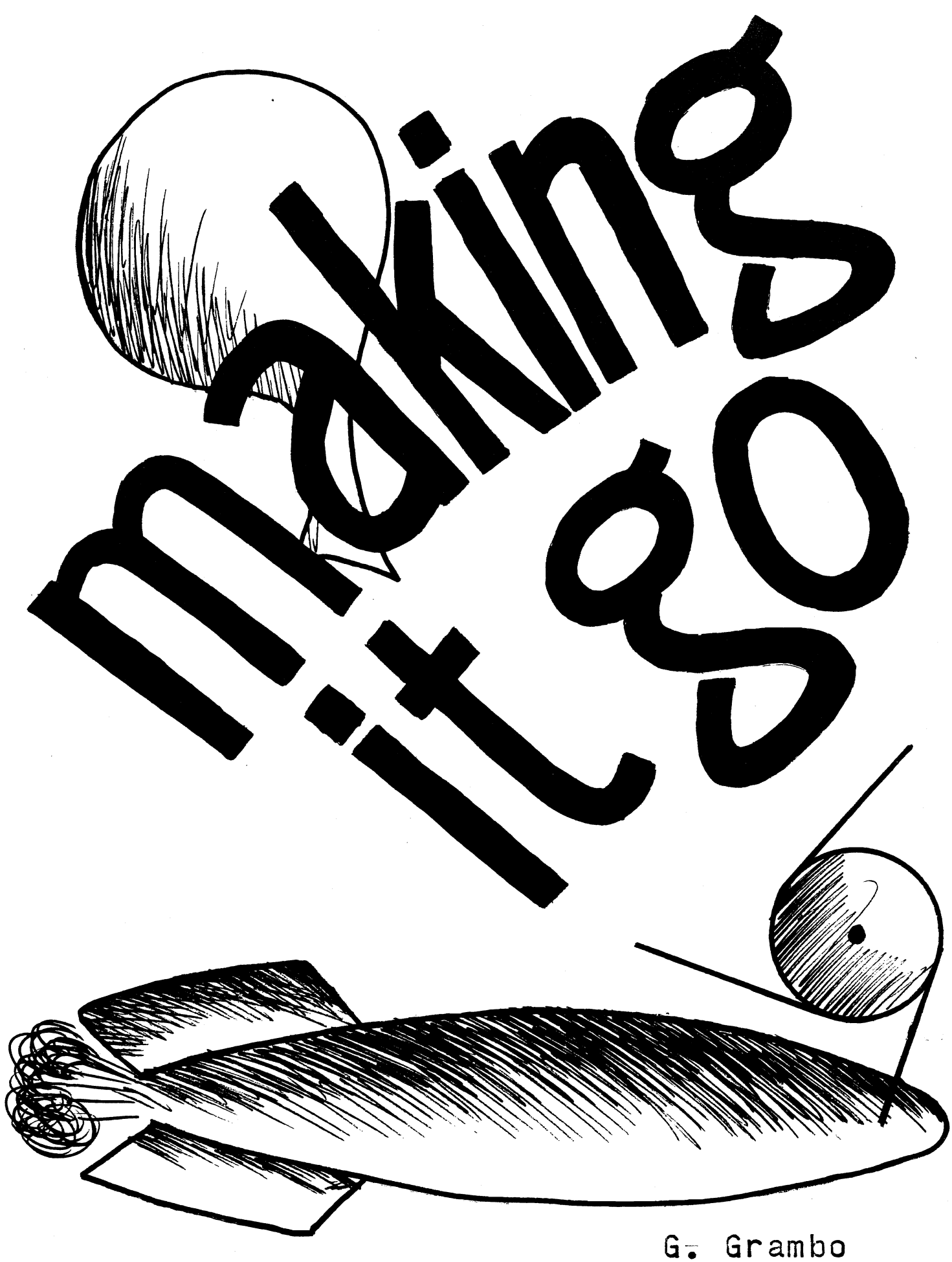
making it go



G. Grambo

Making It Go

Name _____

Class _____ Box No. ____

Experiment 1

Problem- How do muscles help things move?

