

Snap – Abstraction & Testing

Reporters and Predicates (Recap)

- Perform a function and give back a value
- Predicates give back true/false value
- Custom blocks can report values



Reporter

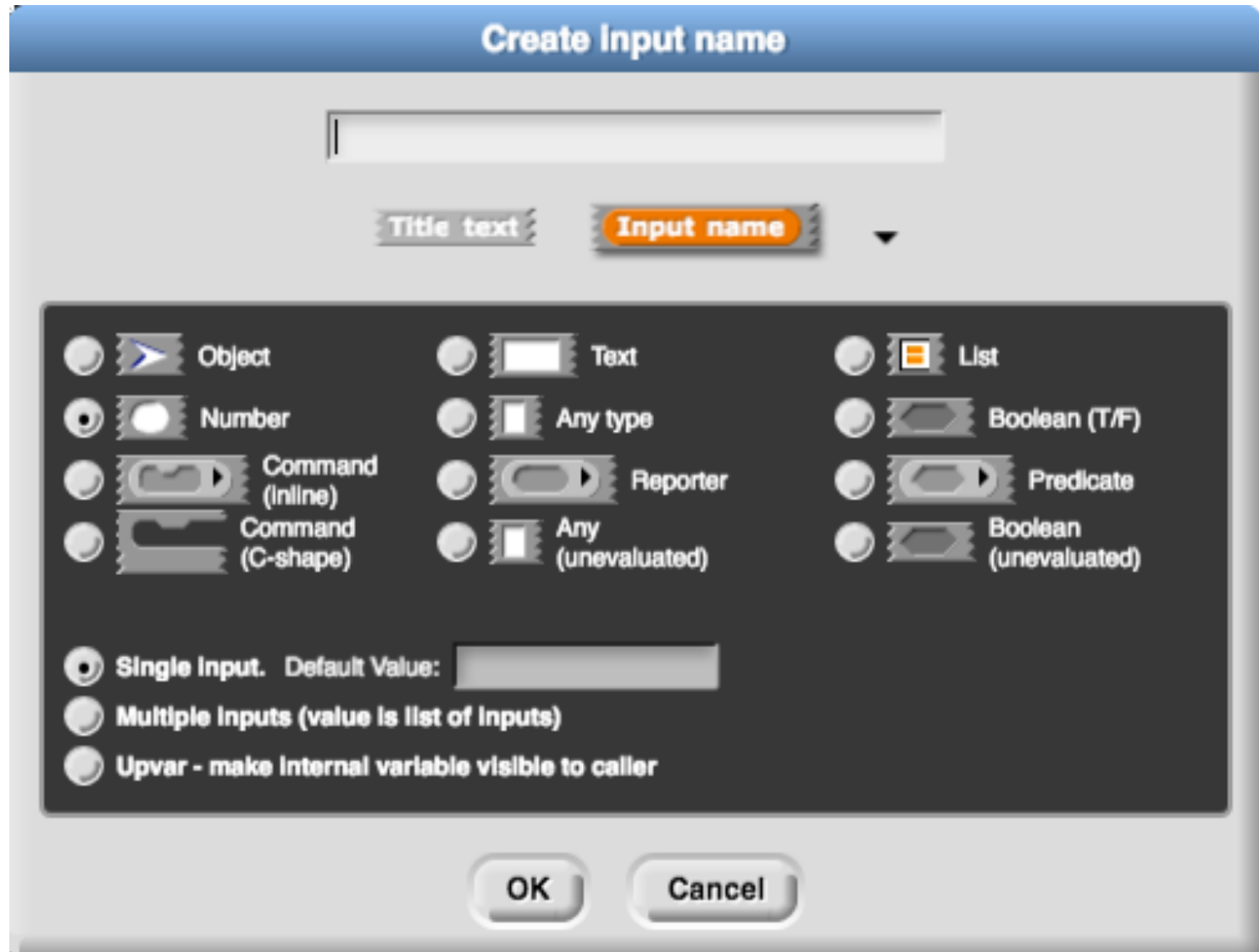


Predicate

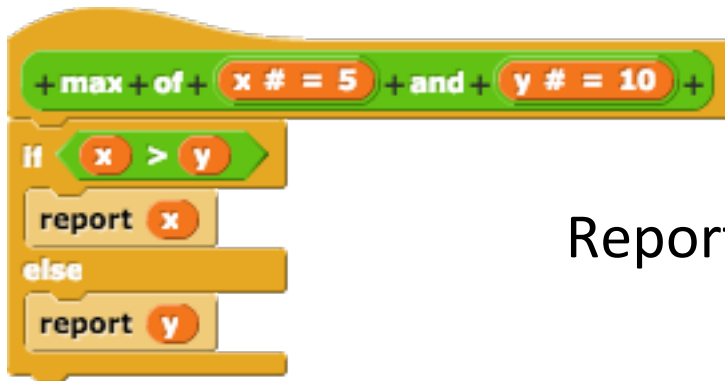


Reporter – custom built

Blocks only accepting numbers



Blocks inside Blocks



Reports the max of two numbers



Reports the max of three numbers using the above max block

First 3 blocks

- A three-input addition operator that accepts only numbers.



- A reporter block named "sum of two smallest"



- A predicate block named "Are any equal?"

