

Welcome to Section

Week 3 – Fly me to the ~~moon~~ Mars

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Agenda

01

Check-in

How are all of you doing?

02

Recap

Revisiting lecture content

03

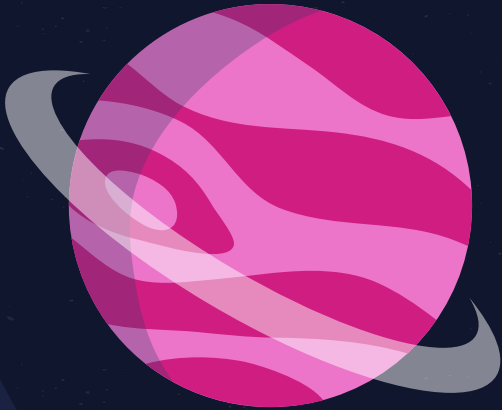
To Mars!!!

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?



A dark blue space-themed background featuring a white rocket with pink flames in the upper left, a large white moon with grey craters in the lower left, and several smaller planets in blue, orange, and pink. White stars and a shooting star are scattered throughout the scene.

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!










Numbers

Rounding

While we didn't cover this in lecture yet, it may be relevant in the future! There is a `round(float, num_decimals)` function which lets us round a floating point number to a certain amount of decimals! For example: `19.724555555 -> 19.725` by using `round(19.724555555, 3)`.





Before We Start...

Are there any questions?



Section Problem #1:

To Mars

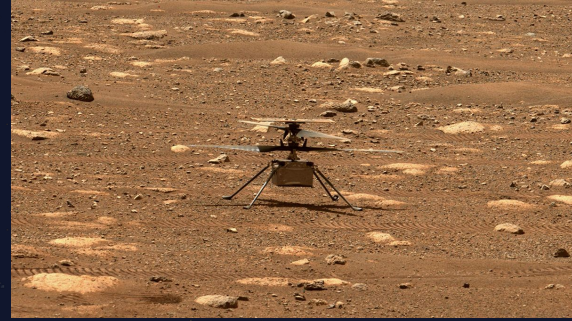
Storytime



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

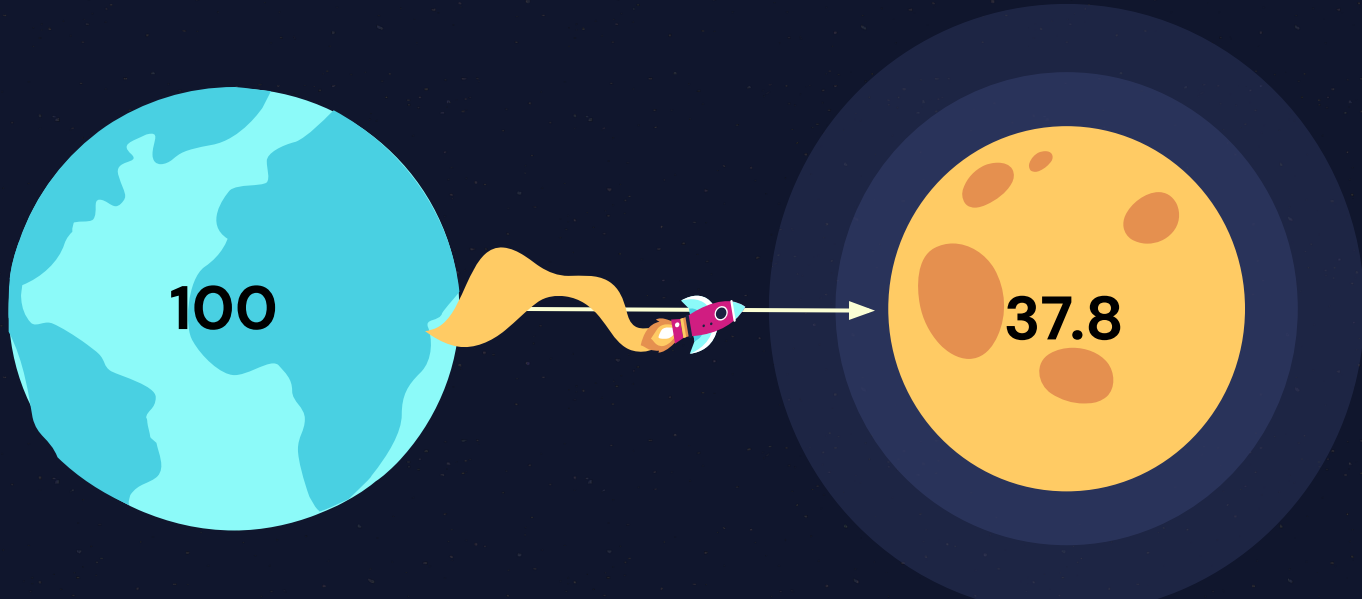
Inputs, Constants, & Types

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



Let's Code!

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





Section Problem #2: To Infinity & Beyond

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: To Infinity & Beyond

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 and white planets at the bottom left and bottom center, and a single white star in the upper right.

Section Problem #2: To Infinity & Beyond

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: To Infinity & Beyond

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 *



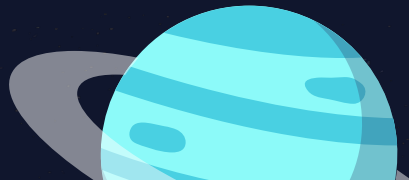
354.0



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!

