P(sum of 9)} = \frac{\text{Number of outcomes with sum of 9}}{\text{Total number of outcomes}} = \frac{4 \div 4}{36 \div 4} = \frac{1}{9}$$

(3,6)
(4,5)
(5,4)
(6,3)

$6 \times 6 = 36$
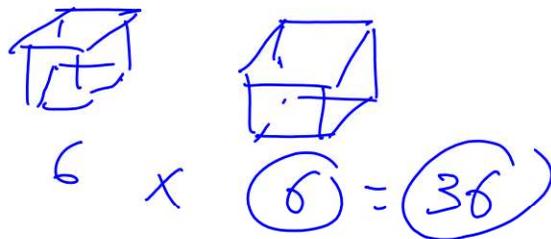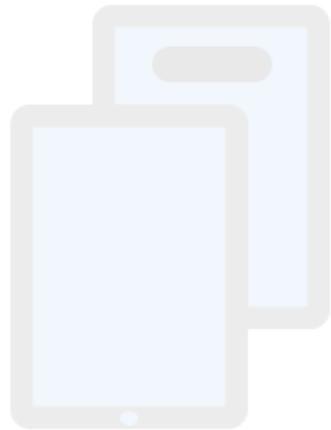
Roll 2

	1	2	3	4	5	6
1	(1, 1)	(1, 2)	(1, 3)	(1, 4)	(1, 5)	(1, 6)
2	(2, 1)	(2, 2)	(2, 3)	(2, 4)	(2, 5)	(2, 6)
3	(3, 1)	(3, 2)	(3, 3)	(3, 4)	(3, 5)	(3, 6)
4	(4, 1)	(4, 2)	(4, 3)	(4, 4)	(4, 5)	(4, 6)
5	(5, 1)	(5, 2)	(5, 3)	(5, 4)	(5, 5)	(5, 6)
6	(6, 1)	(6, 2)	(6, 3)	(6, 4)	(6, 5)	(6, 6)

Roll 1

Outcome: Use organized lists, to find the sample space and probability of a compound event   **Textbook #552,553 Examples 3,4**

Two coins are tossed and a number cubes labeled 1 - 6 is rolled. What is the probability of **tossing heads at least once ,and rolling an even number?**

P(Head at least once and even number) = $\dfrac{9}{24} = \dfrac{3}{8}$
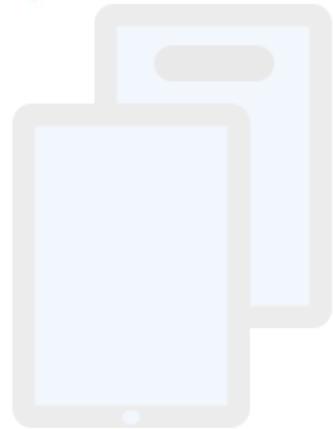
at least once 1, 2, 3...—

3 outcome × 3 outcome

9

H   HH

H

      T   HT

      H   TH

T

      T   TT

1, 2, 3, 4, 5, 6   No. # 6

Outcome: Use organized lists, tables, or tree diagrams to find the sample space , of a compound event. **Textbook #558 questions 6-11**
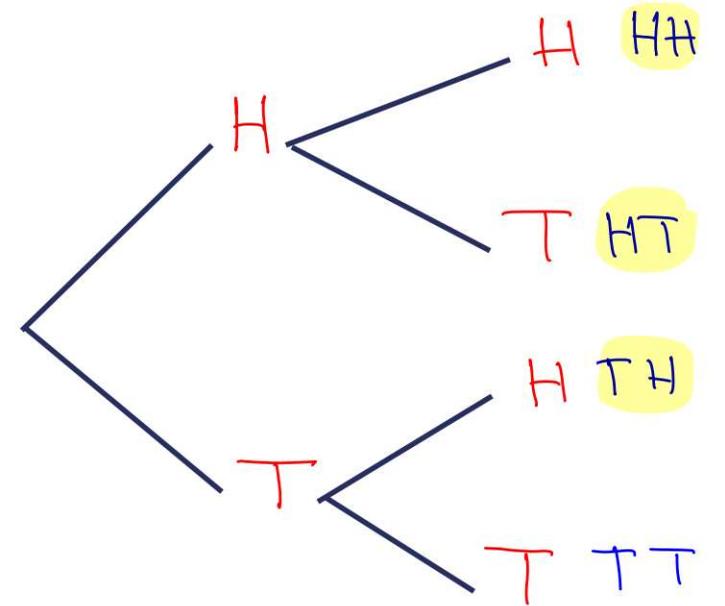
10) Does the algebraic expression x^{10} represent the number of possible outcomes if the spinner shown is spun x times??