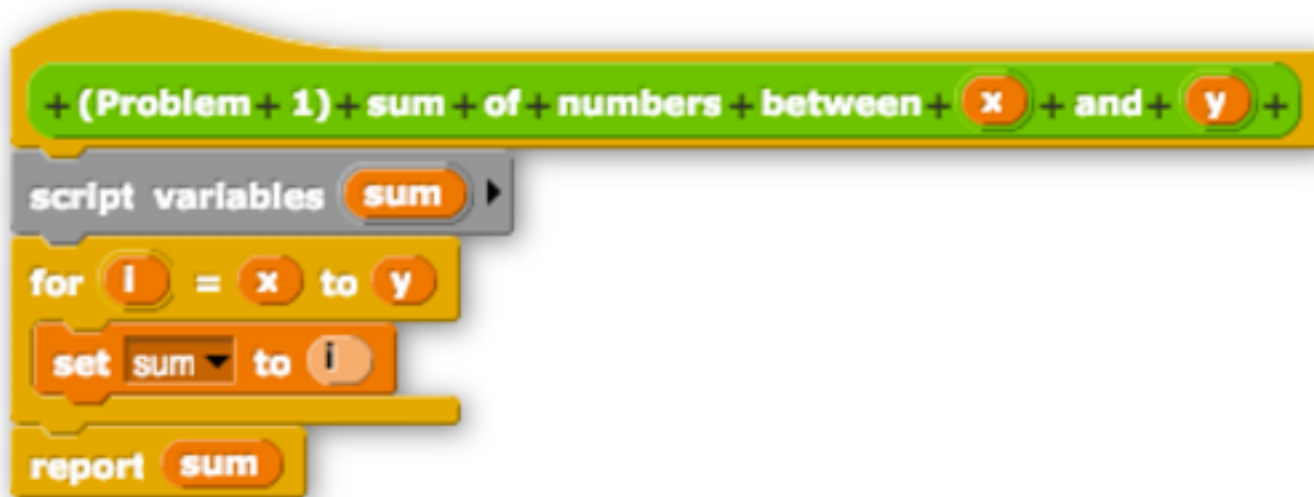


Debugging

- At some point in your programming career, you will discover errors
 - Syntax errors - code will never even run
 - something is written wrong
 - Not so common in Snap!
 - Runtime errors – code will run but crash
 - An impossible calculation is attempted
 - Ex: Division by zero; accessing a file that doesn't exist;
 - Logic errors – code runs without problem
 - You are getting incorrect results back
 - Usually a miscalculation

Debugging

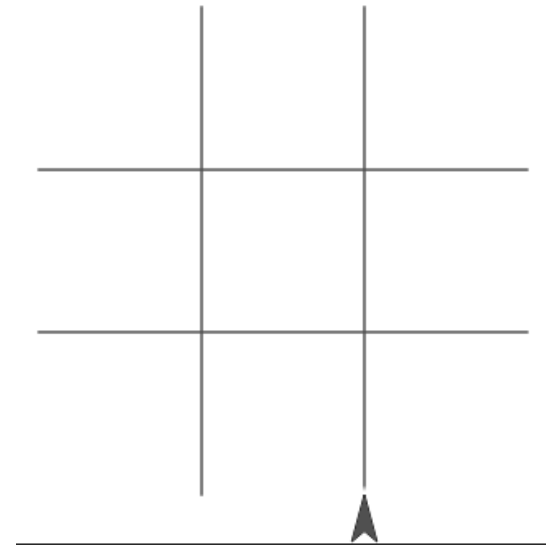
- In the “Sum Things up” section, you will debug 3 blocks



...

