









## In Partnership With











# TABLE OF CONTENTS

TOPIC	DESCRIPTION	PAGE NUMBER
Curriculum Expectations	 Overall expectations from the Ontario Curriculum have been included to use as a guide when integrating the activities of the event into their classroom  Language, Math, and Science overall expectations have been included.  Teachers are encouraged to review additional curriculum expectations and integrate other expectations where they may see fit.	3-4
Pre-Event Activities*	 Students can research the various careers in the skilled trades using the Skills Ontario App, the Skills Ontario Career Profile Videos, or Job Talks Videos	5-7
Event Activities*	 Students will be able to listen and be engaged during the event panel	8-9
Post-Event Activities*	 After the event there are several activities that teachers will be able to use to continue to engage their students	10-39

*\*All activities included in this resource guide are optional and teachers can decide which activities they would like to complete with their students*

# CURRICULUM EXPECTATION

LANGUAGE			
Grade	Strand	Expectation	Description
Grade 6 – 8	Oral	1. Listen in order to understand and respond appropriately in a variety of situations for a variety of purposes	 Students will be able to set goals for and demonstrate appropriate listening strategies during the live panel discussions and through their individual research.  Students will be able to demonstrate an understanding of variety of careers in the skilled trades throughout the event activities
	Reading	1. Read and demonstrate an understanding of a variety of literary, graphic, and informational texts, using a range of strategies to construct meaning	 Students will be able to view a variety of different texts to learn and understand the different careers in the skilled trades.  Students will be able to demonstrate an understanding after reading different texts about the trades and extend their knowledge of how the trades influence our world
	Writing	1. Generate, gather, and organize ideas and information to write for an intended purpose and audience	 Students will be able to generate, gather and organize information to support the idea that these careers are fantastic opportunities throughout the activities of the event

MATH			
Grade	Strand	Expectation	Description
Grade 6 – 8	Number Strand	B1. Demonstrate an understanding of numbers and make connections to the way numbers are used in everyday life B2. Use knowledge of numbers and operations to solve mathematical problems encountered in everyday life	 Students will learn the benefits of math in the real world and how it is important in our everyday lives and in different careers
	Algebra Strand	C4. Apply the process of mathematical modelling to represent, analyze, make predictions, and provide insight into real-life situations	 Students will be able to use and demonstrate previous mathematical knowledge to create a variety of hands-on projects (see pages: 17-35)
	Spatial Sense	E1. Describe and represent shape, location, and movement by applying geometric properties and spatial relationships in order to navigate the world around them	 Students will be able create various 3D shapes to create projects that can hold weight, and move with a purpose (see pages: 17-35)

SCIENCE			
Grade	Strand	Overall Expectation	Description
Grade 6	Understanding Structures and Mechanisms - Flight	1. Assess the societal and environmental impacts of flying devices that make use of properties of air 2. Investigate ways in which flying devices make use of properties of air 3. Explain ways in which properties of air can be applied to the principles of flight and flying devices.	Students can use and develop their knowledge about structures and mechanisms by completing the hands-on activities found on pages: 17-35
Grade 7	Understanding Structures and Mechanisms – Form and Function	1. Analyze personal, social, economic, and environmental factors that need to be considered in designing and building structures and devices 2. Design and construct a variety of structures, and investigate the relationship between the design and function of these structures and the forces that act on them 3. Demonstrate an understanding of the relationship between structural forms and the forces that act on and within them	
Grade 8	Understanding Structures and Mechanisms – Systems in Action	1. Assess the personal, social, and/or environmental impacts of a system, and evaluate improvements to a system and/or alternative ways of meeting the same needs 2. Investigate a working system and the ways in which components of the system contribute to its desired function 3. Demonstrate an understanding of different types of systems and the factors that contribute to their safe and efficient operation	

# PRE-EVENT ACTIVITY

## RESEARCH ACTIVITY

Have students research 4 skilled trades and technology careers using one or more of the sources below:

- 1) Use the Skills Ontario App: [https://www.youtube.com/watch?v=AtpT6\\_zlTkc](https://www.youtube.com/watch?v=AtpT6_zlTkc)



- 2) Watch various Skilled Trades Success Stories on our Edgefactor Site (no login necessary):

<https://edgefactor.com/zone/skillsontario>

- 3) Watch various Skilled Trades Career Profiles on the Job Talks YouTube Chanel:

 <https://www.youtube.com/playlist?list=PLPgSYIcEchyi7-LJCglUrOPlaQGv4elat>

 <https://www.youtube.com/playlist?list=PLn3Rb8hYhq6oRgf3D7PJS-zJ2WS7ISS9Y>

 <https://www.youtube.com/playlist?list=PLn3Rb8hYhq6q6V3u7ATtcKDixEpgE1tq5>

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### **Skills Ontario Discovery Day – Pre-Event Research Activity**

**Instructions:** Using one of the options mentioned from your teacher, research **FOUR** Skilled Trades Careers and complete the following activity

#### **CAREER 1**

Skilled Trade Career Title:

\_\_\_\_\_

Description of the Career:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Career Salary:

\_\_\_\_\_

Name one thing you found interesting about this career:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### **CAREER 2**

Skilled Trade Career Title:

\_\_\_\_\_

Description of the Career:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Career Salary:

\_\_\_\_\_

Name one thing you found interesting about this career:

---

---

---

### **CAREER 3**

Skilled Trade Career Title:

---

Description of the Career:

---

---

---

Career Salary:

---

Name one thing you found interesting about this career:

---

---

---

### **CAREER 4**

Skilled Trade Career Title:

---

Description of the Career:

---

---

---

Career Salary:

---

Name one thing you found interesting about this career:

---

---

---



# EVENT ACTIVITY

## PANNEL DISCUSSION

- 🔧 Use the Microsoft Teams Link sent to you prior to the event to join our live event
- 🔧 If you are unable to join for the entire panel, please feel free to log in and out when convenient for you and your students
- 🔧 Watch event recordings found on our Skills Ontario Website:  
<https://www.skillsontario.com/ddnw>

