



WEEK 3

**WELCOME TO  
SECTION!!!**

Section Leader  
Eesha Tariq

# Agenda

01

## Check-in

How are all of you doing?

02

## Recap

Revisiting lecture content

03

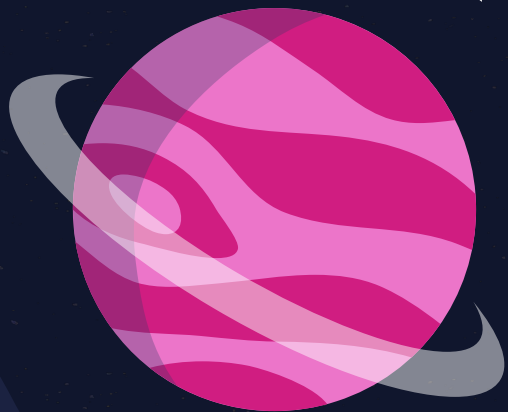
## To Mars!!!

Section Problem #1

04

## To Infinity & Beyond

Section Problem #2



# Check-in

Welcome back to another week of Code in Place section!

I hope you all are doing well! Hopefully CiP hasn't been stressful.

Let's do a quick check-in question! (Feel free to answer in the chat!)

Feel free to answer *any* of the following:

- ★ If you could teach Karel ONE more command, what would it be?
- ★ What is your favorite food?
- ★ What is a hobby of yours that you do in your free time?



# Announcements

Come attend some events! @ [codeinplace.stanford.edu/cip5/events](https://codeinplace.stanford.edu/cip5/events)

## Previous Events (recordings available!):

- Various Karel Review Problems with Head TA Ty (Stone Mason, Piles and Jigsaw, Fill Karel)
- Karel Review: Checkerboard and Midpoint with Joseph L
- LeetKarel – Studying Algorithms Using Karel with Nick B

## Upcoming Events (all in Pacific Time; check events page for local time):

- **Every Monday:** Monday Mornings with Chris (reoccurring)
- ~~May 9th, 3:30pm PT: Explaining Fencepost Coding Problems~~ [RESCHEDULED for May 16th]
- **May 9th, 8:00pm PT:** Game Design Workshop 1: Guest Speaker – WattDesigns on YouTube
- **May 10th, 1:30 PM:** Transitioning to Console (N-sided-dice and Sunrise-fill-in-the-blanks) [NEW]
- **May 10th, 3:30 PM:** Programming for accessibility: guest speaker [NEW]
- **May 10th, 5:00pm PT:** FGLI in Stem Panel





The background is a dark navy blue space scene. In the top left, a white rocket with pink fins and nose cone is launching, leaving a dark blue curved trail. In the bottom left, a large, white, cratered moon is partially visible. In the center, there is a small blue planet with white dots, an orange planet with brown stripes, and a pink planet with darker pink dots in the bottom right. Several white stars of different sizes are scattered across the background, and a shooting star with a long white tail is in the top center.

# Recap

Revisiting variables



# Defining and Using Variables

## Defining Variables

We define variables by writing the variable's name, followed by an equals sign, and then what we want to store inside.

```
var_name = value
```

## Using variables

When we use the variable's name—unless we are changing its value—we essentially open the “suitcase” to use what's inside.

```
print(var_name)  
sum = num1 + num2
```



# Variable Types



## Types

Variables have **types**.  
These types are what  
differentiates letters and  
numbers to our  
computers.

## Example Types

**Strings:**

Words/Sentences

**Ints:**

Integers; numbers  
without decimals

**Floats:**

Any other number that  
isn't an integer

## Casting

Sometimes, we can  
**change from one  
variable type to another**  
via **typecasting**. For  
example, we may have a  
**number** represented as a  
string, and we need to  
cast it to be a **number** so  
we can do math with it!









# Constant

- A **constant** is a **fixed value** that **does not change** during the execution of a program.
- Once assigned, a constant **cannot be modified**.

Example: `DAYS_OF_WEEK` is a constant: it won't change.





