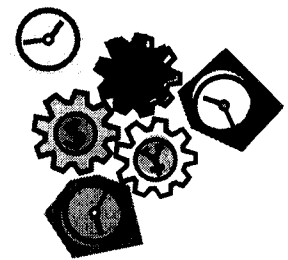


Grade 4 Building Project



Dear Parent/Guardian,

As part of the science unit “Building Devices and Vehicles That Move”, students are expected to design and construct a device or vehicle that moves or has moving parts.

Building upon what the students are learning in the current unit “Wheels and Levers”, the students will be asked to construct a device or vehicle **with materials brought from home**. The students will only be given one afternoon of time to work on this at school. The rest of the project and completion of the log sheet needs to happen at home. The project is due on May 31, 2013. The device or vehicle must move or have a moving part(s) when a simple force is applied such as air, gravity, etc. (being pushed or pulled is not allowed). Using what they have learned in the classroom, the students will follow the given criteria in order to design (log sheet), construct and evaluate a device or vehicle.

The students will present and demonstrate their vehicle/device in class as well as hand in the **required** log sheet.

Please find attached a list of criteria for the project (log sheet). We have also included some examples of wheel/axle, vehicle/device designs and material possibilities. **These are suggestions only**. Creativity is encouraged, and students are to design and create a vehicle/device which they will build from parts they have created, rather than using those from Lego® or another toy. Please remember that you can tie in other units such as “Waste and Our World” by thinking about re-using or recycling items that could fit in with this project.

In order to be able to fairly evaluate your child’s learning this project must be theirs alone. Past experience showed us that projects completed with significant adult assistance don’t achieve as well on his/her final assessment. You are encouraged to offer support gathering materials with your child and brainstorm ideas with them. Your child will also need to demonstrate that they are motivated to do the work (creating the design, gathering the materials, creating parts, etc.) making sure that they have what they need, so that the project can be completed by the due date.

Time allotment/due date for the project – May 15 to May 31, 2013

This is an individual project – No partners or group work

Start gathering possible materials now – place them in a container or a bag.

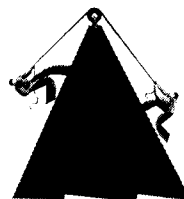
The project will be due on Friday, May 31, 2013. Class presentations start June 3, 2013.

As always, all information will be reviewed with students before the project begins.

Enjoy the challenge!

Mrs. Newby

Mr. Schellenberg



Log Sheet

Name: _____

Build a simple machine with moving parts.

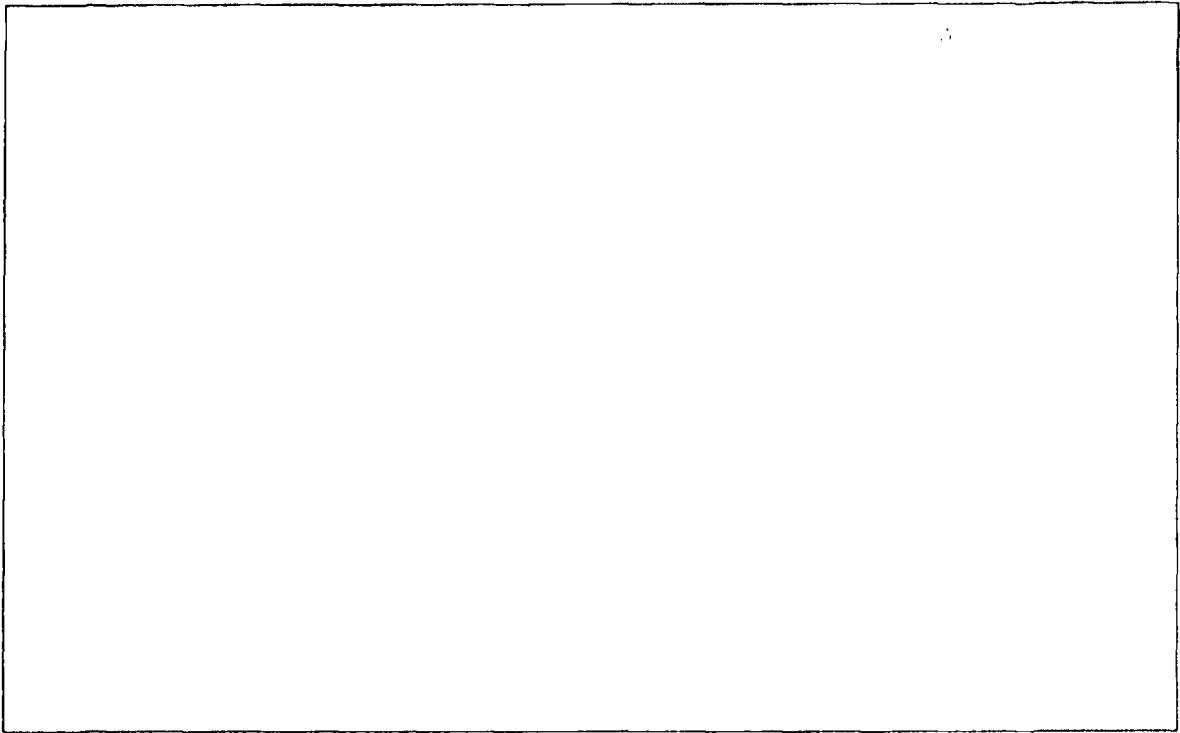
Task : Build a simple machine with moving parts.

