

ARCHITECTURAL BLUEPRINT READING CONTEST REGULATIONS

I. Purpose:

To evaluate each contestant’s working knowledge and understanding of reading architectural prints related to the industry.

II. Clothing Requirements:

SkillsUSA or appropriate business attire. Your school name should not appear on any clothing.

III. Eligibility:

Open to all SkillsUSA members who qualify to attend the SkillsUSA Nebraska Leadership & Skills conference.

IV. Tools and Equipment:

- 2- #2 Pencils
- Pocket calculator
- Architect’s Scale

If additional tools or equipment are required, they will be listed on the tool list sent out from the state SkillsUSA office.

V. Scope of the Contest:

Contestants will be given a set of prints to answer a series of questions pertaining to the following areas in Structural design and Mechanical systems within the industry.

- | | | |
|----------|-------------------|----------------|
| Masonry | Air Conditioning | Specifications |
| Plumbing | General Carpentry | Symbols |
| Heating | Electrical | |

VI. Scoring:

Criteria	Points	Contestant Number							
Written Test	100								
Clothing Penalty	-5								
Total									

VII. Suggested preparation:

Contestants should familiarize themselves with industry standards used in developing working plans. Contact your local city and/or county planning board for current industry standards and specifications.

BRIDGE BUILDING CONTEST REGULATIONS

I. Purpose:

The objective of the contest is to design and build the most efficient bridge that will support a load over a given span using a given material. Bridges must be built by the individual prior to coming to SkillsUSA Nebraska Leadership and Skills conference. The Bridge Building contest will test to determine the efficiency of the design, not the maximum load carried. Bridges may be disqualified if they do not meet all the identified criteria.

II. Clothing Requirements:

SkillsUSA or appropriate conference attire. Your school name should not appear on any clothing.

III. Eligibility:

Any SkillsUSA Nebraska, member who qualifies for SkillsUSA Nebraska Leadership & Skills Conference. Participants are not required to be present during the testing except that local advisors may require attendance.

IV. Materials of Construction:

The bridge must be bonded together with commercially available glue. Any type may be used.

The bridge must be constructed entirely of wood. Any kind of wood may be used as long as it is 3/16" x 3/16" or less in cross-section. No particle board, (gussets*) or (laminated*) wood may be used.

*** Any triangular structure that completely fills the corner will be considered a gusset. (If daylight exists between the two beams constructing the corner the beam will be considered a structural member.)**

***Laminated wood is described as gluing two or more pieces of wood face to face or edge to edge. Even if the total cross sectional area of the laminated pieces is less than 3/16" x 3/16".**

Maximum weight must not exceed 100 grams. Weight will be determined by the official conference scale.

Thread or other wrapping of joints is not permitted. You may not coat the bridge with any material. Splines or dowels are not permitted. Tension member, if used, must also be constructed of wood.

State Only Contest Rules

V. Scope of Contest:

The bridge dimensions must be in accordance with the following:

1. The bridge must be long enough to support itself on the test platform. It must span a gap of 300mm and have a maximum length of 350mm.
2. The bridge must give a minimum inside width of 50mm.
3. Wood pieces added (outriggers) to the bridge only to satisfy dimensional constraints will not be allowed.
4. The bridge must contain a "roadbed" with a minimum inside width of 50mm and a minimum length of 305mm. The top of the roadbed is not to be a solid surface. Maximum length of the substructure is 270mm and can be no more than 75mm below the top surface of the of the roadbed. **Except for the roadbed and substructure, there are no other height limitations.**
5. The roadbed must rest on the test platform. The maximum thickness of the roadbed will be no more than 3/8". Any part of the structure below the roadbed is to be considered the substructure and has to follow the guidelines and dimensions set up for the substructure
6. No portion of the roadbed, loaded shall deflect, at maximum load, more than 20mm below the top of the test support.
7. The unloaded bridge must be symmetrical from side to side and left to right (not top to bottom). The bridge does not have to have sides or a top except the roadbed must support the load block (50mm x 50mm) and the bridge must fit the tester.
8. A drawing (2 or 3 view) with dimensions must accompany the bridge at time of contest.

The mass of the bridge will be determined by weighing at the time of testing. Efficiency rating (maximum load supported divided by mass of the bridge) will be used to determine the winner.

