

Name _____
Class Period _____



CO₂ Car Unit (400 Points)

This unit will have a number of different activities that involve the design and construction of a competition CO₂ dragster. This unit will require you to sketch a number of different design ideas for your car, decide on a design and get a working drawing, build a prototype, and then build and paint a completed car.

You are expected to use this project to:

- show your creativity
- use the design process to reduce errors in project completion
- be responsible for all parts of the car kit
- demonstrate your ability to meet requirements set forth for competition
- enjoy the spirit of competition

You must prepare for this project with careful planning because you WILL NOT be given additional wooden car blanks. Each student will be given ONE foam and ONE wooden car blank. NO I.O.U.s will be allowed to purchase replacement parts. All replacement parts must be paid for at the time they are given to the student. The following replacement parts will be available for purchase at the costs listed.

Front Wheels.....	\$.25 EACH
Rear Wheels.....	\$.25 EACH
Screw Eyes.....	\$.25 EACH
Axels.....	\$.25 EACH
Foam Blanks.....	\$ 1.00 EACH

**WOODEN BLANKS ARE NOT REPLACABLE- NONE
WILL BE SOLD- BE CAREFUL WHEN CUTTING.**

Your grade will be determined on the quality of your drawings, the design and construction of your prototype, and the quality and speed of your completed car. The points for your grade are as follows:

Thumbnail Sketches.....	64 points
Rough Sketches.....	36 points
Working Drawings.....	50 points
Working Prototype.....	100 points
Completed Working CO ₂ Car.....	<u>150 Points</u>
TOTAL POINTS.....	400 POINTS

- The thumbnail sketches will each have a top and side view. They will be worth four points per drawing. You will be required to draw **16 different** cars, each with a top and side view. Each set of sketches is worth 4 points.
- The rough sketches will each be worth 12 points. You will be required to submit **THREE (3) different** rough sketches for your car design. Each rough sketch must have a top and side view.
- Once you have decided on a design you must draw **TWO (2)** copies of your final design full size. Each of these two (2) drawings is worth 25 points, for a total of 50 points. One of these drawings will be used as a template for cutting of your prototype and the other will be turned in along with your car at the end of the unit.
- You will use the foam blank, wheels and axels provided to build a working prototype that will be tested with the air launcher. This prototype must be cut and sanded to match your final design and should look like your completed car without paint.
- Your completed CO₂ car should be designed for strength, speed, and looks. Each of these three categories is worth 50 points. In order to race your car **must meet all of the specs** for the TSA Competition, this ensures safety to all of those who are involved with the race. You will be provided with a copy of the Pitsco “GO-NO GO” Gauge. This gauge has all of the size requirements for the cars. If your car does not meet **ALL** of the specs you will **NOT** be able to race and you will receive no points for strength and speed. The quality and appearance of you car is worth the final 50 points for the unit.

After everyone has completed their cars and before we race them, we will have a car show contest. The class will all get a chance to vote on the 3 best cars. The three cars that get the most votes will receive prizes. We will also have judges (teachers and principals) vote on the 3 best cars from both classes. The number one car from both classes will receive an additional prize.

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Thumbnail Sketches

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

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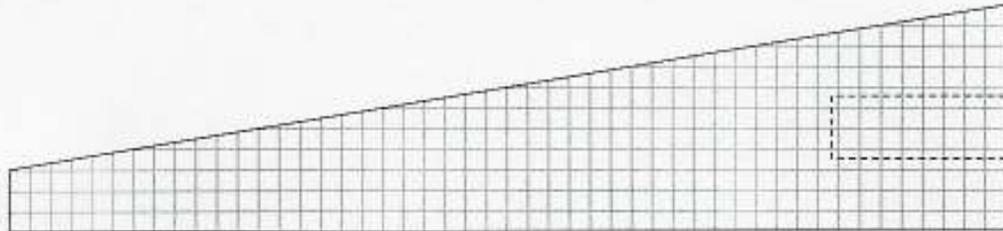
Directions:

Lightly draw your car's shape in the top and side view boxes below. Once you are happy with your design, darken in your design using good, hard lines drawn with drafting equipment. Finally, lightly shade in the design adding any possible paint schemes you may wish to add to your car.

Top View



Side View



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GRADE SHEET

Thumbnail Sketches (16 sketches)..... 64 points possible

Rough Sketches (3 sketches)..... 36 points possible

Working Drawings (2 drawings)..... 50 points possible

Working Prototype

Meets TSA "GO/ NO GO Gauge" 50 points possible

Cut and sanded properly..... 30 points possible

Test run with air launcher..... 20 points possible

Completed wooden CO₂ car

Strength:

Meets TSA "GO/ NO GO Gauge" 50 points possible

Appearance:

Car is cut and shaped evenly..... 20 points possible

Car is sanded smooth..... 10 points possible

Car is painted well/ creatively..... 20 points possible

Speed:

Ranking in class..... 50 points possible

Fastest car in class-----50 points

2nd place-----48 points

3rd place-----46 points

4th-5th place-----44 points

6th-7th place-----42 points

8th-10th place-----40 points

11th-15th place-----38 points

16th-20th place-----36 points

21st-24th place-----34 points

CO₂ Cars

Best of Show

Please rate all of the categories on a scale of 1 to 10 for each car. Please judge on creativity as well as actual construction. Partial decimal numbers are acceptable. (Ex. 9.5 out of 10)

Car #1

- _____ Shape of Car (body design)
- _____ Sanding/ Prep (body is sanded well with no cutting or sanding marks)
- _____ Colors used (colors work well with each other)
- _____ Paint job (paint is applied evenly with no runs)
- _____ Wheels (rims are painted/ axels are cut to fit car width)

Comments:

Car #2

- _____ Shape of Car (body design)
- _____ Sanding/ Prep (body is sanded well with no cutting or sanding marks)
- _____ Colors used (colors work well with each other)
- _____ Paint job (paint is applied evenly with no runs)
- _____ Wheels (rims are painted/ axels are cut to fit car width)

Comments:

Car #3

- _____ Shape of Car (body design)
- _____ Sanding/ Prep (body is sanded well with no cutting or sanding marks)
- _____ Colors used (colors work well with each other)
- _____ Paint job (paint is applied evenly with no runs)
- _____ Wheels (rims are painted/ axels are cut to fit car width)

Comments:

Car #4

- _____ Shape of Car (body design)
- _____ Sanding/ Prep (body is sanded well with no cutting or sanding marks)
- _____ Colors used (colors work well with each other)
- _____ Paint job (paint is applied evenly with no runs)
- _____ Wheels (rims are painted/ axels are cut to fit car width)

Comments:

Car #5

- _____ Shape of Car (body design)
- _____ Sanding/ Prep (body is sanded well with no cutting or sanding marks)
- _____ Colors used (colors work well with each other)
- _____ Paint job (paint is applied evenly with no runs)
- _____ Wheels (rims are painted/ axels are cut to fit car width)

Comments:

Car #6

- _____ Shape of Car (body design)
- _____ Sanding/ Prep (body is sanded well with no cutting or sanding marks)
- _____ Colors used (colors work well with each other)
- _____ Paint job (paint is applied evenly with no runs)
- _____ Wheels (rims are painted/ axels are cut to fit car width)

Comments: