Worksheets unit 3

MACHINES

MACHINES MOVE THE WORLD

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February – April 2011

Let's bet!

Is a/an……..a machine?

Write questions for all the objects and bet (from 1 to 5).

Question	Yes, it is a machine.	No, it isn't a machine.	BET	LOSS	GAIN
1. Is a **TV** a machine?	✓		**5**	**0**	**5**
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20. Are **scissors** a machine?					
			TOTAL:		

What do you think? I think that …… is/isn't a machine.

I agree with you.

I do not agree with you.

Grand total=

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Cut these images and place them in the correct place.


TELEVISION


DRYER


CHEESE GRATER


COMPUTER


APPLE


SCREW NUT


TOW TRUCK


BOOK


WASHING MACHINE


TELEPHONE


CORKSCREW


AXE


SEE-SAW


WELL


SLIDE


RADIO


ARTICHOKE

POLICE CAR


DOG


SCISSORS

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Classify simple machines and compound machines.

SIMPLE MACHINES

COMPOUND MACHINES

Write three machines that you usually use, and fill in the blanks.


SOLAR ENERGY


NUCLEAR ENERGY


WIND ENERGY


MECHANICAL ENERGY


ELECTRIC ENERGY


CHEMICAL ENERGY

MACHINE	WRITE THE ENERGY THAT THIS MACHINE USES TO WORK	WE USE THIS MACHINE TO...
Cork screw	Mechanical energy	Open bottles

Match the pair of these questions:

What is a machine?	Work is done when a force moves something. If you use a PUSH or a PULL to move an object you are doing work.
What is work?	When we do work we use energy.
When do we use energy?	A machine is a device designed to make work easier.

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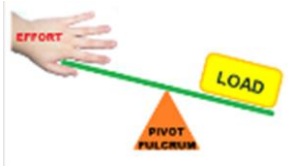
Match those questions with the answers.

How many rulers do we need?	Start with the short ruler and then do the same process with the long ruler.
What do we do with the rubber?	We use the rubber as a fulcrum for doing a lever.
What is the big book for?	We need two rulers: one long and one short.
Which ruler do we use first?	We use the big book as a load.
What are the small books for?	We use the small books as an effort.
What is the ruler for?	We use the ruler as a lever.

Order these steps of the experiment.

Prepare all the materials.
Predict: What is the **best position** of the rubber (as a fulcrum) to lift the big book with less effort (less small books)? Predict: What is the **best ruler** for lift the big book with less effort?
Try different positions for the rubber (fulcrum).
Change the short ruler for the long ruler and repeat the process.
Start with the short ruler.
What is the best ruler to lift the big book with less effort?
What is the best position of the rubber (as a fulcrum) to lift the big book with less effort (less small books)?

Choose one image for your prediction.



1

2

3

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HANDS ON! LEVER

Names:

Date:

PROBLEM:

Can we do the same work with less effort?

MATERIALS: Write down the materials that we need for the experiment.

- _____
- _____
- _____
- _____
- _____

STEPS: (from 1 to 7)

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PREDICTION

Best position of the ruler

best ruler

What is the **best position** of the rubber (as a fulcrum) to lift the big book with less effort (less small books)?

_____

What **is the best ruler** to lift the book with less effort? Write it.

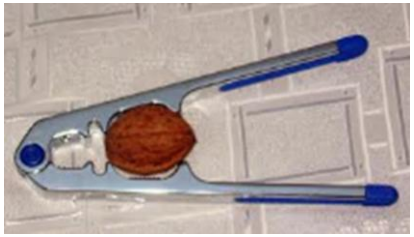
_____

Draw your lever and write the names in the correct place.

Identify in the pictures:

FULCRUM: green dot **EFFORT**: red arrow **LOAD:** blue arrow/dot

TWEEZERS



NUTCRAKER

PLIERS

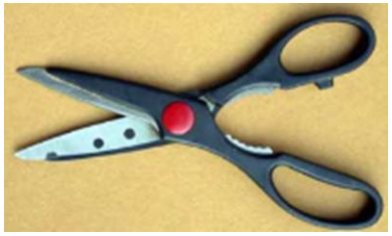
SHEARING SCISSORS

WHEELBARROW

SEE-SAW

TONGS

BOTLE OPENER



SCISSORS

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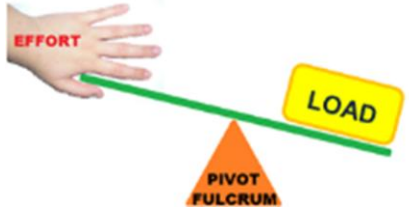
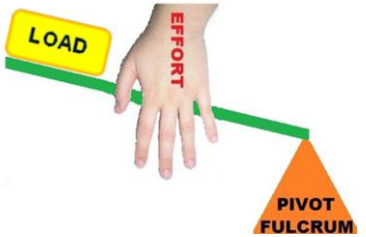
Classify these machines below.

