# REBOOT ACADEMY

**Computer Training Institute**
**Practice Assignments**

1. Write a program that teaches the user how to recognize whether a positive integer less than 100 is divisible by 2, 3, 5, and 9.

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**Test Run 1**: Enter a positive integer less than 100: **51**

A number is only divisible by 2 if it ends in a 0, 2, 4, 6, or 8. Since 51 has 1 in the ones column, we know it is not divisible by 2.

Since the sum of the digits of 51 is 6 which is divisible by 3, 51 is divisible by 3.

All numbers that do not end with a 0 or 5 are not divisible by 5, so 51 is not divisible by 5.

All positive integers less than 100 with digits that do not sum to 9 are not divisible by 9. So, 51 is not divisible by 9.

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**Test Run 2**: Enter a positive integer less than 100: **50**

A number is only divisible by 2 if it ends in a 0, 2, 4, 6, or 8. Since 50 has 0 in the ones column, we know it is divisible by 2.

Since the sum of the digits of 50 is 5 which is not divisible by 3, 50 is not divisible by 3.

All numbers ending in 0 are divisible by 5, so 50 is divisible by 5.

All positive integers less than 100 with digits that do not sum to 9 are not divisible by 9. So, 50 is not divisible by 9.

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Test Run 3: Enter a positive integer less than 100: 45

A number is only divisible by 2 if it ends in a 0, 2, 4, 6, or 8. Since 45 has 5 in the ones column, we know it is not divisible by 2.

Since the sum of the digits of 45 is 9 which is divisible by 3, 45 is divisible by 3.

All numbers ending in 5 are divisible by 5, so 45 is divisible by 5.

All positive integers less than 100 with digits that sum to 9 are divisible by 9. So, 45 is divisible by 9.

2. Write a program that outputs a menu and reads a shape choice (circle, rectangle, or triangle). The program should then prompt for the appropriate dimensions and calculate the area of the shape chosen.

Test Run 1:

Shape Menu

1. Circle

2. Rectangle

3. Triangle

Shape (1, 2, or 3)? 1

Radius? 5.1

The area of your shape is 81.7128 square units.

Test Run 2:

Shape Menu

1. Circle

2. Rectangle

3. Triangle

Shape (1, 2, or 3)? 2

Width? 1.4 Height? 2.7

The area of your shape is 3.78 square units.

**Test Run 3:**

**Shape Menu**

**1. Circle**

**2. Rectangle**

**3. Triangle**

**Shape (1, 2, or 3)? 3**

**Base? 4 Height? 9.7**

**The area of your shape is 19.4 square units.**

**Test Run 4:**

**Shape Menu**

**1. Circle**

**2. Rectangle**

**3. Triangle**

**Shape (1, 2, or 3)? 4**

**4 is an invalid menu option, program terminated.**