

Contest Overview:

Design Horizons: Where Creativity Meets Opportunity

Presented by myBlueprint

Contest Theme

The theme of this contest centers on applying design drawing principles and engineering design processes to develop an innovative and functional dome structure. Students will use traditional drawing techniques to create their design which may include hand drawn and/or using a digital tool(s) of their choosing with permission from their teacher/school. This challenge encourages critical thinking, collaboration, and practical problem-solving skills.

Background Information

Design drawing is a creative process used to visually communicate ideas and concepts. It involves sketching, drafting, and illustrating designs for various purposes such as products, buildings, or artwork. The contest draws inspiration from [SciTechOntario's](#) STEM resources and focuses on skill development in observation, technical drawing, and problem-solving, preparing students for real-world design and career pathways.

Learning Goals and Success Criteria

- **Learning Goals:**
 - Understand and apply the engineering design process to create functional and structurally sound designs.
 - Explore career applications of design and engineering.
- **Success Criteria:**
 - Students can clearly communicate design ideas through labeled sketches and digital models.
 - Team reflections explain design decisions in relation to structural stability and the engineering design process.

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Challenge:

Students will work in teams to design a dome structure. The dome must meet the following criteria:

- A height of at least 20 cm from the inside of the top to the base.
- A base diameter of at least 25 cm in all directions.
- The dome must be a frame structure with no internal supports.
- Students will submit design drawings (sketches, diagrams, or digital models) alongside a team reflection explaining the design decisions and how they address structural stability. No physical dome construction is required.

Process:

- Guidance on the engineering design drawing process.
- Use of a video tutorial to assist in understanding the design process.
- Teams will reflect on their designs, explaining structural considerations and user needs.

Evaluation Rubric

<p>Design Drawing (Hand Drawn or Digital) Accuracy:</p> <p>The technical drawing accurately represents the dome structure with clear dimensions, proportionality, labeling, and adhered to the contest specifications.</p>	<p>/ 25</p>
<p>Creativity & Innovation:</p> <p>The design demonstrates originality and innovation with its design elements, creative solutions, and overall structure, while still maintaining functionality.</p>	<p>/ 25</p>
<p>Engineering Design Process Application:</p> <p>Clear demonstration of problem-solving and thoughtful consideration of structural stability and functionality.</p>	<p>/ 25</p>
<p>Team Reflection:</p> <p>The team provides strong rationale for design decisions, explaining how structural stability was considered to meet the needs of the dome specifications.</p> <p>Demonstrate a connection of the skills used to create this design and at least one skilled trade. This should include a minimum of the following information:</p> <ul style="list-style-type: none"> - Name of the skilled trade - Long term outlook of the skilled trade - Education and training - At least one school in Ontario that offers a program and the secondary school prerequisite courses - Salary or salary range - Description of how the engineering design process and/or technical drawings relates to this skilled trade 	<p>/ 25</p>
<p>Total Mark</p>	<p>/100</p>