



# **JUNK DRAWER RACES**

## **PAPER GLIDER COMPETITION**

### **Grade 6 - 7**

### **CHAMPIONSHIP GUIDELINE 2021-22**

*Last Updated: December 2021*

## TABLE OF CONTENTS

Championship Overview	Page 2
Registration Information	Page 2
Championship Challenge	Page 3
Challenge Overview and Judging Requirements	
Part 1: Planning and Design Package	Page 3
Part 2: Construction	Page 4
Part 3: Flight Test	Page 6
Part 4: Weight Challenge	Page 7
BONUS: Visual Appeal	Page 8
Scoring	Page 9
Submission Package	Page 10
Submitting to Dropbox	Page 11
Important Dates	Page 11
Resources	Page 12
Questions	Page 12

If you require assistance or have any questions about the contest, please consult the **Junk Drawer Races Frequently Asked Questions** located on our website at [www.skillsontario.com/junk-drawer-races](http://www.skillsontario.com/junk-drawer-races) or you may contact the Competition Coordinator at [junkraces@skillsontario.com](mailto:junkraces@skillsontario.com).

## CHAMPIONSHIP OVERVIEW

The Provincial Paper Glider Championship Round consists of the top 3 teams from each division from the regional competition. The Provincial Championship Round will follow the same rules and guidelines as the regional competition, except for the added Provincial Competition Challenge.

Teams competing within the Provincial Championship round will have until February 16<sup>th</sup> to review their existing blueprints, potentially modify their designs to meet the provincial challenge and construction requirements while explaining their modifications and submit their new submissions via Dropbox. Entries are to be assembled and submitted similar to how they were submitted within the regional competition.

Provincial Submissions will be evaluated by industry volunteers, and the top three teams will be awarded prizes by Skills Ontario. Winning teams will be notified no later than March 10<sup>th</sup>.

## REGISTRATION INFORMATION

**Teams that are advancing to the Provincial Paper Glider Championship Round will be announced via social media event on January 12<sup>th</sup>. Teams will also be notified via email that was used during the registration for the regional round. Teams that are advancing to the championship do not need to pay any fees, but teachers are required to register again with the name of the team members this time.**

Every team must register for the championship round to participate. Teachers can register the teams on behalf of their students like they did for the regional round. A link to register for the championship round will be shared via email.

### **Registration Confirmation Email:**

A confirmation email will be sent to the registering email. This confirmation email will be sent within 5 business days of registering. A team is not registered for the program until a confirmation email is sent. If the confirmation email is not received within 5 business days, please contact Skills Ontario at [junkraces@skillsontario.com](mailto:junkraces@skillsontario.com). Please be sure to check spam folders.

**Registration closes Wednesday, February 16<sup>th</sup> at 3:00 PM. No exceptions.**

**If your school or school board is not listed, or if you notice an error, please contact the Competitions Coordinator at [junkraces@skillsontario.com](mailto:junkraces@skillsontario.com)**

## CHAMPIONSHIP CHALLENGE

Teams that are competing within the Championship Round can choose to use their previous glider plane and glider plane design, or they may create a new design and plane to meet the Championship Challenge.

This year's Paper Glider Plane Championship challenge is:

Create new Paper Glider Plane or modify the existing one that can stay in the air the longest while carrying the weight of up to 100 grams in coins.

Teams may use any tape or adhesive to secure the coins to the Paper Glider Plane. Teams must submit a design plan that includes where the coins will be placed on the plane, the mandatory safety plan, as well as an unedited video of a single attempt at a flight test.

## CHALLENGE OVERVIEW AND JUDGING REQUIREMENTS

Below you will find the description and judging requirements for each section of the Paper Glider Competition.

### PART 1: PLANNING & DESIGN

There are three components to the Students' Planning and Design. All three components must be handed in to receive full marks. Submissions will **not be accepted** if students do not include their Mandatory Safety Checklist. All students MUST complete the Mandatory Safety Checklist PRIOR to beginning their Paper Glider Plane project, however the checklist only needs to be submitted with the rest of the project files.

#### Mandatory Safety Checklist

Teams must complete the Mandatory Safety Checklist, which is a full project safety checklist that all entries must submit in order to be eligible to compete. Visit the Resources section of the Junk Drawer Races webpage to download the Mandatory Safety Checklist in .PDF format, located here: [www.skillsontario.com/junk-drawer-races](http://www.skillsontario.com/junk-drawer-races).

#### Design Plan

In teams, students are to create a Design Plan of their Paper Glider Plane project and submit their designs within their submission package. Design Plan should be neat, easy-to-read, and should clearly show the design of Paper Glider. Teams are welcome to create their designs by hand or by computer. Teams will be marked on their abilities to build according to their design plans.