1 Begin With

Stick

Wall Clock

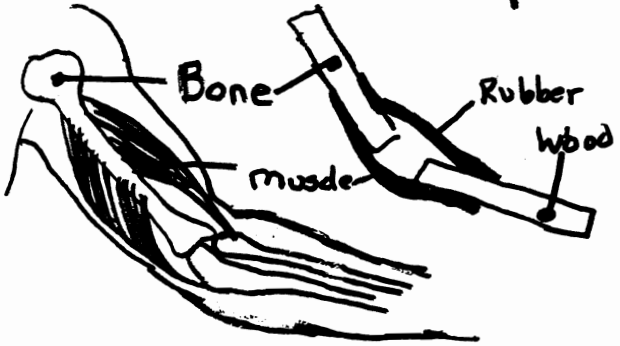
2 Bend your arm

like this

3 Describe what happens?

4 How did the bump get there?

5 You have a special stick in your box. The wood stands for your bones. The rubber stands for muscles, which holds the bones in place.



6 Bend Stick. Describe what happens to both pieces of rubber.

7 Why does your arm bulge when you bend your it?

Grambo

8) How do muscles help you move your arm?

9) How do your muscles feel after you do alot of work?

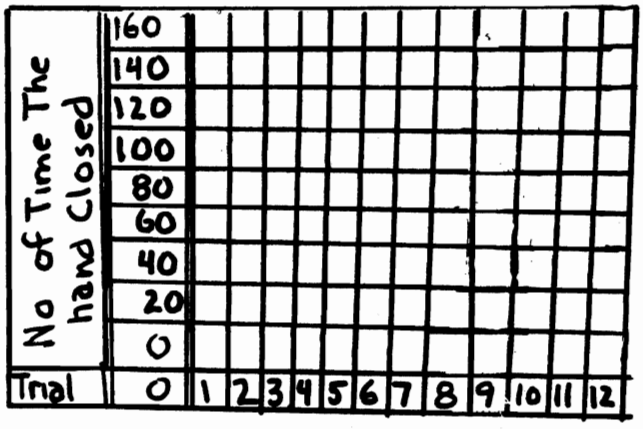
Lets see how long it takes for you to get tired

10) Put your arm on the desk open and close your hand as many times as you can in 30 seconds. Put this on the chart.

Fatigue Test

Trial	1	2	3	4	5	6	7	8	9	10	11	12
No of Times Hand Closed												

11) Put this information on This Graph.



12) What does this graph tell you?

13) Why did the number of times you were able to open and close your hand decrease?

14) What does fatigue mean?

Why is this called a fatigue test?

Homework-

1)- Why do you get tired?

Making It Go

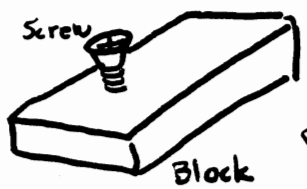
Name _____

Class _____ Box No _____

Experiment 2

Problem- How do tools help our muscles work better?

1 Begin With



2 How do your muscles make your arm move?

3 Why do you get tired?

4 Why do you sit when you are tired?

5 How do you get the energy to do work?

6 Find the block with the screw in it. With your fingers unscrew and remove the screw.

7 Why is it difficult to unscrew?

Gramba

8) How can a screwdriver help you?

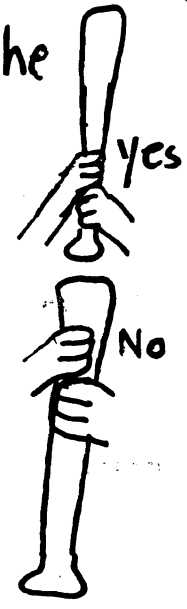
Put Screwdriver in the screw and turn it.

9) Why is there a slot in the screw?

10) Why did this happen?

11) Why is it easier to put a nail in a wall with a hammer than it is with your hand?

12) You are playing baseball. Why should you hold the bat at the end of the handle rather than in the middle?



13) How does the length of the bat help your muscles?

Homework -

1- How do tools help your muscles?

2- How could animals help your muscles?

Making It Go

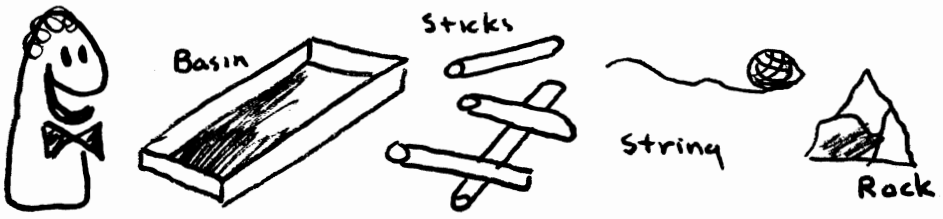
Experiment 3

Name _____

Class _____ Box No _____

Problem- How can we use water to make things go?

1) Begin With



2) Place one of the Wood sticks into the basin of water

3) What can you tell me about wood when you put it in water?

