Assignment 1: Python Logic & Problem Solving

📋 Administrative Details

- **Weight:** 8%
- **Due:** February 27, @ Midnight
- **Submission:** A single `.zip` file named `FirstNameLastName_ass1.zip`.
- **Late Penalty:** 10% per day (max 3 days).

⚠️ Submission Rules

- Use the provided starter `.py` files.
- **Do not** change the provided variable names in the templates.
- Ensure your output matches the **Expected Output** exactly.
- Use `math` module functions where specified.

Exercise 1: Debugging (1 pt)

Fix the syntax and type errors in `exercise1.py`. **Expected Output Example:**

```
Hello Alex you are 20 years old.
The area is: 50
The Laptop costs 999.99
```

Exercise 2: Smartphone Battery Planner (2 pts)

Calculate the energy needs for a 12-hour video marathon.

- **Battery:** 4,500 mAh
- **Usage:** 425 mAh / hour
- **Goal:** Find total power, deficit after 1 charge, number of full recharges needed, and the leftover power required.

Exercise 3: The Backyard Deck (2.5 pts)

You are building a **40m²** deck. Calculate how many bulk packages to buy.

Item	Requirement/m²	Bulk Size
Planks	6	Bundle of 15
Screws	45	Box of 200
Stain	0.8L	5L Can
Sandpaper	2 sheets	Pack of 10

> 📌 **Note:** Use `math.ceil()` to ensure you never run out of materials!

Exercise 4: Satellite Physics (2.5 pts)

Calculate the orbital mechanics for a satellite 400km above Earth.

1. **Total Radius ():**
2. **Velocity ():**
3. **Horizon Distance ():**

Expected Output:

```
Total Orbital Radius: 6771 km
Orbital Velocity: 7.67 km/s
Distance to Horizon: 2291.53 km
```