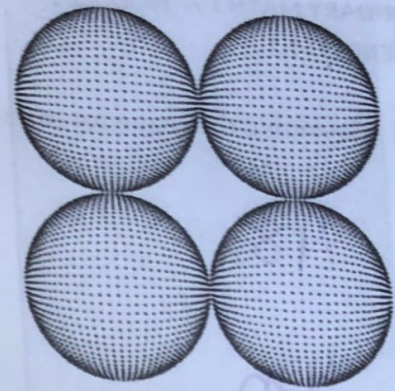
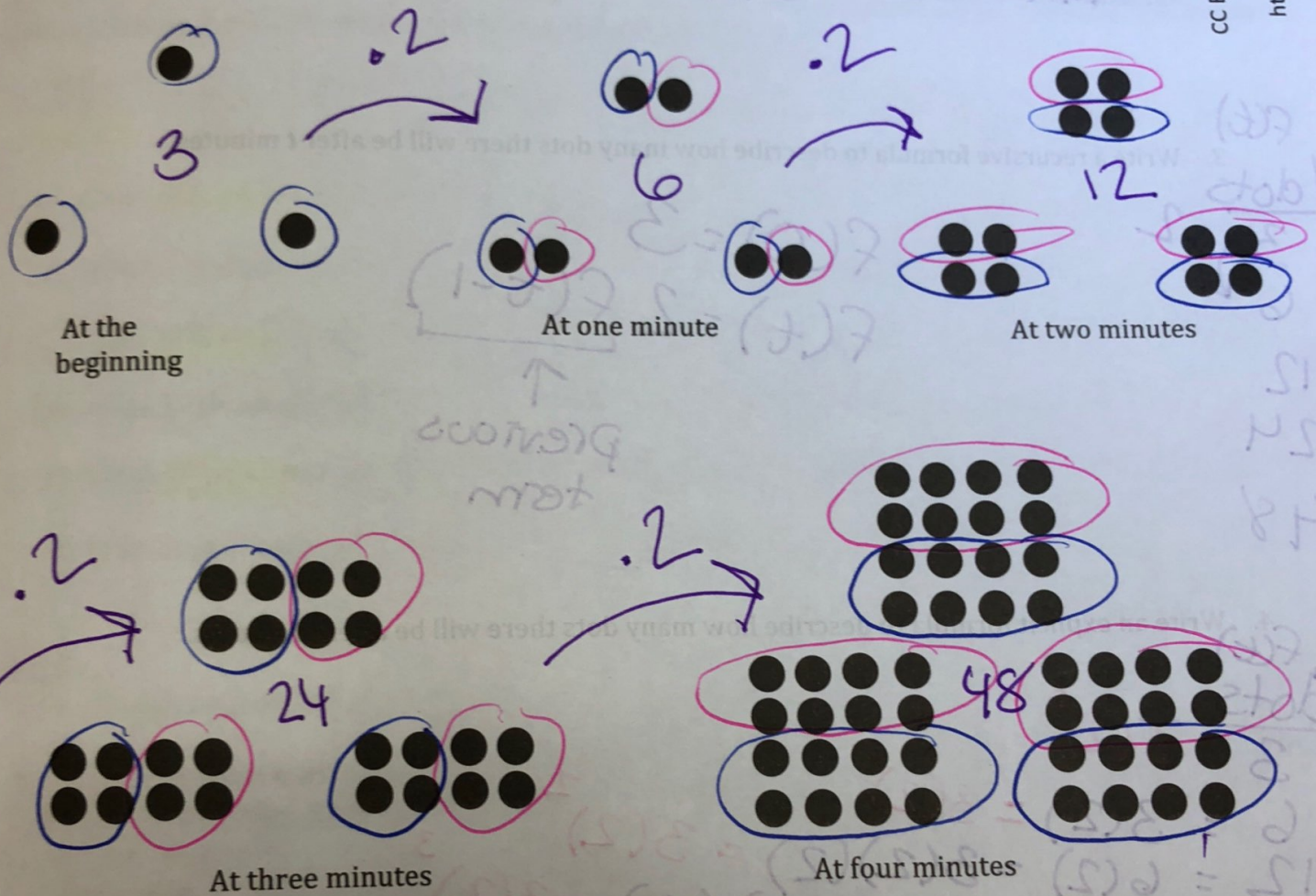


1.3 Growing, Growing Dots

A Develop Understanding Task



CC BY ms. neaux neaux nope
<https://flic.kr/p/7UMF7V>



1. Describe and label the pattern of change you see in the above sequence of figures.

The previous term is doubling

2. Assuming the sequence continues in the same way, how many dots are there at 5 minutes?

48

96

4th

5th

t min	f(t) dots
0	3
1	6
2	12
3	24
4	48

3. Write a recursive formula to describe how many dots there will be after t minutes.

$$f(0) = 3$$

$$f(t) = 2 \cdot \underbrace{f(t-1)}_{\substack{\uparrow \\ \text{previous} \\ \text{term}}}$$

4. Write an explicit formula to describe how many dots there will be after t minutes.

t min	f(t) dots
0	3 = 3(2) ⁰
1	6 = 3(2) = 3(2) ¹
2	12 = 6(2) = 3(2)(2) = 3(2) ²
3	24 = 12(2) = 3(2)(2)(2) = 3(2) ³
4	48 = 3(2)(2)(2)(2) = 3(2) ⁴
5	96 = 3(2)(2)(2)(2)(2) = 3(2) ⁵
...	...
20	3(2) ²⁰
n	3(2) ⁿ

$$f(t) = 3(2)^t$$