4) look at the Rock 

How can the sticks help move the rock across the basin?

5) How can the thin string help you? 

(Build One)

6) How did this idea help move people over the rivers?

The things you carry are called <u>loads</u>

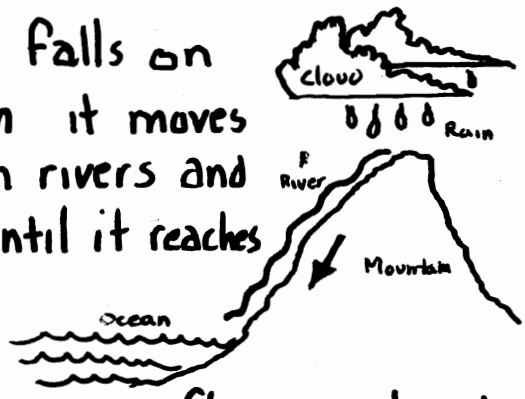
7) We call this floating object a ATFR unscramble the letters.

Grambo

8) If you hold a stick and let go of it, where does it go?

9) This happens because Gravity pulls things to the earth. Water gets pulled to the earth also.

When rain falls on a mountain it moves downhill in rivers and streams until it reaches the ocean.



If you put your floating object in a river it would only move in one direction, down the river. Moving water is called a Current

10) How can we make our floating object, or _____, able to go up a river against the current?

11) How has this floating object helped us make things go?

You are going to need a milk container for the next experiment. Bring one in

Homework -

1) What is a load? (See other side of the sheet)

2) How does water get to the ocean?

3) How might it (water) get back to the clouds?

Making It Go

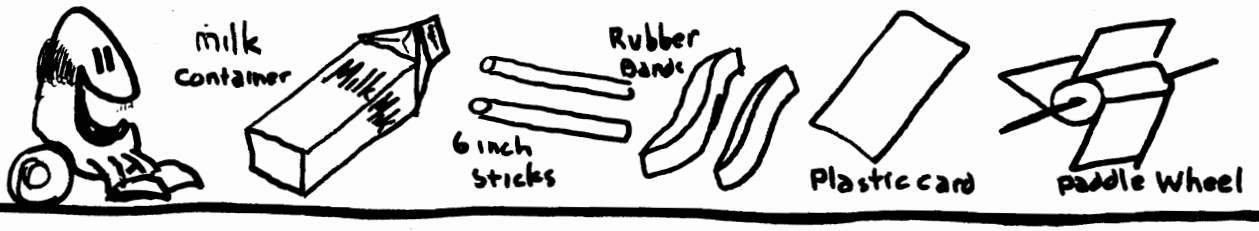
Name _____

Class _____ Box No _____

Experiment 4

Problem- How does a paddle make things go?

