

### Activity 2: Second Differences

1. An equation for the quadratic parent function is  $f(x) = x^2$ . Use mental math to complete the table.

x	$y = f(x) = x^2$	1 <sup>st</sup> differences	2 <sup>nd</sup> differences
0	$y = f(0) = 0^2 = 0$		
1			
2			
3			
4			
5			
6			

2. The height,  $h$ , of an object thrown straight up at 96 ft/sec is given by the equation  $h(x) = 96x - 16x^2$ , where  $x$  is the time in seconds. Complete the table.

x	$y = h(x) = 96x - 16x^2$	1 <sup>st</sup> differences	2 <sup>nd</sup> differences
0	$y = h(0) = 96(0) - 16(0)^2 = 0$		
1			
2			
3			
4			
5			
6			

3. Develop your own quadratic, build a table, and show that the second differences are constant.