

# Algebra 2 Quick Quiz 12202022

Question 1.

What is the sum of the first 6 terms of the series  $2+10+50+\dots$ ?

Arithmetic Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 + (n-1)d$$

$$\text{Sum: } s_n = \frac{n}{2}(a_1 + a_n)$$

Geometric Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 r^{(n-1)}$$

$$\text{Sum: } s_n = \frac{a_1(1-r^n)}{(1-r)}$$

- A 3,906
- B 7,812
- C 15,624
- D 31,248

Question 2

A child puts \$1.00 into a piggy bank. One week later, he puts \$1.25 in the bank. Two weeks later, he puts \$1.50 in the bank, and so on. How much money does he put in the bank on the 25<sup>th</sup> week?

Arithmetic Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 + (n-1)d$$

$$\text{Sum: } s_n = \frac{n}{2}(a_1 + a_n)$$

Geometric Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 r^{(n-1)}$$

$$\text{Sum: } s_n = \frac{a_1(1-r^n)}{(1-r)}$$

- A \$ 6.25
- B \$7.00
- C \$93.00
- D \$100.00

Question 3.

What is the value of  $x$  in the geometric sequence  $\left\{x, -\frac{1}{2}, \frac{1}{8}, \frac{-1}{32}, \dots\right\}$ ?

Arithmetic Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 + (n-1)d$$

$$\text{Sum: } s_n = \frac{n}{2}(a_1 + a_n)$$

Geometric Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 r^{(n-1)}$$

$$\text{Sum: } s_n = \frac{a_1(1-r^n)}{(1-r)}$$

- A -4
- B -2
- C 2
- D  $\frac{9}{2}$

Question 4.

Which formula could be used to find the sum of an arithmetic series if the last term is unknown?

Arithmetic Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 + (n-1)d$$

$$\text{Sum: } s_n = \frac{n}{2}(a_1 + a_n)$$

Geometric Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 r^{(n-1)}$$

$$\text{Sum: } s_n = \frac{a_1(1-r^n)}{(1-r)}$$

- A  $s_n = \frac{n}{2}(2a_1 + (n-1)d)$
- B  $s_n = \frac{n}{2}(2a_1 + (n+1)d)$
- C  $s_n = n(2a_1 + (n-1)d)$
- D  $s_n = n(2a_1 + (n+1)d)$

Question 5.

In an arithmetic sequence beginning with 36 and ending with 405, how many integers are divisible by 9?

Arithmetic Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 + (n-1)d$$

$$\text{Sum: } s_n = \frac{n}{2}(a_1 + a_n)$$

Geometric Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 r^{(n-1)}$$

$$\text{Sum: } s_n = \frac{a_1(1-r^n)}{(1-r)}$$

- A 41 integers
- B 42 integers
- C 44 integers
- D 45 integers

Question 6.

How many terms are there in a geometric series if the first term is 3, the common ratio is 4, and the sum of the series is 1,023?

Arithmetic Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 + (n-1)d$$

$$\text{Sum: } s_n = \frac{n}{2}(a_1 + a_n)$$

Geometric Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 r^{(n-1)}$$

$$\text{Sum: } s_n = \frac{a_1(1-r^n)}{(1-r)}$$

- A 4 terms
- B 5 terms
- C 6 terms
- D 23 terms

Question 7.

What is the complete solution to the equation

$$|3 - 6x| = 15?$$

A.   $x = -2; x = -3$

B.   $x = 2; x = 3$

C.   $x = 2; x = -3$

D.   $x = -2; x = 3$

Question 8.

What are the possible values of  $x$  in  $|12 - 4x| = 2$ ?

A.   $x = -2.50$  or  $x = -3.50$

B.   $3.5 > x > 2.5$

C.   $x = 2.50$  or  $x = 3.50$

D.   $-3.50 < x < -2.50$

Question 9.

For a wedding, Shereda bought several dozen roses and several dozen carnations. The roses cost \$15 per dozen, and the carnations cost \$8 per dozen. Shereda bought a total of 17 dozen flowers and paid a total of \$192. How many roses did she buy?

A.  6 dozen

B.  9 dozen

C.  8 dozen

D.  7 dozen

Question 10.

A restaurant manager bought 20 packages of bagels. Some packages contained 6 bagels each, and the rest contained 12 bagels each. There were 168 bagels in all. How many packages of 12 bagels did the manager buy?

A.  $\underline{\quad ? \quad} \mid 12$

B.  $\underline{\quad ? \quad} \mid 6$

C.  $\underline{\quad ? \quad} \mid 9$

D.  $\underline{\quad ? \quad} \mid 8$

Bonus Question

Question 11

Use the information provided to answer Part A and Part B for question 26.

To investigate housing needs in the future, a town planning committee created a model to help predict the growth of the population of the town. The committee created a model based on data about the population of the town for five years. The data are shown in the table.

Year	Population (in thousands)
1985	5.35
1990	6.01
1995	6.91
2000	8.07
2005	9.45
2010	11.06

**Part A**

Which model for  $P(t)$ , the population of the town  $t$  years after 1985, **best** fits the data?

- A.  $P(t) = 4.95 + 0.229t$
- B.  $P(t) = 5.35 + 0.228t$
- C.  $P(t) = 5.24(1.030)^t$
- D.  $P(t) = 5.35(1.029)^t$

**Part B**

Consider the value predicted by the model for the year 2010. Which statement is true?

- A. The model overpredicts the actual population of the town by fewer than 1,000 people.
- B. The model overpredicts the actual population of the town by more than 1,000 people.
- C. The model underpredicts the actual population of the town by fewer than 1,000 people.
- D. The model underpredicts the actual population of the town by more than 1,000 people.