1 Begin With

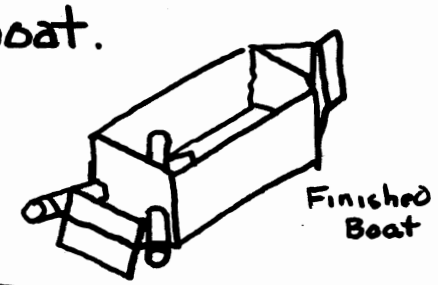


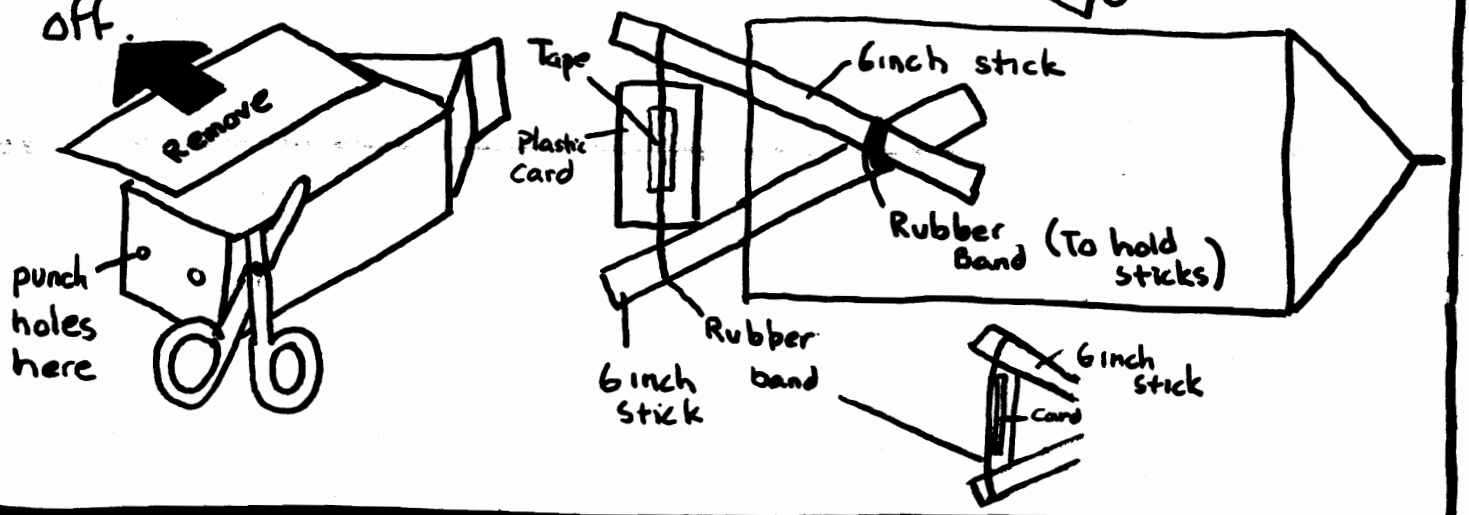
2 What causes a floating object on a river, to move?

3 Why won't it move up river?

4 We are going to make a paddle boat.

Take the milk container and cut the side panel off.





Grambo

5) Turn the plastic card 10 times and place your boat in a basin of water.

6) How has this paddle wheel helped your boat go?

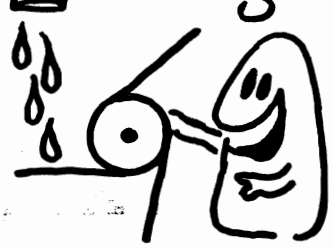
7) Why do you think we call it a paddle wheel?

8) How can a paddle wheel help boats traveling on a river?

9) What might happen if we hold a paddle in a river or in moving water?

10) Why will this happen?

11) Pick up the paddle from the teachers desk and hold it under running water



12) How can we use this paddle to make things go?

Home work -

1- How does the paddle help things go?

2- How can you make the paddle turn?

Making It Go

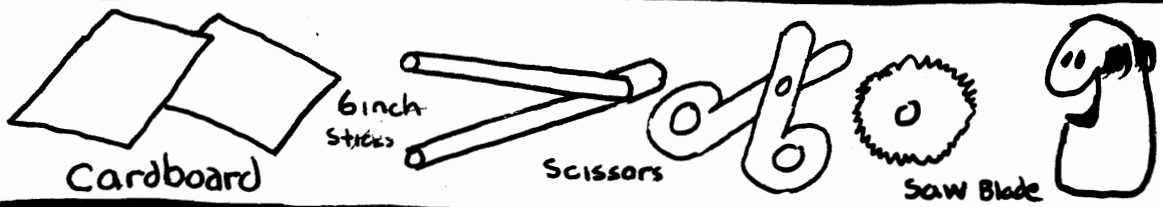
Name _____

Class _____ Box No _____

Experiment 5

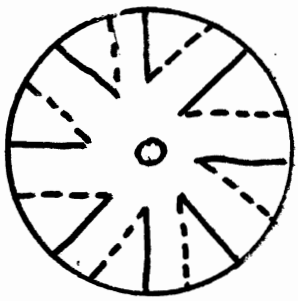
Problem- How else can we use a paddle wheel?

1) Begin With



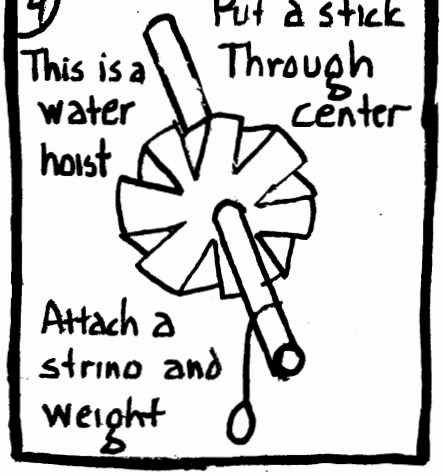
2) What is one use of a paddle wheel? (you have learned so far)

3) lets make another paddle wheel



Cut Cardboard along solid lines. Bend on dotted lines

4)



5) Hold wheel under running water.
Describe what happens

6) Why did this happen to the weight?

Which way does the wheel turn? Why?

7) How can we make the wheel turn faster without putting the water on more?