## Agenda

TIME	Activity (EST)	Activity (CST)
10:00am — 12:00pm (EST) 9:00am—11:00am (CST)	Education Panel (10am EST—10:30am EST) Skilled Trades Panel (10:30am EST—11:30am EST) Additional Q & A Time (11:30am EST—12:00pm EST)	Education Panel (9am CST—9:30am CST) Skilled Trades Panel (9:30am CST—10:30am CST) Additional Q & A Time (10:30am CST—11:00am CST)
12:30pm — 2:30pm (EST) 11:30am—1:30pm (CST)	Education Panel (12:30pm EST—1:00pm EST) Skilled Trades Panel (1:00pm EST—2:00pm EST) Additional Q & A Time (2:00pm—2:30pm EST)	Education Panel (11:30am CST—12:00pm CST) Skilled Trades Panel (12:00pm CST—1:00pm CST) Additional Q & A Time (1:00pm—1:30pm CST)

## QUESTIONNAIRE ACTIVITY

During the event, have students complete the questionnaire on the following page.



Name: \_\_\_\_\_

Date: \_\_\_\_\_

### **Skills Ontario Discovery Day – Event Questionnaire Activity**

**Instructions:** During the event, please listen carefully to be able to answer the following questions

1. What are the 2 educational pathways that you can pursue in the trades?

---

---

2. What is a college course that was discussed that sound interesting to you?

---

---

3. What does OYAP stand for?

---

---

4. When can you participate in OYAP?

---

---

5. What is a benefit of the Apprenticeship Pathway?

---

---

6. Name 2 of the panel speakers' careers.

---

---

7. What is something that you heard today that inspired you the most?

---

---

8. What is one question you would like to ask to the panelists?

---

---

# POST-EVENT ACTIVITIES

- 🔧 Have students complete the event survey at: <https://www.surveymonkey.com/r/Z728HV3>
- 🔧 If students have questions after the event, they can post a question regarding the event to our Padlet Page (online whiteboard). *Questions will be monitored and approved before publicly posted*
  - a. Please post questions for our Education Panelists here:  
<https://padlet.com/discoveryday/education>
  - b. Please post questions for our Skilled Trades Panelists here:  
<https://padlet.com/discoveryday/skilledtrades>
- 🔧 Book a Skills Ontario Presentation: *see Appendix A*
- 🔧 Students can continue to explore the 140+ skilled trades using the:
  - a. Skills Ontario Mobile App and websites previously provided
  - b. OYAP Poster: *see Appendix B*
- 🔧 Complete various hands-on activities
  - a. Junk Drawer Races: *see Appendix C*
  - b. Marshmallow Chute Challenge: *see Appendix D*
  - c. Encourage students to participate in the Skills Ontario March Break Workshops: *see Appendix E*

SkillsCompétences  
Canada Ontario

# **APPENDIX A**



# SKILLS ONTARIO VIRTUAL PRESENTATIONS



Book a virtual presentation  
to explore **skilled trade  
and technology careers!**

Presentations will be tailored  
for students from  
kindergarten to grade 12.



*This program is funded by the Government of Ontario.  
Ce programme est financé par le gouvernement de l'Ontario.*

Contact [mcrow@skillsontario.com](mailto:mcrow@skillsontario.com) to book a presentation or for more details.  
Contactez [mcrow@skillsontario.com](mailto:mcrow@skillsontario.com) pour réserver une présentation.

## **APPENDIX B**



# APPRENTICESHIP IN ONTARIO



## MOTIVE POWER

- 🍁 Agricultural Equipment Technician
- ▲ Alignment and Brakes Technician
- 🍁 Auto Body and Collision Damage Repairer
- ▲ Auto Body Repairer
- ▲ Automotive Electronic Accessory Technician
- Automotive Glass Technician
- 🍁 Automotive Painter
- ▲ Automotive Service Technician
- 🍁 Heavy Duty Equipment Technician
- Marine Engine Technician
- Motive Power Machinist
- ▲ Motorcycle Technician
- Powered Lift Truck Technician
- 🍁 Recreation Vehicle Technician
- Small Engine Technician
- ▲ Transmission Technician
- ▲ Truck and Coach Technician
- ▲ Truck-Trailer Service Technician
- Turf Equipment Technician

### WHAT IS APPRENTICESHIP?

Apprenticeship is a combination of on-the-job training and classroom learning that leads to a skilled trade credential.

- 90% in the workplace with an experienced skilled worker
- 10% is in school at an approved training centre, union hall or college
- Apprentices follow training standards to become skilled in the trade

🍁 Indicates a Red Seal Program  
▲ Indicates a Designated Compulsory Trade\*  
Trades that are not Compulsory are Voluntary Trades\*\*

\***Compulsory Trade:** a trade in which registration as an apprentice is legally mandatory.

\*\***Voluntary Trade:** a trade in which certification is not legally required to practice the trade.

