BRILLIANT

Competitive Math Assessment - Data Practice Quiz #2

Here are some suggestions for how to practice replicating testing conditions:

- Make sure you have a quiet place to practice on your own for an extended period of time. This will help model the actual experience of a competition. When you have finished the quiz, check your solutions using the online Brilliant quiz.
- Set a timer, or at least keep an eye on the clock to learn your own pace. If you want to set a specific time goal, math competitions provide an average of about 2 minutes per problem, so you should give yourself 30-40 minutes to complete these problems. Keep in mind that the general difficulty of problems increases as you move forward.
- Some competitions allow students to use calculators while others do not. We encourage you to use a calculator only for the most in-depth calculations on this practice quiz.

---

1. _____ What is the arithmetic mean of the set of numbers below?

$$\{17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27\}$$

2. _____ The data plot below shows the scores various students received on a quiz. What is the mean of the mode and the range of these scores?

Score

3. _____ What is the median of the complete set of integers from 1 through 111, inclusive?

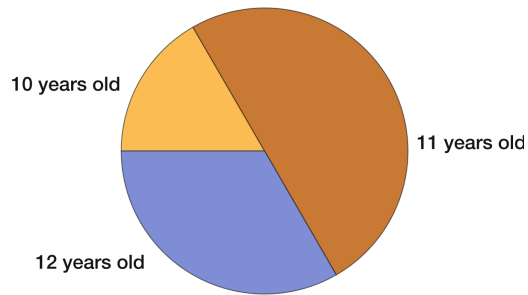|	
A. 53	**B.** 54
C. 55	**D.** 56
E. 57	

4. _____

A group of students is surveyed on their ages, and the results have been put in a pie chart as shown below (measurements are accurate and not approximate). If we list every age gathered (and repeat the number of times each age occurred as appropriate), what is the median age of the set of students?

10 years old

11 years old

12 years old

5. _____

The five high scores on a video game are shown in the table below. What is the mean (average) of the high scores?

Player	Score
Player 1	185,713
Player 2	185,706
Player 3	185,711
Player 4	185,718

6. _____

Ellie has a class with three quiz score of 82, 75, and 86, and she is about to take a test that is worth the same as three quizzes. If she wants the cumulative weighted average to be 90 with the quizzes and test combined, what's the minimum possible score she must get on the test?

7. _____

The set of numbers below have the same median and mode. What is the value of n?

$$\{47, 91, 39, 20, 83, n\}$$

8. _____

In a set of four numbers, the unique mode is 50, the median is 60, and the mean is 70. What is the value of the largest number?

9. _____

The set of numbers below have the same range and mean. What is the sum of all possible values of n?

$$\{60, 70, 80, 90, n\}$$

10. _____

What is the largest x (which may or may not be an integer) for which the mean of $\{x, 2x, 3x\}$ is larger than or equal to the mean of $\{x, x^2, x^2\}$?

11. _____

Two pairs of integers $\{a, b\}$ and $\{c, d\}$ share an integer mean x. If all five numbers (including the mean) are unique, and the largest integer in either set is 100, what is the largest possible value of x?

12. _____

The mean and median are equal in the set below. If exactly one integer is removed, how many possible choices for that integer are there such that the mean and median are still equal?

$$\{1, 2, 3, 4, 5, 6, 7, 8, 9\}$$

13. _____

A data set of 5 positive integers has a median of 2 and a range of 10. What's the largest possible mean?

14. _____

Given a set of three even integers, how many of the numbers below are possible values of the mean?

$$2 \qquad 2.5 \qquad 3 \qquad 5$$

15. _____

In the ordered sequence of positive integers $\{3, b, c, d, e, f, g, h\}$, any set of three adjacent numbers has a mean of 10. What is the maximum value of h?