Cypress Woods Invitational 2014

Scratch Division

Instructions & Guidelines:

1. You will have 2 hours to complete as many problems as you can.
2. Input, if needed to solve a program, will be given by a judge.
3. Once you think you have finished a problem, call over a judge and they will tell you if it is correct or not.
4. All problems are worth the same amount of points.
5. Winners will be determined based on who finishes the most problems in the least amount of time.
6. If you have any questions don't hesitate to ask a judge.

Problems

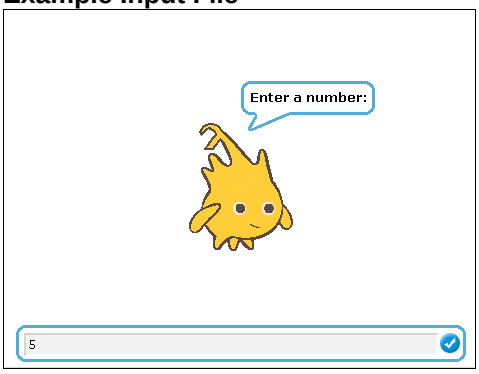
1. Sum of Nums
2. Temperature
3. Catch the Squirrel
4. Click & Color
5. Click Counter
6. Pump up the Ball
7. Checkout
8. Caesar Cipher
9. Speed Converter
10. Sum of Evens
11. Sum of Square Roots
12. Sides

1. Sum of Nums

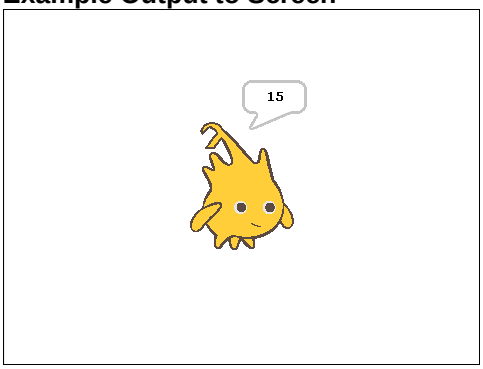
Program Name: sumofnums.ypr

Given a number *n*, have Alonso calculate the sum of all the numbers between 0 and *n*

Example Input File



Example Output to Screen



2. Temperature

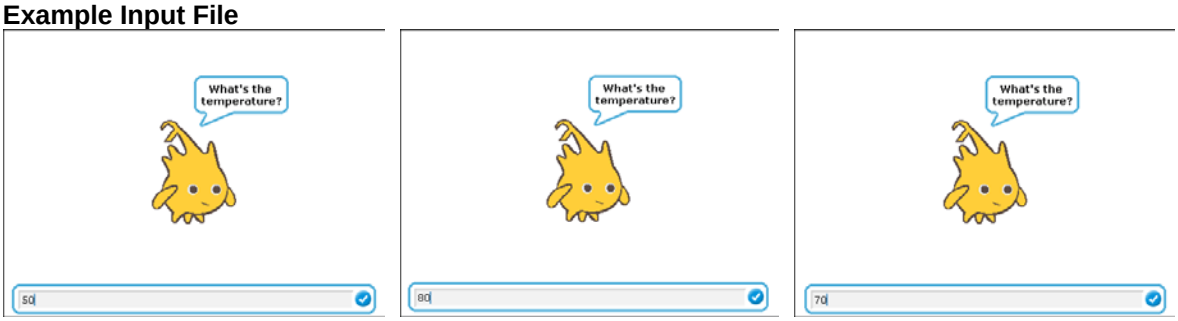
Program Name: temperature.ypr

Alfonso is very sensitive when it comes to temperature. He is only comfortable at 70˚ F. Anything below is too cold and anything above is too hot.