## SERVICE

- Aboriginal Child Development Practitioner
- Agricultural — Dairy Herdsperson
- Agricultural — Fruit Grower
- Agricultural — Swine Herdsperson
- 🍁 Appliance Service Technician
- Arborist
- Assistant Cook
- Baker
- 🍁 Baker-Patisserie
- Chef
- Child and Youth Worker
- Child Development Practitioner
- 🍁 Cook
- Developmental Services Worker
- Educational Assistant
- Electronic Service Technician
- Gemsetter/Goldsmith
- ▲ 🍁 Hairstylist
- Horse Groom
- Horse Harness Maker
- 🍁 Horticultural Technician
- Information Technology — Contact Centre Customer Service Agent
- Information Technology — Contact Centre Sales Agent
- Information Technology — Contact Centre Technical Support Agent
- Information Technology — Hardware Technician
- Information Technology — Network Technician
- Institutional Cook
- Micro Electronics Manufacturer
- Native Clothing and Crafts Artisan
- Network Cabling Specialist
- 🍁 Parts Technician
- Retail Meat Cutter
- Saddlery
- Special Events Coordinator
- Utility Arborist

## CONSTRUCTION

- 🍁 Architectural Glass and Metal Technician
- 🍁 Brick and Stone Mason
- 🍁 Cement (Concrete) Finisher
- Concrete Pump Operator
- 🍁 Construction Boilermaker
- 🍁 Construction Craft Worker
- Construction Millwright
- 🍁 Drywall Finisher and Plasterer
- 🍁 Drywall, Acoustic and Lathing Applicator
- ▲ 🍁 Electrician — Construction and Maintenance
- ▲ 🍁 Electrician — Domestic and Rural
- Exterior Insulated Finish Systems Mechanic
- 🍁 Floor Covering Installer
- 🍁 General Carpenter
- Hazardous Materials Worker
- 🍁 Heat and Frost Insulator
- 🍁 Heavy Equipment Operator — Dozer
- 🍁 Heavy Equipment Operator — Excavator
- 🍁 Heavy Equipment Operator — Tractor Loader Backhoe
- ▲ 🍁 Hoisting Engineer — Mobile Crane Operator 1
- ▲ 🍁 Hoisting Engineer — Mobile Crane Operator 2
- ▲ 🍁 Hoisting Engineer — Tower Crane Operator
- 🍁 Ironworker — Generalist
- 🍁 Ironworker — Structural and Ornamental
- Native Residential Construction Worker
- 🍁 Painter and Decorator — Commercial and Residential
- Painter and Decorator — Industrial
- ▲ 🍁 Plumber
- 🍁 Powerline Technician
- Precast Concrete Erector
- Precast Concrete Finisher
- Refractory Mason
- ▲ 🍁 Refrigeration and Air Conditioning Systems Mechanic
- 🍁 Reinforcing Rodworker
- ▲ Residential (Low Rise) Sheet Metal Installer
- ▲ Residential Air Conditioning Systems Mechanic
- Restoration Mason
- 🍁 Roofer
- ▲ 🍁 Sheet Metal Worker
- ▲ 🍁 Sprinkler and Fire Protection Installer
- ▲ 🍁 Steamfitter
- 🍁 Terrazzo, Tile and Marble Setter

## INDUSTRIAL

- Bearings Mechanic
- Blacksmith
- 🍁 Cabinetmaker
- Computer Numerical Control (CNC) Programmer
- Die Designer
- Draftsperson — Mechanical
- Draftsperson — Plastic Mould Design
- Draftsperson — Tool and Die Design
- 🍁 Electric Motor System Technician
- Electrician (Signal Maintenance)
- Elevating Devices Mechanic
- Entertainment Industry Power Technician
- Facilities Mechanic
- Facilities Technician
- 🍁 General Machinist
- Hydraulic/Pneumatic Mechanic
- 🍁 Industrial Electrician
- 🍁 Industrial Mechanic Millwright
- 🍁 Instrumentation and Control Technician
- Light Rail Overhead Contact Systems Linesperson
- Locksmith
- Machine Tool Builder and Integrator
- 🍁 Metal Fabricator (Fitter)
- Mould Designer
- Mould Maker
- Mould or Die Finisher
- Optics Technician (Lens and Prism Maker)
- Packaging Machine Mechanic
- Pattern Maker
- Pressure Systems Welder
- Process Operator — Food Manufacturing
- Process Operator — Power
- Process Operator — Refinery, Chemical and Liquid Processes
- Process Operator — Wood Products
- Railway Car Technician
- Relay and Instrumentation Technician
- Saw Filer/Fitter
- Surface Blaster
- Surface Mount Assembler
- Thin Film Technician
- Tool and Cutter Grinder
- 🍁 Tool and Die Maker
- Tool and Gauge Inspector
- Tool/Tooling Maker
- Tractor-Trailer Commercial Driver
- Water Well Driller
- 🍁 Welder

LIVE THE SKILLED LIFE!

[www.oyap.com](http://www.oyap.com)

# APPRENTICESHIP IS POST-SECONDARY EDUCATION



# L'APPRENTISSAGE EN ONTARIO

## FORCE MOTRICE

- ★ Peintre de carrosseries automobiles
- ▲ Réparateur de carrosseries automobiles
- ▲★ Réparateur de carrosseries et de dommages résultant d'une collision
- ▲ Technicien d'accessoires électroniques d'automobile
- ▲ Technicien de boîtes de vitesses
- ▲ Technicien de chariots élévateurs
- ▲ Technicien de glaces de véhicule automobile
- ★ Technicien de machines agricoles
- ▲ Technicien de moteurs marins
- ▲★ Technicien de motocyclettes
- ▲★ Technicien d'entretien automobile
- ▲★ Technicien d'entretien de camions et d'autocars
- ▲★ Technicien d'entretien de remorques de camions
- ▲ Technicien de petits moteurs
- ▲ Technicien d'équipement de gazon
- ★ Technicien d'équipement lourd
- ▲ Technicien de systèmes électriques et d'alimentation en carburant
- ★ Technicien de véhicules récréatifs
- ▲ Technicien spécialiste des freins et du réglage de la géométrie des roues
- ▲ Usineur de pièces (véhicule moteur)

## Qu'est-ce que l'apprentissage?

L'apprentissage est une combinaison de formation au travail et à l'école qui mène à un diplôme de compétence.

- 90 % en milieu de travail avec un compagnon qualifié et expérimenté
- 10 % à l'école
- Les apprentis suivent les normes de formation pour devenir qualifiés dans le métier

- ★ Désigne un métier du programme Sceau rouge
- ▲ Désigne un métier à accréditation obligatoire\*

Un métier qui n'est pas à accréditation obligatoire et un métier à accréditation facultative\*\*

\* **Métier obligatoire** : métier dans lequel l'inscription en tant qu'apprenti est légalement obligatoire.

