

# Marvellous Mechanics

Premium Worksheets For Children  
For 8-12 Year Olds

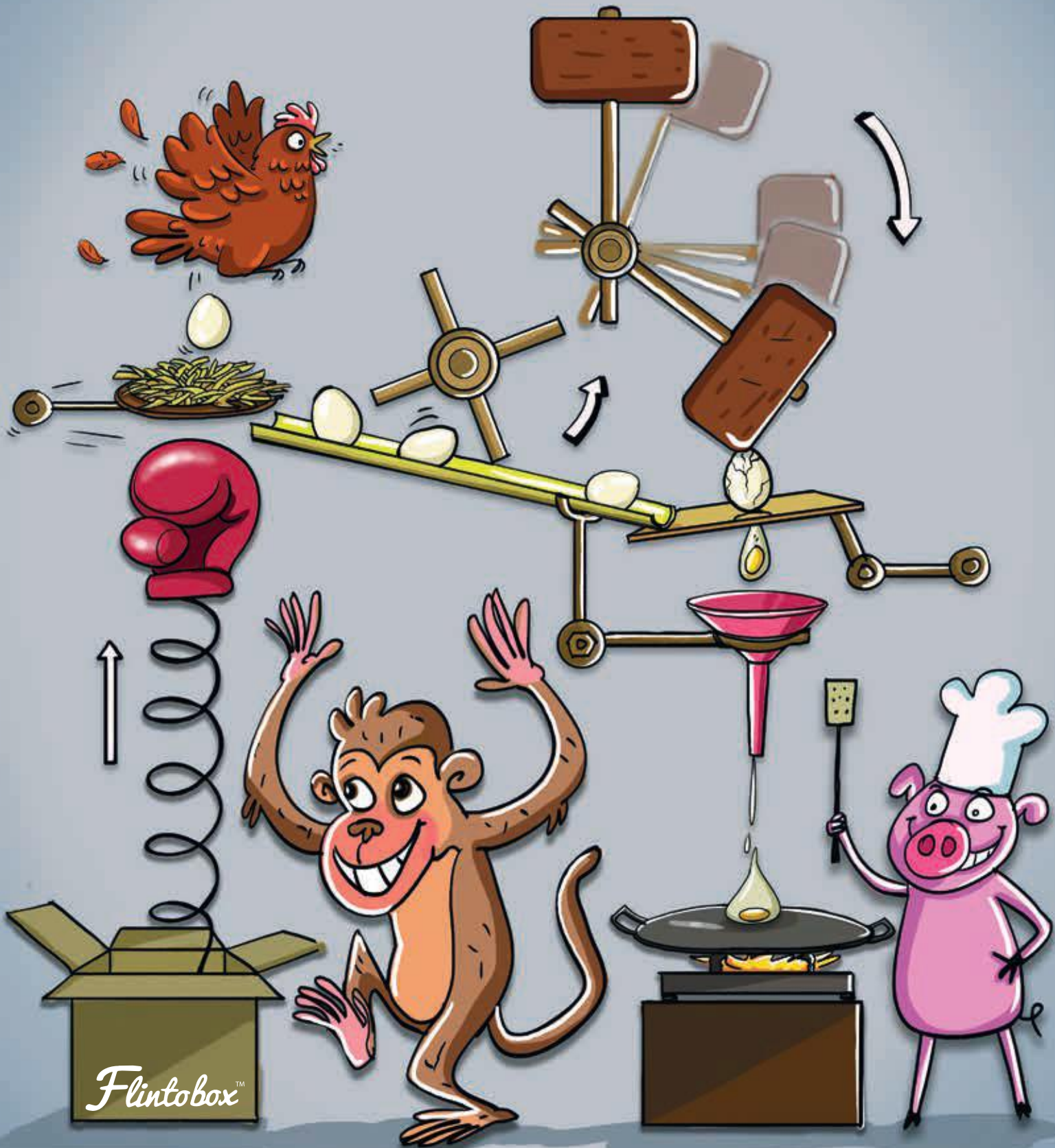


Illustration: Suresh Kumar  
Content: Marwah

# Index

## *Activity name*

*What Are Simple Machines?*

*Find & Circle*

*Gear Up*

*Pulley-me-up!*

*Word Search*

*Geared vs Ungeared*

*Magnets At Home*

*Odd One Out*

*How Is It Made?*

*Machines In Construction*

## *Skills Acquired*

*Vocabulary, Concept Learning, Logical Reasoning*

*Identification, Knowledge Application, Discovery*

*Problem Solving, Reasoning, Cognition*

*Cognition, Investigation, Numeracy*

*Vocabulary, Visual Tracking, Observation*

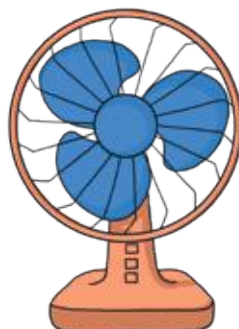
*Curiosity, Observation, Analysis*

*Analysis, Concept Learning, Discovery*

*Cognition, Observation, Logical Reasoning*

*Problem Solving, Cognition, Critical Thinking*

*Applying Knowledge, Recall, Observation*

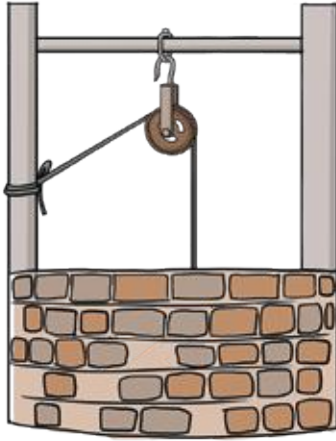


# What Are Simple Machines?

Simple machines are simple tools that help make work easier. They often help lift, move, push, or pull. Simple machines are found in all machines we use in our daily lives.

Below are a few definitions and pictures. Match each definition with its correct pictorial representation.

a)



Pulley

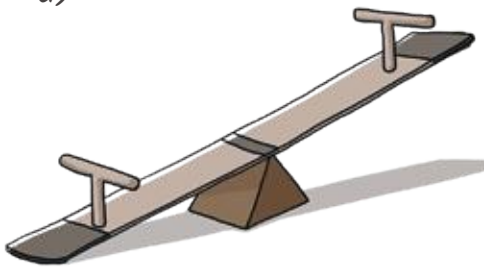
b)



c)



d)



e)



f)



1. Lever - A rod or plane that balances on a fulcrum and helps lift, carry, or move a heavy object.

2. Inclined Plane - A slanting surface that connects a lower level to a higher level.