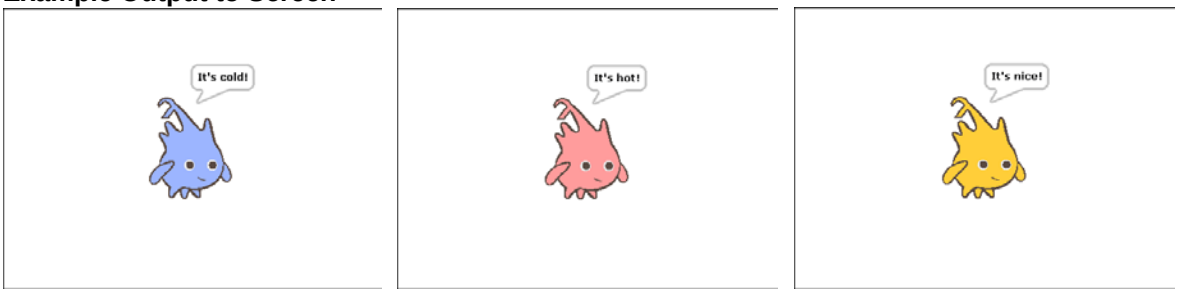
Input
The sprite will ask for the temperature.

Output
The sprite will change color and make a statement according to the temperature.
When it's cold, the sprite turns blue and says "It's cold!"
When it's hot, the sprite turns red and says "It's hot!"
Otherwise, the sprite remains the same and says "It's nice!"

Example Input File



Example Output to Screen



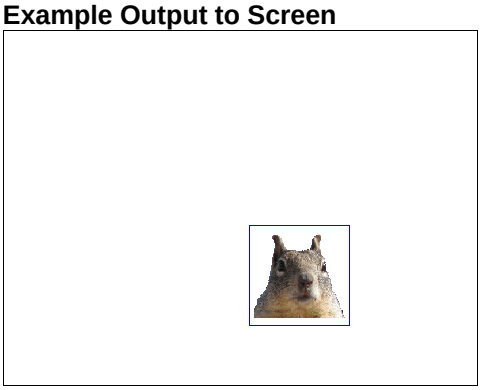
3. Catch the Squirrel

Program Name: squirrel.ypr

There is a squirrel on the loose. It has been reported that it appears at random locations between (-100, -100) and (100,100). Have Alonso draw a box around the squirrel to catch it.

Output
Every time the squirrel appears, it should have a box around it.

Example Output to Screen

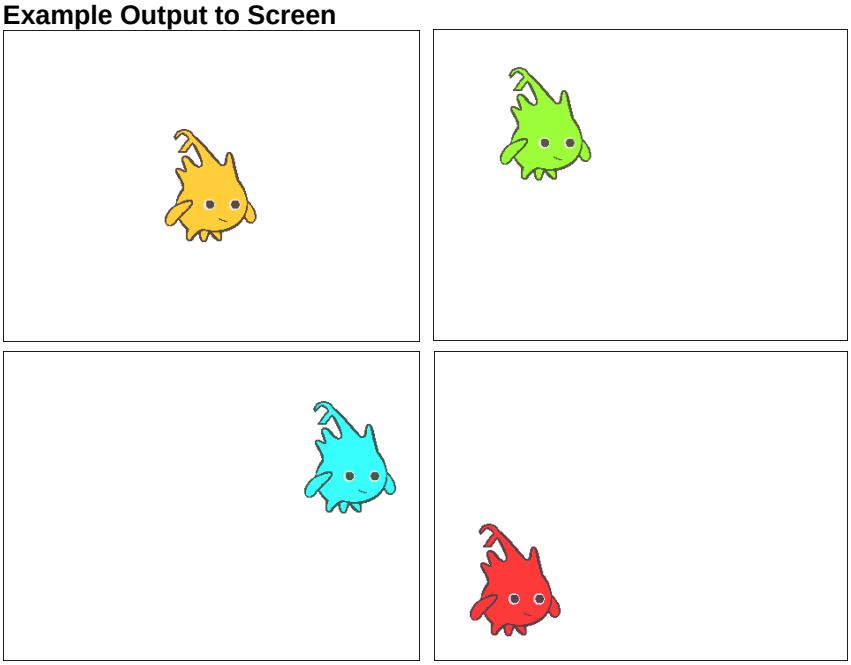


4. Click & Color

Program Name: colorclick.ypr

Alonso starts at the middle of the screen. Every time the stage is clicked, Alonso moves to the clicked spot and changes color.