# Before We Start...

Are there any questions?



# Section Problem #1: To Mars

# Storytime



## Section Problem #1: To Mars!!!

One of the things that NASA engineers need to account for is the fact that due to the weaker gravity on **Mars**, an Earthling's weight on **Mars** is **37.8%** of their weight on **Earth**.

Write a Python program that prompts an Earthling to enter their weight on **Earth** and prints their calculated weight on **Mars**.





100

# Section Problem #1: End Goal

## Sample Input

Enter a weight on Earth:



Enter a weight on Earth: ***100***

## Sample Output

The equivalent weight on Mars: 37.8

\* ***User input*** is italicized and bolded for visual clarity \*



37.8



# Pre-Code Discussion

Inputs, Constants, & Types

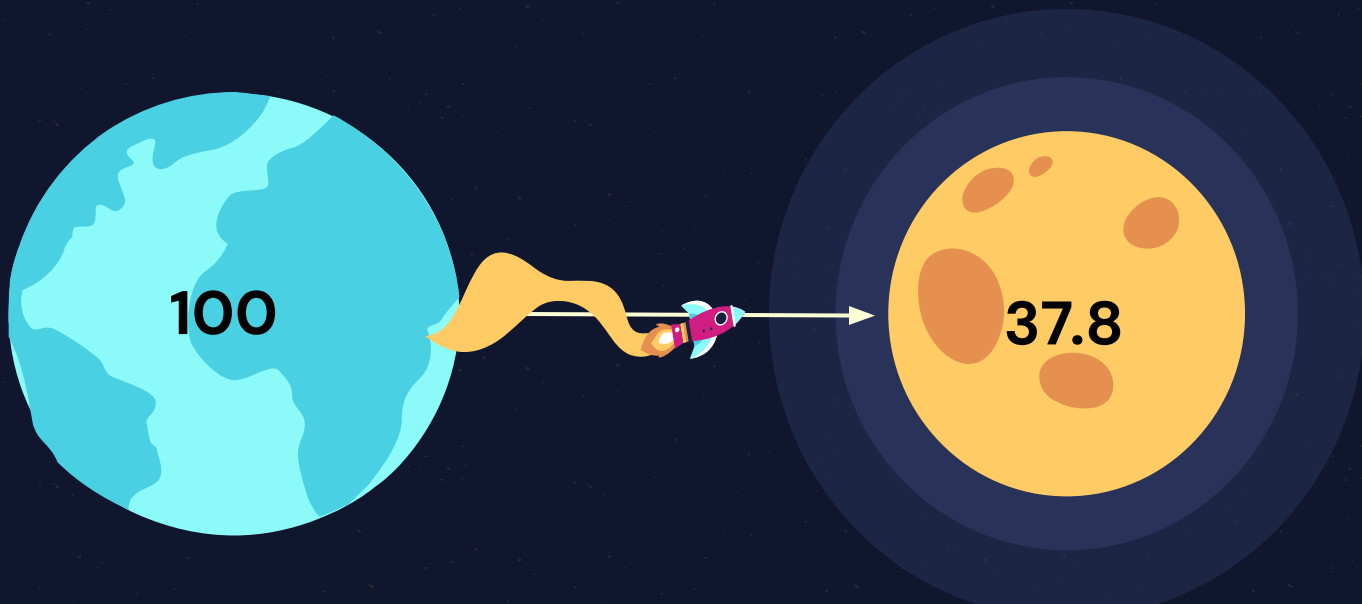
(Also, questions if you have them!!!)

