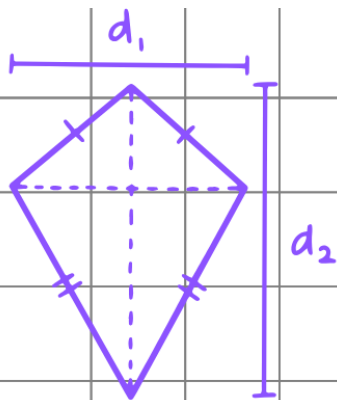


$$\cot \theta = \frac{1}{\tan \theta}$$

$${}^a\log x - {}^a\log y = {}^a\log \left(\frac{x}{y}\right)$$

$${}^a\log x = \frac{{}^p\log x}{{}^p\log a}$$

$$\cos(-\theta) = \cos \theta$$



$$A = \frac{1}{2} d_1 d_2$$



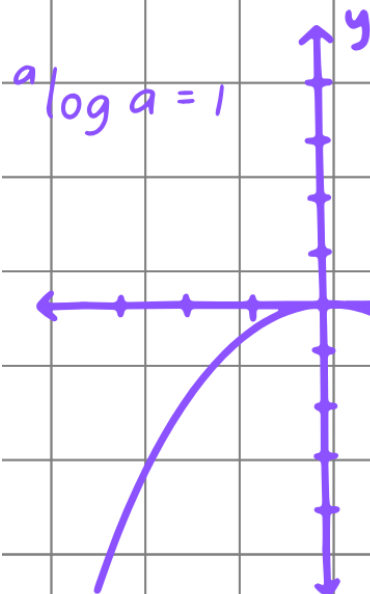
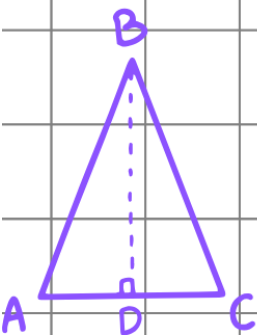
$$m = \tan \theta$$

$$= \cos x$$

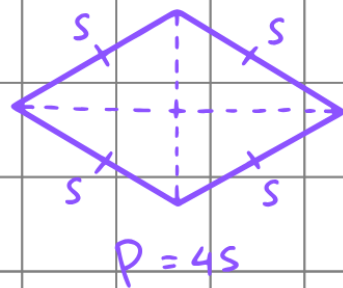
$$\frac{a(r^n - 1)}{r - 1} \quad r > 1$$

AP STATISTICS

SUMMER LEARNING JOURNAL



$$\frac{1}{\log a}$$



$$\cot \theta = \frac{1}{\tan \theta}$$

$${}^a\log x - {}^a\log y = {}^a\log \left(\frac{x}{y}\right)$$

$${}^a\log x = \frac{{}^p\log x}{{}^p\log a}$$

$$\cos(-\theta) = \cos \theta$$

Name: _____

Teacher: _____



Summer AP Statistics Learning Packet Overview For Rising 12th Grade Students

Welcome to your AP Statistics Summer Learning Packet! This packet is designed to help you review and strengthen key prerequisite skills needed for success in Statistics. Completing this work will ensure you start the school year confident, prepared, and ready to engage with more advanced concepts in data analysis and probability.

Each section of this packet focuses on a specific foundational topic. At the top of each section, you will find a link to an **Edpuzzle lesson**. You must **watch and complete the Edpuzzle** before attempting the problems in that section of the packet. The Edpuzzle videos provide important explanations, examples, and guided practice to support your understanding.

Important Information:

- **Both** the completed Edpuzzles and the physical packet will count toward your first **assessment grade** in Algebra II.
- Complete all work carefully and show all steps where necessary.
- Manage your time wisely and complete all sections before the first day of school.

By dedicating time to this summer work, you are setting yourself up for a strong and successful year in Algebra II. We look forward to seeing the effort and preparation you bring into the classroom this fall.