Gramho

8) look at paper saw blade.
How can we use the paddle wheel to make the saw turn?

9) Why does a paddle wheel need moving water?

10) In nature where can we find moving or running water?

11) What determines how fast the wheel will turn?

12) How will the number of flaps on the wheel affect how fast the wheel will turn?

13) How can we find out?
Do It

14) How can we turn the paddle in a place that does not have alot of moving water?

Homework-

1- What are 3 uses of a paddle wheel?

2- How does a water hoist work?

Making It Go

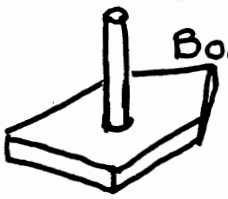
Name _____

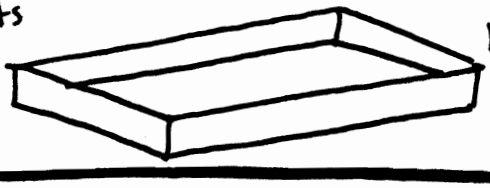
Class _____ Box No _____

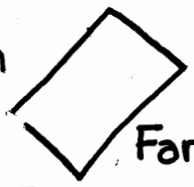
Experiment 6

Problem- How does wind make things go?

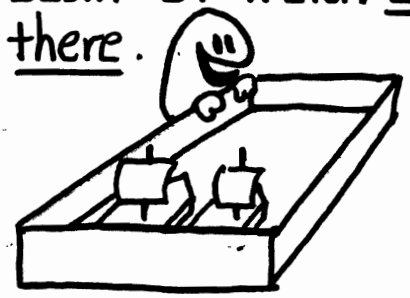
1 Begin With







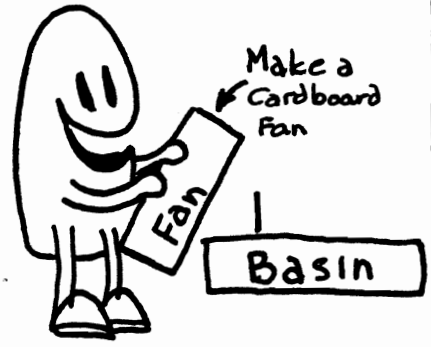
2 Find the part of the room that has the three boats and the basin of water. Go there.



3 Before engines were put on boats how did they move?

4 How did Christopher Columbus get his boats to move?

5 Put the boat that has no sail into the water. Fan it.



6 Look at the three boats. If you fan them which will move faster?

☐ nina ☐ pinta ☐ Santa Maria

Why?

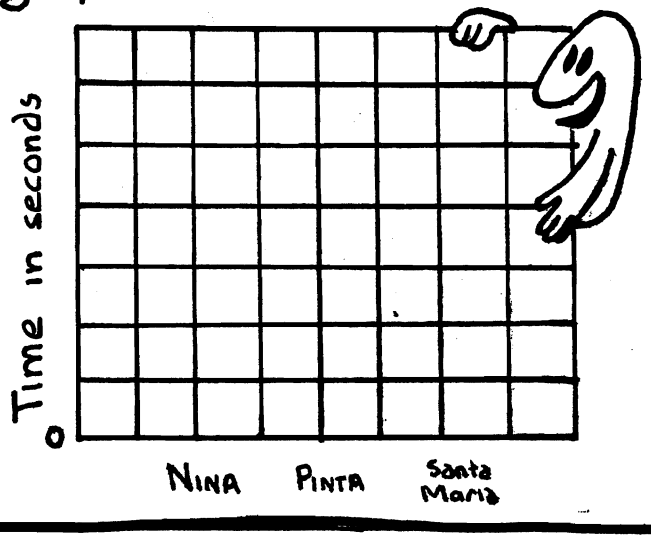
Grambo

7) How can we prove Which will move faster?

8) Put information here

Ship	Distance	Trial in Seconds					
		1	2	3	4	5	Average
Nina							
Pinta							
Santa Maria							

9) Plot your information on this graph



10) Which Ship moved faster?

Why?

11) How can we make the ships move faster?

12) How else can the wind help make things go?

13) When will the wind not help you make things go?

Home work –

1- How can the wind help make things go?

2- Name three things that make use of the wind.

Making It Go

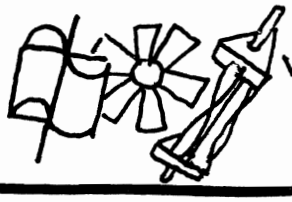
Experiment 7

Name _____

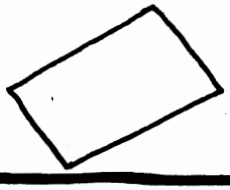
Class _____ Box No _____

Problem – How else can you use the wind?

