

Surrey Science Challenge 2011

Gyrocopter Challenge

Pre-build competition



Objective

Build a gyrocopter that descends at the **slowest possible rate**... Obviously gravity ALWAYS wins but you can use your engineering and science skills to slow your gyrocopter down!

What is a gyrocopter?

It's a simple spinning device that spins as it descends. Watch the video on the website first to get an idea! Then use the attached templates and attach a weight (e.g. paperclip). Cut out as many gyrocopters as you possibly can. Change things as much as you want, see what happens. Then start to refine your ideas carefully to create the perfect gyrocopter.

Using the scientific method

This project is all about using the scientific method to try to create the 'perfect' gyrocopter. We really hope you **recognize all the variables** involved (e.g. blade length, width, mass of counterweight etc). You should then **isolate** each variable and test your gyrocopter. Every time you change a variable **observe** how the time of descent changes. **Refine** and refine your copter one variable at a time until you find the perfect blend of variables! GOOD LUCK – we can't wait to see your designs!

RULES:

You guys are very sneaky! If you think you've found a way around the rules or you're not 100% sure your gyrocopter will be legal **PLEASE** ask us before the competition to avoid any disqualifications - we **love** innovation, we **hate** disappointed students! Post a comment on the website to ask questions or you can email us at:

hardman_a@sd36.bc.ca

- 1) **Your team has only two drops – you can use 2 gyrocopters if you wish**
- 2) **The slowest descent counts (the longest time)**
- 3) **The height of the drop is 20 feet**
- 4) **The drop zone is a square with edges of 5 metres – your drop must land in this zone**
- 5) **Timing will be controlled by video and laptops – decisions of timing staff are final!**
- 6) **Your gyroscope must be spinning all the way down**
- 7) **No parachutes are allowed to slow your descent**
- 8) **No buoyancy devices are allowed to slow your descent - e.g. helium balloon**
- 9) **No size restrictions!**
- 10) **No material restrictions (we prefer non-radioactive, non-explosive, non-toxic etc.)**
- 11) **Your device must be powered only by GRAVITY!**
- 12) **Awards for team spirit, school spirit, best designs will be available –**
HAVE FUN!