VI. Testing:

All construction requirements and dimensions will be checked prior to testing. **Bridges which do not meet all requirements may be disqualified.** Bridges must be at the test site at the starting time identified in the official program. Once testing has begun, no additional entries will be accepted. Bridges will remain the possession of the judges until they are released at the end of the testing. Load will be applied at the center of the bridge with downward force. The load will be applied through a metal load resting on the roadbed. The block will be exactly 50mm x 50mm x 10mm. Make certain the roadbed can support the block. The load will be applied to the loading block by a hydraulic loading rod. The rod will have a diameter of 13mm and will extend through the center of the roadbed. The underside of the substructure must be able to accommodate the lower end of the vertical loading rod which has a diameter of 25mm. This allows the bridge to fit properly in the bridge tester. The bridge construction must accommodate the block and hydraulic loading rod. Bridges which do not meet this requirement will be disqualified. Please view the pictures to see how the bridge will be fit onto the machine.

Bridges will be tested until failure or the limits of the tester have been reached. Failure is defined as the inability of the bridges to carry additional load (Maximum load).

State Only Contest Rules



VII. Scoring:

Contestant Number	Max Load Supported (lbs)	x 454 =	Weight of Bridge (grams)	= Efficiency Rating	Plus Drawings Up to 20 points	Total Points
Example	43	19522	49	398.4081633	17	415

In case of a tie, the lightest bridge will be the winner.

Metric 500 Dragster CONTEST REGULATIONS

I. Purpose:

SkillsUSA contestants in the Metric 500 Dragster contest are required to design, draw, and build a model dragster powered by a blast of air. Design, speed, craftsmanship, and a drawing of the dragster are the primary elements judged. The purpose of the Metric 500 is to provide a means for SkillsUSA members to demonstrate their ability to design, draw, and build a product within a rigid set of specifications.

II. Clothing Requirements:

SkillsUSA or appropriate conference attire. Your school name should not appear on any clothing.

III. Eligibility:

Any SkillsUSA Nebraska member who qualifies for SkillsUSA Nebraska Leadership & Skills Conference. **Chapters are limited to 3 vehicles.**

IV. Time Limitations:

Contestants or designee must present drawing and dragster at the time specified in the conference program and must remove the drawing and the dragster at the time specified in the conference program.

V. Specific Regulations:

All entries must be turned in at the time designated. Each contestant will be responsible for obtaining the time schedule at registration.

All entries must be free of needed repair and/or maintenance at time of check-in.

CO2 cartridge will be used. Cars will be propelled by a blast of compressed air at the start. Car kits made for CO2 cartridges are acceptable.

Drawings:

Every entry must be submitted with a metric drawing of the completed dragster. A two-view (top and side) drawing with metric dimensions shall be made on the following paper sizes: 11" x 17", or 12" x 18". A three-view (top, side and end) drawing is acceptable, but will not change point allocations. Standard engineering procedures should be followed. Drawing may be made using ink or graphite. Computer aided drawings will be accepted. Originals, prints, or copies will be accepted. Title block will only include "Entry Number ____" which will be assigned at registration time, and placed on entry prior to turn-in.

State Only Contest Rules

Dragsters which fail to meet the specifications will be disqualified.

Wheels must be made entirely from plastic.

All contest entries will be judged according to the Metric 500 Rating Sheet, which includes criteria for drawing, design, race, speed, etc.

No repair or maintenance on entries will be allowed after entries have been registered. Any entry damaged during the race will be judged by the contest coordinator to determine whether or not the dragster will be allowed to race again. In the event that conference personnel damage the dragster, the Contest coordinator will make a ruling as to whether or not the dragster will run. This is the **only** reason a student would be allowed to touch his/her dragster after registration. Undamaged wheels, which come off during the race, may be replaced as determined by the Contest coordinator. Damaged wheels may not be replaced.

Racetrack length shall be twenty (20) meters (65' 7") from start gates to the timer and finish gate.

VI. Procedures

Contestants or designee will register with the Contest Coordinator at the time designated in the conference program.

Instructions and contest time lines provided at registration will be followed. It will be the responsibility of each contestant to obtain these instructions.

Dragsters will receive their official ranking (time - placing) during the time trials.

Based upon the time trial placing, the fastest 16 dragsters will compete in double elimination bracket to determine final placing in the speed portion of the contest.