Tic Tac Toe

- Sometimes we need to break down complicated code into a more readable state
 - Use custom blocks
 - Use loops to repeat duplicate code
- You'll need to convert the provided code to produce a tic-tac-toe board



Abstraction

- Performing many subtasks that contribute to a greater task
- Example: Draw a brick wall with Z rows



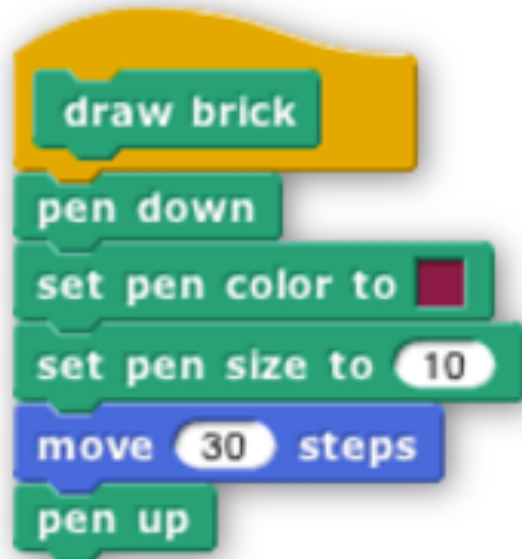
Draw a Brick Wall with Rows

draw brick

A possible approach for brick wall

Create blocks that:

1. Draw one brick



A possible approach for brick wall

2. Draw one row

rowA



3. Draw another row (offset the first and last bricks)

rowB



A possible approach for brick wall

4. Draw the entire wall, alternating rows

```
+ Draw a Brick Wall with x # Rows +  
for i = 1 to x  
  if i mod 2 = 0  
    rowB  
  else  
    rowA
```





What is “said”?

A.) Next

B.) Tick

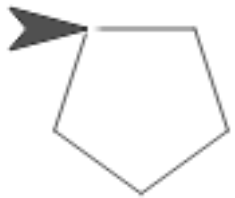
C.) Tock

D.) A combination of Next, Tick, Tack

```
pen down
repeat 6
  wait 1 secs
  move 40 steps
  turn 60 degrees
```

What is drawn?

A



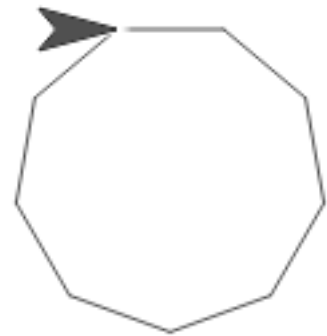
B



C



D



```
pen down
repeat 10
  wait 1 secs
  move 40 steps
  turn 36 degrees
```

What is drawn?

A



B



C





What is drawn?

- A) A star with x number of points
- B) A polygon with x number of sides
- C) A circle with x radius

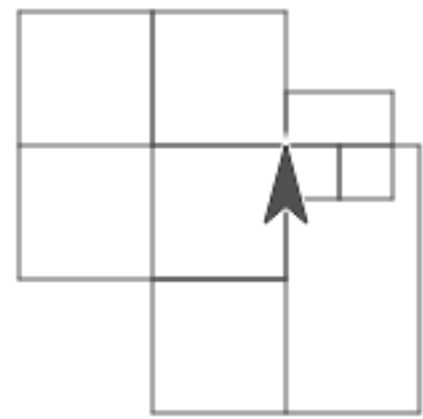

```

+ draw + building + of + size + x +
point in direction 90
pen down
repeat 2
  repeat 4
    pen down
    wait 1 secs
    move x steps
    turn 90 degrees
  pen up
  wait 1 secs
  move x steps
pen down
wait 1 secs
turn 90 degrees
move x steps
wait 1 secs
turn 90 degrees
move 2 x x steps
wait 1 secs
turn 90 degrees
move x steps

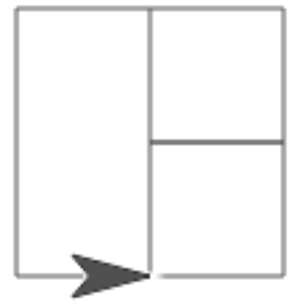
```