$x = 1$ outcomes $= 10$

$x = 2$ outcomes $= 10 \times 10$

$= 10^2$

$x = 3$

outcomes $= 10^3$

10^x number of possible outcome

not x^{10}

11) Describe a real–world compound event that has a sample space with four possible outcomes. Show the sample space?

Sandwich	Salad
Roast Beef	Caesar
Turkey	Macaroni

Sample Space:

Roast Beef , Caesar

Roast Beef , Macaroni

Turkey , Caesar

Turkey , Macaroni

Outcome: Use organized lists, tables, or tree diagrams to find the sample space , of a compound event. **Textbook #558 questions 6-11**
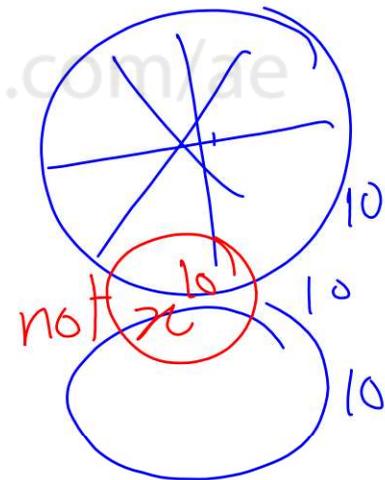
8) Natalie has a choice of a black, blue, or tan skirt to wear with a red, blue, or white sweater. Without calculating the number of possible outcomes, **how many more outfits can she create if she adds a yellow sweater to her collection?**

he will have ____3____ different skirts that she can wear with the yellow sweater.

9) Kimiko and Miko are playing a game in which each person rolls a number cube. If the sum of the numbers is a prime number, then Miko wins. Otherwise, Kimiko wins. **Is this game fair?**

The probability that Miko win = $\dfrac{15 \div 3}{36 \div 3} = \dfrac{5}{12}$

The probability that Kimiko win =

$= \dfrac{36-15}{36} = \dfrac{21}{36} = \dfrac{7}{12}$

Not fair
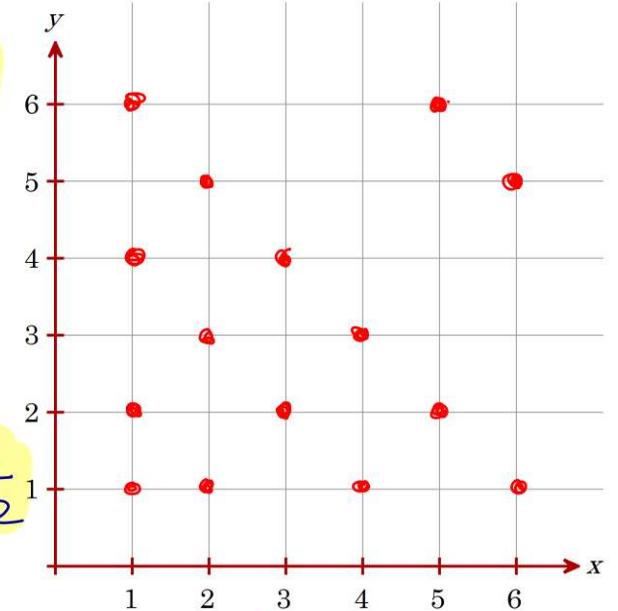
$6 \times 6 = 36$

Outcome: Design a simulation to represent a simple or compound event   .textbook #567 questions 1-2

1) Suppose the chance of rain on Saturday is 2/5 and the chance of rain on Sunday is also 2/5. A student wants to run a simulation to estimate the probability that it will rain on both days.

