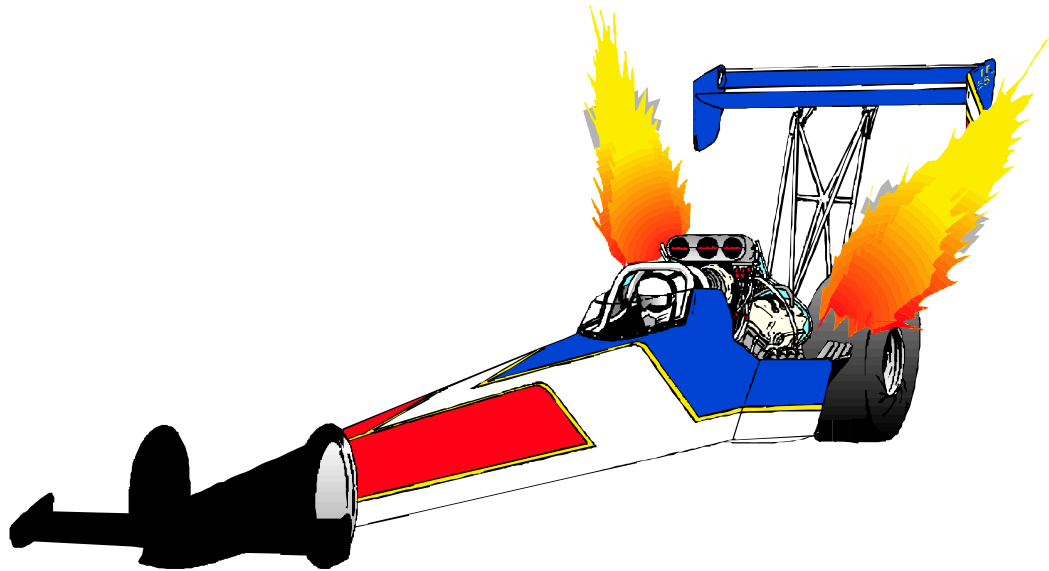


GYMPIE STATE HIGH SCHOOL
INDUSTRIAL TECHNOLOGY AND DESIGN



DRAGSTER
DESIGN FOLIO
YEAR 10

Presented by:-

YEAR 10 DESIGN FOLIO

CO2 DRAGSTER

SITUATION

Each year a competition is held for Shop A students throughout the state to design and produce a race vehicle powered by a standard CO2 cartridge. Specifications of wheel size, body length, axle size and cartridge position are given by the organizers of the contest.

The vehicles will be raced against each other over a 20m distance with tensioned fishing line to act as a guide. A 'firing' device will be used to start the vehicles simultaneously.

BRIEF

Design a vehicle (to specs) to travel a distance of 20m in the fastest time possible using the power provided by a single standard CO2 cartridge.

	<i>DRAGSTER DETAILS</i>	<i>MIN</i>	<i>MAX</i>	<i>PASSED</i>	<i>REMED Y</i>
a	Axles (diameter)	3mm	4.5mm		
b	Axles (length)	35mm	88mm		
c	Axles bearing (diameter)	3.5mm	4.5mm		
d	Axle hole (diameter)	3mm	4.5mm		
e	Axle hole (position above body bottom)	5mm	10mm		
f	Axle hole (position from either end of body)	9mm	100mm		
g	Spacer bearing (diameter) (optional)	7mm	9mm		
h	Dragster body (length)	200mm	305mm		
i	Dragster body (height at rear with wheels)		75mm		
j	Dragster body (mass with wheels)	45g	170g		
k	Dragster body (width at axles - front & back)	35mm	42mm		
l	Power plant depth of hole	52mm	52mm		
m	Power plant housing thickness (around entire housing)	3mm			
n	Power plant housing (diameter) {Please use a 3/4" drill}	19.5mm	3/4"		
o	Power plant centre line (from body bottom)	31mm	35mm		
p	Screw eye (eyelet inside diameter)	4mm	8mm		
q	Screw eyes (2) or centre line of bottom, distance apart	155mm	270mm		
r	Wheels, front (diameter)	32mm	37mm		
s	Wheels, front (width at greatest diameter)	2mm	5mm		
t	Wheels, rear (diameter)	30mm	40mm		
u	Wheels, rear (width at greatest diameter)	15mm	18mm		
v	wheelbase	105mm	270mm		

INVESTIGATION

FUNCTION

What is the primary function?

Is there a secondary function?

SAFETY

Some areas of safety which need to be considered are:

MATERIALS

Timber will be supplied by the school for this exercise. Are there any more suitable materials for this project, if so list them and give reasons they may be more suitable. Your teacher may allow you to use other material following discussions with him.

SHAPE / FORM

Three major factors must be considered when designing your dragster:

1. _____

2. _____

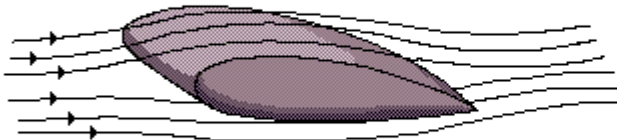
3. _____

You may wish to take into consideration some of the following aerodynamic considerations:



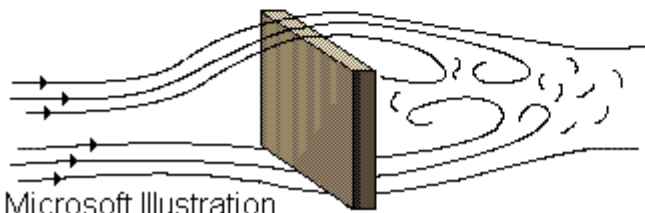
Sphere

Round objects such as baseballs experience a medium amount of drag.



Airfoil

The shape of an airplane wing minimizes drag.



Square

Flat, edged objects such as boxes experience a high amount of drag.

Microsoft Illustration

CONSTRUCTION

With regard to construction I will pay particular attention to the following areas:

POSSIBLE SOLUTIONS

In the spaces below, sketch eight possible designs for your dragster. Beside each of these, make notes in the space provided about some of the positives and negatives of each design.

1	+ve
	-ve
2	+ve
	-ve
3	+ve
	-ve
4	+ve
	-ve
5	+ve
	-ve
6	+ve
	-ve
7	+ve
	-ve
8	+ve
	-ve

SOLUTION DEVELOPMENT

From the ideas illustrated and investigated earlier, I have selected two for further investigation because they exhibit the following qualities:

In the boxes include more detailed sketches of your two selected ideas.

Idea No. _____

Idea No. _____

SOLUTION REFINEMENT

After further consideration I have decided to refine idea no. ____.

I will refine it for the following reasons:

Sketch below the Top and Front Views of your final design.

TOP VIEW

FRONT VIEW

Sketch a pictorial presentation of the final design in the space below.

PICTORIAL VIEW

The following profile will be used in assessing this unit of work.

CRITERIA Design Folio	A	B	C	D	E
Investigation page(s)					
Devising page(s)					
Realization page(s)					
Evaluation page(s)					
Overall Design Folio Achievement Level					
CRITERIA Practical Project					
Safe working techniques					
Care and use of tools and equipment					
TREND					
Accurate marking out of project					
Workmanship (preparation)					
Overall appearance and finish					
TREND					
Overall Practical Project Achievement Level					