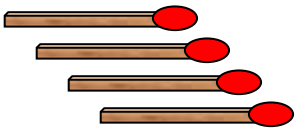
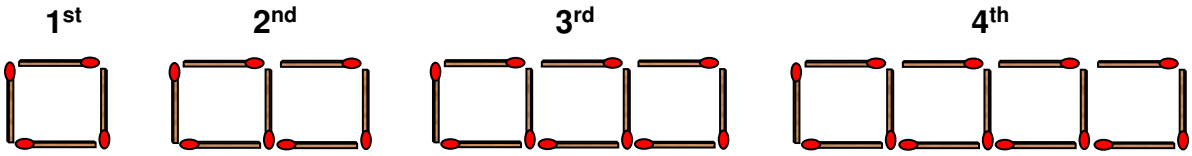
Matchsticks and Marbles



Task A Matchsticks



Look carefully at the matchstick pattern and answer the questions below.

1. How many matchsticks would there be in:
a. the 5th pattern? **b.** the 6th pattern? **c.** the 7th pattern?

2. Copy and complete the table below.

Pattern Number	1	2	3	4	5	6	N
Number of Sticks	4	7					

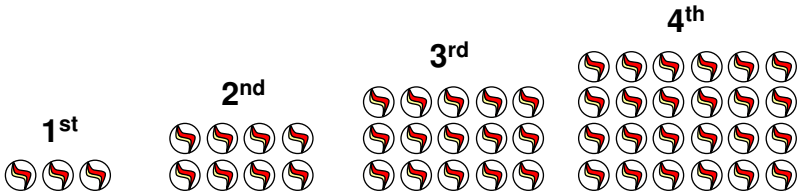
3. Use the Nth term to find out how many matchsticks there would be in:
a. the 10th pattern **b.** the 20th pattern **c.** the 100th pattern

4. A particular matchstick pattern in the sequence above is made up of 46 matchsticks. Which number pattern would this be?

5. Copy and complete the table below.

Pattern Number	18	31					
Number of Sticks	55	94	100	136	301	667	N

Task B Marbles



Look carefully at the marble pattern and answer the questions below.

1. How many marbles are there in the 5^{th} and 6^{th} pattern?

2. Write down an Nth term for this pattern.

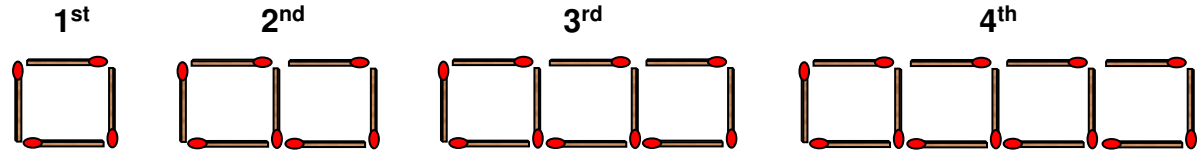
3. How many marbles in the 10^{th} pattern and the 21^{st} pattern?

4. A particular marble pattern contains 168 marbles. What is its position in the sequence?

5. Draw a graph with the x-axis going from 0 to 6 and the y-axis going from 0 to 25.
Plot the sequences from Task A and Task B on the graph.

Matchsticks and Marbles Answers

Task A Matchsticks



Look carefully at the matchstick pattern and answer the questions below.

1. How many matchsticks would there be in:
a. the 5th pattern? ***16*** **b.** the 6th pattern? ***19*** **c.** the 7th pattern? ***22***

2. Copy and complete the table below.

Pattern Number	1	2	3	4	5	6	N
Number of Sticks	4	7	***10***	***13***	***16***	***19***	***3N+1***

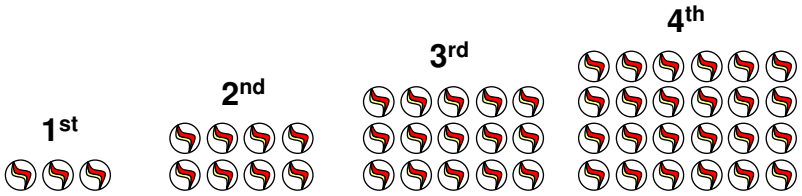
3. Use the Nth term to find out how many matchsticks there would be in:
a. the 10th pattern ***31*** **b.** the 20th pattern ***61*** **c.** the 100th pattern ***301***

4. A particular matchstick pattern in the sequence above is made up of 46 matchsticks. Which number pattern would this be? ***15***

5. Copy and complete the table below.

Pattern Number	18	31	***33***	***45***	***100***	***222***	***(N-1)/3***
Number of Sticks	55	94	100	136	301	667	N

Task B Marbles



Look carefully at the marble pattern and answer the questions below.

1. How many marbles are there in the 5th and 6th pattern? ***35 & 48***

2. Write down an Nth term for this pattern. ***N(N+2)***

3. How many marbles in the 10th pattern and the 21st pattern? ***120 & 483***

4. A particular marble pattern contains 168 marbles. What is its position in the sequence? ***12***

5. Draw a graph with the x-axis going from 0 to 6 and the y-axis going from 0 to 25.
Plot the sequences from Task A and Task B on the graph.