1. Begin With



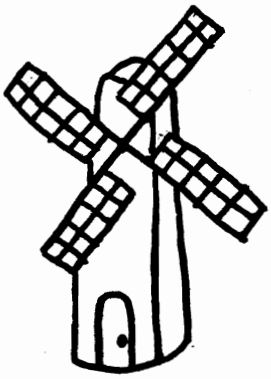
Windmills



Fan

propeller

2. In Holland there are many windmills. What are they used for?

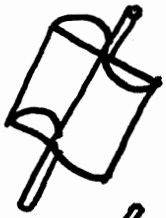


look in an encyclopedia

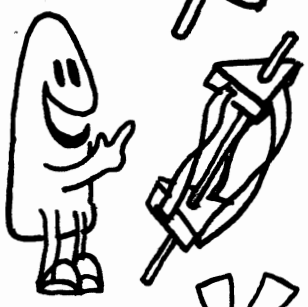
3. Why is the wind needed for a windmill to work?

4. We have three windmills. How can we find out which will turn with the least wind?

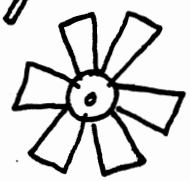
5. The three are



Savonius Rotor



Helix Rotor



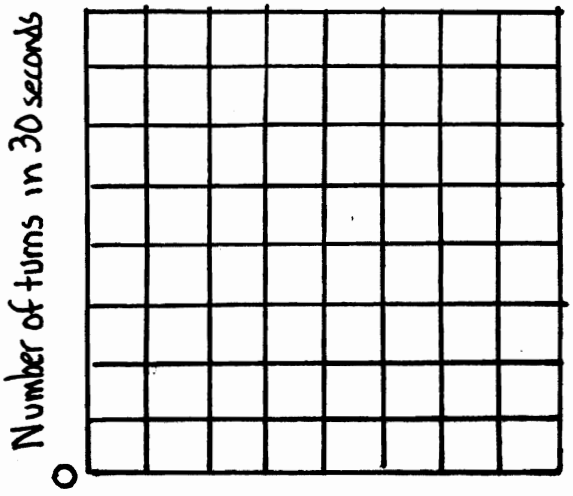
Pinwheel

6. Face each windmill into the wind. Count how many times it turns in 30 seconds.

	Savonius Rotor	Helix Rotor	Pinwheel
Trial 1			
Trial 2			
Trial 3			
Average			

Grambo

7) Graph your results here.



8) Which windmill would you use in an area that has very little wind?

9) How can a windmill be used to lift or turn something?

10) look at the plane propeller. How is it like a windmill?

Plane propellers are turned by an engine. This propeller moves the air and this makes the plane go. Ships also have propellers that make them go.

Homework -

1- How does a windmill make use of the wind?

2- Define the words

Rotor -

Windmill -

Making It Go

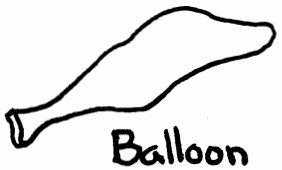
Experiment 8

Name _____

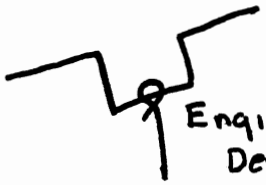
Class ____ Box No ____

Problem- How do engines make things go?

1) Begin With



Balloon

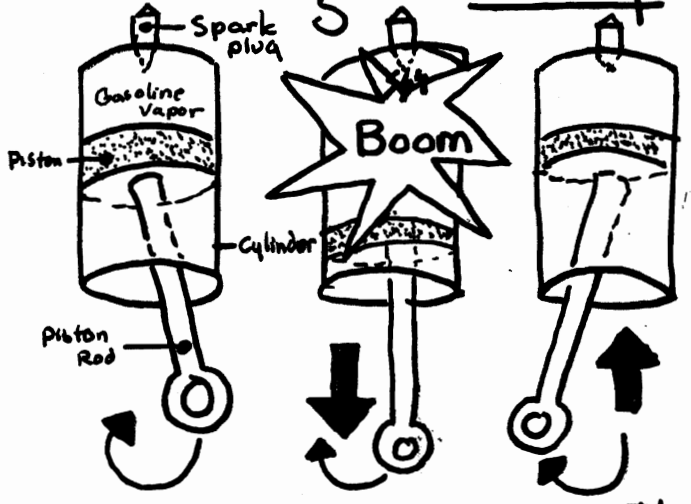


Engine Demonstrator

2) Why is gasoline put in a car?