What is drawn?

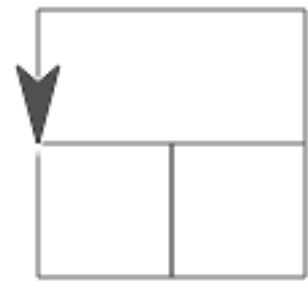
A

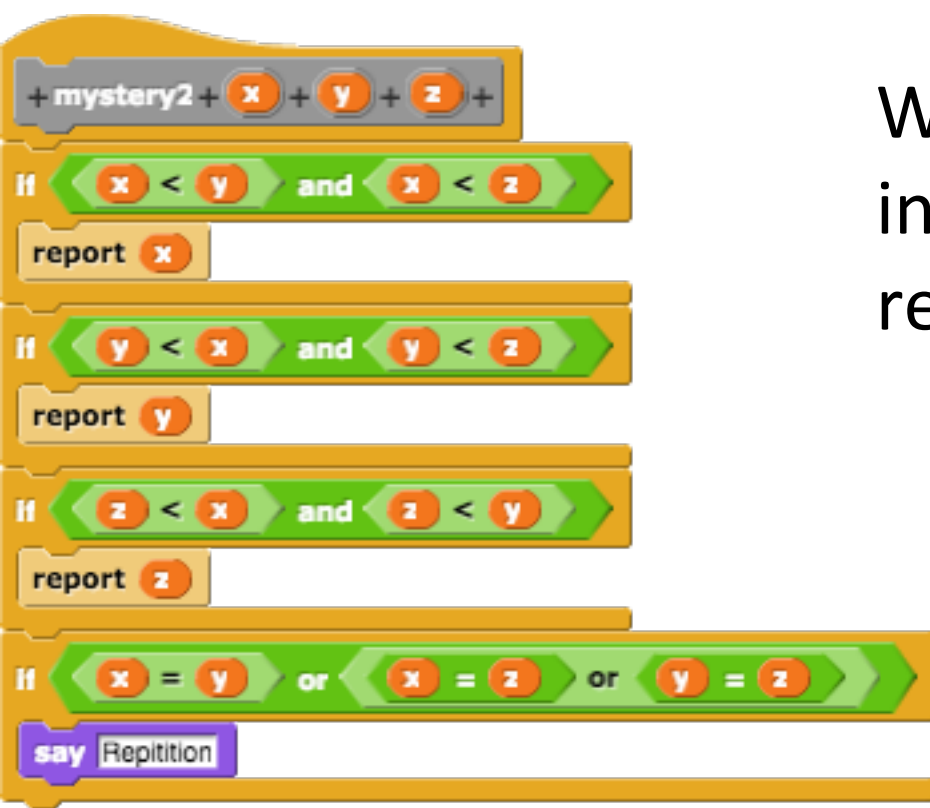


B



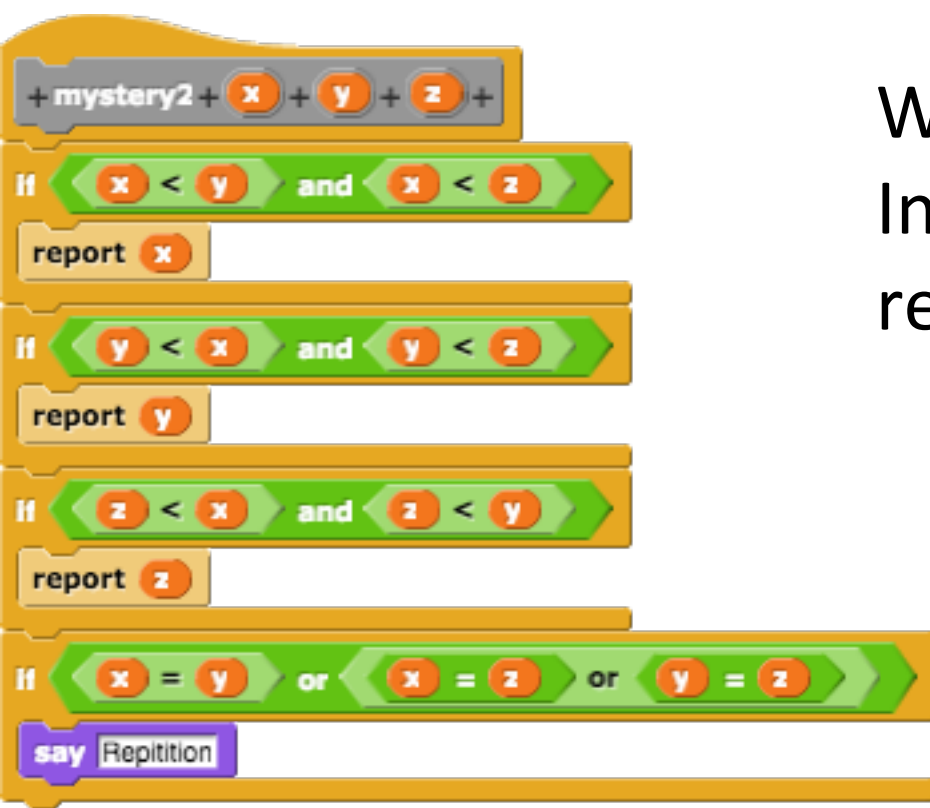