Example Output to Screen



5. Click Counter

Program Name: clickcount.ypr

Count how many times Alonso is clicked.

Example Output to Screen

6. Pump up the Ball

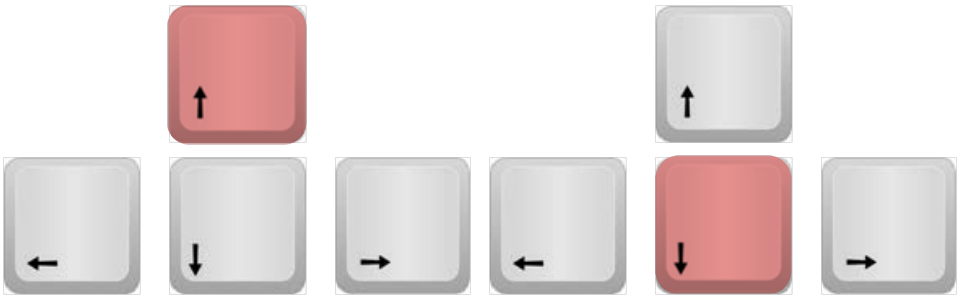
Program Name: pump.ypr

Help Alonso inflate and deflate his soccer ball.

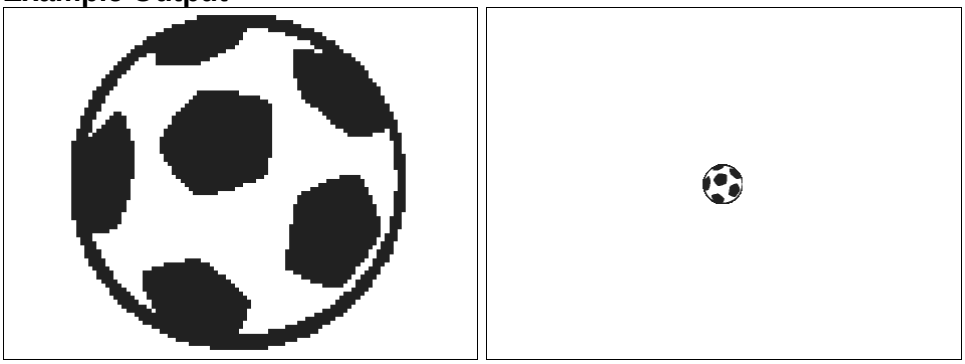
Input
Press the up arrow to inflate the ball. Press the down arrow to deflate the ball.

Output
Change the size of the ball to show it inflating and deflating.

Example Input



Example Output



7. Checkout

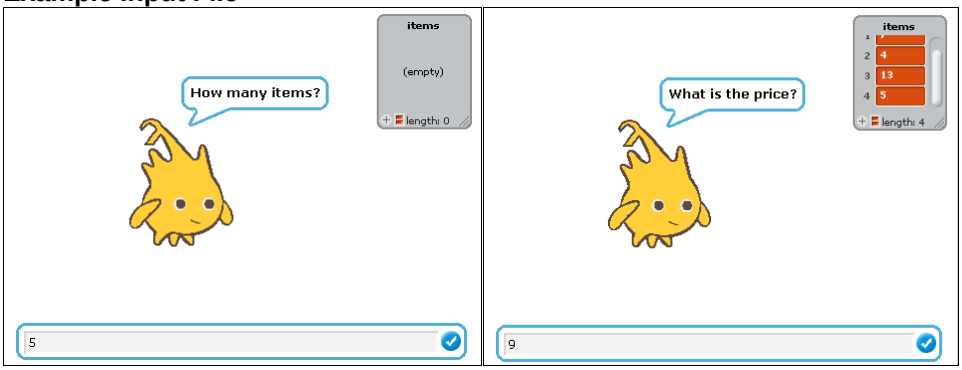
Program Name: checkout.ypr

Alonso is a cashier. Given a list of prices, have him say the total.