3) In a car there are spark plugs and pistons. Gas and air fill up a chamber

The spark plug sparks and the gas blows up.

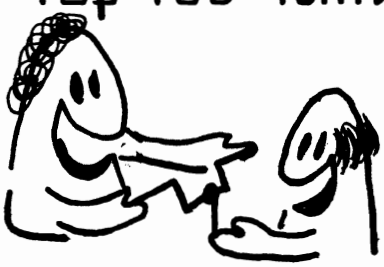


The piston moves down. The rod turns and the piston moves up and the gas goes in again.

4) Why does the piston move?

5) The in out motion of the piston makes the wheel turn. The piston turns the crankshaft which turns the wheel.

How can we make the top rod turn?



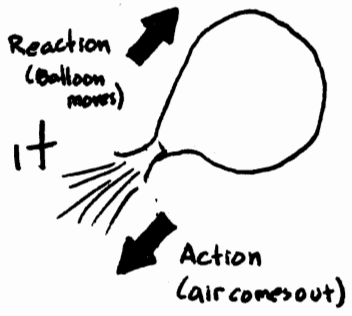
6) How does an automobile engine make the car go?

Grambo

7) In the piston chamber the gas gets hot and it expands. The sides and top of the chamber are solid. They can't move. Since the piston can move, the gas pushes the piston so the gas can expand.

like in a car. engine air goes out the bottom because it is easier than if it came out the sides.

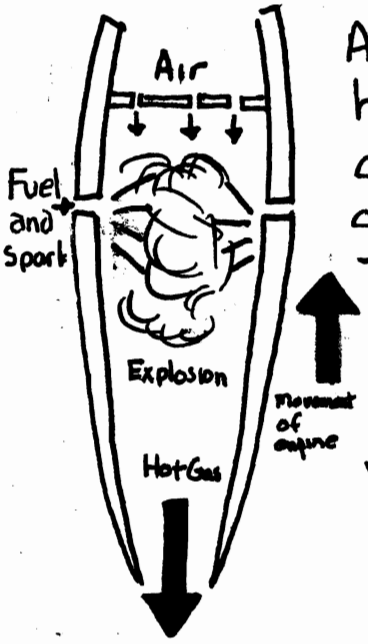
8) Blow up a balloon and let go of it.



Why does it fly?

There is a rule in physics. For every action there is a equal and opposite reaction. This means if the air goes in one direction the balloon will go in the other.

9) Jet engines work on the same idea.



An explosion causes hot gas to move out the bottom of the engine. This causes the engine to move the other way.

Why is a spark needed?

Homework-

1- How does an engine work? (either one)

2- How does a jet engine make things go?

3- Why is fuel needed in these engines?

Making It Go

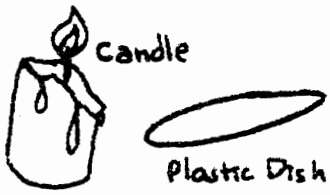
Name _____

Class _____ Box No _____

Experiment 9

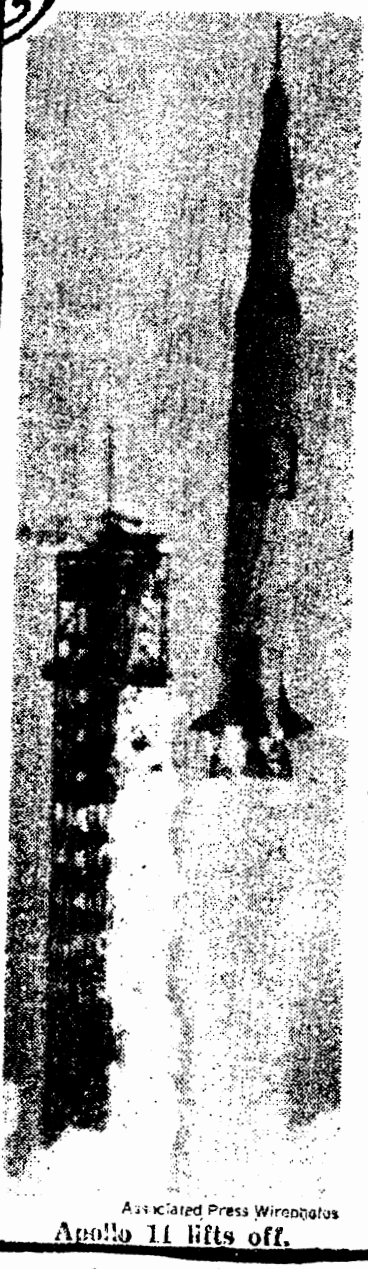
Problem- What makes a rocket go?

