# Lesson 9:

# What's the Equation?

# Learning Targets:

- I can represent situations with sequences.

Let's define sequences.

# 9.1 Math Talk: Multiplying Fractions

For the function $f(x) = 32 \cdot \left(\frac{3}{4}\right)^x$, evaluate mentally:

$f(0)$

$f(1)$

$f(2)$

$f(3)$

# 9.2 Take the Cake!

A large cake is in a room. The first person who comes in takes $\frac{1}{3}$ of the cake. Then a second person takes $\frac{1}{3}$ of what is left. Then a third person takes $\frac{1}{3}$ of what is left. And so on.

Is there still cake left after three people each take some cake?

Complete the task with your partner.

# Activity Synthesis

A large cake is in a room. The first person who comes in takes $\frac{1}{3}$ of the cake. Then a second person takes $\frac{1}{3}$ of what is left. Then a third person takes $\frac{1}{3}$ of what is left. And so on.

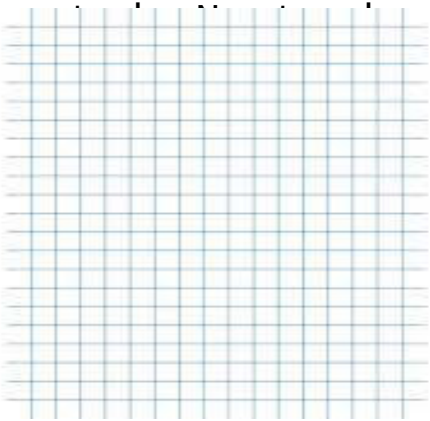
What are two definitions for C(n) : one recursive and one non-recursive.

What is a reasonable domain for this function? Be prepared to explain your reasoning.

# 9.3 Fibonacci Squares

Quiet Work Time

On graph paper, draw a square of side length 1. Draw another square of side length 1 that shares a side with the first square. Next, add a 2-by-2 square, with one side along the sides of both of the first two squares. Next, add a square with one side that goes along the sides of the previous two squares you it again. Pause here for your teacher work.



Now complete the rest of the task with your partner.

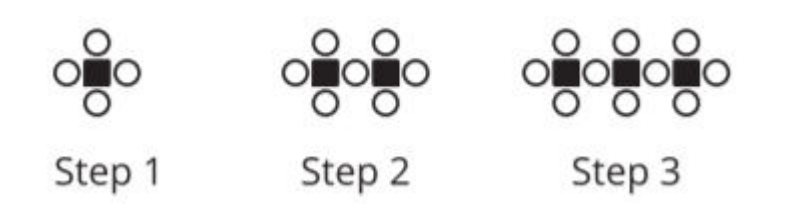
# Activity Synthesis

$$1, 1, 2, 3, 5, 8, 13$$

$$F(1) = 1,\ F(2) = 1,\ F(n) = F(n-1) + F(n-2),\ n \geq 3$$

- What is the domain of this function?
- Does it have any restrictions?

# Lesson Synthesis:




Write a description for how the pattern grows.

Describe the pattern recursively and by the nth term.