A) How can the student model the chance of it raining on each day? Design a simulation.

by using spinner with five equal section, R Section means rain

N Section means No rain. the spinner is spun twice for each trial.
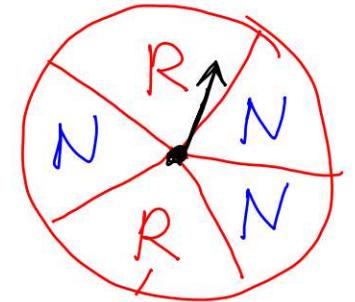
B) Suppose the table shows the results of 10 trials of a simulation. An "R" represents a day that it rained and an "N" represents a day that it did not rain. According to the results of the simulation, what is the experimental probability of having rain on both days?

$$P(\text{rain on both day}) = \frac{3}{10} \overset{\times 10}{\underset{\times 10}{}} = 0.3$$

Trial	1	2	3	4	5	6	7	8	9	10
Saturday	N	R	R	N	N	R	R	N	R	N
Sunday	N	N	R	R	N	R	N	R	R	N

$$\frac{30}{100} = 30\%$$

Outcome: Design a simulation to represent a simple or compound event

.textbook #567 questions 1-2

2) Leigh designs and conducts a computer simulation with 30 trials and uses the data from the simulation to create the relative frequency bar graph shown. The graph shows the relative frequency of the number of spins needed for a spinner divided into 6 equal sections labeled A through F to land on each letter at least once. Using the graph, what is the experimental probability that more than 10 spins are needed to land on each letter at least once? Write the probability as a percent.

$P(\text{more than 10 Spins})$

$= 0.35 + 0.20 + 0.15 + 0.05$

$= 0.75$

$= \dfrac{75}{100} = 75\%$

Relative Frequency bar graph — values: 7: 0.05, 8: 0.1, 9: (0), 10: 0.1, 11: 0.35, 12: 0.2, 13: 0.15, 14: 0.05

Number of Spins to Spin All Possible Letters
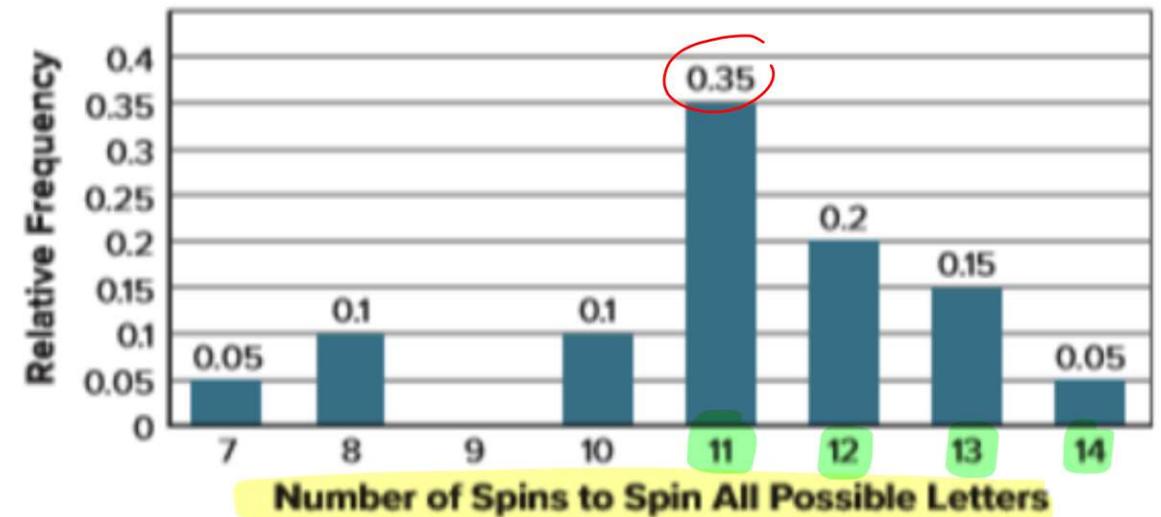
Module11:
Sampling and Statistics

Part (2): 10 MCQ (5 marks per question)

Outcome: Identify biased and unbiased sampling methods and understand that inferences made. . **Textbook #583 questions 1-5**

1) For each sampling description, identify the valid sampling method that best describes it. Choose from *simple random sample*, *stratified random sample*, **or** *systematic random sample*

A) To determine if a candidate for state senator is popular with voters, 25% of voters in 160 counties are surveyed.

☞ Because the population is divided into groups and then a simple random sample is then selected from each group it is a stratified random sample.

B) To determine whether students think a new school library is needed, a computer generates a list of 100 random students, and they are surveyed.

Because each person in the population is as likely to be chosen as any other it is a simple random sample.