Nahum Skelton, nskelton@mptcs.org

Google Classroom Code: svbmhpjp

Part 1: Finding the Mean, Median, Mode

Section Overview	EdPuzzle Lesson
To find the mean (average), sum all the numbers in the dataset and divide by the total number of values. To find the median, arrange the numbers in ascending order and identify the middle value. If there are an even number of values, average the two middle values. To find the mode of a dataset, identify the value that appears most frequently. You can do this by arranging the data in order (ascending or descending) and then counting how many times each value occurs. The value with the highest frequency is the mode.	

Finding the Mean, Median, Mode Practice Problems

Now you get a chance to work out some problems. You may use a calculator if you would like. Study each of these problems carefully; you will see similar problems on the lesson knowledge check. You will need paper and a pencil to complete the following exercises. You will be able to check your answers with the link provided within the lesson to see how you well you did.

Complete the following problems.

1. What is the mean of the following numbers?
10, 39, 71, 39, 76, 38, 25
 - a. 42
 - b. 39
 - c. 42.5
 - d. 35.5
2. What number would you divide by to calculate the mean of 3, 4, 5, and 6?
 - a. 6
 - b. 3
 - c. 5
 - d. 4

3. What measure of central tendency is calculated by adding all the values and dividing the sum by the number of values?

- a. Median
- b. Mean
- c. Mode
- d. Typical value

4. The mean of four numbers is 71.5. If three of the numbers are 58, 76, and 88, what is the value of the fourth number?

- a. 64
- b. 60
- c. 76
- d. 82

5. Determine the mean of the following set of numbers:

40, 61, 95, 79, 9, 50, 80, 63, 109, 42

6. The mean weight of five complete computer stations is 167.2 pounds. The weights of four of the computer stations are 158.4 pounds, 162.8 pounds, 165 pounds, and 178.2 pounds respectively. What is the weight of the fifth computer station?

7. The mean width of 12 iPads is 5.1 inches. The mean width of 8 Kindles is 4.8 inches.

- a. What is the total width of the iPads?
- b. What is the total width of the Kindles?
- c. What is the mean width of the 12 iPads and 8 Kindles?

8. The following data represent the number of pop-up advertisements received by 10 families during the past month. Calculate the mean number of advertisements received by each family during the month.

43 37 35 30 41 23 33 31 16 21

9. The following table of grouped data represents the weight (in pounds) of 100 computer towers. Calculate the mean weight for a computer.

Weight (pounds) Number of Computers

[3 - 5)	8
[5 - 7)	25
[7 - 9)	45
[9 - 11)	18
[11 - 13)	4

10. A group of customer service surveys were sent out at random.

The scores were 90, 50, 70, 80, 70, 60, 20, 30, 80, 90, and 20.

Find the mean score.

11. What is the median of the following numbers?

10, 39, 71, 42, 39, 76, 38, 25

- a. 42.5
- b. 39
- c. 42
- d. 35.5

12. The front row in a movie theatre has 23 seats. If you were asked to sit in the seat that occupied the median position, in which seat would you have to sit?

- a. 1
- b. 11
- c. 23
- d. 12

13. What is the median score achieved by a student who recorded the following scores on 10 math quizzes?

68, 55, 70, 62, 71, 58, 81, 82, 63, 79

- a. 68
- b. 71
- c. 69
- d. 79

14. A set of four numbers that begins with the number 32 is arranged from smallest to largest. If the median is 35, which of the following could possibly be the set of numbers?

- a. 32, 32, 36, 38
- b. 32, 35, 38, 41
- c. 32, 34, 36, 37
- d. 32, 36, 40, 44

15. The number of service upgrades sold by each of 30 employees is as follows:

32, 6, 21, 10, 8, 11, 12, 36, 17, 16, 15, 18, 40, 24, 21, 23, 24, 24, 29, 16, 32, 31, 10, 30, 35, 32, 18, 39, 12, 20

What is the median number of service upgrades sold by the 30 employees?

