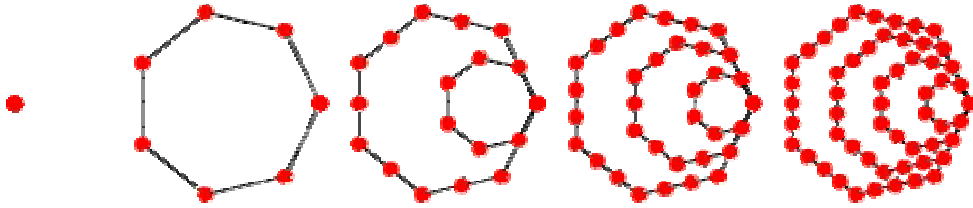


**Heptagonal Numbers:**

- A. Heptagonal numbers are numbers that create a heptagon. In other words: 1,7,18,34,etc.  
 B. The  $n^{\text{th}}$  heptagonal number can be found by the formula:

$$\frac{n(5n-3)}{2}$$

- C. In number sense, the question will only ask for the  $n^{\text{th}}$  heptagonal number.

Ex [1] The 6<sup>th</sup> heptagonal number is \_\_\_\_\_.

- Using the formula we get:  $\frac{(6)(27)}{2}$  or  $3 \times 27 = 81$ .
- The answer is 81.

Ex [2] The 10<sup>th</sup> heptagonal number is \_\_\_\_\_.

- Using the formula we get:  $\frac{(10)(47)}{2}$  or  $5 \times 47 = 235$ .
- The answer is 235.

- D. Here are some ways of manipulating heptagonal numbers:

- The difference of successive heptagonal numbers is:

$$5n - 4, \text{ where } n \text{ is the largest}$$

- Adding successive heptagonal numbers gives:

$$3n^2 - 4n + 2, \text{ where } n \text{ is the largest}$$

NOTE: You might see #1 on a test, but I doubt you will ever see #2 on a test.