C) To determine the freshness of doughnuts, a baker selects a doughnut every 30 minutes and checks it.

a systematic random sample

Part (2): 10 MCQ (5 marks per question)

Outcome: Identify biased and unbiased sampling methods and understand that inferences made. .**Textbook #583 questions 1-5**

2) Identify the type of biased sample for each situation. Choose from *convenience sample* or *voluntary response sample*.

A) A physical education teacher posts an online survey about whether students would be interested in a 5K race. The responses received determine whether there will be a 5K race.

- This sample involves only those who want to, or can, participate in the sampling so it is
- a voluntary response sample.

B) To determine the theme of the school dance, the student council president surveys his homeroom class.

- This sample includes members of the population that are easily accessed so it is
- a convenience sample.

Part (2): 10 MCQ (5 marks per question)

Outcome: Identify biased and unbiased sampling methods and understand that inferences made. .**Textbook #583 questions 1-5**

3) To evaluate customer satisfaction, a grocery store manager gives double coupons to anyone who completes a survey as they enter the store. The store manager determines that customers are very satisfied with their shopping experience in his store. **Identify the sample method used and whether it is biased or unbiased. Then determine whether the inference is valid.**

This is a voluntary response sample.

The results are ~~biased~~ because the responses will likely favor opinions that come only from people who feel very strongly about that topic. So, the inference is not valid

Part (2): 10 MCQ (5 marks per question)

Outcome: Identify biased and unbiased sampling methods and understand that inferences made. . **Textbook #583 questions 1-5**

4) A member of the cafeteria staff asks every fifth student leaving the cafeteria to rank 5 entrees from most favorite to least favorite. She finds that pizza is one of the favorite entrees. Identify the sample method used and whether it is biased or unbiased. Then determine whether the inference is valid.

This sample is selected from the population according to a specific number so it is

a systematic random sample.

The results are unbiased because the sample is unbiased and representative.

So, the inference is valid.

Part (2): 10 MCQ **(5 marks per question)**

Outcome: Identify biased and unbiased sampling methods and understand that inferences made. . .**Textbook #583 questions 1-5**

5) To evaluate the defect rate of its lenses, a camera lens manufacturer tests every 100th lens off the production line. Out of 1,000 lenses tested, one lens is found to be defective. The manufacturer concludes that 3 lenses out of 3,000 will be defective. Select all of the statements that are true about the sampling method.

❑ This scenario is a systematic random sample.

❑ The sampling method is biased.

❑ The inference is valid.

❑ This scenario is a convenience sample.

❑ The sampling method is unbiased.

Outcome: Make predictions about a population based on data from a random sample. **Textbook #591 questions 1-6**

1) A school librarian is purchasing new books for her book clubs in the coming year. In order to determine how many books she needs, she randomly surveys 25 students who plan to participate in one of her book clubs in the coming year. The table shows the results. **Predict how many science fiction books she will need to purchase if 125 students participate in book club next year**

$$\frac{6}{25} \times 125 = 30$$

Book Club Type	Number of Students
Autobiography	2
Graphic Novel	7
Mystery	10
Science Fiction	6

The school librarian should buy __30__ science fiction books.

$$\frac{6}{25} = \frac{x}{125}$$

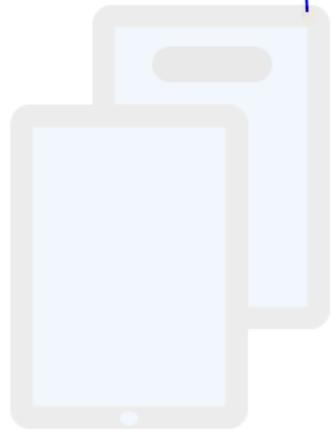**Outcome:** Make predictions about a population based on data from a random sample.   <mark>Textbook #591 questions 1-6</mark>