- a. 18
- b. 21
- c. 24
- d. 32

16. Which of the following measures can be determined for quantitative data? a. Mean
b. Median
c. Mode
d. All of these

17. Which of the following measures can be calculated for qualitative data? a. Mean
b. Median
c. Mode
d. All of these

18. What is the term used to describe the distribution of a data set with one mode? a. Multimodal
b. Unimodal
c. Nonmodal
d. Bimodal

19. What is the mode of the following numbers?

12, 11, 14, 10, 8, 13, 11, 9

- a. 11
- b. 10
- c. 14
- d. 8

20. Which of the following measures can have more than one value for a set of data?

- a. Median
- b. Mode
- c. Mean
- d. None of these

21. What are the modes of the following sets of numbers?

- a. 3, 13, 6, 8, 10, 5, 6
- b. 12, 0, 15, 15, 13, 19, 16, 13, 16, 16

22. A student recorded her scores on weekly math quizzes that were marked out of a possible 10 points. Her scores were as follows:

8, 5, 8, 5, 7, 6, 7, 7, 5, 7, 5, 5, 6, 6, 9, 8, 9, 7, 9, 9, 6, 8, 6, 6, 7

What is the mode of her scores on the weekly math quizzes?

23. What is the mode of the following numbers, and what word can be used to describe the distribution of the data set?

5, 4, 10, 3, 3, 4, 7, 4, 6, 5, 11, 9, 5, 7

Part 2: Quartiles

Section Overview	EdPuzzle Lesson
To find quartiles, first order your data set from smallest to largest. Then, calculate the median (Q2), which divides the data into two halves. The lower quartile (Q1) is the median of the lower half, and the upper quartile (Q3) is the median of the upper half. To find the first quartile (Q1), you need to find the median of the lower half of your sorted data set. This means you'll first arrange your data in ascending order, then locate the middle value of the lower half of the data. This value represents the 25th percentile, dividing the lowest 25% of your data from the rest. To find the second quartile (Q2), also known as the median, you need to order the data set from smallest to largest, and then find the middle value. If the data set has an even number of values, the median is the average of the two middle values. To find the third quartile (Q3), also known as the upper quartile, first arrange your data in ascending order. Then, identify the median (Q2) of the entire dataset. Next, find the median of the upper half of the data (excluding Q2). This median is the third quartile, representing the 75th percentile.	

Find the first, second (median) and third quartiles. Work Space

1) 14, 17.5, 13.5, 12, 16, 15.5

First quartile = _____

Second quartile = _____

Third quartile = _____

2) 63, 175, 239, 50, 12, 252, 192, 120

First quartile = _____

Second quartile = _____

Third quartile = _____

3) 92, 88, 65, 82, 92, 102, 82, 39

First quartile = _____

Second quartile = _____

Third quartile = _____

4) 51.9, 24.1, 32.5, 78.6, 64.5, 39.4

First quartile = _____

Second quartile = _____

Third quartile = _____

5) 21.1, 1.12, 11.2, 12.1, 2.11, 2.12, 1.21, 11.2

First quartile = _____

Second quartile = _____

Third quartile = _____

Part 3: Trig Ratio

Section Overview	EdPuzzle Lesson
To solve for side lengths in trigonometric problems, identify the known and unknown sides relative to the reference angle, select the appropriate trigonometric ratio (sine, cosine, or tangent), and solve the resulting equation for the unknown side length. The acronym SOH CAH TOA helps remember the trigonometric ratios: Sine = Opposite/Hypotenuse, Cosine = Adjacent/Hypotenuse, Tangent = Opposite/Adjacent.	

Here's a more detailed breakdown:

1. Identify the sides:

- **Opposite:** The side across from the reference angle.
- **Adjacent:** The side next to the reference angle (not the hypotenuse).
- **Hypotenuse:** The side opposite the right angle.