\*\* **Métier volontaire** : un métier dans lequel la certification n'est pas légalement requise pour exercer le métier.

## SERVICES

- ▲ Agent des ventes - centre de contact en technologie de l'information
- ▲ Agent du service à la clientèle - centre de contact en technologie de l'information
- ▲ Agent du soutien technique - centre de contact en technologie de l'information
- ▲ Agriculture - Fructiculteur
- ▲ Agriculture - Porcher
- ▲ Agriculture - Soigneur de troupeaux laitiers
- ▲ Aide-cuisinier
- ▲ Aide-enseignant
- ▲ Arboriste
- ▲ Arboriste de services publics
- ▲ Artisan autochtone
- ▲ Assistant social auprès des jeunes
- ▲ Boulanger
- ★ Boulanger-pâtissier
- ★ Chef
- ▲★ Coiffeur
- ▲★ Coordonnateur d'événements spéciaux
- ★ Cuisinier
- ★ Cuisinier d'établissement
- ★ Découpeur de viande au détail
- ★ Fabricant en microélectronique
- ★ Intervenant en services de soutien à l'intégration
- ★ Palefrenier
- ★ Praticien du développement de l'enfant
- ★ Praticien du développement de l'enfant autochtone
- ★ Sellerie
- ★ Sellier-harnacheur
- ★ Sertisseur/orfèvre
- ★ Spécialiste de câblage de réseaux
- ★ Technicien au service des pièces
- ★ Technicien d'entretien d'appareils électroniques
- ★ Technicien d'entretien d'appareils ménagers
- ★ Technicien en horticulture (Horticulteur- paysagiste)
- ★ Technicien en technologie de l'information - matériel
- ★ Technicien en technologie de l'information - réseau

## CONSTRUCTION

- ★ Briqueteur-maçon
- ★ Charpentier-menuisier général
- ★ Chaudronnier de construction
- ▲★ Conducteur d'engins de levage : conducteur de grues à tour
- ▲★ Conducteur d'engins de levage : conducteur de grues mobiles 1
- ▲ Conducteur d'engins de levage : conducteur de grues mobiles 2
- ★ Conducteur d'équipement lourd - boueur
- ★ Conducteur d'équipement lourd - excavatrice
- ★ Conducteur d'équipement lourd- tracto-pelle rétrocaveuse
- ★ Couvreur
- ▲★ Électricien (bâtiment et entretien)
- ▲★ Électricien (secteurs domestique et rural)
- ★ Finisseur de béton
- ★ Finisseur de béton préfabriqué
- ★ Installateur de revêtements de sol
- ▲★ Installateur de systèmes de protection contre les incendies
- ★ Jointoyeur et plâtrier
- ★ Maçon d'ouvrages de briques réfractaires
- ★ Maçon en restauration
- ★ Manoeuvre en construction
- ▲★ Mécanicien en systèmes de climatisation résidentiels
- ▲★ Mécanicien en systèmes de réfrigération et de climatisation
- ★ Mécanicien-monteur de construction
- ★ Monteur de barres d'armature
- ★ Monteur de béton préfabriqué
- ★ Monteur de charpentes métalliques (généraliste)
- ★ Monteur de charpentes métalliques (structurales et ornementales)
- ▲★ Monteur de tuyaux de vapeur
- ★ Opérateur de pompe à béton
- ★ Ouvrier de construction résidentielle autochtone
- ★ Peintre-décorateur (secteur industriel)
- ★ Peintre-décorateur (secteurs commercial et résidentiel)
- ▲★ Plombier
- ★ Poseur de carrelage
- ★ Poseur de matériaux isolants
- ★ Poseur de panneaux muraux secs, de carreaux acoustiques et de lattes
- ▲★ Poseur de tôles pour systèmes résidentiels (petits immeubles)
- ★ Technicien de lignes d'énergie électrique
- ★ Technicien de parements extérieurs isolants
- ★ Technicien du verre et du métal architecturaux (Vitrier)
- ▲★ Tôlier
- ★ Travailleur en décontamination

## INDUSTRIE

- ★ Affûteur/ajusteur de scies
- ★ Affûteur d'outils
- ★ Assembleur d'éléments de surface
- ★ Concepteur de matrices
- ★ Concepteur de moules
- ★ Conducteur de semi-remorques commerciales
- ★ Confectionneur de moules
- ★ Confectionneur d'outillage
- ★ Constructeur et intégrateur de machines-outils
- ★ Dessinateur - conception de moules en plastique
- ★ Dessinateur - conception d'outils et de matrices
- ★ Dessinateur - conception mécanique
- ★ Dynamiteur - exploitation à ciel ouvert
- ★ Ébéniste
- ★ Électricien en entretien des signaux
- ★ Électricien industriel
- ★ Électromécanicien
- ★ Fabricant de prismes et de lentilles de précision
- ★ Finisseur de moules et de matrices
- ★ Foreur de puits d'eau
- ★ Forgeron
- ★ Inspecteur d'outils et d'appareils de contrôle
- ★ Mécanicien d'appareils de levage
- ★ Mécanicien de machines à emballer
- ★ Mécanicien d'entretien de bâtiment
- ★ Mécanicien de roulements
- ★ Mécanicien en hydraulique/pneumatique
- ★ Mécanicien-monteur industriel
- ★ Modeleur
- ★ Monteur-ajusteur de charpentes métalliques
- ★ Monteur de systèmes de lignes aériennes de contact pour le transport léger sur rail
- ★ Opérateur de procédés industriels (produits du bois)
- ★ Opérateur de procédés industriels (raffinerie, procédés chimiques et liquides)
- ★ Opérateur de procédés industriels (secteur de la transformation des aliments)
- ★ Opérateur de procédés industriels (secteur de l'énergie)
- ★ Outilleur-ajusteur
- ★ Programmeur en commande numérique (CNC)
- ★ Régleur-conducteur de machines-outils (Machiniste)
- ★ Serrurier
- ★ Soudeur
- ★ Soudeur d'appareils sous pression
- ★ Technicien de l'instrumentation et des relais
- ★ Technicien de pellicules minces
- ★ Technicien de wagons de chemin de fer
- ★ Technicien en électricité pour l'industrie du spectacle
- ★ Technicien en instrumentation et contrôle
- ★ Technicien en systèmes de bâtiment

