Year 9 mean, median and mode worksheet

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Name: _____ Date: _____

Question 1

A gym tracks the number of minutes two groups of members spend exercising in a week. The data for 8 members in each group is listed below.

Group A: 20, 35, 40, 45, 50, 60, 65, 75

Group B: 15, 25, 30, 45, 55, 70, 80, 90

Find the median for each group, then find the difference between the two medians.

Answer: _____

Question 2

A dot plot shows the number of hours of screen time per day for 8 students. The values in order are: 1, 2, 2, 3, 4, 5, 6, 6. Find the median.

Answer: _____

Question 3

A random sample of 10 households in a suburb recorded their weekly grocery spending.

$185, $220, $150, $310, $205, $175, $240, $195, $260, $210

(a) Find the mean weekly grocery spending of the sample.

(b) The suburb has 400 households. Use the sample mean to estimate the total weekly grocery spending of all households in the suburb.

Answer: _____

Question 4

For the data set 12, 15, 9, 25, 15, 18, 11, find:

(a) the mean

(b) the median

(c) the mode

(d) the range

Answer: _____

Question 5

Two groups of Year 9 students recorded how many hours of screen time they had on a Saturday. The results are shown as a parallel frequency table.

Hours	0	1	2	3	4	5	6	7	8
Group X	1	4	7	5	3	2	1	1	0
Group Y	0	1	1	2	3	4	6	5	2

(a) How many students are in each group?

(b) Describe the shape of each distribution.

(c) Find the median number of hours for each group.

(d) Compare the two groups in one sentence.

Answer: _____

Question 6

The prices of the last seven houses sold in two suburbs are shown, in thousands of dollars.

Suburb P: 650, 700, 720, 750, 780, 800, 2950

Suburb Q: 700, 720, 760, 790, 810, 830, 850

(a) Find the mean and median price for each suburb.

(b) Describe the shape of the Suburb P data.

(c) Which measure of centre better describes a typical house price in Suburb P? Explain.

(d) Using your answer to (c), in which suburb is a typical house more expensive?

Answer: _____

Question 7

(a) In a positively skewed distribution, which is usually larger: the mean or the median? Explain why.

(b) Find the mean and median of the data set 2, 3, 3, 4, 4, 4, 5, 6, 9, 20, and check whether your answer to (a) holds.

Answer: _____

Question 8

Write a data set of 9 whole numbers, each between 1 and 10, that is negatively skewed and has a median of 8. Explain how you know your data set is negatively skewed.

Answer: _____

Question 9

A shoe shop recorded the sizes of the 10 pairs of shoes sold one morning.

7, 8, 8, 8, 9, 10, 11, 11, 11, 12

(a) Find the mode or modes.

(b) Describe the shape of the distribution.

(c) Find the mean and the median.

(d) Suggest a reason for the shape of this data.

Answer: _____

Question 10

The scores of 9 students in a quiz were:

8, 10, 11, 12, 13, 15, 16, 17, 24

(a) Find the mean and median.

(b) A tenth student, who sat the quiz late, scored 40. Find the new mean and new median.

(c) Which measure changed more? Explain why.

(d) Describe how adding the score of 40 changes the shape of the distribution.

Answer: _____

Year 9 mean, median and mode: answers and worked solutions

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Question 1

Key idea: With 8 values, the median is the mean of the 4th and 5th values.

1. Group A values are already in order: 20, 35, 40, 45, 50, 60, 65, 75.\ Median_A = (45 + 50)/(2) = 95/2 = 47.5 2. Group B values are already in order: 15, 25, 30, 45, 55, 70, 80, 90.\ Median_B = (45 + 55)/(2) = 100/2 = 50 3. Difference between medians: 50 - 47.5 = 2.5.

Answer: The difference between the two medians is 2.5 minutes.

Question 2

Key idea: For an even number of values, the median is the mean of the two middle values.

1. There are n = 8 values, already in order: 1, 2, 2, 3, 4, 5, 6, 6. 2. The two middle values are the 4th and 5th: 3 and 4. 3. Median = (3 + 4)/(2) = 3.5 hours.

Answer: 3.5 hours.

Question 3

Answer: (a) $215 ($2150 divided by 10) (b) $86 000 (400 times $215)

Question 4

Answer: (a) 15 (105 ÷ 7) (b) 15 (c) 15 (d) 16

Question 5

Answer: (a) 24 in each group (b) Group X is positively skewed; Group Y is negatively skewed. (c) Group X 2.5 hours, Group Y 6 hours (d) Group Y typically had much more screen time than Group X (median 6 hours compared with 2.5 hours).

Question 6

Answer: (a) P: mean $1 050 000, median $750 000; Q: mean $780 000, median $790 000 (b) positively skewed (one very high price, an outlier) (c) The median, because the one very expensive house pulls the mean up above six of the seven prices. (d) Suburb Q (median $790 000 compared with $750 000)

Question 7

Answer: (a) The mean, because the few very large values in the tail pull the mean up but do not affect the median much. (b) mean 6, median 4; yes, the mean is larger.

Question 8

Answer: Many answers are possible, for example 2, 4, 6, 7, 8, 8, 9, 9, 10. Check: 9 whole numbers from 1 to 10, the 5th value in order is 8, and most values are bunched at the high end with a tail of smaller values on the left.

Question 9

Answer: (a) 8 and 11 (b) bi-modal (c) mean 9.5, median 9.5 (d) For example: the shop sells both women's and men's shoes, which tend to be different sizes.

Question 10

Answer: (a) mean 14, median 13 (b) mean 16.6 (166 ÷ 10), median 14 ((13 + 15)/(2)) (c) The mean (up 2.6, compared with up 1 for the median), because the mean uses the size of every value, so one extreme value pulls it a lot. (d) It adds a long tail to the right, making the data positively skewed.