2. Determine which trigonometric ratio to use:

- **SOH (Sine):** If you know the opposite and hypotenuse, or are trying to find one of those.
- **CAH (Cosine):** If you know the adjacent and hypotenuse, or are trying to find one of those.
- **TOA (Tangent):** If you know the opposite and adjacent, or are trying to find one of those.

3. Set up the equation:

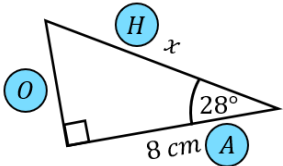
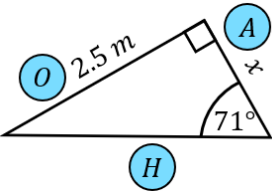
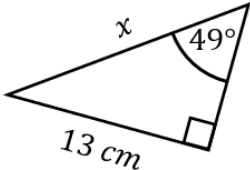
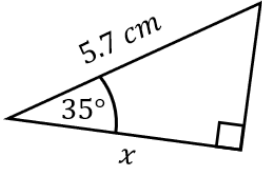
- Substitute the known values and the unknown side length into the chosen trigonometric ratio.

4. Solve for the unknown side length:

- Use algebraic manipulation to isolate the unknown side and calculate its value.

Fill in the Blanks	Finding Lengths Using Trigonometry
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Labelled diagram	Choose ratio	Substitute into formula	Rearrange formula	Answer (1dp)
	$\sin$		$x = 11 \times \sin 38$	
	$\tan$			

	$\cos$	$\cos \cos 28 = \frac{8}{x}$	$x = \frac{8}{\cos \cos 28}$	
	$\tan$			
				
				
		$\tan \tan 68 = \frac{7}{x}$		

Section Overview	EdPuzzle Lesson
To find the mean, median, and mode from a frequency table, follow these steps: 1. Mean: • Step 1: Multiply each data value by its corresponding frequency. • Step 2: Sum up the results from step 1. • Step 3: Divide the sum from step 2 by the total number of data points (the sum of all frequencies). 2. Median: • Step 1: Determine the total number of data points (sum of frequencies). • Step 2: Find the middle value(s) based on whether the total is odd or even: • Odd: The middle value is at position $((\text{total} + 1) / 2)$. • Even: The median is the average of the two middle values (positions $\text{total} / 2$ and $(\text{total} / 2) + 1$). • Step 3: Locate the median value(s) in the frequency table by cumulating the frequencies until you reach the median position(s). 3. Mode: • Step 1: Identify the data value with the highest frequency in the table.	

Find the mode, median, and mean for each data set.

1) Goals in a Hockey Game

Goals	Frequency	Mode	Median	Mean
3	7			
5	2			
6	2			
7	3			
10	1			

2) Academy Awards Won by Movie

# Awards	Frequency	Mode	Median	Mean
1	1			
3	1			
4	2			
5	2			
6	1			
7	4			
8	2			
11	2			

3) Shoe Size

Size	Frequency	Mode	Median	Mean
5.5	1			
7	4			
7.5	3			
8	2			
8.5	1			
9	3			
9.5	1			
10	1			

4)Times Winning the Basketball Tournament

Times	Won Frequency	Mode	Median	Mean
1	10			
2	3			
5	1			
11	1			

5)Goals in a Hockey Game

Goals	Frequency	Mode	Median	Mean
3	6			
5	7			
6	1			
7	2			

6)Shoe Size

Size	Frequency	Mode	Median	Mean
6.5	2			
7	2			
7.5	3			
8	1			
8.5	3			
9	5			
9.5	1			
10	2			

7) Games per World Series

Goals	Frequency	Mode	Median	Mean
4	4			
5	3			
6	2			
7	7			

8) Length of Book Titles

Words	Frequency	Mode	Median	Mean
1	1			
2	3			
3	5			
4	2			
5	2			
6	2			