**OUTILLE-TOI POUR LA VIE!**  
[www.pajo.ca](http://www.pajo.ca)

# L'APPRENTISSAGE, MA FORMATION POSTSECONDAIRE



## **APPENDIX C**





# **JUNK DRAWER RACES**

## **PAPER GLIDER COMPETITION**

### **Grade 6 - 7**

### **Competition Guideline**

*This competition was a Skills Ontario Pilot Competition that started in the fall of 2021. Use this guide to prepare students for future Skills Ontario Competitions (example: Cardboard Boat Races and future Junk Drawer Races). Teachers can use this guide to create a classroom competition and judge the students using the judging criteria in this document.*

## TABLE OF CONTENTS

Program Overview	Page 19
Contest Overview	Page 20
Challenge Overview and Judging Requirements	
Part 1: Planning and Design	Page 20
Part 2: Construction	Page 21
Part 3: Flight Test	Page 22
Part 4: Skilled Trades Test	Page 22
BONUS: Visual Appeal	Page 2
Scoring	Page 23
Resources	Page 24

## PROGRAM OVERVIEW

Introducing the first-ever Skills Ontario's Junk Drawer Races! The contests under this program are open to students from Grades 2 - 12 within Ontario. Last year we launched Paper Glider Competition for grades 7-12 and this year we are announcing new competitions for different grades. Please refer to table below for these competitions.

Competition	Grades	Related Topics from Curriculum
Gravity Powered Robot Walker Race	2-3	Simple Machines   Movement   Strong and Stable Structures   Forces Causing Movement
Cardboard Car Race	4-5	Wheels   Forces Acting on Structures and Mechanisms
Paper Glider Competition	6-7	Flight Technology   Designing   Building   Testing   Centre of Gravity
Hydraulic Crane Challenge	8	Hydraulics   Fluids   Systems in Action
Cardboard Hovercraft Race	9-12	Manufacturing Technology   Technological Design   Transportation Technology

### Number of Teams and its size:

One team of up to four (4) students can participate from every school for every contest. To ensure fairness and access to programs across the province, each school board is entitled to spaces at Elementary, Sr. Elementary and Secondary levels for both their online and in-person learning streams.

Virtual schools/hubs can register one team per contest just like in-person schools. Virtual class/es of a school that also has in-person classes can only register one team per contest which can be either from an in-person class, virtual class, or a collaboration of both. This competition is also open to private schools.

## CONTEST OVERVIEW

Teams of up to four (4) students from grades 6-7 are to design and build a glider plane made out of paper products and toothpicks or wood skewer sticks. Once the Paper Glider Planes are built, the teams are to then test their capabilities by launching the Planes by hand from a Stationary (sitting or standing) position to determine the Glider Plane can stay in the air the longest. Teams are required to video record their Flight test attempts.

## 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

#### 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)

## 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**.

#### Approved Adhesives & Connectors

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

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

Once the Student Competitors have completed constructing 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. They are to perform 3 flight tests, with the goal of longest flight.

### **PART 4: SKILLED TRADES TEST**

Teams are to name 4 skilled trades careers that this activity can be related to

### **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



## 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
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
<b>Total Flight Test Challenge</b>	
<b>Part 4: Skilled Trades Knowledge</b>	
Questions 1 – 10	10
Bonus Question	5
<b>Total Skilled Trades Knowledge</b>	<b>15</b>
<b>VISUAL APPEAL BONUS MARKS</b>	<b>5</b>
<ul style="list-style-type: none"> <li>Did the team use approved decoration materials? Is the decoration appropriate?</li> </ul>	
<b>TOTAL MARKS</b>	

