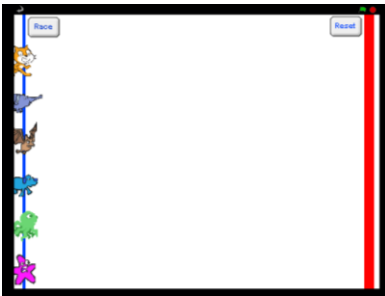
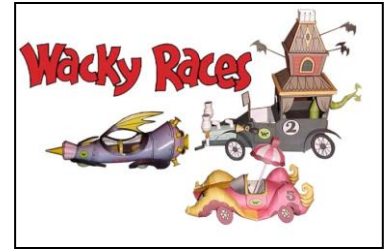


# Wacky Races

## Key Concepts

Let's remember the key points about programming:

- Programming a computer is all about planning the **ALGORITHMS** first.
- Algorithms must be **UNAMBIGUOUS**, and avoid redundant commands.
- A complicated task is best **DECOMPOSED** into smaller parts.
- For a small task, the algorithm can easily be tested before moving on. Once working, hide the detail by putting the sequence into a named block (or procedure). **ABSTRACTION** makes programs easier to understand.



## Challenge: Creating Wacky Races!

Create the game where 6 sprites line up on a starting line. When the race begins, the sprites should race at random speeds across the screen, stopping when they cross the finish line. The game should have the facility to reset – so you can watch them race again.

Let's **DECOMPOSE** the problem first:

**Step 1:** Create a 'racetrack' with start and finish line.

**Step 2:** Select and resize six sprites with at least 2 costumes to allow for animation.

**Step 3:** Work out how to get them all to line up on the starting line.

The 3 steps above could be encapsulated in a LineUp block

Then consider the main race

**Step 4:** Work out how to get one of them to race across the screen and stop on the finish line. This could become a Race block.

**Step 5:** Apply the solution above to all six sprites ensuring they race at a random speed.

**Step 6:** Work out how to get them all to start racing together.

Finally add the finishing touches (you'll need to know about **VARIABLES** for this).

**Step 7:** Get the sprites to announce their position on the finish line.

**Step 8:** Work out how to reset the game so that, when you choose, all the sprites line up on the start line ready to race again.

Make sure you test each step as you go along to make sure everything works. At each stage consider creating custom blocks for the algorithms you have coded. This makes it much easier to understand and debug. If it all works, let's think about improvements. See your teachers for some further challenges!