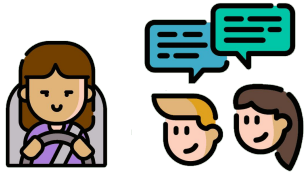
Function Composition

Composing Functions

Each **function card** on the left has a Contract (Name, Domain and Range), and a description of what it does.

Starting with the number 4, you could play the `add1` card to turn it into 5. What card would you play to turn it into 10?



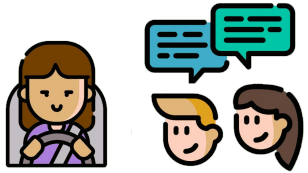
For each of the starting numbers below, which cards select the cards you would play to get to the ending number!

Starting from...	Ending with...
4	26
-22	13
64	0

Investigate

1. Open to Composing Image Functions (**Page 19**).

2. Make sure you've written the contracts for the functions at the top into your workbook. What does each function do?



3. Complete questions 1-4.

Synthesize

- What do all of these functions have in common?
- What does the number in '`scale`' represent?
- What does the number in '`rotate`' represent?
- Can you compose the same function twice?

Students, write your response!

Synthesize

What will `(scale 3 (star 50 "solid" "red"))` produce?

What's a *different* line of code that would produce the exact same image?

`flip-horizontal` takes in an Image and produces an Image. How do I *know* that I can use the text function as an input for flip-horizontal?

Students, write your response!

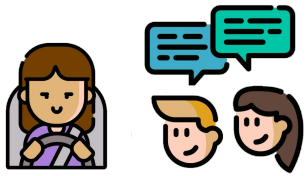
Decomposing Image Problems

With the Function Cards activity, you were given a starting and ending number and asked to think about *what functions would get you from A to B.*

We can do the same thing with images! Given a starting image and a desired ending image, *what functions will get you from A to B?*

Decomposing Image Problems

1. Complete Function Composition - Practice (**Page 20**), practicing drawing Circles of Evaluation and writing code.



2. **Challenge:** create an Image that uses the text function and at least 3 of following functions:
    - `rotate`
    - `scale`
    - `overlay`
    - `flip-horizontal`
    - `flip-vertical`