



Name: _____

Assessment Solar House

- 1) What is the main purpose of the solar panels installed by the Zomars?
 - a) To power their vehicles
 - b) To provide shade
 - c) To attract birds
 - d) To harness the sun's energy for power

- 2) In the tutorial, what component stores energy from the solar panels?
 - a) Battery
 - b) Capacitor
 - c) Resistor
 - d) LED

- 3) Why do the Zomars add an extra 330-ohm resistor during the sandstorm?
 - a) To save energy by reducing the current flow
 - b) To increase the power output
 - c) To make the circuit more complicated
 - d) To disconnect the solar panels

- 4) What happens when you press the button in the circuit described in the tutorial?
 - a) The solar panel stops working
 - b) The capacitor charges
 - c) The LED lights up
 - d) The circuit disconnects

- 5) What should you do before disconnecting the capacitor from the circuit?
 - a) Turn off the solar panel
 - b) Check the voltage tracker
 - c) Drain the capacitor by holding down the button
 - d) Add more resistors

- 6) How can the angle of light affect the efficiency of a solar panel, and what real-world applications can you think of where this knowledge would be important?



Name: _____

7) Imagine you live in a place with frequent power outages. Describe how you could use the knowledge from this tutorial to create a backup power system for your home.

8) The Python code you completed in Blockly reads and graphs the voltage from Pin GP26. Can you modify the code so that it not only graphs the voltage but also prints a message that says "Voltage is high" if the voltage is above 2.5V or "Voltage is low" if it is 2.5V or below? Write the modified code below.



Name: _____

Answer Key Solar House

- 1) D - To harness the sun's energy for power
- 2) B - Capacitor
- 3) A - To save energy by reducing current flow
- 4) C - The LED lights up
- 5) C - Drain the capacitor by holding down the button
- 6) *Example:* The angle of light affects the efficiency of a solar panel because the amount of sunlight hitting the panel impacts how much energy it can generate. In real-world applications, this knowledge is crucial for designing solar power systems to maximize energy absorption, such as on rooftops of homes and buildings. Solar farms and portable solar chargers for camping or emergencies also benefit from optimal panel positioning.
- 7) *Example:* Using the knowledge from this tutorial, I could install solar panels on my roof to harness energy from the sun. This energy would be stored in capacitors or batteries to provide power during outages. By incorporating resistors, I can manage the energy flow and prevent overloading my circuits. Additionally, using voltage trackers and adjusting panel angles seasonally would ensure maximum efficiency, allowing my backup power system to be reliable and effective.
- 8) *Example:*

```
## ---- Imports ---- ##
import time
from piper_blockly import *
import board

## ---- Definitions ---- ##

GP26 = piperPin(board.GP26, "GP26", "Analog")

try:
    set_digital_view(True)
except:
    pass

## ---- Code ---- ##
while True:
```



Name: _____

```
voltage = GP26.readVoltage()
piperGraphNumbers([str(voltage)])

if voltage > 2.5:
    print("Voltage is high")
else:
    print("Voltage is low")

time.sleep(0.5)
```