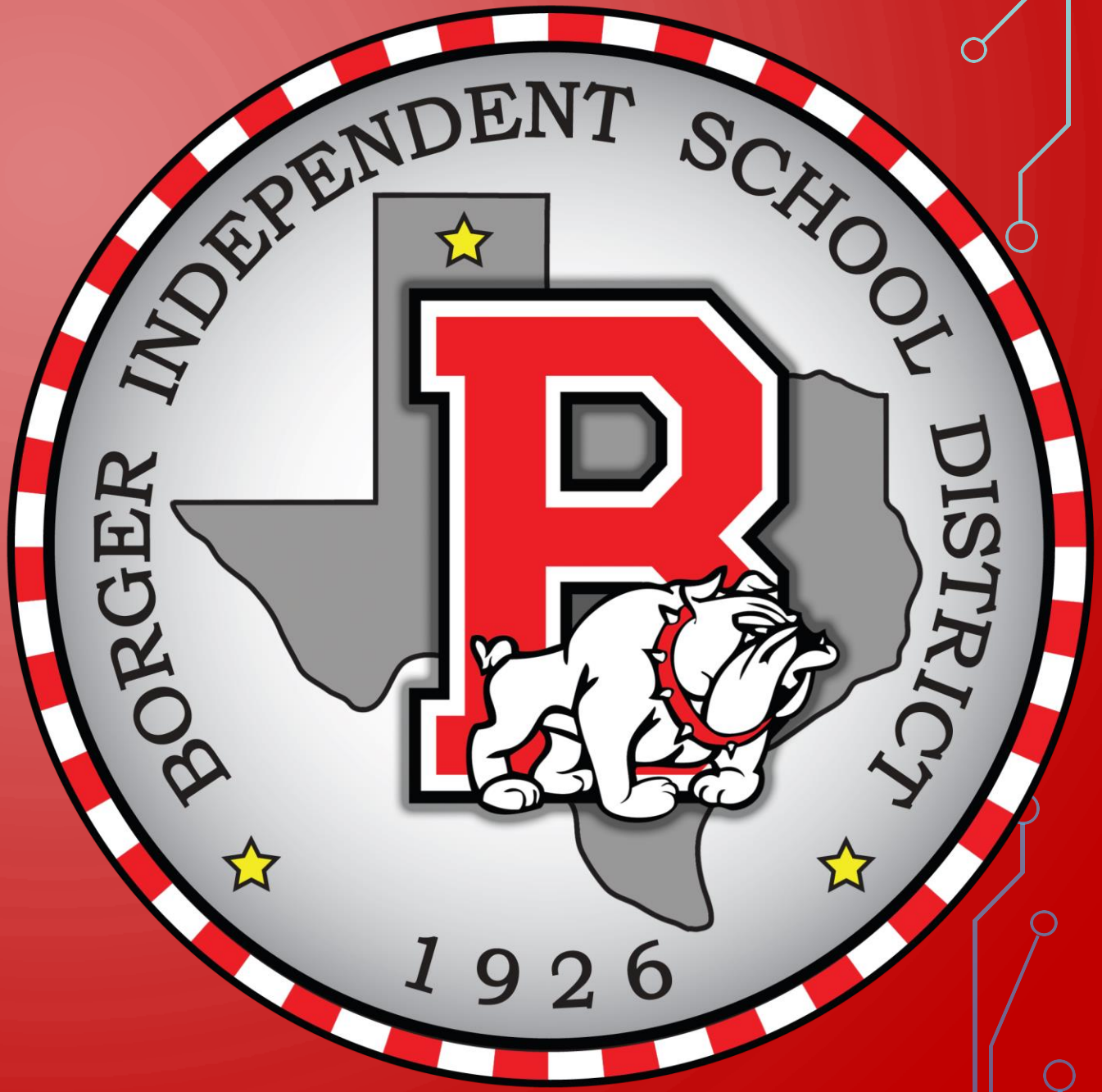
BOARD NOTES

10 MARCH 2020



P.5 (A) evaluate finite sums and geometric series, when possible, written in sigma notation;
P.5 (B) represent arithmetic sequences and geometric sequences using recursive formulas;
P.5 (C) calculate the nth term and the nth partial sum of an arithmetic series in mathematical and real-world problems;
P.5 (D) represent arithmetic series and geometric series using sigma notation;
P.5 (E) calculate the nth term of a geometric series, the nth partial sum of a geometric series, and sum of an infinite geometric series when it exists;

We will be able to evaluate a geometric or arithmetic series.