C





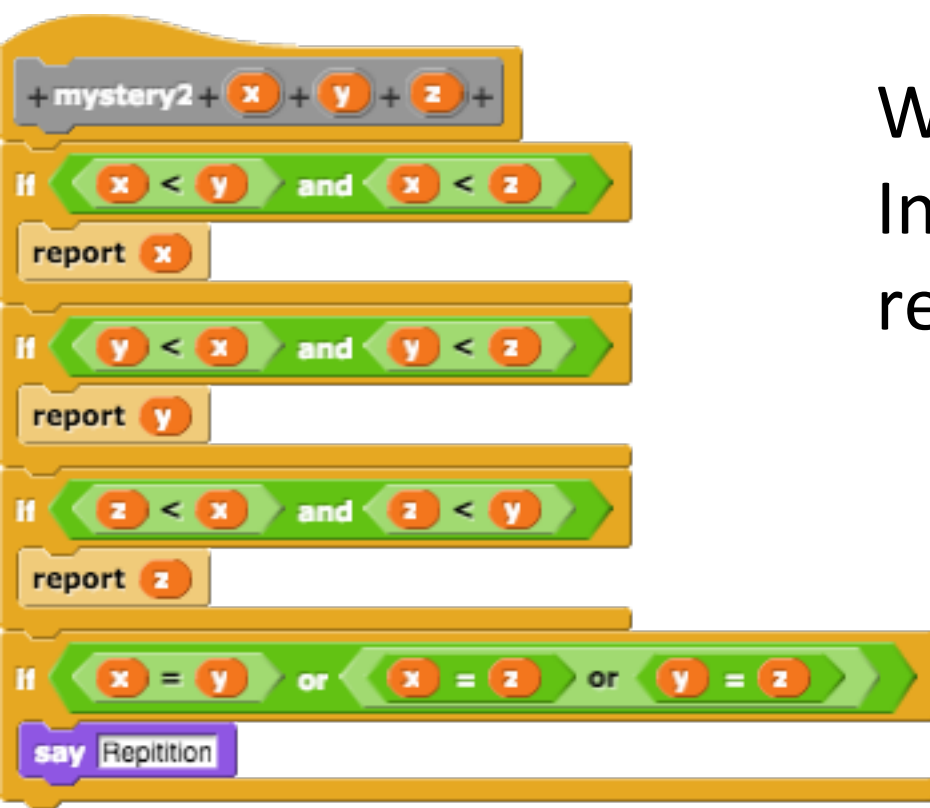
What is reported/said if we input 3,4,5 for x,y,z respectively?