### Tiebreaker

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

## RESOURCES

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

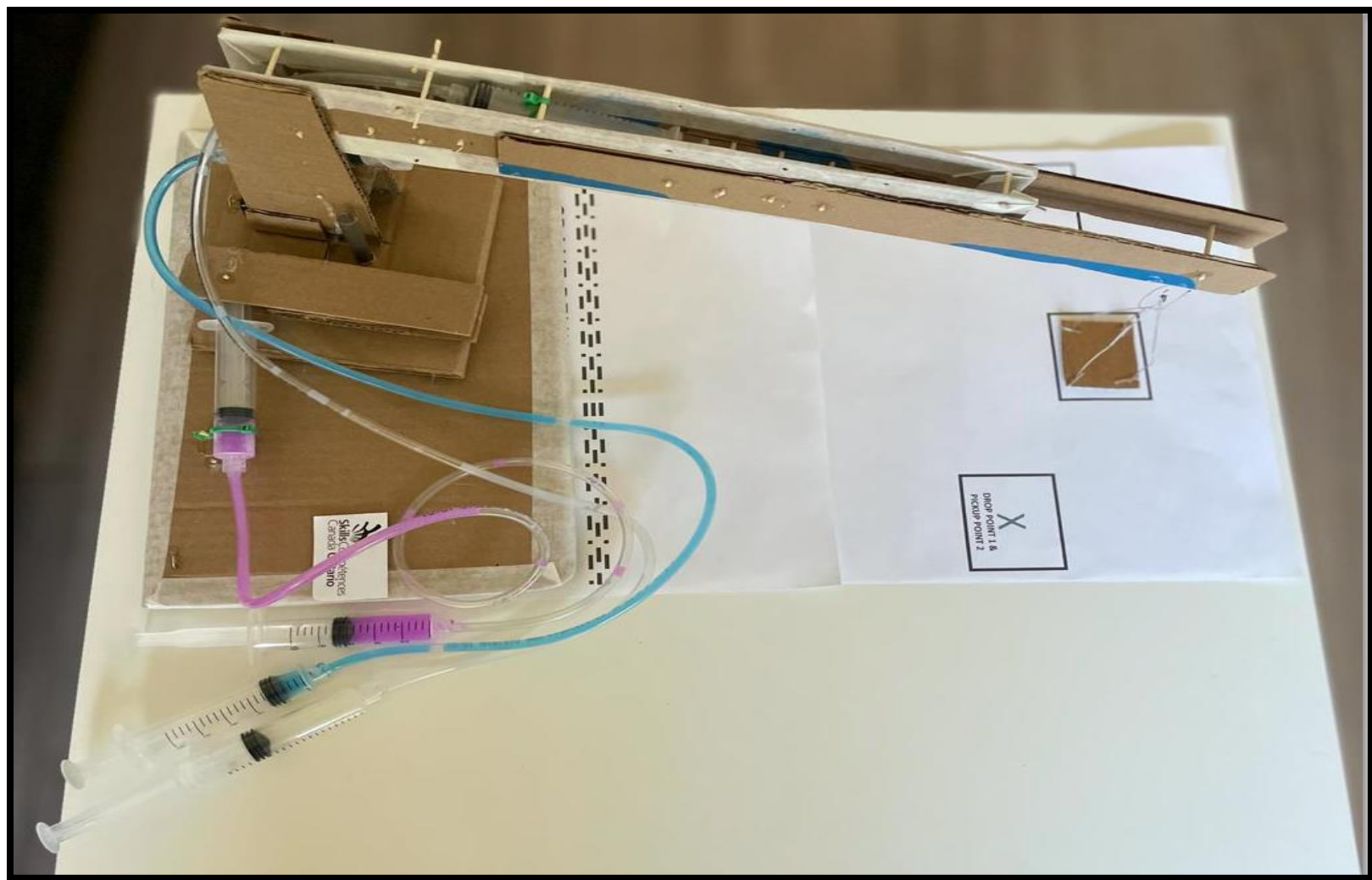
- <https://www.youtube.com/watch?v=GdZiesdZXbA>
- <https://www.youtube.com/watch?v=x-rcysOPn-4>

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.

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



*This program is funded by the Government of Ontario. Ce programme est financé par le gouvernement de l'Ontario.*



# JUNK DRAWER RACES

## HYDRAULICS CRANE CHALLENGE

### Grade 8

### Competition Guideline

*This competition was a Skills Ontario Pilot Competition that started in the fall of 2021. Use this guide to prepare students for future Skills Ontario Competitions (example: Cardboard Boat Races and future Junk Drawer Races). Teachers can use this guide to create a classroom competition and judge the students using the judging criteria in this document.*

## TABLE OF CONTENTS

Program Overview	Page 27
Contest Overview	Page 27
Challenge Overview and Judging Requirements	
Part 1: Planning and Design	Page 28
Part 2: Construction	Page 29 - 30
Part 3: Load Test	Page 30 - 33
Part 4: Skilled Trades Knowledge	Page 31
BONUS: Visual Appeal	Page 31
Scoring	Page 34
Resources	Page 35

## PROGRAM OVERVIEW

Introducing the first-ever Skills Ontario's Junk Drawer Races! The contests under this program are open to students from Grades 2 - 12 within Ontario. Last year we launched Paper Glider Competition for grades 7-12 and this year we are announcing new competitions for different grades. Please refer to table below for these competitions.

Competition	Grades	Related Topics from Curriculum
Gravity Powered Robot Walker Race	2-3	Simple Machines   Movement   Strong and Stable Structures   Forces Causing Movement
Cardboard Car Race	4-5	Wheels   Forces Acting on Structures and Mechanisms
Paper Glider Competition	6-7	Flight Technology   Designing   Building   Testing   Centre of Gravity
Hydraulic Crane Challenge	8	Hydraulics   Fluids   Systems in Action
Cardboard Hovercraft Race	9-12	Manufacturing Technology   Technological Design   Transportation Technology

### Number of Teams and its size:

One team of up to four (4) students can participate from every school for every contest. To ensure fairness and access to programs across the province, each school board is entitled to spaces at Elementary, Sr. Elementary and Secondary levels for both their online and in-person learning streams.

Virtual schools/hubs can register one team per contest just like in-person schools. Virtual class/es of a school that also has in-person classes can only register one team per contest which can be either from an in-person class, virtual class, or a collaboration of both. This competition is also open to private schools.

## CONTEST OVERVIEW

Teams of up to four (4) students from grades 8 are to design and build a **Hydraulics Crane** made from fluids, paper products, syringes, plastic tube/pipe and toothpicks or wood skewer sticks. Once the cranes are built, the teams are to then test their capabilities by lifting a load of 25gm from **Pickup point 1** and drop it at **Drop Point 1/Pickup Point 2** and then lift it from the same point and drop it off at **Drop Point 2**.

## CHALLENGE OVERVIEW AND JUDGING REQUIREMENTS

Below you will find the description and judging requirements for each section of the Hydraulics Crane Challenge.

### PART 1: PLANNING & DESIGN

#### Design Plan

In teams, students are to create a Design Plan of their Crane. Design Plan should be neat, easy-to-read, and should clearly show the design of the Crane. Teams are welcome to create their designs by hand or by computer.