3. Wheel and axle - A circular wheel that has a rod (axle) going through it. They rotate when force is applied on either one of them.

4. Pulley - A simple machine that uses a grooved wheel and rope to raise or lower things.

5. Screw - An inclined plane wrapped in a spiral, around a pole, or central shaft.

6. Wedge - Two inclined planes connected together. Often used to cut or split.

## How this activity helps?

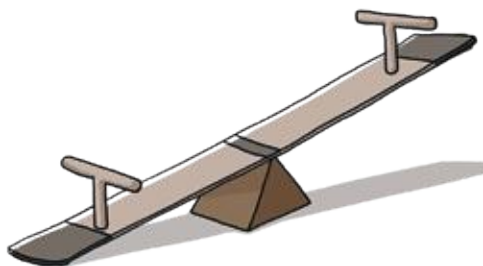
You've just learnt the definitions of simple machines and have learnt to associate them with the various machines.

# Find & Circle

The room on the following page contains a lot of things we see and use in our everyday life. Can you identify which ones use the mechanisms of simple machines?

Here are some of the simple machines you're Looking for:

- A **lever** is a rod that balances on a fulcrum, which helps it move, lift, or carry an object.
- A **screw** is an inclined plane that is grooved around a central object often used to hold two items together.
- A **pulley** uses a wheel and rope to move or lift objects.
- An **inclined plane** is a slanting surface that connects a lower level to a higher level.
- A **wedge** is two inclined planes together often used to cut or split.
- A **wheel and axle** is a device, which helps rotate objects.



How this activity helps?

You've identified the basic simple machines from our daily life! How about discussing them with your parent, where and how each of these machines are related to simple machines.

Eg: The wheel and axle mechanism is found in the wheel of the bicycle.