FIRST CLASS LEVER



SECOND CLASS LEVER

THIRD CLASS LEVER



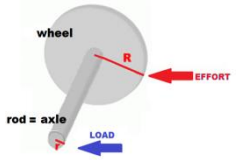
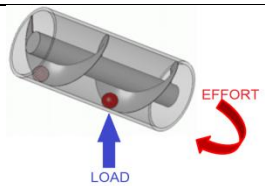
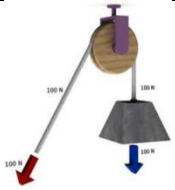
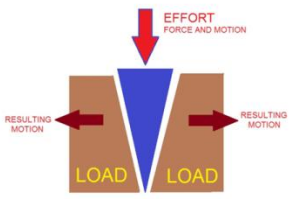
Work in pairs. Fill the gaps.

Each student has to ask questions to find out the missing information.

MACHINES A

What can you tell me about (the lever)?

What machine (has a wheel with a rod)?

pictures	SIMPLE MACHINE	INFORMATION
	LEVER	a) Is a rigid object that is used with an appropriate ……for multiply …….. applied on a ……..
	INCLINED PLANE	Is an inclined surface used to raise an object and it decreases the effort.
	b)	A wheel with a rod, called an axle, through its centre: both parts move together.
	SCREW	Is an inclined plane wrapped around a central shaft. A rotational motion of the central shaft causes a linear upwards motion of the screw.
	PULLEY	c) Is a …… or set of ……. around which a single rope passes to move a……. with a smaller ……..
	WEDGE	Wedges are moving inclined planes to split or separate a load.

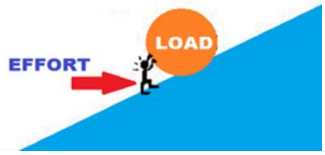
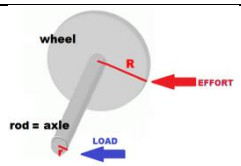
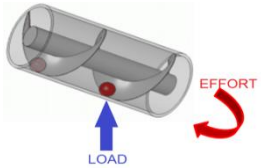
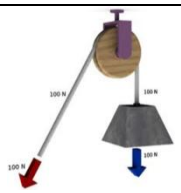
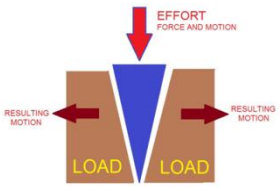
Work in pairs. Fill the gaps.

Each student has to ask questions to find out the missing information.

MACHINES B

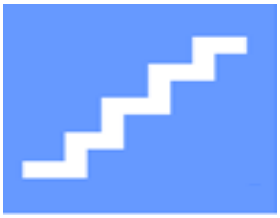
What can you tell me about (the inclined plane)?

What machine (is an inclined plane wrapped around a central shaft)?

pictures	SIMPLE MACHINE	INFORMATION
	LEVER	Is a rigid object that is used with an appropriate fulcrum which multiplies the effort applied on a load.
	INCLINED PLANE	1) Is an …….. used to ……..an object and it decreases ……..
	WHEEL AND AXLE	A wheel with a rod, called an axle, through its centre: both parts move together.
	2)	Is an inclined plane wrapped around a central shaft. A rotational motion of the central shaft causes a linear upward motion of the screw.
	PULLEY	Is a wheel or set of wheels around which a single rope passes to move a load with a smaller effort.
	WEDGE	3) Wedges are ……inclined planes to ……. or …….. a load.

Identify in the pictures:

The direction of the EFFORT: **red** arrow



STAIRS

SLIDE

KNIFE

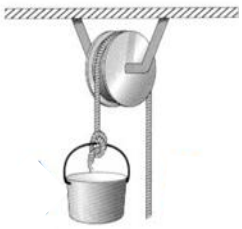
STEERING WHEEL

WHEEL CAR

SCREW

AXE

DOOR KNOB



WELL

LONDON EYE

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FLAG POLE

CURTAIN ROLER

RAMP

ROOF SLOPE

BULB

CHEESE GRATER

SCREW NUT

CORKSCREW

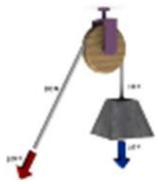
PENCIL SHARPENER

TOW TRUCK

Compose a poster with this information and the pictures of machines.

