Work every problem on the white boards in preparation for your quiz. You will be given 2 minutes for each problem before the answer is revealed.

1.) Write the sequence in recursive notation.

4, 8, 12, 16, 20, . . .

Answer:

\[
\begin{align*}
    a_1 &= 4 \\
    a_n &= a_{n-1} + 4; \ n \geq 1
\end{align*}
\]
2.) Write the sequence in explicit notation.
102, 97, 92, 87, 82, . . .

Answer:
\[a_n = -5n + 107\]

3.) Write the sequence in explicit notation.
1, 4, 9, 16, 25, 36, 49, . . .

Answer:
\[a_n = n^2\]
4.) Write the sequence in explicit notation.
\[
\frac{1}{2}, \frac{4}{5}, 1, \frac{8}{7}, \frac{5}{4}, \frac{4}{3}, \ldots
\]

Answer:
\[
a_n = \frac{2n}{n + 3}
\]

5.) Write the sequence in recursive notation.
10000, 1000, 100, 10, 1, 1/10, \ldots

Answer:
\[
\begin{align*}
a_1 & = 10,000 \\
a_n & = \frac{1}{10} a_{n-1}; n \geq 1
\end{align*}
\]
6.) For the sequence below, find $a_{17}$.
-9, -1, 7, 15, . . .

Answer:
119

7.) Find the third term in the arithmetic sequence whose common difference is 6 and $a_{38} = 218$.

Answer:
8
8.) Write the arithmetic sequence in recursive notation whose common difference is 2 and and seventeenth term is 50.

\[ a_1 = 18 \\
\{ a_n = a_{n-1} + 2; n \geq 1 \]  

Answer:

9.) Write the arithmetic sequence in explicit notation where \( b_8 = 83 \) and \( b_{25} = 236 \).

\[ b_n = 9n + 11 \]
10.) Write the sequence in recursive notation.

\[ \frac{1}{7}, \frac{2}{7}, \frac{3}{7}, \frac{4}{7}, \ldots \]

Answer:
\[
\begin{cases} 
    a_1 = 0 \\
    a_n = a_{n-1} + \frac{1}{7}; \quad n \geq 1
\end{cases}
\]

11.) Write the sequence in recursive notation.

\[ \frac{2}{3}, \frac{4}{9}, \frac{8}{27}, \ldots \]

Answer:
\[
\begin{cases} 
    a_1 = \frac{1}{3} \\
    a_n = \frac{2}{3} a_{n-1}; \quad n \geq 1
\end{cases}
\]