# Where are the simple machines?

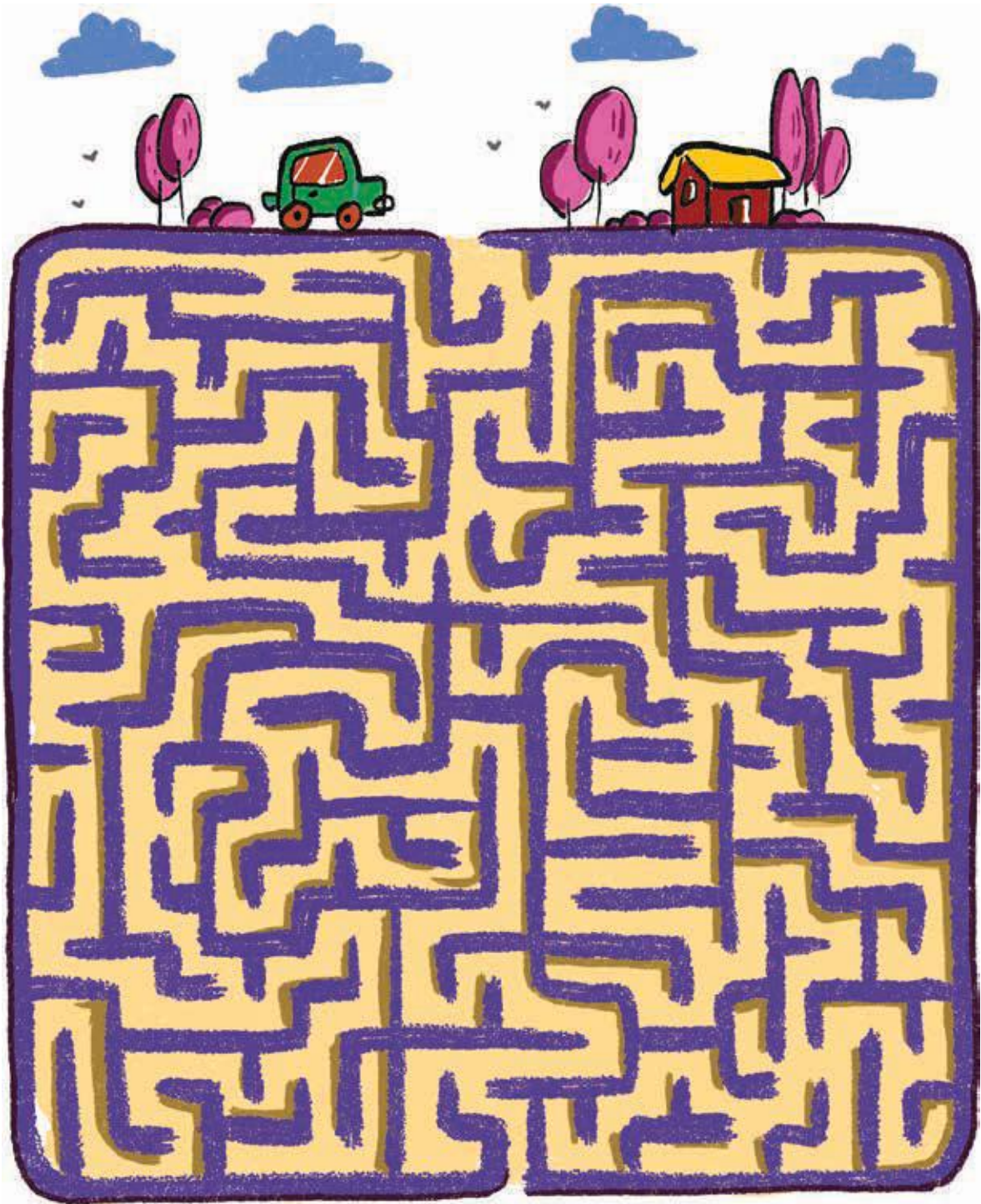


Answer: lever - a pair of scissors, broom; inclined plane - ladder, stairs; screws - screws on cabinets; wedge - knives; wheel & axle - bicycle, door knob; light bulb, screws

## Gear Up

*Bigger machines are made up of simple machines (pulley, wheel and axle, lever, inclined plane and wedge), magnets, and gears! Gears help things move faster, slower, or change direction — like in a car!*