WHAT WE NEED:

- TI-84
- Arithmetic Sequence
- Geometric Sequence

I WILL BE ABLE TO COMPLETE MY HOMEWORK GIVEN THE

- Equation

Arithmetic:

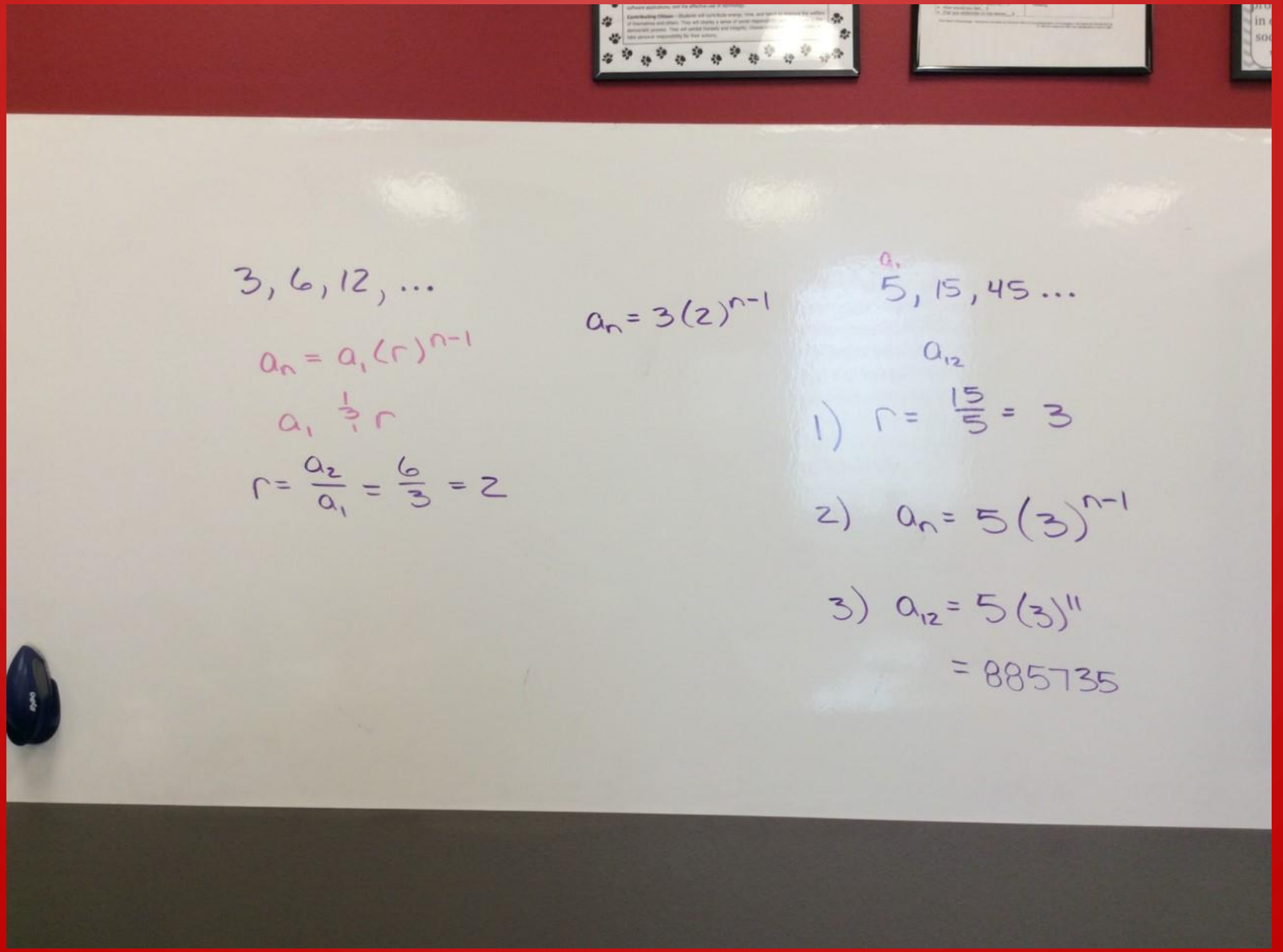
$$d = a_2 - a_1$$
$$d = a_3 - a_2$$

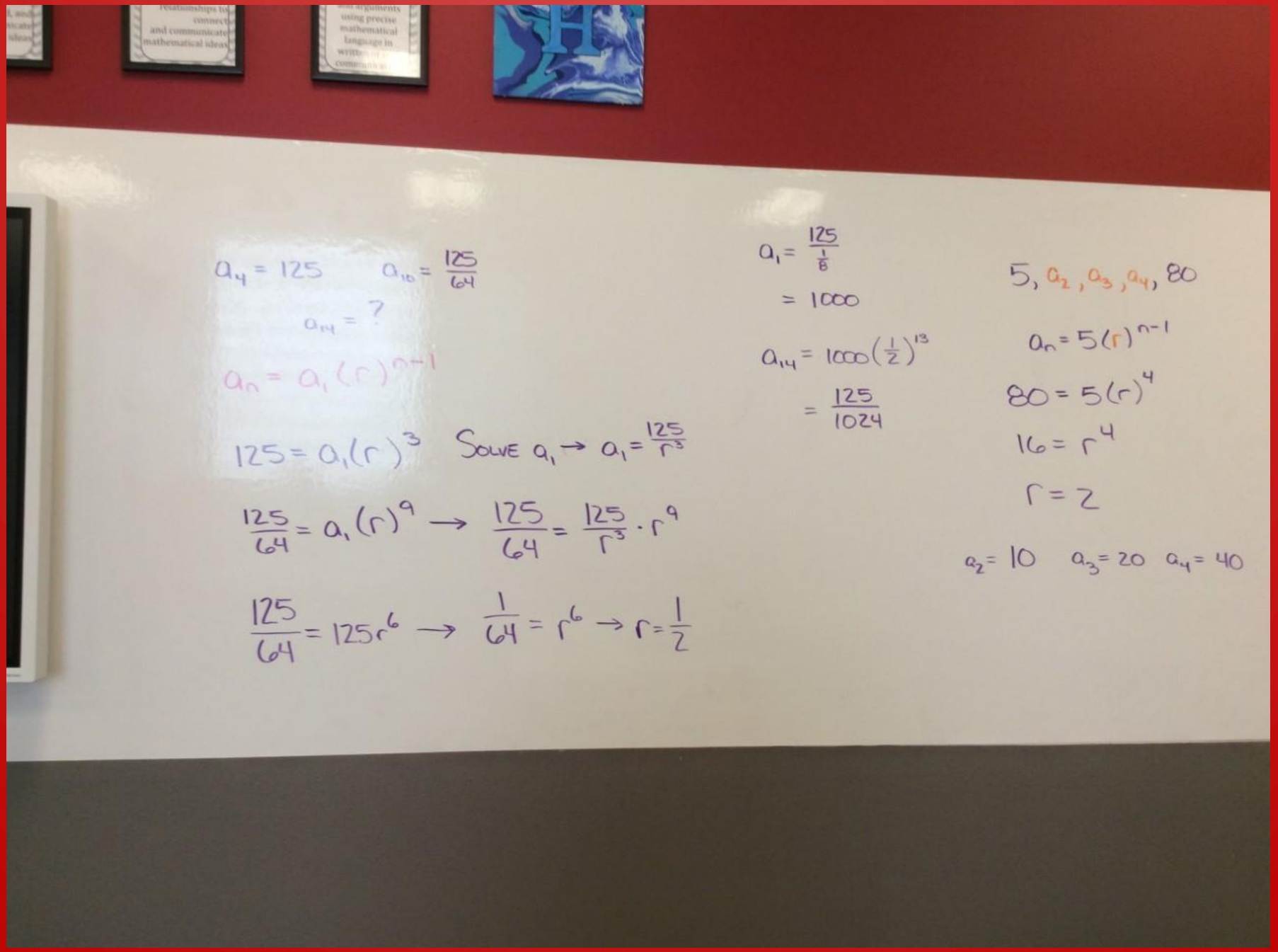
$$a_n = a_1 - d(n-1)$$

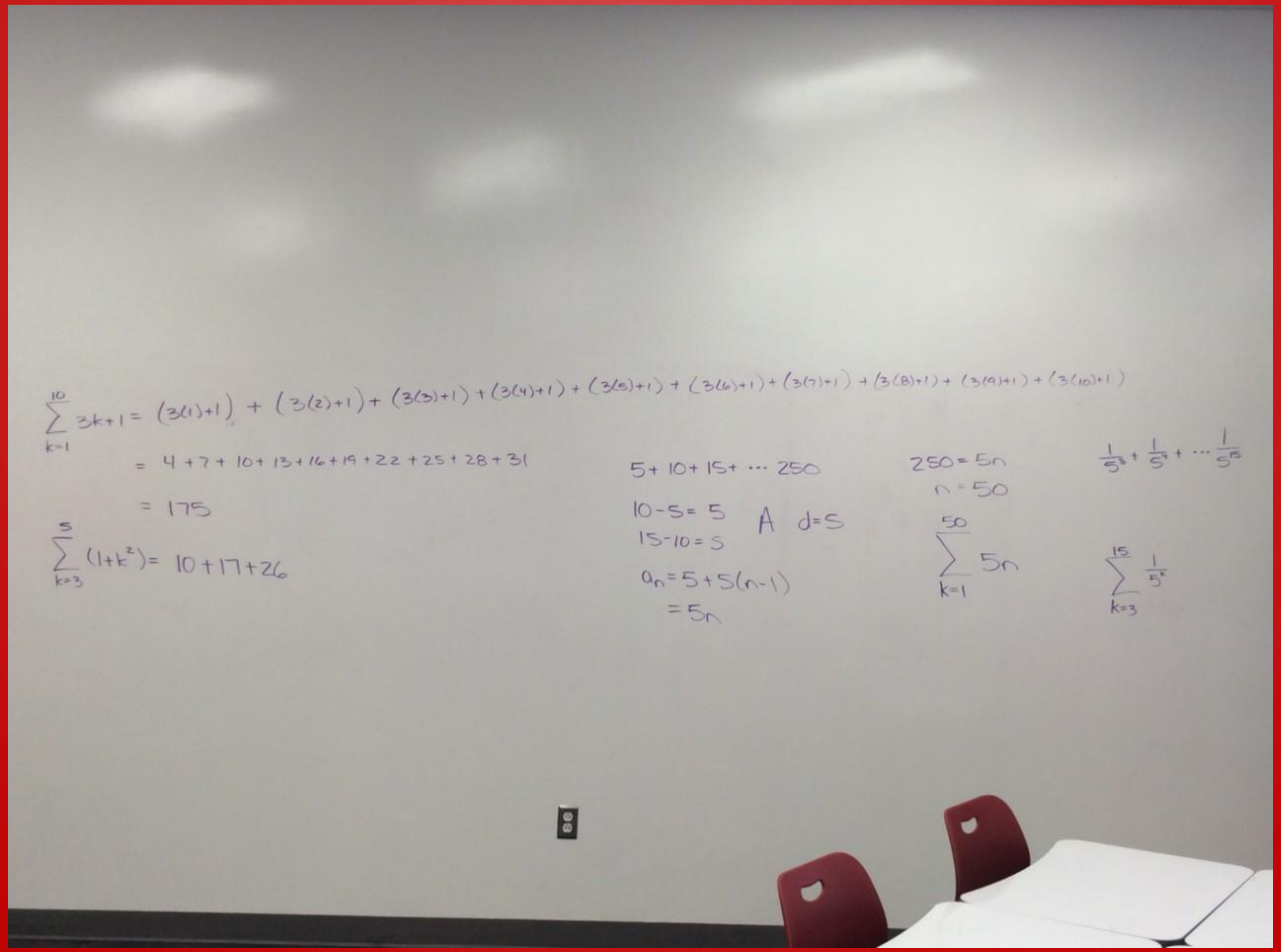
Geometric:

$$r = \frac{a_2}{a_1}$$
$$r = \frac{a_3}{a_2}$$

$$a_n = a_1(r)^{n-1}$$


3, 6, 12, ...
$a_n = a_1(r)^{n-1}$
a_1 $\frac{1}{3}$ r
$r = \frac{a_2}{a_1} = \frac{6}{3} = 2$
$a_n = 3(2)^{n-1}$
a_1
5, 15, 45 ...
