Name: **Date:** **Section:**

Blood Sugar Regulation Simulator Activity: How Your Body Controls Sugar

Phase 1: ENGAGE (5 minutes)

Getting Started: Open `peebedu.com` and navigate to the **Blood Sugar Regulation Simulator**.

The Mystery: You eat a candy bar with 40 grams of sugar. An hour later, a blood test shows your blood sugar is nearly the same as before you ate. Where did all that sugar go?

Think-Pair-Share:

1. **THINK** (1 minute): Where do you think the sugar went?
2. **PAIR** (2 minutes): Share with a partner. Write their idea:
3. **PREDICT:** What do you think controls blood sugar levels?

Phase 2: EXPLORE (15 minutes)

Let's Investigate How Your Body Manages Sugar!

Part A: Normal Blood Sugar

1. Watch the simulator for 1 minute without adding anything.
2. What is the normal blood sugar range? _____ to _____ mg/dL
3. Do you see any patterns?

Part B: What Happens When You Eat?

1. Click "Add Meal" and choose a sugary snack.
2. Fill in what you observe:

What I'm Watching	Before Eating	Right After Eating	30 Minutes Later
Blood Sugar Level	Normal		
Insulin (Blue)	Low		
What's Happening?	Stable		

Discovery Question: When blood sugar goes up, what does insulin do?

Part C: What Happens During Exercise?

1. Reset the simulator. Click "Add Exercise."
2. What happens to blood sugar during exercise? _____
3. Which hormone increases? (Hint: It's the orange one!) _____

4. Why do you think the body does this?

Part D: When Things Go Wrong

1. Switch to "Type 1 Diabetes" mode. Add a meal.
2. What's different? The body doesn't make _____
3. What happens to blood sugar? _____
4. Draw what you see happening:

Phase 3: EXPLAIN (10 minutes)

Making Sense of Blood Sugar Control

The Blood Sugar Team: Match each player to its job:

Team Member	Job Description	When It Works
Insulin		After eating
Glucagon		During exercise/between meals
Pancreas		Always monitoring
Liver		When signaled

Complete the Story: Fill in the blanks using what you learned:

When you eat candy, your blood sugar goes _____. Your pancreas detects this and releases _____. This hormone tells your cells to _____ the sugar from your blood. When blood sugar gets too _____, your pancreas releases _____, which tells your liver to _____ stored sugar.

Draw It Out: Create a simple diagram showing:

- What happens after eating (use arrows!)
- What happens during exercise
- Label insulin and glucagon

Phase 4: ELABORATE (10 minutes)

Real-Life Connections

Scenario 1: The Soccer Player

Maria has a soccer game at 3 PM. She eats lunch at noon.

1. Use the simulator to show what happens to her blood sugar from lunch through the game.
2. Should she eat a snack before the game? Test it! What happens?

Scenario 2: Understanding Diabetes

Your friend has Type 1 diabetes and needs to check blood sugar before lunch.

1. Why is this important? (Use what you learned!)
2. If their blood sugar is high, what's missing in their body?
3. How could medicine help? (Think about what insulin does)

Design a Healthy Day:

Use the simulator to plan meals and activities for stable blood sugar:

- Morning: _____
- Noon: _____
- Evening: _____

Phase 5: EVALUATE (5 minutes)

Show What You Know!

Check Your Understanding:

1. What organ makes insulin and glucagon? _____
2. When blood sugar is HIGH, the body releases _____
3. When blood sugar is LOW, the body releases _____

Apply Your Knowledge:

1. Why do you think people feel tired when their blood sugar is too high or too low?
2. A student skips breakfast. Predict what their body does to maintain blood sugar:
3. Explain to a younger student how the body controls blood sugar (use simple words!):

Model Evaluation:

- One thing this simulator helped me understand: _____
- One question I still have: _____

Key Vocabulary:

- **Blood Sugar (Glucose):** The fuel your cells need for energy
- **Insulin:** Hormone that lowers blood sugar by helping cells absorb it
- **Glucagon:** Hormone that raises blood sugar by releasing stored sugar
- **Pancreas:** Organ that makes insulin and glucagon
- **Diabetes:** When the body can't control blood sugar properly