I built :

Materials used :

Method (how I built my simple machine - the steps I followed when constructing my machine :

A drawing/picture of my simple machine :



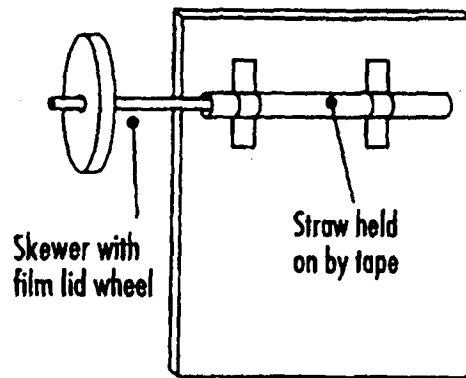
What functioned well with the design of your machine?

What did not function well?

What are two things that you would change next time in your design/construction?

Wheels and Levers - Ideas

- *Plastic drinking straw as axle housing*



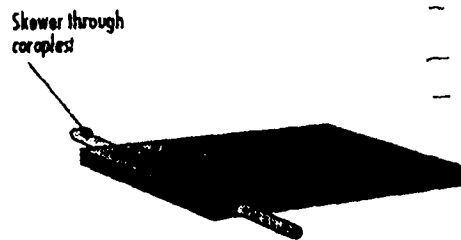
FIXED WHEEL

Wheel fixed to axle,
axle free to rotate
in axle housing

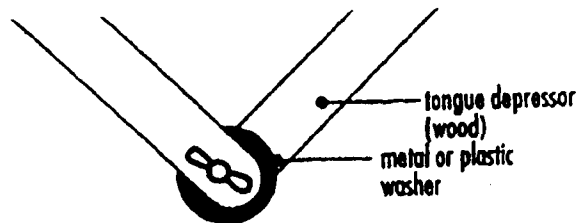
For wheels,
consider also :

- milk jug caps
- cardboard
- styrofoam
- spools
- film canister lids

- *Axle through coroplast*



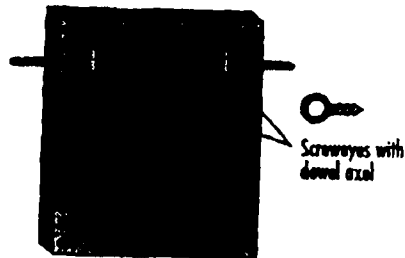
- *Use plastic or metal washers between moving joints*



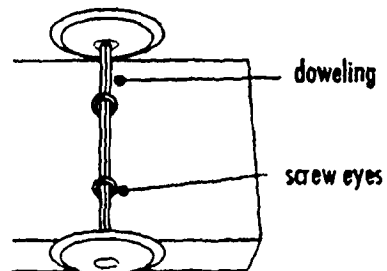
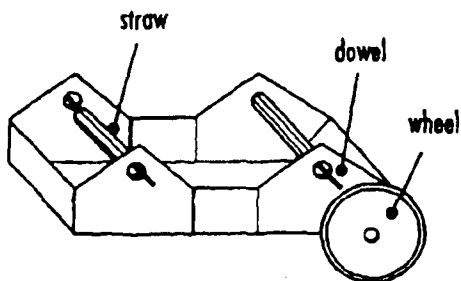
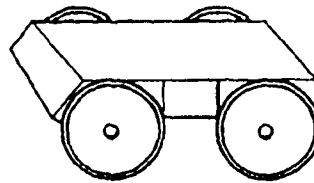
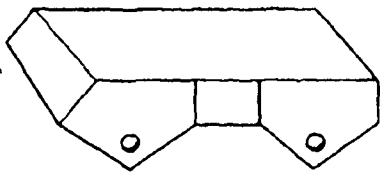
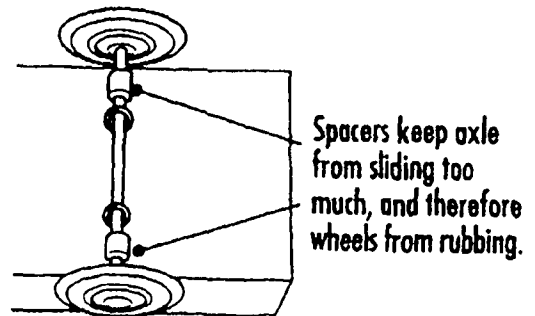
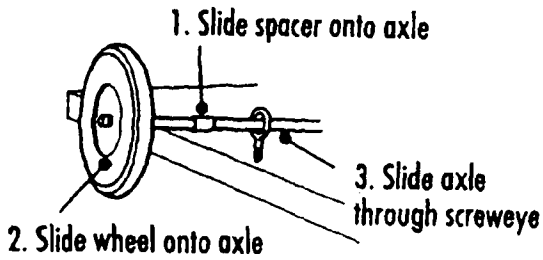
Wheels and Levers... continued - Ideas