*Can you help the car below find its way around the maze?*

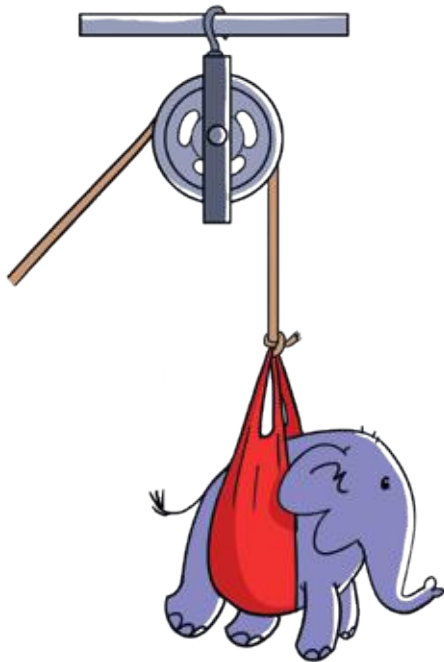


**How this activity helps?**

*You've exercised your logical reasoning and problem solving skill while finding your way through the maze.*

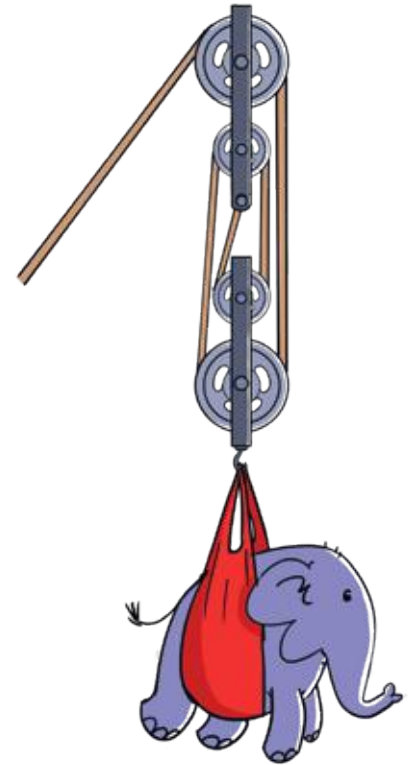
# Pulley-me-up!

There are three different pulleys illustrated below. Can you identify the one that would be most efficient to pull a heavy load without using much effort?



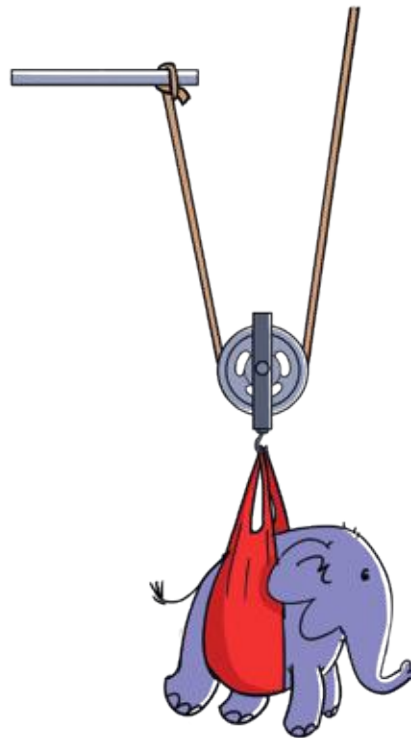
Fixed Pulley

*This pulley helps lift the heavy object. You have to use the same amount of effort as the weight of object.*



Compound pulley

*All the pulleys used here divide the weight of the object.*



Moveable Pulley

*The fixed point of the pulley holds half the weight and the effort you use is half the weight of the object.*