VI. Required Personnel and Equipment:

Contest coordinator

Judges - three (3) or more

Two (2) persons assigned to check in/receive entries

Person assigned for security

Room - must be securable for equipment and entries. Size must accommodate a twenty (20) meter track and equipment. Two (2) rooms optional - one per level.

Table and chairs for judges.

Tables for entries (at least six -2' x 8' tables).

Twenty (20) meter track with start and finish gate.

State Only Contest Rules

VII. Scoring

Contestants shall be ranked in numerical order on the basis of final score to be determined by each judge without consultation with each other. The winner shall be that contestant whose total score is the highest. Other placing shall be determined in the same manner. In case of a tie, the judges shall consult each other to ascertain the winner.

Contest Coordinator will provide a sealed packet to the Competitive Events Coordinator containing the results.

All judges' ratings/results remain confidential.

Ratings shall be based upon the following maximum points:

Item Name	Total
Design	10
Appearance	5
Finish	5
Drawing	15
Accuracy	5
Neatness	5
Dimensions	5
Construction	15
Craftsmanship	10
Detail	5
1st Place	60
2nd Place	56
3rd Place	52
4th Place	48
5th	45
7th	40
12-Sep	35
13-16	30
17-24	25
25-32	20
All other finishes	10
Total Points:100	

MOUSE TRAP VEHICLE CONTEST REGULATIONS

I. Purpose:

To evaluate each contestant's ability to problem solve by designing, constructing and racing a vehicle powered by a mousetrap.

II. Clothing Requirements:

SkillsUSA or appropriate conference attire. Your school name should not appear on any clothing.

III. Eligibility:

Any SkillsUSA Nebraska member who qualifies for SkillsUSA Nebraska Leadership & Skills Conference.

IV. Scope of the Contest:

Vehicle Design and Construction

A. The vehicle must be powered by one standard household mousetrap. Additional springs, rubber bands, etc. will not be allowed (in the power apparatus). The base of the mousetrap cannot be cut or altered although a reasonable number of small holes can be drilled for mounting purposes only. The center "cheese holder" and arm retainer piece can be removed. The trap arm can be extended and/or bent.

B. The mousetrap must travel with the vehicle.

C. The frame, wheels, and axles may be made from any material. These parts have no size or weight restrictions other than to fit on the track.

NOTE: Wheels must be made from materials the student has designed or put together. Commercially made wheels will not be accepted. Various materials and everyday products such as paper, wood, cardboard, can lids, balls, etc. can be used.

D. The vehicle must be able to travel a 20 inch wide by 12 foot long track. The vehicle cannot be more than 16 inches long and 16 inches tall in its starting configuration.

E. If at any point a vehicle is determined to be in violation of one of these rules that vehicle will be disqualified from the competition.

V. Race Rules

- A. Cars will be lined up and inspected for Design and Construction requirements listed above. The cars which meet these requirements will advance to the track.
- B. Each car will make one run on the track and the time will determine their seed. The contestant will be allowed three attempts to establish a time. The time will be established from the first complete run. Each vehicle will begin with the front wheels behind the starting line. Time will stop when the front wheels cross the finish line.
- C. The fastest car will be determined by a double elimination tournament. The top seeded car will have the choice of lanes.
- D. The race officials will call false starts and tie finishes. The run will be repeated.
- E. A pit area will be provided but please bring your own tools.
- F. Contestants will be given time to prepare their cars for the race. Racers will be called to the track in the following order. Racers (car numbers) are UP. Racers (car number) are on DECK. Racers (car number) are IN THE HOLE. The cars that are UP position, race, and all other cars advance.
- G. These cars by nature are fragile, therefore, should a car need a minor repair (such as a string snap at the starting line) a reasonable amount of time will be allowed for the repair. Other cars in the bracket may continue their races. The repaired car race will be run at the end of the bracket.
- H. Contestants may make practice runs before the contest starts if they wish. No practice runs will be allowed after the car is checked in.
- I. The race officials will make every reasonable effort to maintain a clean and flat race track.
 - 1. The track will be set up to ensure that the seam located at the mid-point of the track is smooth in both lanes and will not hinder the operations of the race cars.
 - 2. The track will be wiped clean of all dirt and debris. The track will be wiped again after the practice runs are completed and before the competition begins. Waxes or oil-based cleaners should not be used.

VI. Scoring

The winner is determined by double elimination.