2. Minimize Surface of Contact

- Eye screws as axle holders

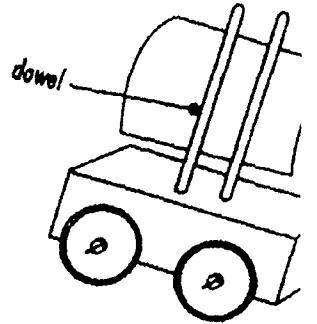
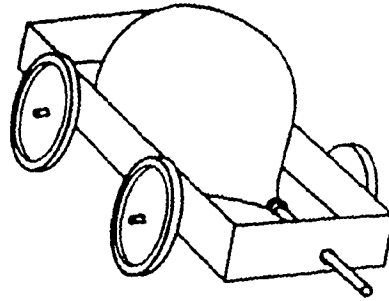
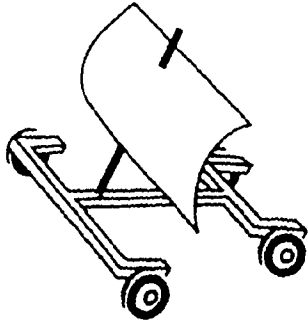


3. Stabilize Moving Parts

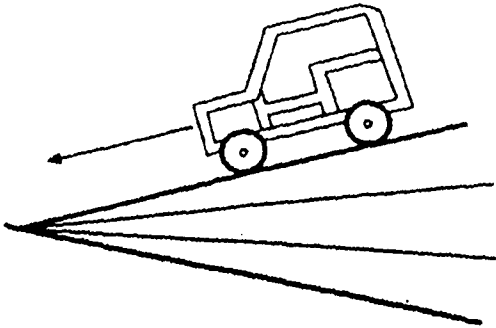


Simple Forces - Ideas

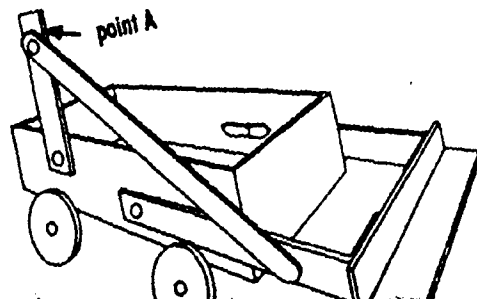
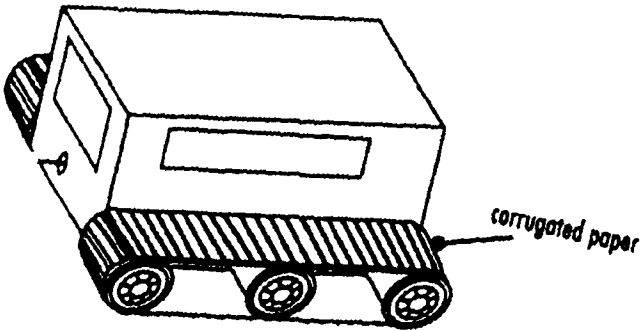
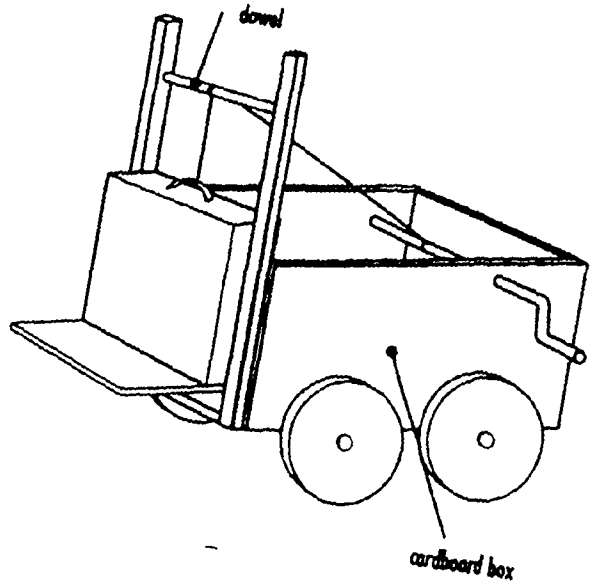
Air:



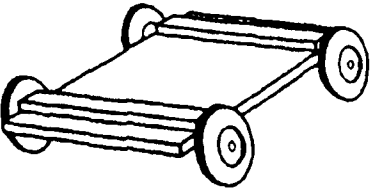
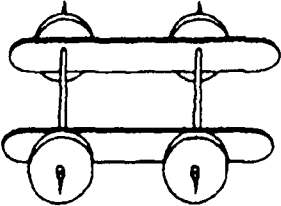
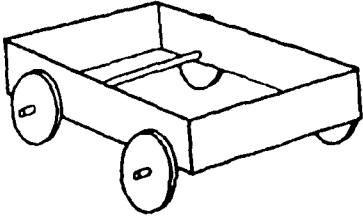
gravity:

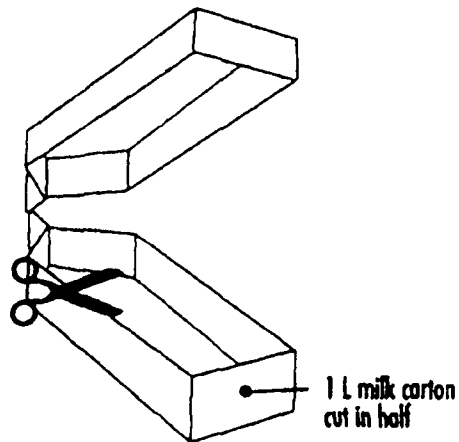


push / crank:



Frames or - Ideas Chassis

Coroplast Model	Popsicle Stick Model	Cardstock Box Model
		



Consider also :

- juice boxes
- shoe boxes
- wood
- plastic container
- styrofoam

The Challenge

- 1) Design and construct a device or vehicle that moves and/or has moving parts.
- 2) Use a simple force to propel the vehicle or power the device (air, gravity, crank, etc.)

Name: _____

	Exemplary (Excellent)	Proficient (Very Good)	Approaching Proficiency (Good)	Beginning (Improvement required)
Creativity of design and materials (if any of your materials are from another device (Lego, toy, etc.) you will achieve an Beginning ^{Mark})	Excellent use of creativity in the design and use of materials. It is clearly evident that much thought went into the design and use of materials.	Very good use of creativity in the design and use of materials. It is evident that very good thought went into the design and use of materials.	Good use of creativity in the design and use of materials. It is evident that good thought went into the design and use of materials.	Some creativity in the design and use of materials. It is somewhat evident that minimum thought went into the design and use of materials.
Durability and workability during demonstration	The project was an excellent example of durability and workability during the demonstration.	The project was a very good example of durability and workability during the demonstration.	The project was a good example of durability and workability during the demonstration.	The project found it a challenge at various moments to stay together and work during the demonstration.
Log Sheet	The log sheet was completed with well written sentences using appropriate scientific terminology. An exceptional and thorough job was done.	The log sheet was completed with appropriately written sentences using fairly specific scientific terminology. A very good job was done.	The log sheet was completed with somewhat appropriately written sentences using some scientific terminology. A good job was done.	The log sheet was somewhat completed with some sentences using a few scientific terminology.
Independence (this is your project, not someone else – family members, etc.)	Required very little if any support. Student listened to and followed instructions at an exceptional level. Very independent and capable student.	Required appropriate support and encouragement. Student listened to and followed instructions at an appropriate level. Independent student.	Required some support and encouragement. Student listened to and followed instructions at an somewhat appropriate level. Somewhat independent student.	Required a fair bit of support and encouragement. Student struggled at times to listen to and follow instructions at an appropriate level. Somewhat dependent student.
Overall	Excellent work in all areas.	Very good work in most areas.	Good work in a number of areas.	You struggled with this project.