2) A smart tablet manufacturer tests 1 out of every 25 screens for flaws. Out of 125 tablets tested, 2 had defective screens. How many defective screens should the manufacturer expect out of 45,000 smart tablet.
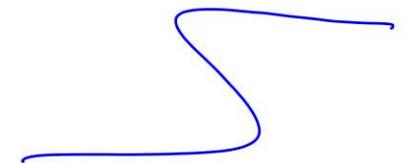
$$\frac{2}{125} = \frac{x}{45000} \qquad \text{or} \qquad x = \frac{2}{125} \times 45000$$

$$= 720$$

The manufacturer should expect ___720___ tablets to be defected

3) The superintendent of a school district wants to project for next year's middle school lunch count. The graph shows the results of a survey of randomly selected middle students. If the district has 5,000 middle school students next year, **about how many students plan to buy lunch 1–2 days a week?**
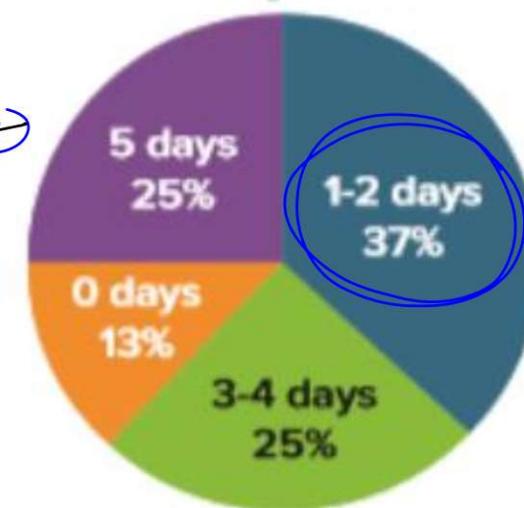
$$37\% = \frac{37}{100}$$

$$\frac{37}{100} = \frac{x}{5000}$$ or $$x = \frac{37}{100} \times 5000$$

$$= 37 \times 50$$

$$= 1850$$

How Many Days Will You Buy Lunch?

- 5 days 25%
- 1-2 days 37%
- 0 days 13%
- 3-4 days 25%

Outcome: Make predictions about a population based on data from a random sample. **Textbook #591 questions 1-6**

4) The guidance department conducted a random survey of the student body and found that 16% of the students plan to volunteer at the school festival. **Predict how many volunteer positions they should plan for a population of 950 students.**

$$\frac{\overset{8}{\cancel{16}}}{\cancel{100}} \times \cancel{95\cancel{0}}^{19}$$

$$= \boxed{152}$$

$$950 \times \frac{16}{100} = \frac{x}{950} \times 950$$

Outcome: Make predictions about a population based on data from a random sample.   <mark>Textbook #591 questions 1-6</mark>

5) The owner of a travel agency randomly surveyed its customers. The survey showed that 55% of the company's customers were planning an overseas vacation the following year. **Predict how many of the travel company's 12,400 travelers will vacation overseas the following year.**
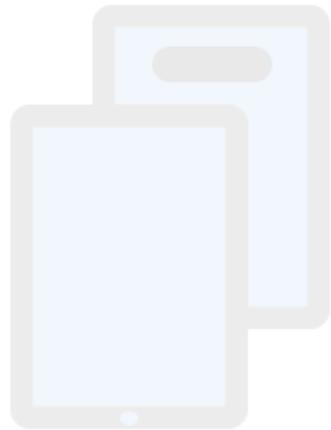
$$\frac{55}{100} = \frac{x}{12400}$$

$$\text{or} \quad x = \frac{55}{100} \times 12400$$

$$= 55 \times 124$$

$$= 6820$$

$$\text{Student}$$

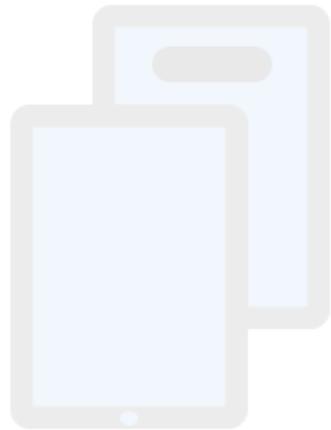**Outcome:** Make predictions about a population based on data from a random sample.   Textbook #591 questions 1-6

6) Every 30 minutes, a box of crayons is pulled from the assembly line to check the quality. Of 240 checked boxes of crayons, 2 did not pass inspection. **How many boxes out of 12,000 should the crayon company expect to not pass inspection?.**

$$\frac{2}{240} = \frac{x}{12000}$$

$$x = \frac{2}{240} \times 12000^{100}$$

$$= \boxed{100} \text{ box not pass insepction}$$

Outcome: Understand how collecting multiple samples of data can help determine predictions about a population <mark>Textbook #601 questions 1-3</mark>

1) The dot plot displays data from 14 random samples, each consisting of 30 middle school students. Each dot represents the mean number of sports played per year by students in the sample

Means of Samples

A) Which number best represents the mean number of sports played by middle school students?

$$\text{mean} = \frac{1 + 1.5 + \overset{6}{2(3)} + \overset{10}{2.5(4)} + \overset{9}{3(3)} + \overset{7}{3.5(2)}}{14} = \frac{34.5}{14}$$

$$= 2.46 \simeq 2.5$$

the mean of the population should be close to __2.5__ sports.