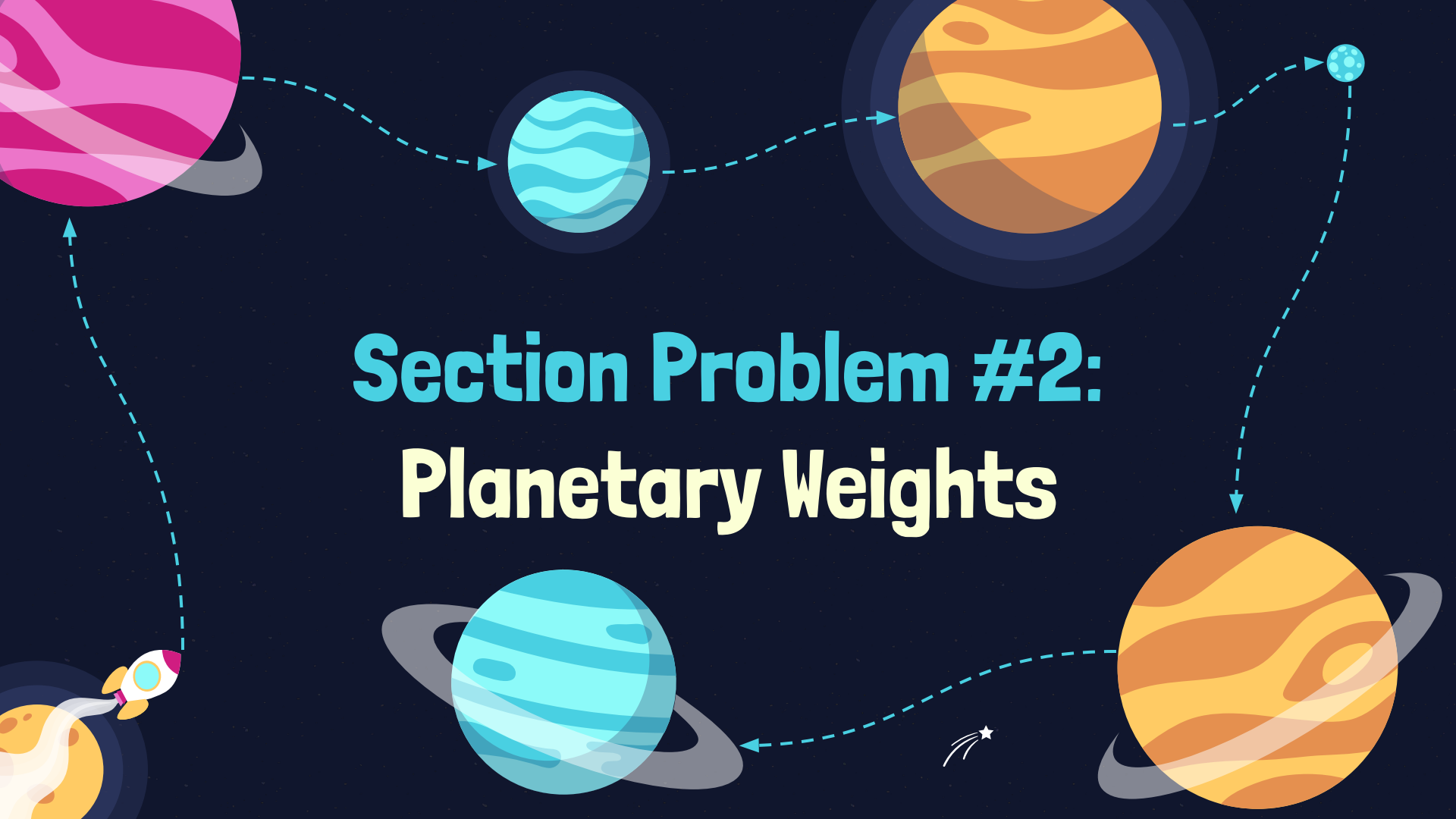




# Let's Code!

For this activity, you'll be working in breakout rooms with each other



The background is a dark blue space scene. It features several stylized planets: a large pink and white striped planet in the top left, a small blue and white striped planet in the top center, a large orange and white striped planet in the top right, a blue and white striped planet with a ring in the bottom center, and a large orange and white striped planet with a ring in the bottom right. A small rocket is in the bottom left, and a small blue planet is in the top right. A dashed white line with arrows connects these elements in a path: from the rocket to the pink planet, then to the small blue planet, then to the top orange planet, then to the small blue planet, then to the bottom orange planet, then to the bottom blue planet, and finally back to the rocket. A small white star with a trail is also visible near the bottom orange planet.