## Materials List

Teams must include, on a separate piece of paper, a full list of the materials used. This document can be created and formatted however the Team wishes. Teams will be marked on their ability to include all materials used to create their Paper Glider Plane. They must also provide quantity of materials used and will be marked on the legibility and professionalism of this document.

### Your Planning & Design Package should include the following three (3) documents:

- Design Plan – Should include all necessary dimensions are labeled (Wingspan, length). It should also include a legend if necessary
- Mandatory Safety Checklist (Can be found in Junk Drawer Races Resource webpage)
- Materials List - Full list of materials used

### Teams will be marked on:

- Materials List– Is it legible? Are all materials used listed? Did they use all approved materials? (Up to 5 marks)
- Design Plan – Does the design plan look neat and organized? Was a straight-edge ruler used? Is it legible? Are all measurements to scale? Does the design reflect the build? (Up to 5 marks)
- Accuracy – Are all measurements to scale? (5 marks)

**All components of the Planning & Design section must be included with final submission in Dropbox in order to receive marks.**

## PART 2: CONSTRUCTION CHALLENGE

Once the Students have completed their mandatory safety checklist, materials list and design plan, they are then to begin constructing their projects according to their design plans. Students will be marked on: their ability to follow their design plans, the quality of the construction and the images provided.

### Dimensions –

- Total Wingspan cannot exceed **90cm**
- Total Length cannot exceed **90cm** (nose to tail)

### Approved Materials:

### Approved Paper Products

- Printer paper
- Wrapping paper
- Newspaper

- Tissue Paper
- Toilet Paper or Paper Towel
- Cardboard and other Corrugated materials
- Any other paper product available – **MUST be a product primarily made of paper**

### **Approved Sticks**

- Toothpicks
- 30cm (12 inch) bamboo/wood Skewer Sticks
- Popsicle sticks
- The use of other materials, such as dowels, plastic or wire will **not be permitted**.

All items listed above can be found at most grocery stores, Dollar Stores, Stationary Stores, Walmart, Canadian Tire or Home Hardware stores across Ontario. If you are having difficulty finding these items, please contact [junkraces@skillsontario.com](mailto:junkraces@skillsontario.com).

If you are unsure if a material is approved, feel free to reach out to us at [junkraces@skillsontario.com](mailto:junkraces@skillsontario.com).

### **Approved Adhesives & Connectors**

Students **may use ANY type of adhesive for their plane** but should take into account the type of materials they are using and if it will restrict flight.

### **Recommended adhesive/connector products:**

- 3M scotch tape
- 3M masking tape
- Painters tape
- Duct tape
- Super Glue
- Glue stick
- Glue gun
- White glue or carpenter's glue
- Zip Ties

### **Construction Images for Final Project Submission**

Team's construction will be marked upon images submitted and proper materials used. Three (3) pictures of the Glider Plane from different angles are to be included with the project submission. Those picture angles are to be taken of the:

1. front
2. side (either side)

### 3. Top

Teams will be deducted marks if three images showing three separate views are not included with their submission package.

#### **Teams will be marked on:**

- Build Accuracy – Did the student competitors follow their design plans? Are all features in the designs present on the product? (Up to 5 marks)
- Picture Quality – Did the team include 3 images with the required views? Do the pictures clearly show the Glider Plane? (Up to 5 marks)
- Quality of Construction – Does the plane look like it will fly? Is it well built? Is it a creative design? (Up to 5 marks)

#### **SAFETY NOTE:**

If using a device that requires an electrical source such as a Hot Glue Gun, please ensure a teacher, parent or guardian is supervising at all times.

## **PART 3: FLIGHT TEST – LONGEST FLIGHT**

Once the Student Competitors have completed constructing their Paper Glider Planes and have taken photographs for their submission entries, students are to complete a flight test of their Paper Glider Planes.

The Student Competitors are to “launch” their Paper Glider Planes by hand from a stationary position. The Planes cannot be released higher than 1.5 metres off the ground. If it is determined by the Judges that a competitor launched their plane above this height, appropriate marks will be deducted from their score. For the championship round, students are to submit **ONLY ONE FLIGHT ATTEMPT**. They may perform multiple flight test with the goal of a longest flight. However, they only have to submit their best attempt. One point will be awarded for each second of flight achieved and 1 point for every 10grams of weight. Tiebreakers will be determined to the nearest tenth of a second. Further, the plane must be in the air for at least 2 seconds to be considered as a valid flight attempt.

