1. Let $f(x) = x^2$.

(a) For $f'(1)$:

point in addition to$(1, f(1))$	slope of secant line
$(.9, f(.9))$	1.9
$(.99, f(.99))$	1.99
$(.999, f(.999))$	1.999
$(1.1, f(1.1))$	2.1
$(1.01, f(1.01))$	2.01
$(1.001, f(1.001))$	2.001

As $x \to 1$, the slope of the secant line approaches 2. I think $f'(1) = 2$.

(b) For $f'(2)$:

point in addition to$(2, f(2))$	slope of secant line
$(1.9, f(1.9))$	3.9
$(1.99, f(1.99))$	3.99
$(2.1, f(2.1))$	4.1
$(2.01, f(2.01))$	4.01

As $x \to 2$, the slope of the secant line approaches 4. I believe $f'(2) = 4$.

(c) For $f'(1.5)$:

point in addition to$(1.5, f(1.5))$	slope of secant line
$(1.4, f(1.4))$	2.9
$(1.49, f(1.49))$	2.99
$(1.6, f(1.6))$	3.1
$(1.51, f(1.51))$	3.01

As $x \to 1.5$, the slope of the secant line approaches 3. I believe $f'(1.5) = 3$.

(d) In each case, what is the connection between a and $f'(a)$?

a	$f'(a)$
1	2
1.5	3
2	4

In each case, $f'(a) = 2a$. I would speculate that in general, if $f(x) = x^2$, $f'(x) = 2x$.