1) Begin With



2) look at the space rocket on the right.
How is the rocket different from a jet?

3)



NEW YORK POST, WEDNESDAY, JULY 16, 1969

Associated Press Wirephotos

Apollo 11 lifts off.

4) Explain how a jet engine works?

5) light the candle. Cover it with a **Glass.**

6) Describe what happens.

Why did this happen?

Grambo

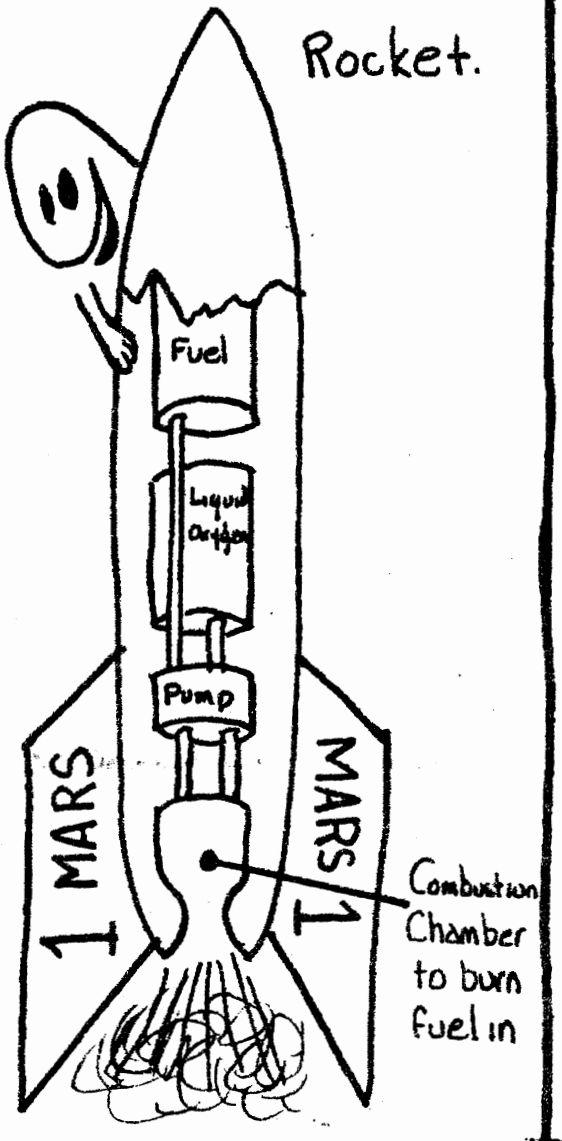
7) What things are needed in order for something to burn?

8) There is no air in space.
Why would it be difficult to burn gasoline in space?

9) If you can't burn anything how can you move a rocket?

10) What must a spaceship carry with it so it can burn fuel?

11) This is a standard Rocket.



Homework-

1- How does a rocket make things go? Why does the rocket move?

2- Why does a rocket carry oxygen?

3- Extra Credit
A short report on rockets, Robert H. Goddard, or space travel.

Making it Go

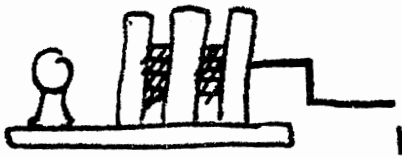
Name _____

Class _____ Box No _____

Experiment 10

Problem – What is energy and how does it make things go?

1) Begin With



Hand generator

2) The movement of water, your muscles, wind, and the burning that goes on inside an engine are all **energy**

3) There is another kind of energy. It moves through the walls of your house and makes bulbs light. What is it?

4) How does electricity affect your T.V., record player, and hair dryer?

5) How does electricity make things go?

6) Look at the hand generator.

Turn the handle

Describe what happens?

7) Why did this happen?

8) look inside the generator while you turn the handle. Describe what you see.

9) The turning part is a coil of copper wire.

10) Outside this part are magnets. When you spin copper wire inside a magnetic field you get electricity.

11) Why must you turn the handle to light the bulb?

12) How can we turn the generator with wind?

13) How can moving water be used to produce electricity?

Homework-

1- What is energy?

2- How can we change muscle water or wind energy into electrical energy?

3- How does energy make things go?