LEVER

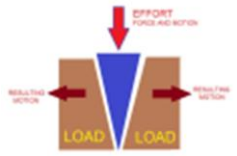
TO CUT OR SPREADS AN OBJECT APART



PULLEY

TO MOVE LOADS

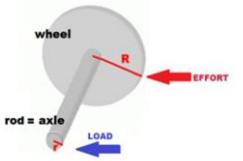
HOW IT HELPS US WORK?



WEDGE

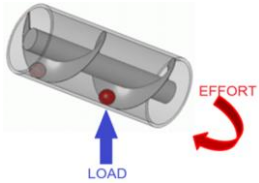
THINGS MOVE UP OR DOWN IT

SIMPLE MACHINES



WHEEL AND AXLE

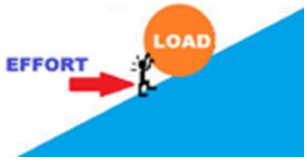
TO MOVE THINGS UP, DOWN OR ACROSS



SCREW

TO LIFT OR TO MOVE LOADS

MACHINES



INCLINED PLANE

TO HOLD THINGS TOGETHER OR TO LIFT

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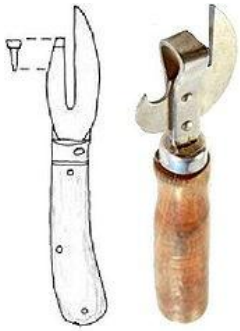
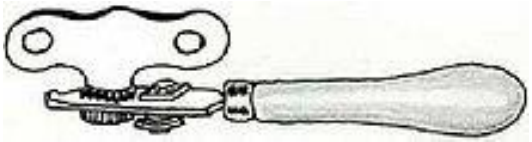
Which simple machines can you identify in the objects below? Write their names.

