Name: _____

Assessment
Reaction Game

1) What does the LED in the weather sensor game signify?
   a) The end of the game
   b) The start of the game
   c) A random event
   d) A score update

2) What is the purpose of the push buttons in the game?
   a) To turn off the LED
   b) To indicate the end of the game
   c) To detect who has the fastest reflexes
   d) To change the LED's color

3) Which block creates a random wait time before the LED turns on?
   a) random integer block
   b) start block
   c) turn pin ON block
   d) wait block

4) What does the 'determine winner' function do in the game?
   a) Turn off the LED
   b) Calculate the random wait time
   c) Check which button was pressed first and return the winner
   d) Reset the game

5) Why is an exit loop block used in the 'determine winner' function?
   a) To reset the winner variable
   b) To stop the game from running indefinitely after a button is pressed
   c) To change the LED color
   d) To update the random wait time

6) Imagine you want to add a third player to the game. Describe how you would modify the code and the wiring to accommodate this change.

7) How could you modify this game so that if someone pushes their button too early, they automatically lose?

8) Look at the Python code provided. The game waits a random amount of time before turning on the LED and checking who presses their button first. Imagine you want to add a feature that shows a message on the screen whenever the LED turns on. How would you modify the code to include this feature?

Answer Key
Reaction Game

1) B - The start of the game

2) C - To detect who has the fastest reflexes

3) A - random integer block

4) C - Checks which button was pressed first and returns the winner

5) B - To stop the game from running indefinitely after a button is pressed

6) *Example:*
   Wiring: Connect an additional push button to another GPIO pin (e.g., GP12) and the GROUND rail.
   Code: Update the 'determine winner' function to include an additional if-else statement for the new button. You would also need to update the winner variable to include the new player's name and modify the logic to check which button is pressed first among three players.

7) *Example:*
   Hardware: Replace physical buttons with virtual buttons on a web interface.
   Code: Develop a web-based interface where players can click virtual buttons. Use a web server to signal the Pico when a button is pressed. Modify the code to handle inputs from the web server instead of physical GPIO pins. The code should also handle receiving data over the Internet and updating the game state accordingly.

8) *Example:*

```
## ---- Imports ---- ##
import time
import random
import board
from piper_blockly import *
from digitalio import Pull

## ---- Definitions ---- ##
winner = None
GP15 = piperPin(board.GP15, "GP15")

try:
  set_digital_view(True)
except:
```

```
  pass

GP14 = piperPin(board.GP14, "GP14")
GP13 = piperPin(board.GP13, "GP13")

def determine_winner():
  global winner
  while True:
    if not GP14.checkPin(Pull.UP):
      winner = 'player 1'
      break
    elif not GP13.checkPin(Pull.UP):
      winner = 'player 2'
      break
  return winner

## ---- Code ---- ##
time.sleep((random.randint(3, 8)))
GP15.setPin(1)
print("The LED is now ON! Press your button quickly!")
print(determine_winner())
```

Explanation:

This modified code includes a `print` statement right after the LED turns on. It displays a message telling players to press their buttons quickly, which adds a new feature to the game and helps make it more engaging.