

Section 7-3 Identifying Functions from Numerical Patterns

*Go through Patterns on P.280-282

Linear Functions have an Add-Add Property

Adding a constant to x results in adding a constant to y

Power Functions have a Multiply-Multiply Property

Multiplying x by a constant results in multiplying y by a constant

Exponential Functions have an Add-Multiply Property

Adding a constant to x results in multiplying y by a constant

Quadratic Functions have a Constant-Second-Differences Property

The second differences between the y values are constant

Determine what kind of pattern the data has. Identify the type of function that has the pattern.

1.

<u>x</u>	<u>y</u>
2	1500
4	750
6	500
8	375
10	300

2.

<u>x</u>	<u>y</u>
2	12
4	48
6	192
8	768
10	3072

3.

<u>x</u>	<u>y</u>
2	400
4	100
6	-200
8	-500
10	-800

4.

<u>x</u>	<u>y</u>
1	352
3	136
5	64
7	136
9	352

5. Find the indicated function value if f is
- a linear function
 - a power function
 - an exponential function

Given $f(3) = 80$ and $f(6) = 120$, find $f(24)$.

6. Given that $f(x)$ varies inversely with the square of x and that $f(5) = 1296$, find $f(10)$ and $f(20)$.

7. Describe the effect on y of doubling x if
- y varies directly with x .
 - y varies inversely with the square of x .
 - y varies directly with the cube of x .

8. The weight, W , of any animal is roughly proportional to the cube of its length, L .
- Write the general equation using W and L .
 - An elephant is roughly 10 times as long as a dog. How does an elephant's weight compare to a dog's weight?
 - The skin area is roughly proportional to the square of its length. If the dog has 4 square feet of skin, how much skin does an elephant have?