PIN DESIGN CONTEST REGULATIONS

I. Purpose:

Create (either computer aided or free hand) a pin design and submit it during registration at the SkillsUSA Nebraska Leadership & Skills conference. The designs will be displayed during the conference and at the advisor breakfast. Judging will be done by the chapter advisors attending the breakfast.

Medals will be awarded for the first, second, and third place drawings. The first place drawing will be the design used for the following year's SkillsUSA Nebraska's Conference pin and National trading pin.

This contest is open to Secondary and Post-Secondary division contestants. There will only be one winner regardless of division.

II. Clothing Requirements:

There is no clothing requirement for the Pin Design Contest.

III. Eligibility:

Any SkillsUSA member is eligible to submit an entry which meets the guidelines below.

IV. Guidelines:

Your design will need to follow these parameters:

The word **Nebraska** must be incorporated somewhere on the design.

The letters **SkillsUSA** must be incorporated somewhere on the design.

The following state conference year must be displayed on the design.

Submit a full color copy of the design on 8 & 1/2" x 11" paper only. No picture frames, plastic sleeves or glossy paper are **NOT** to be used in submitting pin designs.

Submit a color copy that is 1 & 1/2" at its widest point (actual pin size). This copy must be affixed on the 8 & 1/2" x 11" full color copy.

The winning designer will be required to submit an electronic copy of the design. Contestant is limited to no more than 6 colors.

The theme and sub-theme are optional.

You need to fill out and staple the form provided on the page at the end of the contest rules

State Only Contest Rules

IV. General Information:

This pin will be no greater than 1&1/2" inches at its widest point.

Reduce the design on a copier to see what it will look like at 1&1/2" inches and submit with the original design.

Only solid colors should be used (**no shading, blending of colors**).

Narrow detailed color patterns often cannot be separated on a pin that size.

If possible, please use the Pantone Matching System (PMS) of numbering colors. A PMS color guide can be found at any printing company and some high school art or graphic departments.

The SkillsUSA Nebraska Board of Director and the SkillsUSA Nebraska Director reserve the right to alter the design used for the State Pin.

All designs become the property of SkillsUSA Nebraska and may be used for other promotions.

Pin Design Identification Sheet

Name _____

School _____

(Fill the following line out when you arrive at State Headquarters for State Conference Registration):

Contestant Registration Number _____

Research and Development State Only Contest

Purpose: To evaluate each contestant's ability to design and construct a device incorporating specified criteria.

I. Clothing Requirements: SkillsUSA or appropriate conference attire. Your school name should not appear on any clothing. State t-shirt is acceptable and recommended.

II. Eligibility: Any SkillsUSA Nebraska, member who qualifies for SkillsUSA Nebraska Leadership & Skills Conference is eligible to serve on a team of 2 members.

IV. Statement of Problem: Build a device that can pick up a 1" ball (golf ball) off the ground and deposit the ball into a 9" high by 3" diameter free standing cylinder (Example : 7oz. Pringles container) and then return to the original starting point. The container must remain vertical at all times.

The device will be placed 2" back from the cylinder at a given starting point. The 4 balls will be set 12" back from the container at the 4 quadrants (think of a clock, 12, 3, 6, 9). On go the device must pick up the balls and deposit them one at a time in the cylinder. The quickest recorded time will be the winner. If none of the teams are able to get 4 balls in the container then quickest time and the most balls put in the cylinder will be the winner. In case of a tie there will be a do over.

V. Device Design and Construction:

The device must be portable, self-contained, and able to operate independent of other supplementary equipment. (Examples: mobile robot or a robotic arm) The device will be totally operated on battery power and the battery power supply must be attached to the device. Gears, electric motors, belts, erector sets, legos, and VEX robots are all acceptable. The device must be constructed from parts and not purchased as a whole unit.

The dimension of the device is restricted to 16" by 16" by 16" .

Control - The device may be radio controlled or remote controlled (wires are hooked from controller to device)

State Only Contest Rules The batteries should be securely mounted, safely wired and readily accessible.

The device should not interface with any 120 volt plugins. The battery selected should match the power requirements of the device.

No potentially explosive devices or those using pressurized gases or air or flame incendiary features are permitted as entries.

A repair area will be provided. Please bring your own tools.