Which pulley do you think is the most efficient? \_\_\_\_\_

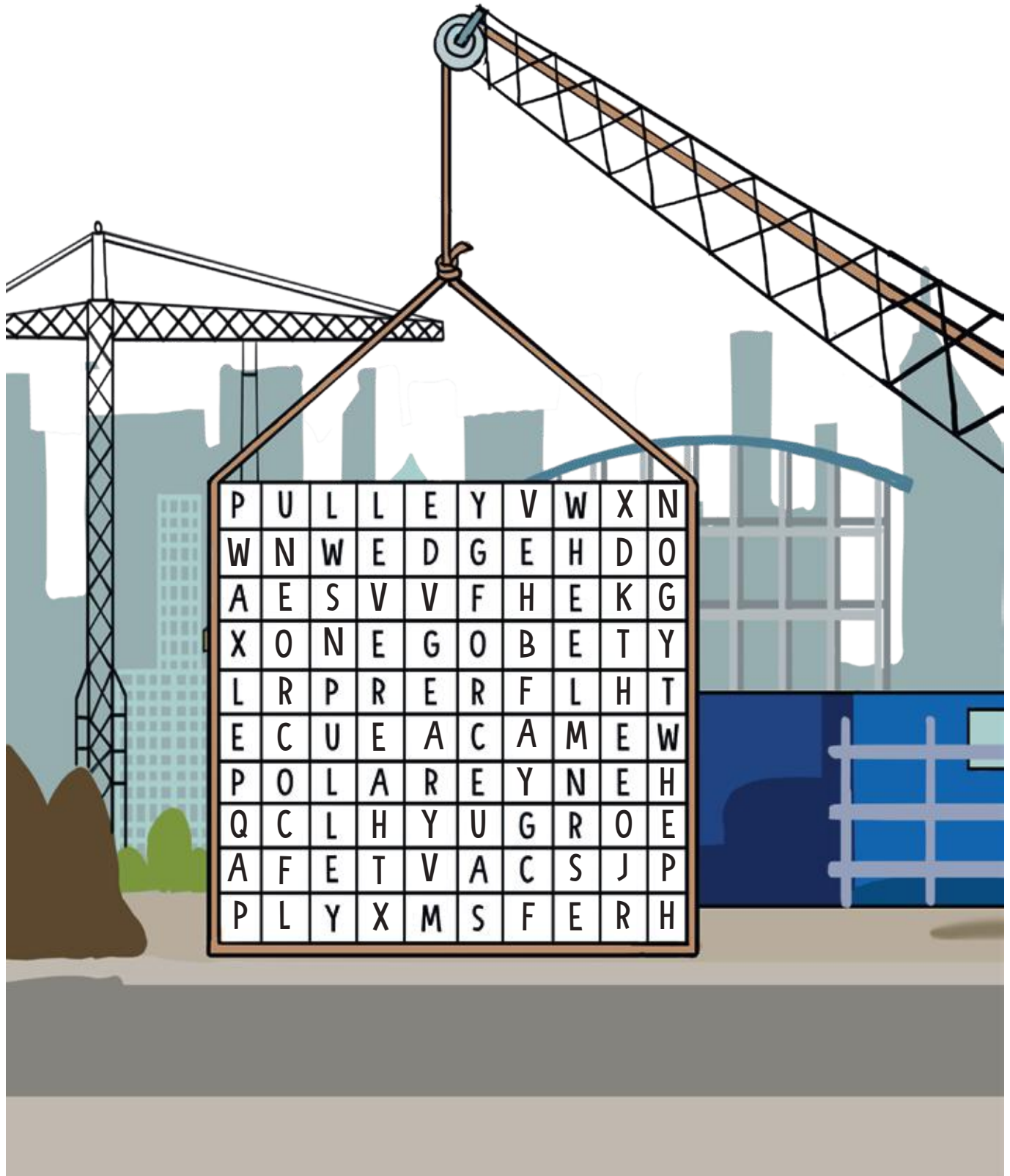
## How this activity helps?

*You've just learnt about the type of pulley you can use to lift a heavy object; all while exercising basic math skills — division!*

# Word Search

Do you see an image below? It's a pulley! There are words hidden amidst the letters; words related to simple machines, gears, and magnets. Go ahead and find all the words!

- Force
- Magnet
- Screw
- Gear
- Wheel
- Pulley
- Axle
- Lever
- Polar
- Wedge



## How this activity helps?

You exercise your visual tracking skill as you look for the words. You've just learned words related to simple machines, gears, and magnets!



# Geared vs Ungearred

Gears are found in many of our household items. Can you identify which of these items don't use gears?