Input
Tell Alonso how many items you have and the price of each.

Output
Alonso will say the total.

Example Input File



Example Output to Screen

8. Caesar Cipher

Program Name: cipher.ypr

Alonso has been hired to encrypt Julius Caesar's messages using a Caesar cipher. During encryption, each letter in the plaintext is replaced by a letter some fixed number of positions down the alphabet. For example, with a left shift of 3, D would be replaced by A, E would become B, and so on.

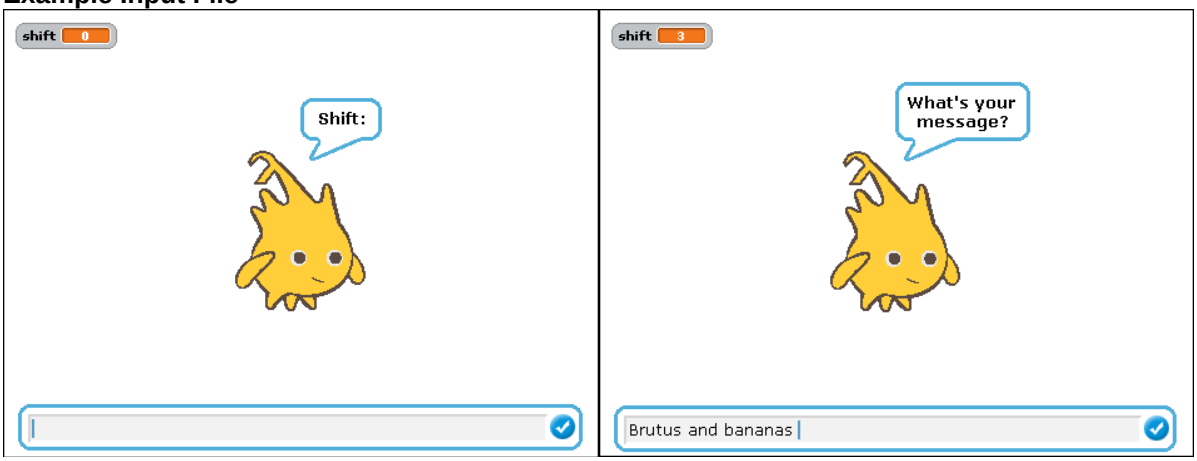
Encryption of a letter, *x,* by a shift, *n,* can be described mathematically as

$$E_n(x) = (x + n) \mod 26.$$

Input
Give Alonso a shift and a message to encrypt.

Output
Alonso will say the encrypted message.