The video must capture the entire flight of the Plane at all times. At no point in the video can the Paper Glider Plane escape the frame of the video. Teams must plan their flight test and video shot carefully in order to ensure the Plane does not leave the video frame. A team may pan their camera to follow the Plane during flight. One (1) point will be deducted for each time the Plane leaves the video shot.

#### **Teams will be marked on:**

- Video – has it met all criteria? (Submitted on time and titled in proper format, Plane does not leave frame; Launcher is within the entire frame during launch)
- Points for the flight test

- One point will be awarded for one full second of flight. Points will be awarded to the nearest Tenth of a second (.0)

**SAFETY NOTE:**

Students should use a large, safe indoor area, such as a school gymnasium, to perform a flight test. Students may use a large, clear outdoor area, such as a soccer field, but should ensure that a teacher/parent/guardian is present and that there are no hazards present (i.e. electrical wires above, vehicles, other people, animals, etc.)

**PART 4: WEIGHT CHALLENGE**

Teams that are competing within the championship round are to complete an additional challenge to what they had completed during the Regional Round. This year's challenge is:

How much weight (up to 100gms in Canadian Coins) can your plane carry while performing the flight test (minimum of 2 seconds)?

Teams are required to attach the coins to their plane using any kind of adhesive listed above. **The coins must be on the plane during the flight test.**

***For weight, students must use any mix of coins and they are required to specify the coins used in their material list. Students must include the weight and the mix of coins in their materials list.***

For the purpose of the competition, the weight of each coin is determined in the table below.

Coin	Weight (grams)
Toonies	7
Loonies	7
Quarters	5
Dimes	2
Nickels	4

Teams must include the total amount of coins, along with total weight, they secured to their Paper Glider Planes within their design plan package in a chart that looks like this. Example below:

Coin (Example)	Number of Coins used (Example)	Weight (Grams - Example)
Nickel	3	12 grams
Dime	0	0 grams
Quarter	6	30 grams
One dollar	3	21 grams



Two dollar	3	21 grams
<b>Total Weight</b>		<b>84 grams</b>

## BONUS: VISUAL APPEAL

Teams have the option to decorate their Paper Glider Plane projects but must do so using specific materials that do not provide a structural advantage. Students may only use decorations such as colourful construction paper, markers, crayons, paint, glitter, etc.

Some examples of decorations that could provide an unfair advantage are:

- Wire
- Pipe Cleaners
- Non-Paper materials, such as aluminum foil, saran wrap or plastic

Any decorations that appear to be aiding in the structural integrity of the Paper Glider Plane will result in a 5-point penalty. If a team is unsure if a certain decoration material is allowed to be used, they may email the Competitions Coordinator at [junkraces@skillsontario.com](mailto:junkraces@skillsontario.com).

## SCORING

Category	Maximum Points
<b>Part 1: Planning &amp; Design package</b>	
Materials List- Is it legible? Are all materials used listed? Did they use all approved materials?	5
Professionalism – Does the Design Plan look neat and organized? Was a straight-edge ruler used? Is it legible?	5
Accuracy – Are all measurements to scale?	5
Mandatory Safety Checklist - submitting this is an automatic 5 points. If an entry does not include a Safety Checklist, the entry will be disqualified	5
<b>Total Planning and Design</b>	<b>20 points</b>
<b>Part 2: Construction</b>	
Build Accuracy – Did the Student Competitors follow their design plans? Are all features in the designs present on the product?	5
Picture Quality – Did the team include 3 images with the required views? Do the pictures clearly show the Glider Plane?	5
Quality of Construction – Does the plane look like it will fly? Is it well built? Is it a creative design?	5
<b>Total Construction</b>	<b>15</b>
<b>Part 3: Flight Test</b>	
3 attempts	1 point per 1 second in the air during Flight
Quality of Video	10
<ul style="list-style-type: none"> <li>Was the plane within the frame at all times?</li> <li>Was the entire body of the “Launcher” within the frame during Launch</li> <li>Was it clear in the video where the plane <i>first</i> landed?</li> </ul>	
<b>Total Flight Test Challenge</b>	
<b>Part 4: Weight Challenge</b>	
Weight the plane is holding	1 point per 10 grams
<b>Total Weight Challenge</b>	<b>10</b>
<b>VISUAL APPEAL BONUS MARKS</b>	
<ul style="list-style-type: none"> <li>Did the team use approved decoration materials? Is the decoration appropriate?</li> </ul>	5
<b>TOTAL MARKS</b>	

### **Important Points:**

1. All judging is final. Individual final scores will not be shared with teams.
2. Students are encouraged to work in a team and every student must have a different responsibility (keeping the time, measuring the distance, launching the plane)

### **Tiebreaker**

In the event of a tie between two or more teams, ties will be broken by using the score from the distance challenge.