Saw



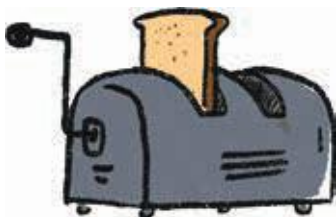
Musicbox



clock



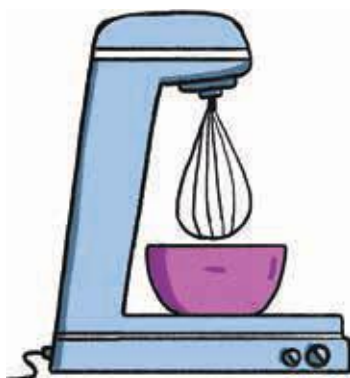
Pencil



Toaster



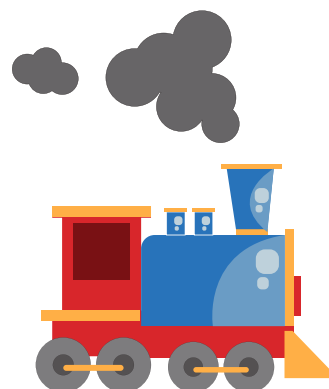
Tv



Mixer



Car



Train

How this activity helps?

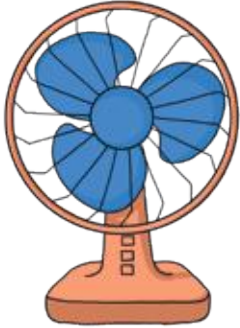
You have just learnt to differentiate between items that use gears and the ones that don't.

How about identifying what function the gears in these items have.

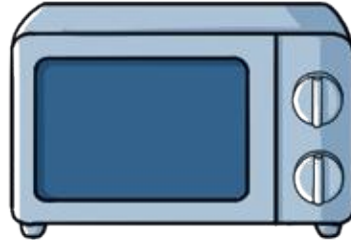
Eg: The gear in the car helps it move fast, slow, or change direction.

# Magnets At Home

Many of the objects and machines we use at home have magnets in them. From the images below, can you identify the ones that have magnets in them?



Fan



Oven



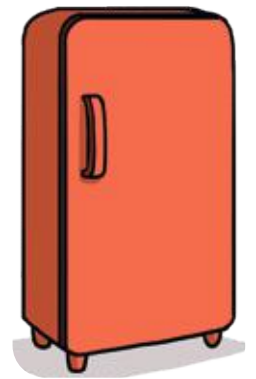
Toothpaste



Television



Toothbrush



Refrigerator



Human



Cabinet



Laptop

How this activity helps?

You've just been introduced to the different machines at home that use magnets. How about taking a walk around the house and looking for more machines that use magnets?

Answer: fan, oven, television, laptop, cabinet, refrigerator

# Odd One Out

There are three items on each row — two of them use a mechanism of simple machines and one does not. Can you identify the item that does not use a simple machine?