Example Input File



Example Output to Screen

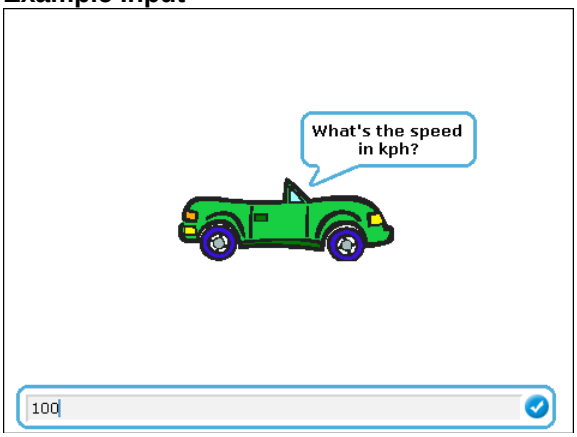
9. Speed Converter

Program Name: speed.ypr

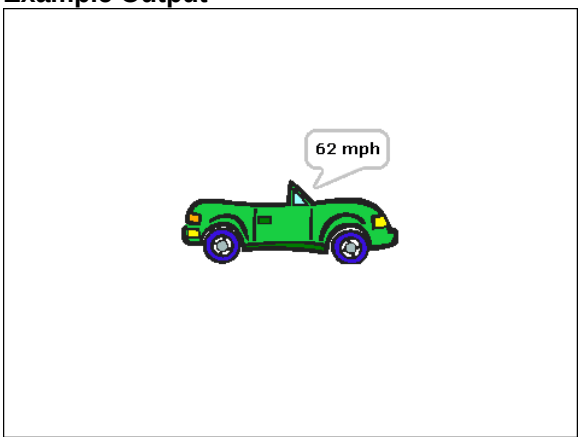
Alonso moved to the US from Spain and brought his car with him. Problem is that his car measures speed in kph. Help him convert the speed from kph to mph.

$$1\ km = 0.62\ mi$$

Example Input



Example Output

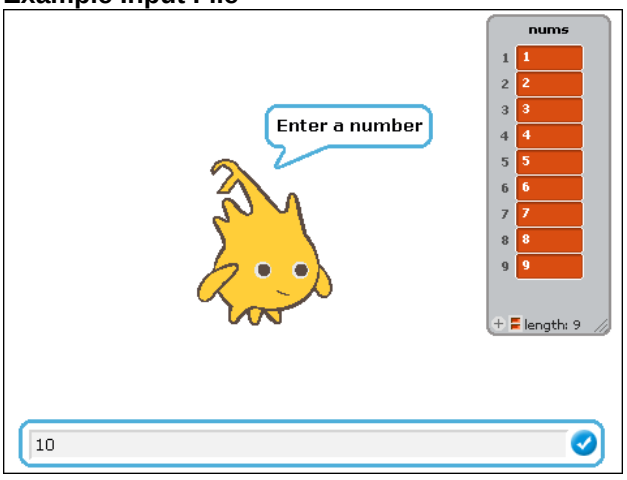


10. Sum of Evens

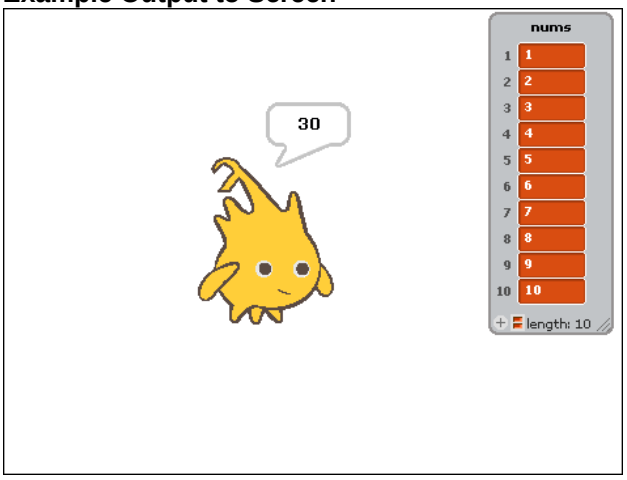
Program Name: sumofevens.ypr

Find the sum of all the even numbers in a list of 10 numbers.

