Arithmetic Sequence

Melanie is starting to train for a swim meet. She begins by swimming 5 laps per day for a week. Each week she plans to increase her number of daily laps by 2.

Make a table.

week	laps
1	
2	
3	
4	

What's the rule?

Common difference (slope) = _____

y-intercept (x = 0) = _____

Equation

_____

1. How many laps per day will she swim during the 15th week of training?

Find the sum of the series

2. How many laps did she swim during 10 weeks of training?

week	Total laps	week	Total laps
1		6	
2		7	
3		8	
4		9	
5		10	

Find the sum of the series

3. How many laps did she swim during 20 weeks of training?

Sigma (Σ) Notation

$$\sum_{i=1}^{5} 3i$$

What does that look like in Sigma (Σ) notation?

formula for finding the sum of a series

$$s_n = n\left(\frac{a_1 + a_n}{2}\right)$$

a_1 = _____

a_n = _____

n = _____

Use the formula to answer question #3.

adapted from various sources

(MCC9-12.F.BF.2)

The Handshake Problem

35 people go to a party and shake everyone's hand exactly once. How many handshakes occurred?

Make a table.

# of people	# of handshakes per person	Total # of handshakes
1		
2		
3		
4		
5		
6		

What's the rule?

Equation

_____

1. How many handshakes occurred among 35 people?

2. If there were 253 handshakes at the party, how many people were there?

Find the sum of the series

3. How many handshakes would occur altogether if there were 50 people at the party?

What does that look like in Sigma (Σ) notation?

Do you notice a pattern?

0, 1, 2, 3, 4, 5

Why do we divide by 2 in the formula?

Use the formula to answer question #3.

Evaluate.

$$\sum_{k=3}^{10} 2k+1$$

adapted from various sources