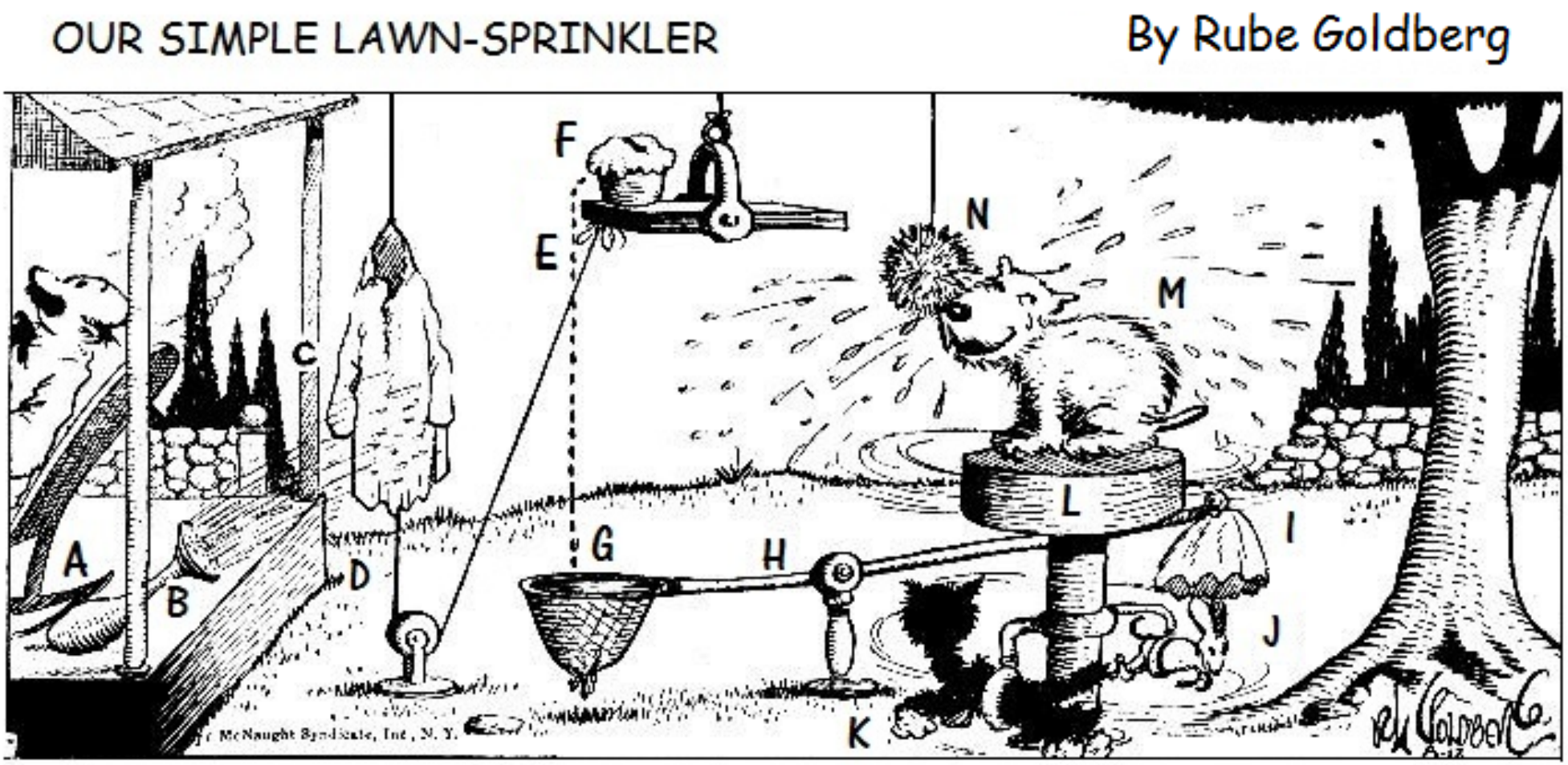
CORKSCREW	CAN OPENER
	
	
	

LET'S FIND MACHINES IN OUR SCHOOL

PUPIL	ITS NAME	WE CAN USE IT TO… WE CAN USE THE……. FOR…	NAME OF THE SIMPLE MACHINE
MARIA JOSEP	1 SCISSORS	WE CAN USE THE SCISSORS TO CUT DIFFERENT THINGS LIKE PAPER.	2 LEVERS 2 WEDGES
	2		
	3		
	4		
	5		
	6		
	7		
	8		

LOOK AT THIS PICTURE

What can you see? (Write it)



Cut the labels. Look at the picture. Order the text and put a letter inside the brackets.

SQUEEZES A BULB ( )

A ROCKING CHAIR ( )

TIPPING THE SHELF ( )

CAUSING HIM TO LAUGH SO HARD HE CRIES - SPEED OF REVOLUTIONS SCATTERS TEARS OVER LAWN CAUSE GRASS TO GROW.

CAUSING THE ROD ( )

SPRAYING A SHIRT ( )

THIS CAUSES IT TO SHRINK AND PULL THE STRING ( )

THEREBY REVOLVING THE PLATFORM ( )

TO RAISE HOOD ( )

REVOLVES, HE IS TICKLED ON THE NOSE BY A FEATHER BALL ( )

EXPOSING A MOUSE ( )

TO RAISE A COVER ( )

A CAT CHASES THE MOUSE ( )

FALLS HEAVILY INTO THE NET ( )

THE HOMEMADE BISCUIT ( )

EACH TIME THE LAUGHING HYENA ( )

Order the steps of the process to make a compound machine

Step	What do you do?
	Use verbs to describe the action of the parts of the machine.
	Choose a theme/objective for the machine
	Make a drawing/ sketch of a machine
	Make the machine.
	Order the different parts of the process.
	Choose two partners
	Explain the machine function to other groups.
	Make two lists one for the verbs and one for the nouns.
	Give your opinion as a group about the process of building the machine
	Write a list of materials and tools needed.
	Write the instructions of the function of the machine.

Tenth

Eighth | Second | Fifth | Fourth | First

Seventh | Ninth | Finally | Sixth | Third

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COMPOUND MACHINE PROJECT

Student A
Student B
Student C

Step-by-step process to build our compound machine. Checklist

Phase	Step	What do you do?	What tools do you need?	Finished?
1	**First**	Choose two partners		
	Second	Choose a theme for the machine		
	Third	Make a drawing/sketch of the machine.		
	Fourth	Write a list of materials and tools needed.		
2	**Fifth**	Make the machine.		
	Sixth	Make two lists one for the verbs and one for the nouns.		
	Seventh	Use verbs to describe the action of the parts of the machine		
	Eighth	Order the different parts of the process.		
	Ninth	Write the steps of the movement of the different parts of the machine.		
3	**Tenth**	Explain the machine function to other groups.		
	Finally	Give your opinion as a group about the process of building the machine		

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DESINGNING A COMPOUND MACHINE

The theme for our compound machine project is…

Group
Student A
Student B
Student C

Sketch

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OUR MACHINE

We are going to need…

MATERIALS	TOOLS

DESCRIBING THE PROCESS

NOUNS	VERBS

Write the steps of the movement of the different parts of the machine.

Order	Steps of movement

Presentation

GROUP:

We are going to explain some ideas about our machine and then you will see the machine working.

The name of our compound machine project is…

The first stage is push or pull to start moving the machine.

The second stage …

The third stage ….

Finally…

Let's start!

Can you push /pull the _____, please?