#### 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 build their Crane. 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 (Frame, width, weight, length). It should also include a legend if necessary
- 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)

## 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 width of the base of the crane cannot exceed **30 cm**
- Total length of the 1<sup>st</sup> Boom cannot exceed **18 cm**

### Approved Materials:

#### Approved Paper Products

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

#### Other Approved Materials

- Bamboo/wood Skewer Sticks
- Toothpicks
- Popsicle sticks
- 10 ml Syringes \*
- Water and colors for fluids
- Plastic/rubberized tubes for syringes\*
- Old batteries or coins for counterweights
- Thin wire or craft thread for hook and hoist rope
- The use of other materials, hard plastic, motors 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.

\* Syringes can be found at Michaels and Canadian Tire; Tubes can be found at Canadian Tire, Home Depot and other home, hardware, and plumbing stores.



## Approved Adhesives & Connectors

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

### 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

### 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)
- Quality of Construction – Does the Crane look like it will function? Is it well built? Is it a creative design? (Up to 5 marks)

## PART 3: LOAD TESTS – FASTEST ATTEMPT

### Task

The teams are then to test their capabilities by lifting a load of 25 gm from **Pickup point 1** and drop it at **Drop Point 1/Pickup Point 2** and then lift it from the same point and drop it off at **Drop Point 2**.

Students are to perform 3 Load tests, with the goal of fastest attempt. Points will be awarded based on the time taken to complete the task. Tiebreakers will be determined to the nearest tenth of a second.

***For 25 gm weight, students must use any mix of coins and they are required to specify the coins used in their material list.***

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

## **PART 4: SKILLED TRADES KNOWLEDGE**

Teams are to think of four Skilled Trades Careers that would use the skills involved in this competition in their daily work life.

## **BONUS: VISUAL APPEAL**

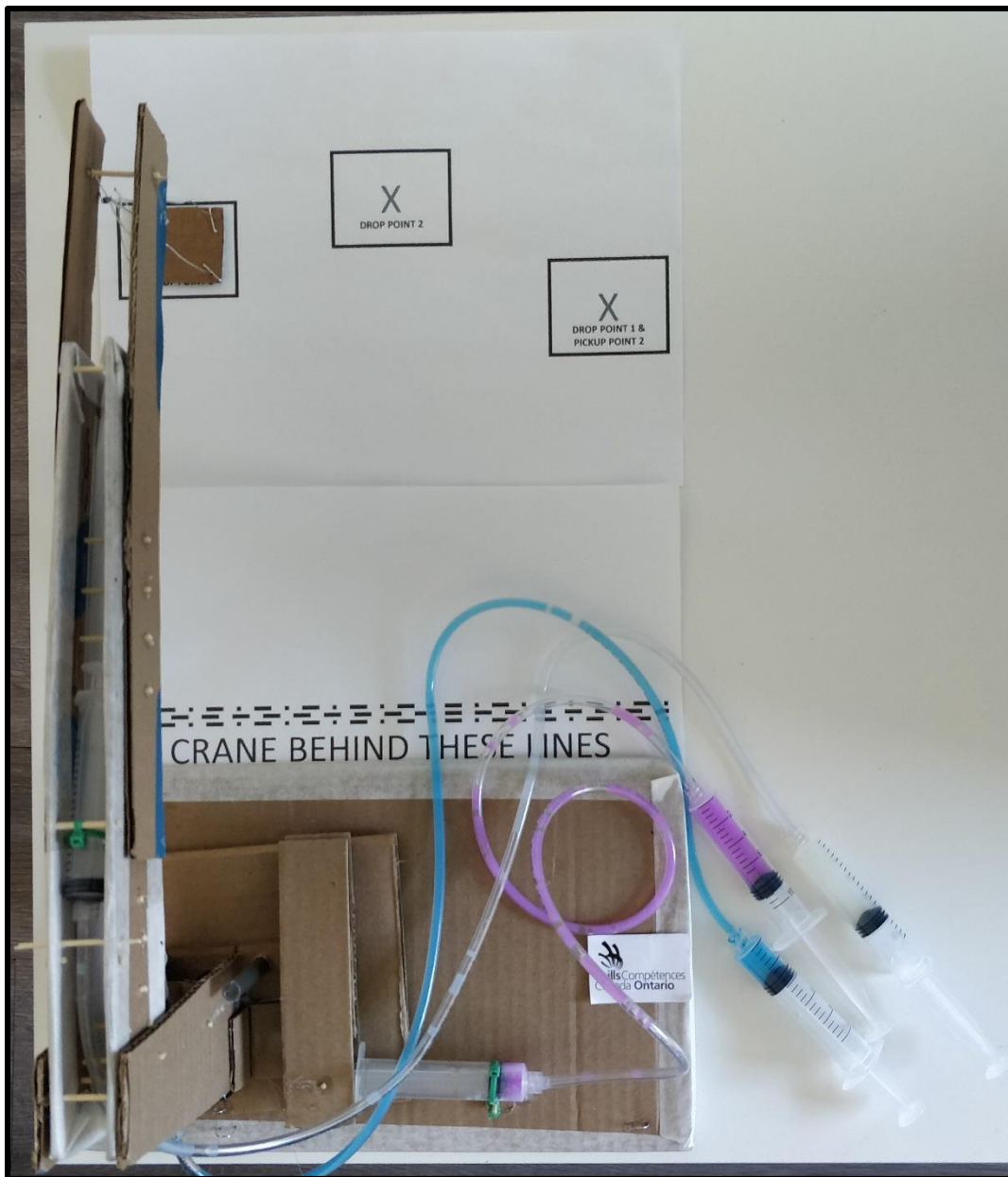
Teams have the option to decorate their Crane projects but must do so using specific materials that do not provide a structural advantage. Students may only use decorations such as colorful construction paper, markers, crayons, paint, glitter, etc.