1. In which of the following items are **screws** found?



2. In which of the following items are **pulleys** found?



3. In which of the following items are **levers** found?



4. In which of the following items are **inclined planes** found?



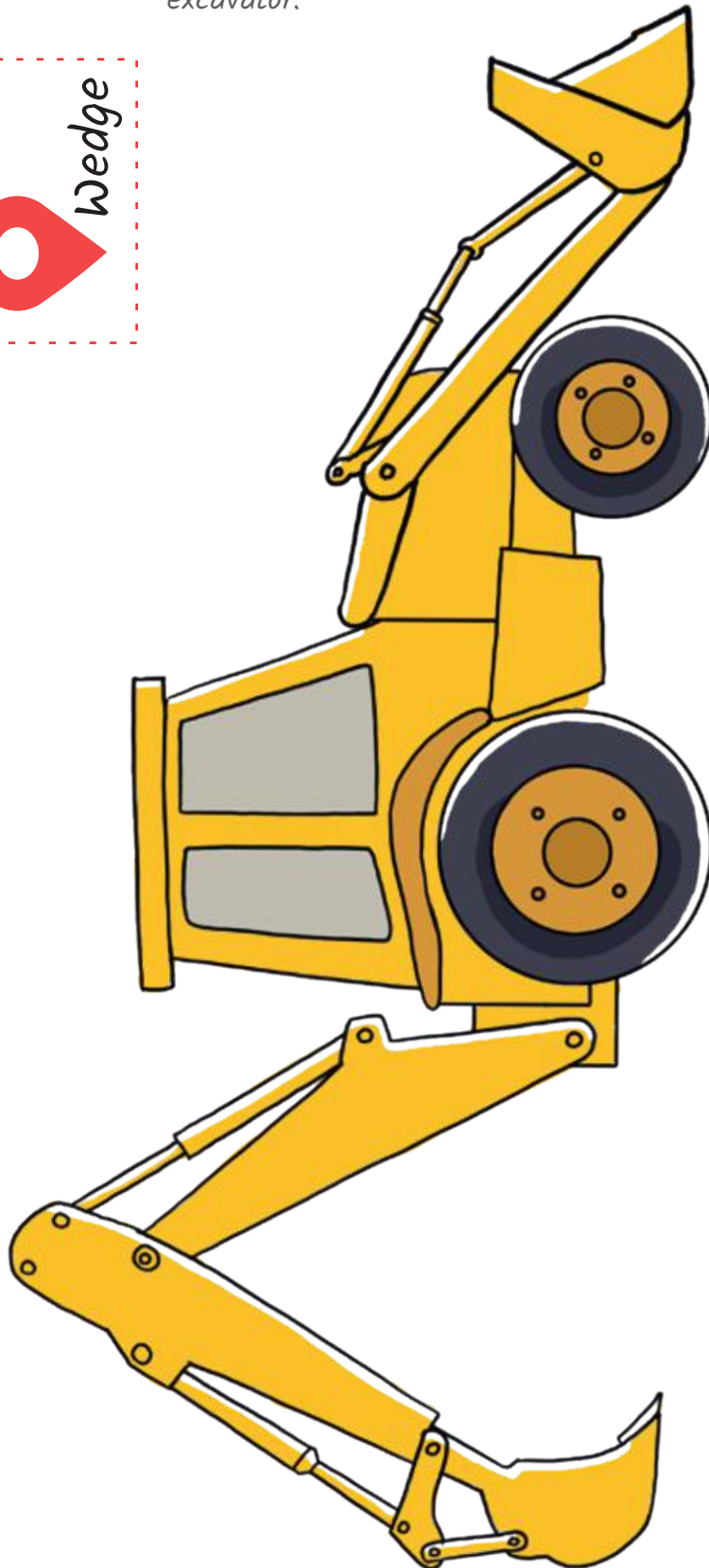
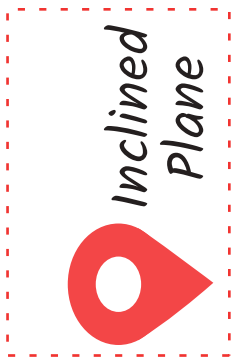
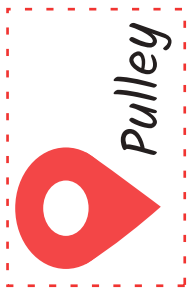
How this activity helps?

You've just learnt more about simple machines. You can now identify where simple machines are used.

Answer: 1. Light bulb, jar lid 2. Well stage curtain 3. Wheelbarrow shovel 4. Waterslide, ladder

# How Is It Made?

Here is an excavator, it's a compound machine. An excavator is large machine that is used for construction. A big machine that is made up of two or more simple machines is called a 'compound machine.' Can you identify where the simple machines are found? Cut along the dotted lines and paste them on the excavator.