Number of Sports Played   2.5(2)

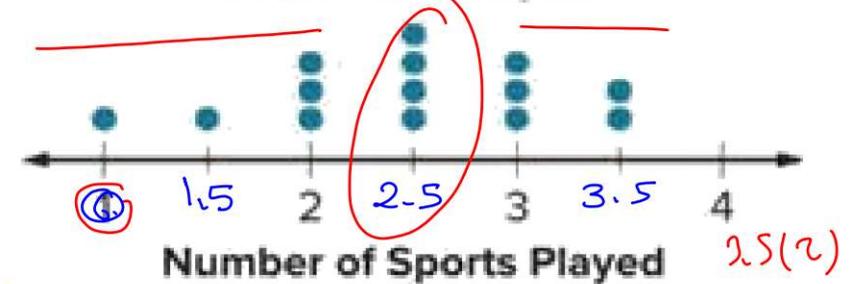B) Find and interpret the variability in the distribution

$$MAD = \frac{1.5 + 1 + 0.5(3) + 0(4) + 0.5(3) + 1(2)}{14} = \frac{7.5}{14}$$

$$\simeq 0.54$$

MAD= __0.5__ sports;
The majority of the sample means are within __0.5__ sport of the mean.
This means our estimate is likely not far off from the true mean.

High

The Mean

$$\frac{1 + 1.5 + 2(3) + 2.5(4) + 3(3) + 3.5}{14}$$

$$\approx 2.5$$

MAD = Mean Absolute Deviation

$$= \frac{1.5 + 1 + 0.5(3) +}{14}$$

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Part (1): 10 MCQ 3 marks per question

Outcome: Understand how collecting multiple samples of data can help determine predictions about a population   **Textbook #601 questions 1-3**
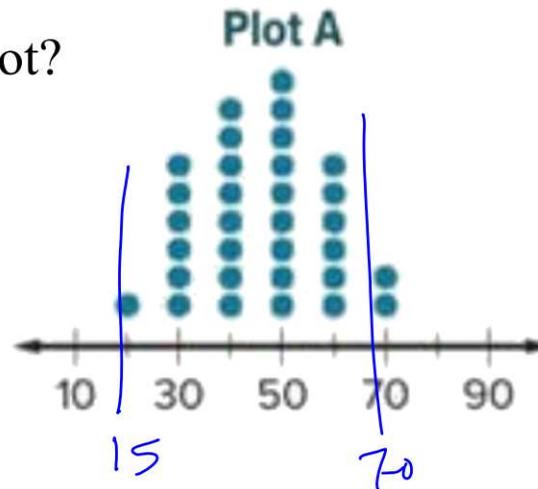
2) Below are two dot plots containing sample means from the same population.

A) How many samples are represented in each plot?

Plot A

___32___ samples are in Plot A

___32___ samples are in Plot B

because each dot represents one sample

Plot B

B) Which dot plot has higher variability?

Plot ___B___ has a higher variability.

C) One plot contains samples of size 25, and the other plot contains samples of size 60. Which dot plot contains the samples of size 60?

the plot that contains the sample of size 60 is ___Plot A___

because ___Plot A___ has smaller variability

Part (1): 10 MCQ 3 marks per question

Outcome: Understand how collecting multiple samples of data can help determine predictions about a population   **Textbook #601 questions 1-3**

3) A large company is trying to determine the mean number of pounds of decaf coffee sold per week in its stores. The dot plot shows the mean pounds of decaf coffee sold per week from 32 samples of 50 stores each

A) Describe the variability of the dot plot.

The majority of the data are clustered

between ___14___ and ___19___ pounds.

Means of Samples

B) How might the dot plot be different if each of the 32 samples contained data from 200 stores.

The data would be more tightly clustered

between _____ and _____ pounds.

