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Topic 1: Average of two numbers

Problem 1: Find the average of 12 and 18.

Answer: The average is $(12 + 18) / 2 = 30 / 2 = 15$.

Problem 2: Calculate the average of 25 and 35.

Answer: The average is $(25 + 35) / 2 = 60 / 2 = 30$.

Topic 2: Introduction to summation notation

Topic 3: Mean of a data set

Problem 1: Find the mean of the data set {4, 8, 12, 16}.

Answer: Mean = $(4 + 8 + 12 + 16) / 4 = 40 / 4 = 10$.

Problem 2: Calculate the mean of {7, 9, 11, 13, 15}.

Answer: Mean = $(7 + 9 + 11 + 13 + 15) / 5 = 55 / 5 = 11$.

Topic 4: Computations involving the mean, sample size, and sum of a data set

A basketball team had a mean score of 53 points per game. The total number of points they scored is 954. How many games have they played?

games



$$\frac{954}{53} = 18 \text{ games}$$

Topic 5: Finding the value for a new score that will yield a given mean

Martina has scored 71, 78, and 66 on her previous three tests. What score does she need on her next test so that her average (mean) is 71?



4 tests
 mean = 71

$$71 \times 4 = 284 \text{ total points}$$

$$284 - 71 - 78 - 66 = 69$$

Answer: Weighted mean = $(0.25 \times 70) + (0.25 \times 80) + (0.5 \times 90) = 17.5 + 20 + 45 = 82.5$.

Topic 8: Median of a data set

Problem 1: Find the median of the data set {3, 7, 9, 12, 15}.

Answer: Ordered set: {3, 7, 9, 12, 15}. Median is the middle value, 9.

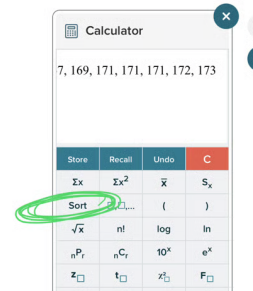
Here are the weights (in pounds) of a sample of 11 male eleventh graders.

172, 169, 171, 171, 162, 167, 142, 173, 157, 165, 171

[Send data to calculator](#) [Send data to Excel](#)

Find the median weight of these students.

pounds



Problem 2: Calculate the median of {4, 8, 10, 6}.

Topic 9: Mode of a data set

Problem 1: Find the mode of the data set {2, 4, 4, 6, 8}.

Answer: Mode is 4, as it appears most frequently (twice).

Problem 2: Determine the mode of {1, 3, 3, 5, 5, 7}.

Answer: Modes are 3 and 5, as each appears twice (bimodal).

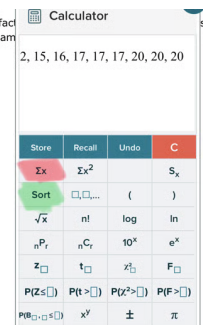
Topic 10: Mean, median, and mode: Computations

To inspect manufacturing processes, companies typically examine samples of parts for deficiencies. One company that manufactures its manufactured pens on each of 10 days. The company recorded, for each sample, the number of defective pens in the sample.

17, 15, 17, 16, 20, 20, 8, 20, 12, 17

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(a) What is the median of this data set? If your answer is not an integer, round your answer to one decimal place.	17	<i>Use sort</i>
(b) What is the mean of this data set? If your answer is not an integer, round your answer to one decimal place.	16.2	<i>Use summation</i>
(c) How many modes does the data set have, and what are their values? Indicate the number of modes by clicking in the appropriate circle, and then indicate the value(s) of the mode(s), if applicable.	<input type="radio"/> zero modes <input type="radio"/> one mode: <input type="text"/> <input checked="" type="radio"/> two modes: 17 and 20	<i>Use sort</i>



Topic 11: How changing a value affects the mean and median

The numbers of trading cards owned by 10 middle-school students are given below. (Note that these are already ordered from least to greatest.)

~~395~~⁵⁶⁵, 476, 506, 507, 528, 541, 555, 573, 588, 601

[Send data to calculator](#)

Original Median $\frac{528 + 541}{2} = 534.5$

Suppose that the number 395 from this list changes to 565. Answer the following.

(a) What happens to the mean?	<input type="radio"/> It decreases by <input type="text"/> . <input checked="" type="radio"/> It increases by 17. <input type="radio"/> It stays the same.
(b) What happens to the median?	<input type="radio"/> It decreases by <input type="text"/> . <input checked="" type="radio"/> It increases by <input type="text"/> 13.5

New Median $\frac{541 + 555}{2} = 548$

☐ It stays the same.

$$\begin{array}{r} 548 \\ -534.5 \\ \hline 13.5 \end{array}$$

To find mean: Use ALEKS calculator and the summation button and divide by how many there are.

Original mean: 527

New mean: 544

$544 - 527 = 17$

Increased by 17

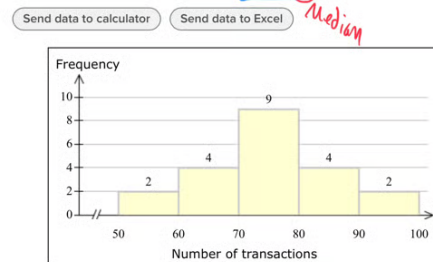
Topic 12: Choosing the best measure to describe data

<p>(a) The following number of people attended the last 9 screenings of a movie: 195, 196, 198, 200, 201, 203, 204, 207, 209.</p> <p>Which measure should be used to summarize the data?</p> <p> <input checked="" type="radio"/> Mean <input type="radio"/> Median <input type="radio"/> Mode </p>
<p>(b) In a survey, 9 people reported how many soft drinks they drank in the last month. Here are their responses: 28, 29, 30, 33, 35, 36, 37, 38, 86.</p> <p>Which measure should be used to summarize the data?</p> <p> <input type="radio"/> Mean <input checked="" type="radio"/> Median <input type="radio"/> Mode </p>
<p>(c) Each member of the football team was asked to report the year he was born. Which measure gives the most common year of birth?</p> <p> <input type="radio"/> Mean <input type="radio"/> Median <input checked="" type="radio"/> Mode </p>

Topic 13: Comparing the mean, median, and mode of a data set

USH Financial is examining the use of its midtown ATM machine. The numbers of transactions made in a day at this ATM for the past 21

12, 34, 57, 62, 64, 66, 68, 71, 72, 73, 73, 73, 75, 77, 79, 79, 81, 81, 85, 88, 94, 97



Answer the questions below.

<p>(a) Which measures of central tendency do not exist for this data set? Choose all that apply.</p>	<input type="radio"/> Mean <input type="radio"/> Median <input type="radio"/> Mode <input checked="" type="radio"/> All of these measures exist
<p>(b) Suppose that the measurement 54 (the smallest measurement in the data set) were replaced by 12. Which measures of central tendency would be affected by the change? Choose all that apply.</p>	<input checked="" type="radio"/> Mean <input type="radio"/> Median <input type="radio"/> Mode <input type="radio"/> None of these measures
<p>(c) Suppose that, starting with the original data set, the smallest measurement were removed. Which measures of central tendency would be changed from those of the original data set? Choose all that apply.</p>	<input checked="" type="radio"/> Mean <input checked="" type="radio"/> Median <input type="radio"/> Mode <input type="radio"/> None of these measures

$57 - 97$