# Section Problem #2: Planetary Weights

The background is a dark blue space filled with small white stars. Several stylized planets are scattered around: a large orange and yellow striped planet in the top left, a blue and white striped planet in the top center, a pink and purple striped planet with a grey ring in the top right, a blue and white striped planet with a grey ring in the bottom center, and a large orange and yellow striped planet in the bottom right. A small blue planet with white dots is in the bottom left.

## Section Problem #2: Planetary Weights

Mars is not the only planet in our solar system with its own unique gravity. In fact, **each planet** has a **different** gravitational constant, which affects how much an object would weigh on that planet.

The background is a dark blue space-themed illustration. It features several stylized planets: a large orange and yellow planet in the top left, a pink and purple planet in the top right, a blue and white striped planet with a grey ring in the middle right, and a large orange and yellow planet in the bottom right. There are also smaller blue planets at the bottom left and bottom center, and a single white star in the upper right.

## Section Problem #2: Planetary Weights

Write a **Python** program that prompts an Earthling to enter their weight on Earth and then to enter the name of a planet in our solar system. The program should print the equivalent weight on that planet.

\* You can assume that the user will always type in a planet with the first letter capitalized and you do **not** need to worry about the case where they type in something other than one of the above planets. \*

## Section Problem #2: Planetary Weights

Here's a list of constants for each planet's gravity compared to Earth's:

- ★ Mercury: 37.6%
- ★ Venus: 88.9%
- ★ Mars: 37.8%
- ★ Jupiter: 236.0%
- ★ Saturn: 108.1%
- ★ Uranus: 81.5%
- ★ Neptune: 114.0%





120

## Section Problem #2: End Goals

### Sample Input

Enter a weight on Earth:



(Input 1) Enter a weight on Earth: ***120***



Enter a planet:



(Input 2) Enter a planet: ***Mars***

### Sample Output

The equivalent weight on Mars: 45.36



\* ***User input*** is italicized and bolded for visual clarity \*



45.36



120

## Section Problem #2: End Goals

Full Run

```
Enter a weight on Earth: 120
Enter a planet: Mars
The equivalent weight on Mars: 45.36
```

\* ***User input*** is italicized and bolded for visual clarity \*



45.36



150

## Section Problem #2: End Goals



### Sample Input

Enter a weight on Earth:



(Input 1) Enter a weight on Earth: ***150***



Enter a planet:



(Input 2) Enter a planet: ***Jupiter***

\* ***User input*** is italicized and bolded for visual clarity \*

### Sample Output

The equivalent weight on Jupiter:

354.0



354.0





120

## Section Problem #2: End Goals

Full Run

Enter a weight on Earth: *150*  
Enter a planet: *Jupiter*  
The equivalent weight on Jupiter: 354.0

\* *User input* is italicized and bolded for visual clarity \*



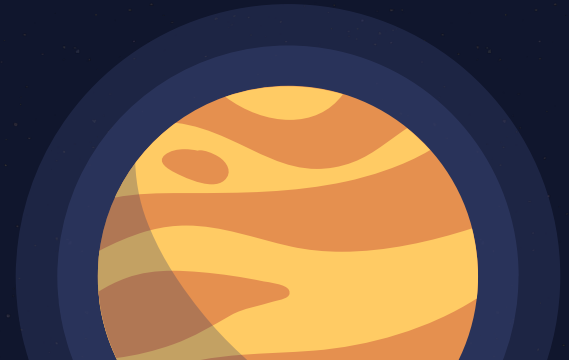
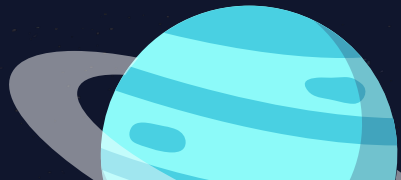
354.0



# Pre-Code Discussion

What's different?

(Also, questions if you have them!!!)



# Let's Code!

For this activity, we'll break out again, and then come back together!