## **SUBMISSION PACKAGE**

Team's submissions for the Championship Paper Glider Plane Round are to include the following media in the following formats:

### **Part 1 – Design Plan Package**

- A copy of the Paper Glider Plane Design Plan is required to be submitted. These can be created and submitted in: .PDF, .JPEG, .DOCX (Word or Excel). Any other formats will not be accepted. Must be saved as "Design Plan"
- Material List is required to be created and submitted in: .docx, .xls or .pdf format (MS Word or Excel). Must be saved as "Materials List"
- Mandatory Safety Checklist to be downloaded, answered, and submitted in: .docx, .xls or .pdf format (MS Word or Excel). Must be saved as "Mandatory Safety Checklist – Completed"

### **Part 2 – Construction Photographs**

- Three (3) pictures of the Paper Glider Plane are required to be submitted (Front, Side and Top). These can be received in: .PDF, .JPEG. Any other formats will not be accepted.
- The three (3) pictures must each be saved as: "plane\_top", "plane\_side", "plane\_front".

### **Part 3 – Flight Test**

- **One (1) attempt within 1 unedited video** is required to be submitted. Video submission formats accepted are: .MP4 and .AVI.
- This file must be titled "Flight Test".

The Paper Glider Plane Submission Package should contain the Team's design plan, materials list, three (3) photographs of the constructed Paper Glider Plane, and the video recording of their Longest Flight test online. **Registered Teams will have until February 23<sup>rd</sup> by 3:00 PM** to submit their Submission Package to the Dropbox folder.

## Submitting to Dropbox

Teams are to collect all parts of their submission within a folder and submit their final submission package within the Skills Ontario Junk Drawer Races webpage at <https://www.skillsontario.com/junk-drawer-races#Submission>. Teachers may assist with the Safety Checklist, if required.

Project submissions must be submitted in a specific naming format in order to receive marks. If a team does not name their submission package in the following naming convention, their submission may be disqualified from competition.

**STUDENTS:** Be sure to have all 5 components of your project saved within a compressed .ZIP file folder. The .ZIP file MUST be titled using your school's name and school board initials if there was only one team. If the school had more than one team during the regional round, the title should include the team number (team 1 or team 2 or team 3). Please use the same team number from the regional round.

Teams may ask their teacher(s) for assistance in creating a zip file folder. You may also watch this video (<https://www.youtube.com/watch?v=lpn-T5Um3d4>) to learn how to create a zip file folder.

**For example, if your school is St. Mary's Elementary School in Waterloo Catholic District School Board, your file must be titled: "stmarys.wcdsb.ZIP" if there was only one team from the school. In case the school had two or three teams, the .zip file should be titled as "stmarys.wcdsb.team1.zip" or "stmarys.wcdsb.team2.zip" or "stmarys.wcdsb.team3.zip".**

**NOTE: Your full submission package should include a total of 5 documents that is a part of the 4 sections noted in the guidelines of every contest.**

## IMPORTANT DATES

Event	Date
Registration for Regional Competitions Opens	Oct. 12 <sup>th</sup> , 2021, at 9:00 AM
Registration for Regional Competitions Closes	Nov. 26 <sup>th</sup> , 2021, at 4:00 PM
Submissions for Regional Competitions Due	Dec. 9 <sup>th</sup> , 2021, at 2:00 PM
Regional Competitions Winners Announced	January 12 <sup>th</sup> , 2022, VIA Social Media
Championship Round Challenge Announced	January 12 <sup>th</sup> , 2022
Championship Round Registration Opens	January 12 <sup>th</sup> , 2022
Championship Round Registration Closes	February 16 <sup>th</sup> , 2022 at 3:00 PM
Championship Round Submissions Due	February 23 <sup>rd</sup> , 2022 at 3:00 PM
Championship Round Winners Announced	March 23 <sup>rd</sup> , 2022, VIA Social Media

\*All important dates are subject to change.

## RESOURCES

To learn how to build this activity and see how it functions, you can refer to the links below:

- <https://www.youtube.com/watch?v=GdZiesdZXbA>
- <https://www.youtube.com/watch?v=x-rcysOPn-4>

Note: The links are for reference only, you may learn from these, but your submission shouldn't be identical. If it is found to be identical by the judges, your submission may not be considered for marking.

## QUESTIONS?

Should you have any questions regarding this competition, please don't hesitate in contacting the Competitions Coordinator at [junkraces@skillsontario.com](mailto:junkraces@skillsontario.com).

**Thank you to our Sponsor. Merci à notre commanditaire.**



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