- A) x is reported
- B) y is reported
- C) z is reported
- D) "Repitition" is said



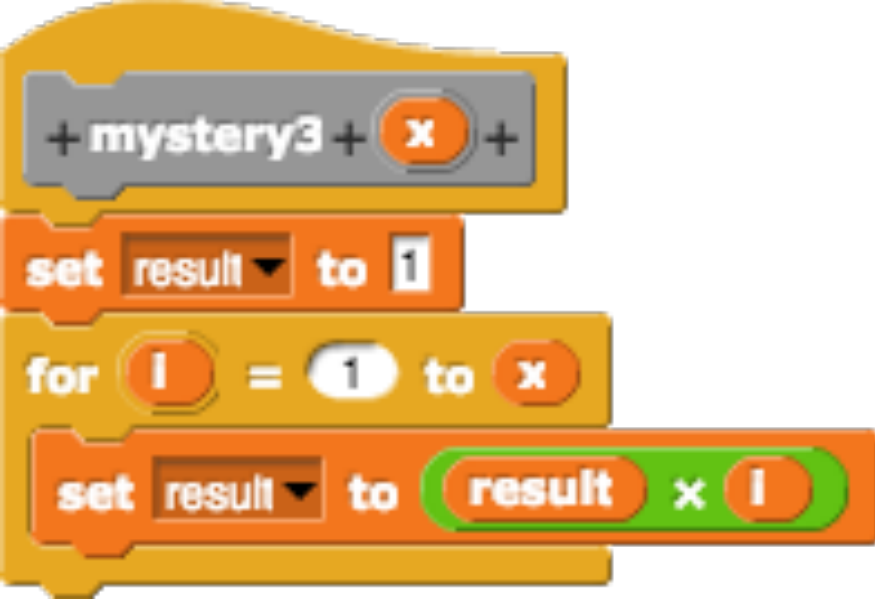
What is reported/said if we Input 5,4,3 for x,y,z respectively?

- A) x is reported
- B) y is reported
- C) z is reported
- D) "Repitition" is said



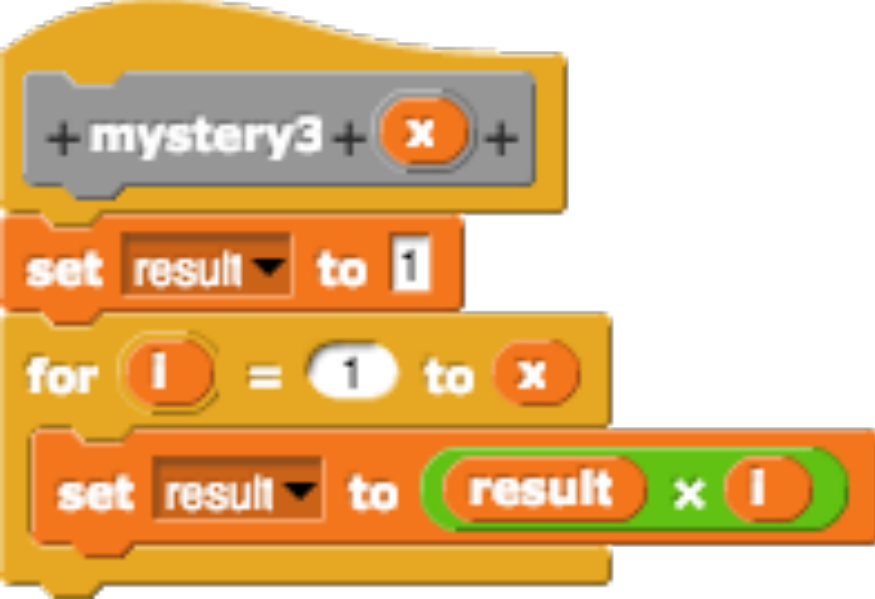
What is reported/said if we Input 5,5,5 for x,y,z respectively?