Example Input File



Example Output to Screen

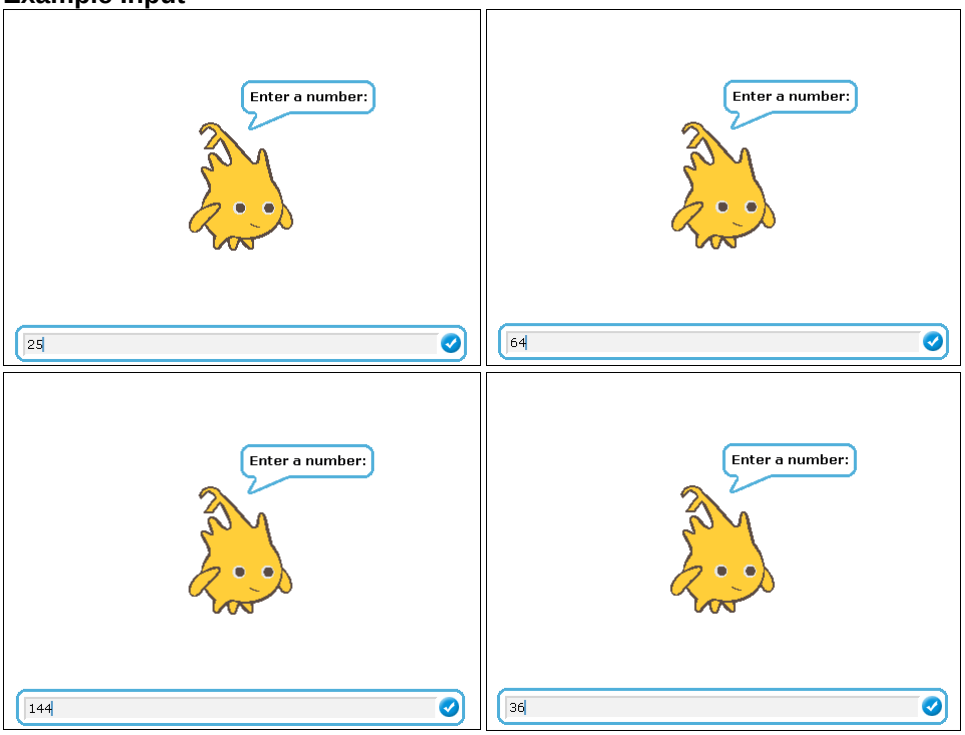


11. Sum of Square Roots

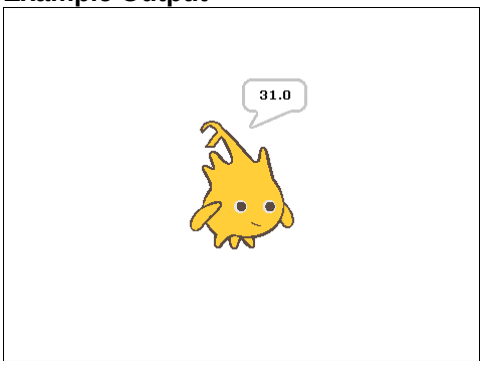
Program Name: sumofsqrts.ypr

Given 4 numbers, find the sum of their square roots.

Example Input



Example Output



12. Sides

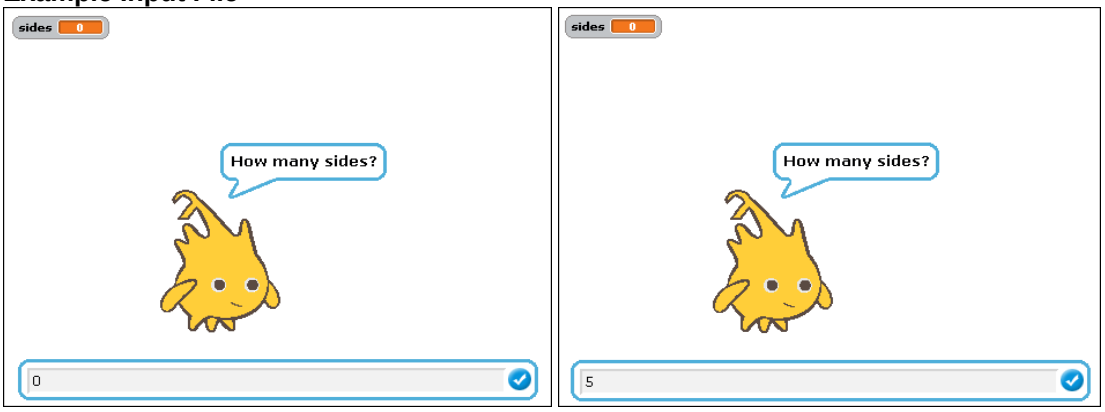
Program Name: sides.ypr

Alonso likes to draw shapes. Tell him how many sides a shape has and he will draw it.

Input
Tell Alonso how many sides the shape should have.

Output
Alonso will draw a shape with the given number of sides.

Example Input File



Example Output to Screen