State Only Contest Rules

VI. Scope of the Contest:

- A. Prior to the demonstration an oral description of how the idea originated, how you built the device and how it works is required. The oral description shall not exceed two minutes.
- B. Contestants must have a working drawing of the device.
- C. Contestants will demonstrate their device to the judges. The demonstration shall not exceed 10 minutes.
- D. Student will be allowed a maximum of three attempts at completing the task. The time will be restarted after each attempt but not to exceed a total of ten minutes.

VII. Scoring: Winner will be determined on the quickest time and the most balls put in the container. Up to 3 tries in the ten minutes.

Judges Material - Stop Watch, Tape Measure, Masking Tape to mark spots for device starting position, and ball position, 16"x16"x16" (inside measurements) box to put over device. Seven ounce Pringles can and 4 golf balls.

STATE T-SHIRT DESIGN CONTEST REGULATIONS

I. Purpose:

Create (either computer aided or free hand) a T-Shirt design.

A medal will be awarded for the first, second and third place designs. The first place winning design will be the design placed on the State T-Shirt.

This contest is open to Secondary and Post-Secondary division contestants. There will only be one winner regardless of division.

II. Clothing Requirements:

There is no clothing requirement for the State T-Shirt Design Contest

III. Eligibility:

Any SkillsUSA member is eligible to submit an entry which meets the guidelines below.

V. Guidelines:

Your drawing will need to follow these parameters:

The word **Nebraska** must be incorporated somewhere on the design.

The letters **SkillsUSA** must be incorporated somewhere on the design.

The current state conference year must be displayed on the design.

It is preferred that "Nebraska State Leadership and Skills Conference" appear somewhere on the design.

Submit a full color copy of the artwork on **8 & 1/2" x 11"** 16 lb. paper **only**. Glossy photo paper, plastic sleeves or picture frames of any kind are **NOT** to be used in submitting t-shirt designs.

The winning designer will be asked to send an electronic copy of the design to the State SkillsUSA office after the conference. The electronic copy will be sent to the company that prints the t-shirts.

Contestant is limited to no more than 4 colors.

The theme and sub-theme are optional.

You need to fill out and staple the form provided on the page at the end of the State Only T-Shirt Rules.

VI. General Information:

There is no restriction on the location or size of the design. The design can be on the front of the shirt, on the back of the shirt or the design can be on both the front and the back. If possible, please use the Pantone Matching System (PMS) of numbering colors. A PMS color guide can be found at any printing company and some high school art or graphic departments.

The SkillsUSA Nebraska Board of Director and the SkillsUSA Nebraska Director reserve the right to alter the design used for the State T-Shirt.

All designs become the property of SkillsUSA Nebraska and may be used for other promotions.

State T-Shirt Design Identification Sheet

Name _____

School _____

(Fill the following line out when you arrive at State Headquarters for State Conference Registration):

Contestant Registration Number _____

TECHNOLOGY TEAM PROBLEM SOLVING

I. Purpose:

To foster teamwork and problem solving skills through competition.

II. Clothing Requirements:

SkillsUSA or appropriate conference attire. Your school name should not appear on any clothing.

III. Eligibility:

Any SkillsUSA Nebraska member who qualifies for SkillsUSA Nebraska Leadership & Skills conference is eligible to serve on a **team of 3-5 members**.

IV. Equipment and Materials:

The competing teams will receive contest details, tools and materials necessary to develop a solution to a specific problem.

V. Procedures:

A. All members of a team must be present at the announced location and time for the start of the competition.

B. Each team will receive contest details, tools, supplies, and related materials necessary for a problem to be solved specifically for the competition. The solution to the problem must be created using the materials provided.

C. Each team will develop a solution to the problem by:

1. Identify the Problem
2. Brainstorm
3. Design
4. Build, Test & Evaluate, Redesign
5. Share Solution

D. Each team will work in a designated area. All construction work must be done in the assigned area with the materials provided. Also, appropriate safety procedures must be followed during the construction and testing phases.

E. Forms for sketches and procedures will be provided and are to be turned-in for evaluation at the end of the contest.

F. The solution to the problem must be completed and tested within the time announced for the activity.

G. Judges will evaluate the device built to solve the problem, related sketches and forms, and will witness the actual solution to the problem.

VI. Scoring:

Scoring can be based on: All team members present; Clothing Requirements; Identifying the Problem; Solution Design (Brainstorming, Sketch, Creativity); Solution Fabrication (Construction, Aesthetics); Solution Testing (Test Procedures, Evaluation); Solution Output (Fabrication, Results); and Rule Violations.