Pounds of Decaf Coffee Sold per Week

D) The company samples 200 stores and finds a mean of 17 pounds of decaf coffee sold per week. Based on your answer to Part B, what range of values might describe the mean for all stores in the company

The store might expect to sell between _____ and _____ pounds of decaf coffee
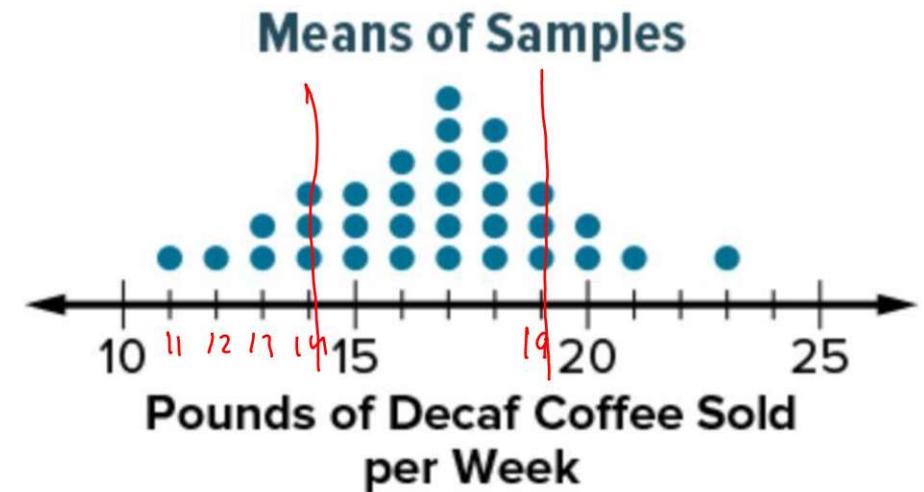
1) The double dot plot shows the weights in pounds of several housecats and small dogs. **Compare their centers and variability**. What are some appropriate inferences you can make about the data

Housecats

The Mean: $\dfrac{9 + \overset{20}{10(2)} + \overset{33}{11(3)} + \overset{24}{12(2)} + 13}{9} = \dfrac{99}{9} = \boxed{11.}$

The Mean Absolute Deviation (MAD)

$MAD = \dfrac{2 + 1(2) + 0(3) + 1(2) + 2}{9} = 0.888 - \\ \simeq 0.9$

Weights (lb)

Small Dogs

The Mean: $\dfrac{6 + 7 + 8(2) + 9(3) + 10(2) + 11 + 12}{11} = \dfrac{99}{11} = \boxed{9}$

The Mean Absolute Deviation (MAD) $= \dfrac{\boxed{3 + 2} + \overset{2}{1(2)} + \overset{0}{0(3)} + \overset{2}{1(2)} + \boxed{2 + 3}}{11} = \dfrac{14}{11} = 1.27$
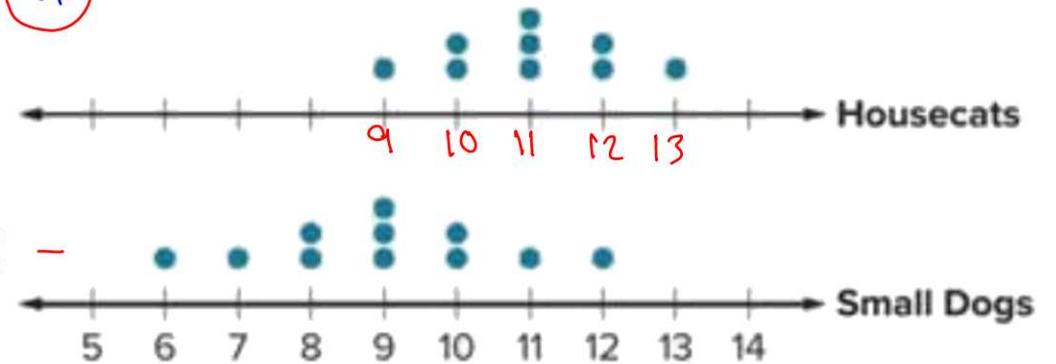
★ House cat have more weight than small dogs and have less variability

Part (2): 10 MCQ (5 marks per question)

Outcome Use the measures of center and measures of variation to compare two samples and make comparative inferences . Textbook #611 questions 1-3

2) The double box plot shows the number of Calories per serving for various fruits and vegetables. **What are some appropriate inferences you can make about the data**

$Range = Max - Min$
$= 200 - 25$
$= 175$

Calories per Serving

Fruits

Median: 100

$Q_3 = 125$
$Q_1 = 50$

Interquartile Range (IQR)

$= Q_3 - Q_1 = 125 - 50$
$= 75$

What is the difference in the interquartile range?

