Exponential Growth & Decay   Name_____
Homework   Date_____Block_____

Use the output ratio to find the growth/decay factor, determine if the table shows growth or decay, then identify the initial value, and write an exponential equation for the table.

1.

x	y
1	24
2	144
3	864
4	5184

2.

x	y
2	0.605
3	0.6655
4	0.73205
5	0.80526

3.

x	y
3	43.2
4	259.2
5	1555.2
6	9331.2

4.

x	y
-5	200000
-4	20000
-3	2000
-2	200

5.

x	y
3	1536
4	12288
5	98304
6	786432

6.

x	y
2	0.04
3	0.008
4	0.0016
5	0.00032

Context:

7. A car purchased for $24,000 is expected to lose value, or depreciate, at a rate of 8% per year. This situation can be modeled by $y = 24{,}000 \cdot (0.92)^t$, where t is the number of years since the car was purchased. After how many years is the car first worth less than $15,000?

    a) 4 years   b) 5 years   c) 6 years   d) 7 years

8. A watch purchased for $1200 is expected to gain value at a rate of 5% per year. This situation can be modeled by $y = 1200 \cdot (1.05)^t$, where t is the number of years since the car was purchased. After how many years is the car first worth more than $1800?

    a) 7 years   b) 8 years   c) 9 years   d) 10 years

9. A 500 mL puddle of water is evaporating at a rate of 4% per hour. Write a function that represents the amount of water in the puddle at a given time. Use x for hours and y for the amount of water left in the puddle.

10. Using the equation from the above problem, determine when the puddle will be reduced to half its original volume.

11. A dust bunny gathers dust at a rate of 11% per week. The dust bunny originally weighs 0.7 oz. Write a function that represents the weight of the dust bunny at a given time. Use x for weeks and y for the weight of the dust bunny.

12. Find the weight of the dust bunny after 7 weeks.