MatchCodeLab Week 2 - Advanced Homework Sheet

Focus: Variables, Operators & Python Blocks (Level Up!)

Part A: Multiple Choice (1 point each)

1. What does this code print?

```
a = 4
b = 3
c = a ** b
print(c)
```

A. 81 B. 12 C. 64 D. Error

2. Which of the following is NOT allowed as a variable name?

A. my_var B. class C. total_3 D. varName

3. What is the result of this expression?

```
(10 + 2) * 3 // 2
```

A. 18 B. 6 C. 19 D. 36
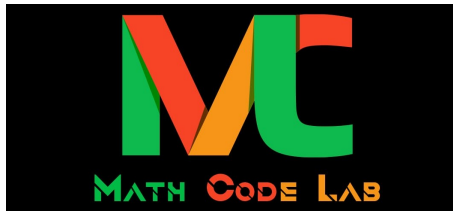
4. What is the value of x?

```
x = 7
x += 3
x *= 2
```

A. 20 B. 17 C. 14 D. 24

5. What will this code output?

```
x = "5"
y = 2
print(x * y)
```

A. 10 B. "10" C. "55" D. "55555"

Part B: True or False (1 point each)

6. Python allows variables to change types after assignment.

7. "5" + 5 will result in a syntax error.

8. The 'and' operator returns True only if both conditions are true.

9. A code block inside an 'if' must be indented.

10. The '==' operator checks if two variables point to the same object.

Part C: Short Answer & Fix the Bug (2 points each)

11. What is the difference between = and == in Python?
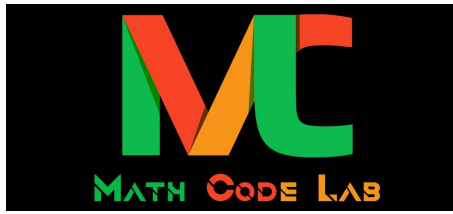
12. Identify the error and fix it:

```
if age => 13:
    print("Teenager")
```

13. What is the output?

```
num = 10
if num % 2 == 0:
    print("Even")
else:
    print("Odd")
```

14. Explain what a "block" is in Python and why indentation matters.

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15. Fix and rewrite this snippet:

    name = "Sara"

    print "Hello", name

Part D: Code Challenges (3 points each)

16. Write code that takes two numbers and prints their sum, difference, product, and quotient.

17. Create a program that checks if a number is positive, negative, or zero using if...elif...else.

18. Store the number of apples and oranges, calculate total fruits and fruit ratio (handle division by zero).

19. Use string formatting (f-strings) to print: "Hello Sam, your score is 92 out of 100."

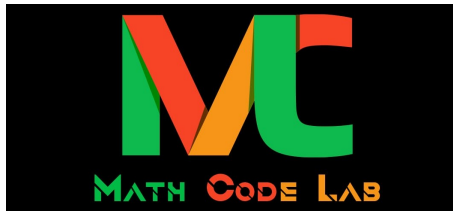20. Ask user for age (input), convert to int, and print eligibility to vote.

Part E: Code Tracing & Puzzles (3 points each)

21. What will this print?

    x = 3

    y = 4

    z = x + y * 2

    print(z)

22. Predict the output:

    result = 10

    result //= 3

```
result += 1
print(result)
```

23. Fill in the blanks:

```
a = 7
b = 2
if a % b == 0:
    print("_____")
else:
    print("_____")
```

24. Explain the difference between / and // using:

```
a = 10
b = 3
print(a / b)
print(a // b)
```
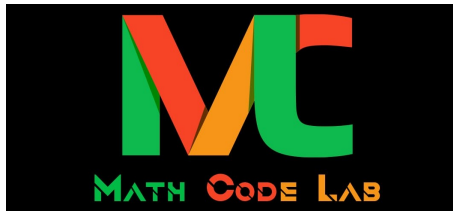
25. The output is: Result is: 45

What values of x and y satisfy this?

```
x = ___
y = ___
print("Result is:", x * y + 5)
```

Total Points: 65

Challenge yourself to write, trace, and fix real Python code.

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Submit by end of the week. Review with your mentor in the next session.