- A) x is reported
- B) y is reported
- C) z is reported
- D) "Repitition" is said



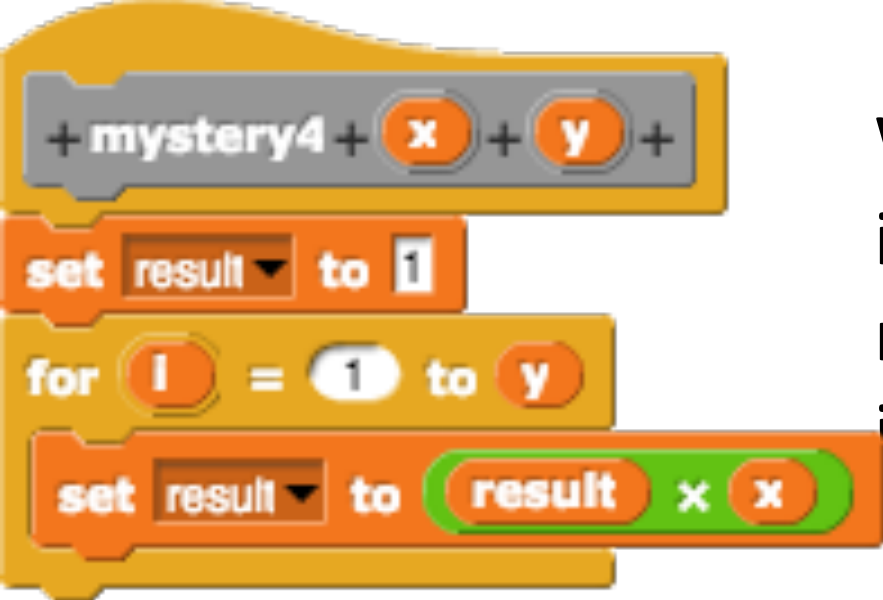
What is the value of result if 4 is input as x? Assume result is a global variable.

- A) 12
- B) 24
- C) 16



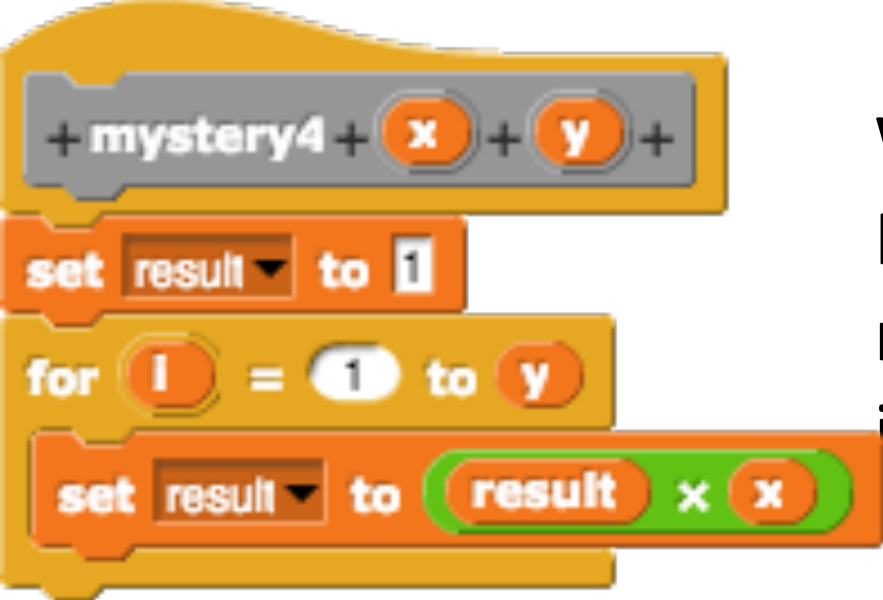
What is the value of result if 5 is input as x? Assume result is a global variable.

- A) 60
- B) 120
- C) 25



What is the value of result if 2 and 3 are input as x and y respectively? Assume result is a global variable.

- A) 6
- B) 8
- C) 10



What is the value of result
If 3 and 4 are input as x and y
respectively? Assume result
is a global variable.

- A) 12
- B) 27
- C) 81