a_{12}
1) $r = \frac{15}{5} = 3$
2) $a_n = 5(3)^{n-1}$
3) $a_{12} = 5(3)^{11}$
$= 885735$


$a_4 = 125 \quad a_{10} = \frac{125}{64}$
$a_{14} = ?$
$a_n = a_1(r)^{n-1}$
$125 = a_1(r)^3$ Solve $a_1 \rightarrow a_1 = \frac{125}{r^3}$
$\frac{125}{64} = a_1(r)^9 \rightarrow \frac{125}{64} = \frac{125}{r^3} \cdot r^9$
$\frac{125}{64} = 125r^6 \rightarrow \frac{1}{64} = r^6 \rightarrow r = \frac{1}{2}$
$a_1 = \frac{125}{\frac{1}{8}}$
$= 1000$
$a_{14} = 1000\left(\frac{1}{2}\right)^{13}$
$= \frac{125}{1024}$
$5, a_2, a_3, a_4, 80$
$a_n = 5(r)^{n-1}$
$80 = 5(r)^4$
$16 = r^4$
$r = 2$
$a_2 = 10 \quad a_3 = 20 \quad a_4 = 40$


$\sum_{k=1}^{10} 3k+1 = (3(1)+1) + (3(2)+1) + (3(3)+1) + (3(4)+1) + (3(5)+1) + (3(6)+1) + (3(7)+1) + (3(8)+1) + (3(9)+1) + (3(10)+1)$
$= 4 + 7 + 10 + 13 + 16 + 19 + 22 + 25 + 28 + 31$
$= 175$
$\sum_{k=3}^{5} (1+k^2) = 10 + 17 + 26$
$5 + 10 + 15 + \cdots 250$
$10 - 5 = 5$
$15 - 10 = 5$
A $d = 5$
$a_n = 5 + 5(n-1)$
$= 5n$
$250 = 5n$
$n = 50$
$\sum_{k=1}^{50} 5n$
$\frac{1}{5^3} + \frac{1}{5^4} + \cdots \frac{1}{5^{15}}$
$\sum_{k=3}^{15} \frac{1}{5^k}$