$75 - 50 = 25$

Vegetables

Median: $= 50$

$Range = Max - Min$
$= 100 - 0 = 100$

$Q_1 = 25$
$Q_3 = 75$

Interquartile Range (IQR)

$= Q_3 - Q_1$
$= 75 - 25 = 50$

introduction to data analysis: Box Plot

lower quartile Q1   median   upper quartile Q3

min   max

whisker   whisker

interquartile range (IQR) $= Q_3 - Q_1$
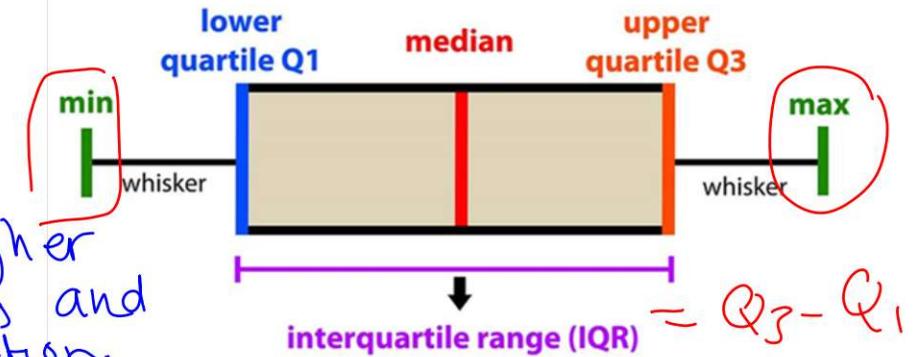
fruits have a higher number of calories and greater variation.

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Outcome Use the measures of center and measures of variation to compare two samples and make comparative inferences . **Textbook #611 questions 1-3**

3) The double dot plot represents the average number of hours of homework each week for high school students and middle school students. Use the measures of center and variability of these samples to select the age group(s) to which each statement applies.

Average Number of Hours of Homework per Week
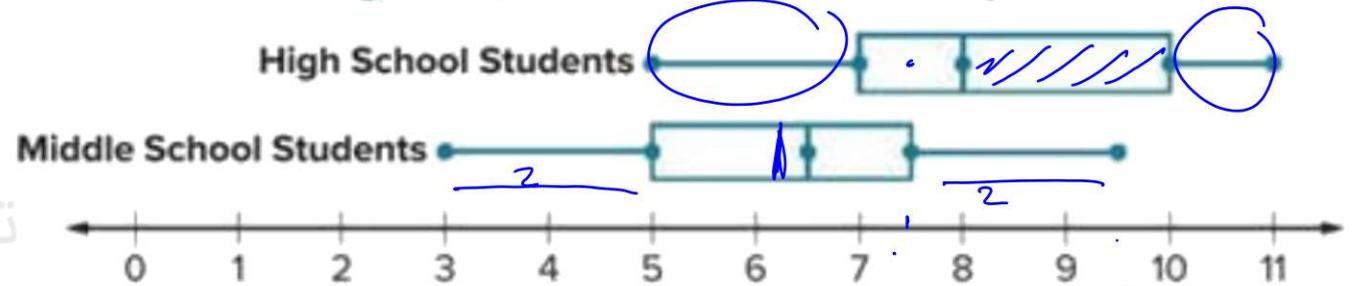
High School Students
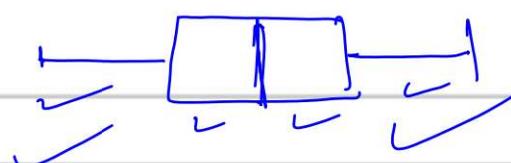Median = 8
R_G
IQR = $10 - 7 = 3$ Range = $11 - 5 = 6$

Middle School Students
Median = 6.5
IQR = $7.5 - 5$
= 2.5
Rang = $9.5 - 3$
= 6.5

	Middle School	High School
The median is greater.		✓
The IQR is 2.5.	✓	
The data have greater variability.		✓
A person from this sample is more likely to have more than 7 hours of homework a week.		✓
The data are more symmetric.	✓	