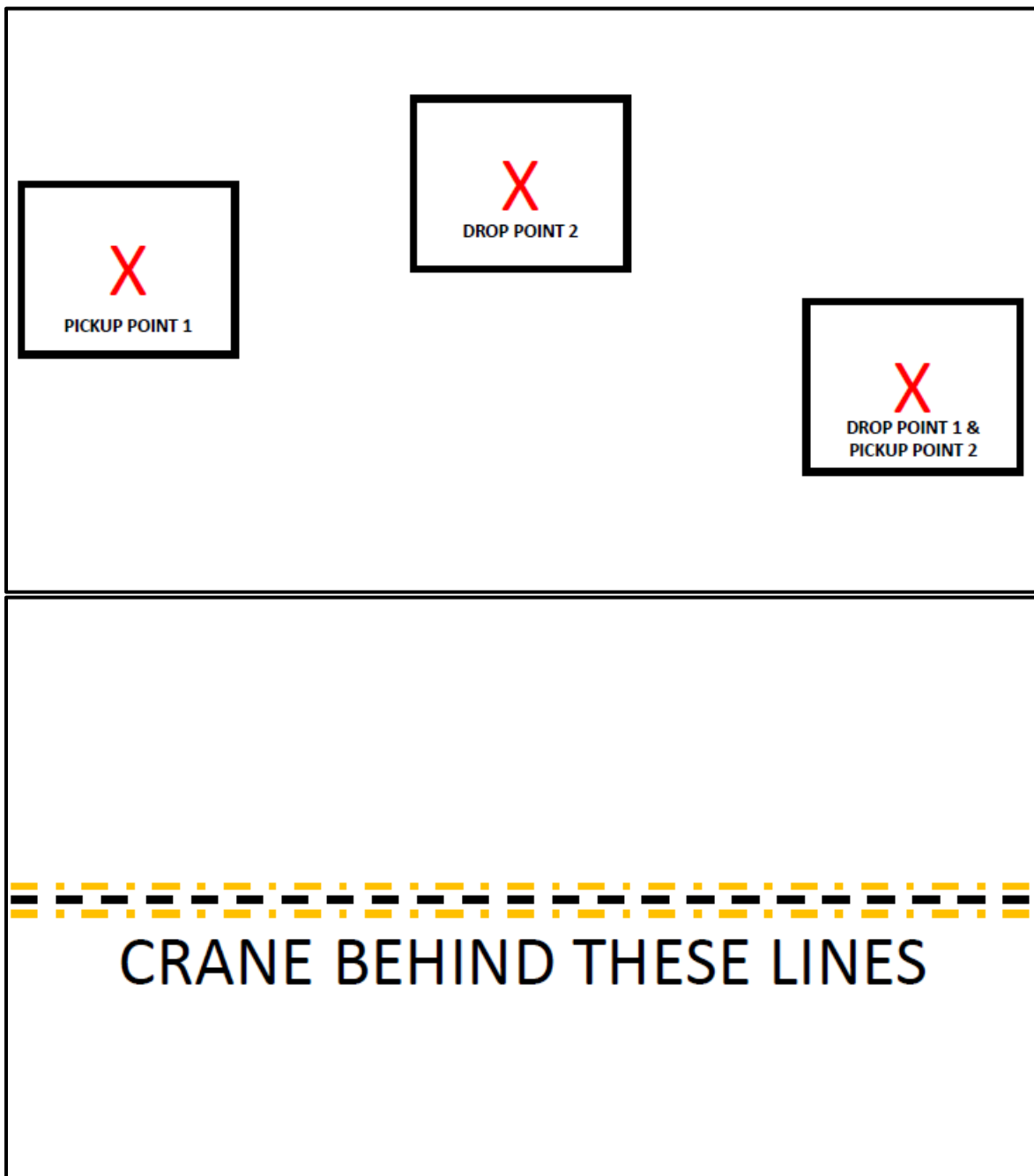
Some examples of decorations that could provide an unfair advantage are:

- 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 Crane 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).

## Placement of Crane





## 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
<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
Quality of Construction – Does the crane design look like it will work? Is it well built? Is it a creative design?	5
<b>Total Construction</b>	<b>15</b>
<b>Part 3: Load Tests</b>	
3 attempts – Points Breakdown	Time of the fastest attempt will be considered
Time	
Less than 10 seconds	
10 – 11.99 seconds	
12 – 13.99 seconds	
14 – 15.99 seconds	
16 seconds and above	
<b>Total Load Test Challenge</b>	
<b>Part 4: Skilled Trades Knowledge</b>	
Did they come up with 4 skilled trades careers related to the activity?	10
<b>VISUAL APPEAL BONUS MARKS</b> • Did the team use approved decoration materials? Is the decoration appropriate?	<b>5</b>
<b>TOTAL MARKS</b>	

## Tiebreaker

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

## 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=AklAmKKu1y0>
- <https://www.instructables.com/CARDBOARD-Robotic-Hydraulic-Arm/>
- <https://www.youtube.com/watch?v=dYhWg3038rl>

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.

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



*This program is funded by the Government of Ontario. Ce programme est financé par le gouvernement de l'Ontario.*

## **APPENDIX D**





Winterfest 2021—Independent Activity

# Create Your Own Snowball Chute



Get ready for winter by creating your very own 'snowball chute'. Use design and construction skills to make an obstacle course! The goal is to get the snowballs (mini-marshmallows) to drop into a mug of hot chocolate, with as many twists and turns as you can!

Ensure you have parent/guardian supervision while participating. Be careful that your hot chocolate is not too hot and doesn't splash!

Share your creation between December 1st to February 28th! Tag **@SkillsOntario** on Facebook, Twitter, or Instagram and use the hashtag **#SkillsWinterfest2021** for a chance to win a prize pack!

## **APPENDIX E**





# MARCH BREAK VIRTUAL WORKSHOPS



**Registration is open!**  
**Build skills and have fun this  
March Break with Skills Ontario!**

[skillsontario.com/march-break](https://skillsontario.com/march-break)



#### Workshop Co-Hosts



#### Camp Program Partners



This program is funded by  
the Government of Ontario.