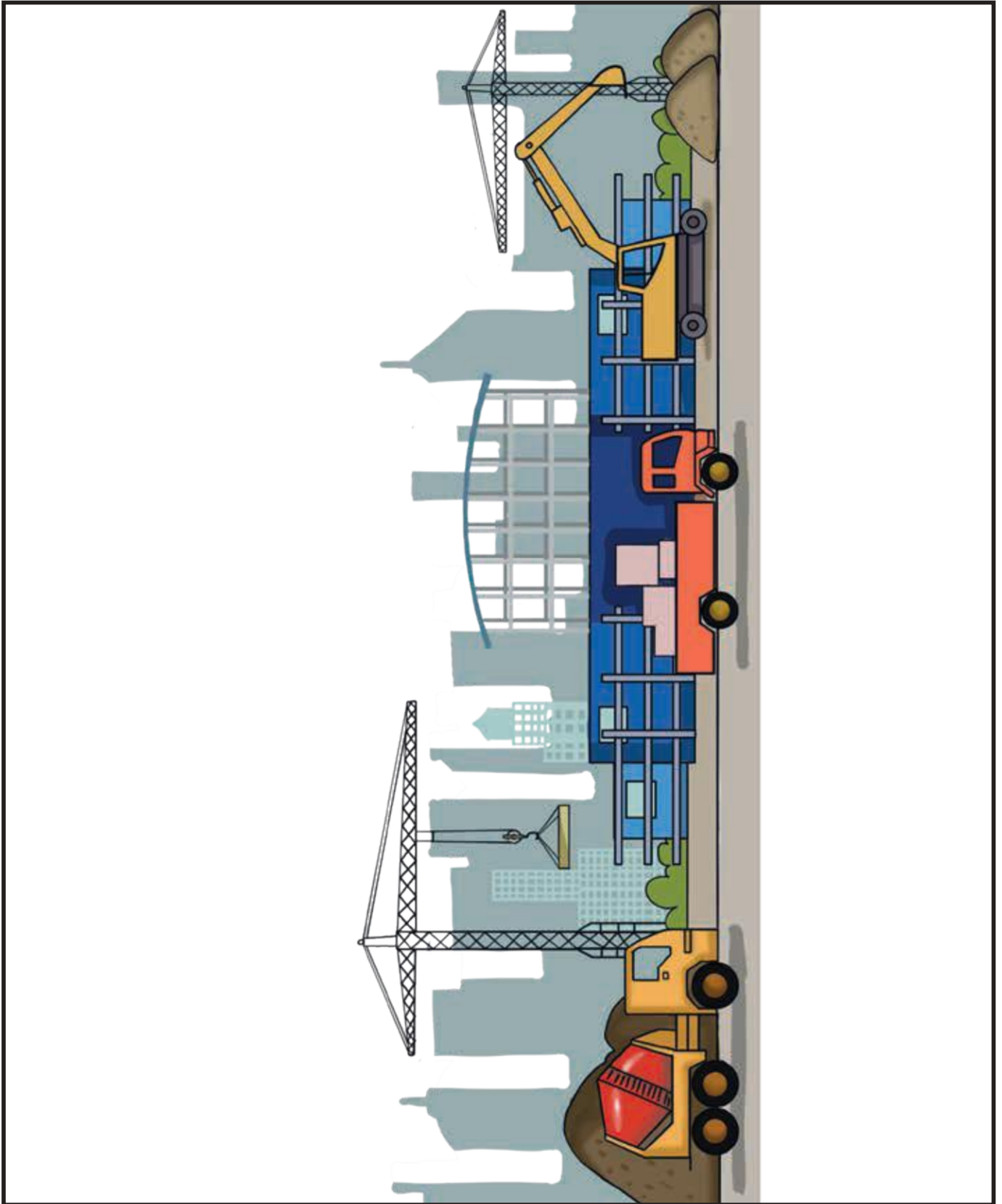


How this activity helps?

You've just been introduced to compound machines. You've also learnt about the mechanisms used in an excavator.

# Machines In Construction

Here is a construction site where many compound machines are found. Remember: a compound machine is a large machine made up of simple machines. Can you identify where all the simple machines are?



How this activity helps?

You are able to identify all the compound machines where the simple machines are found. You exercised your concentration as you take a look at the illustration and find the machines.

Answer: cement roller, crane, wheels excavator, there are simple machines found in all the bigger machines!

# Take a look at our super exciting Flintobox themes



Incredible Optics



Design Mania



Secret Agent



Marvellous Mechanics



Ocean Navigator



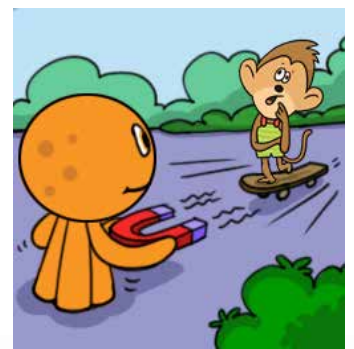
Fun With Electricity



Glowing Chemistry



Everyday Science



Fantastic Force

Don't forget to get these  
boxes for your child

For queries: +91 7695857799