TEACHER'S RESOURCE PACK
AGES 5 TO 8

This pack includes ideas to engage and excite your pupils about **maths, science, design and technology**, and **art** and **design** before your visit to **The MAD Museum** to see the amazing world of automata and marble runs! It also features printable activities to help bring these subjects to life in your classroom.

BEFORE YOUR VISIT

Read the wonderful poem **Ode to Marbles** by Max Mendelsohn to your class and have a brief discussion about playing with marbles: https://www.poetryfoundation.org/poems/51147/ode-to-marbles Have they ever seen or played with a marble run?

Talk about marble runs and how they work. Introduce the idea of using different materials or angles to make the marbles go faster or slower.

Model mini marble runs in the classroom using recycled materials, such as kitchen roll tubes cut in half lengthways. You can even use lollipop sticks, as in this example: https://www.youtube.com/watch?v=aGHnoP_4wIQ You'll find many more ideas for creative marble runs on Pinterest. Ask your pupils to evaluate their finished marble runs. What could they do better next time?

Alternatively, **make a simple slope** for a marble or ball to roll down. Have a variety of fabric and craft paper scraps available, including rough, smooth, sticky and furry. Ask your pupils to complete our **Rough or Smooth** activity sheet (in this pack) before choosing materials to cover their slopes. Which material will make the marble roll faster? Which material will make it roll slower?

BEFORE YOUR VISIT CONTINUED...

As well as counting, our **Gear Up** activity sheet introduces children to the shape and idea of cogs and gears – an important part of many of the moving toys and exhibits at The MAD Museum. When you visit, ask your pupils to point out any gears they see.

For **Design and Technology**, introduce the simple mechanisms **levers, sliders, wheels and axles** with our **Make a Moving Picture** project, which uses sliders to make a picture come to life. You could also add a lever and pivot to our picture to make the MAD inventor wave an arm. To do so:

- Make a lever from a strip of card.
- Make a hole in the centre of the lever and push a paper fastener through it. Now make a hole in the inventor's shoulder and push the paper fastener through that too. (Flatten the paper fastener at the back).
- Cut out the extra arm on the page with our MAD inventor image.
- Stick it to the front of the card lever, lining it up with the inventor's shoulder.
- Now you can rotate the arm and make him wave.

Discuss how you can also use levers to make heads nod, tails wag, wings flap, feet kick or to make digger machines lift up their buckets. **Can you make another moving picture using only levers and pivots? How can you improve your picture after your visit to The MAD Museum?**

YOUR PUPILS CAN ALSO SEE LEVERS AND PIVOTS IN ACTION AT THE LOCAL PARK WHEN THEY USE THE SEESAW.

ROUGH OR **SMOOTH**

Circle the rough objects in one colour and circle all the smooth objects in another colour.








Imagine you are rolling a ball. Will it roll more quickly over a **rough** surface or a **smooth** surface? CIRCLE THE CORRECT ANSWER.

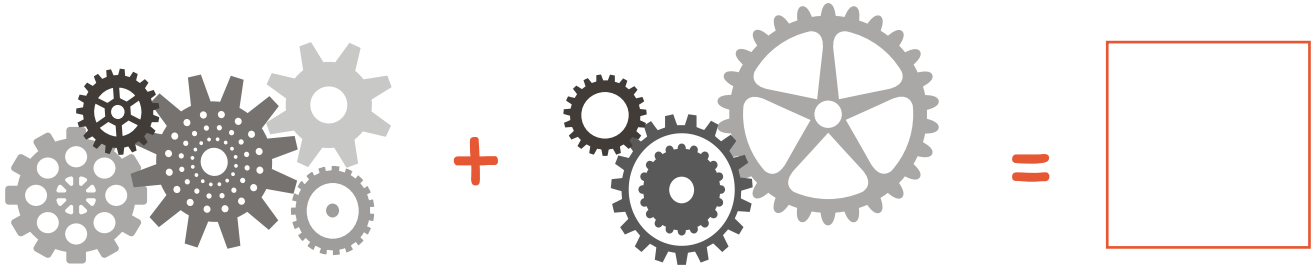
ROUGH SMOOTH

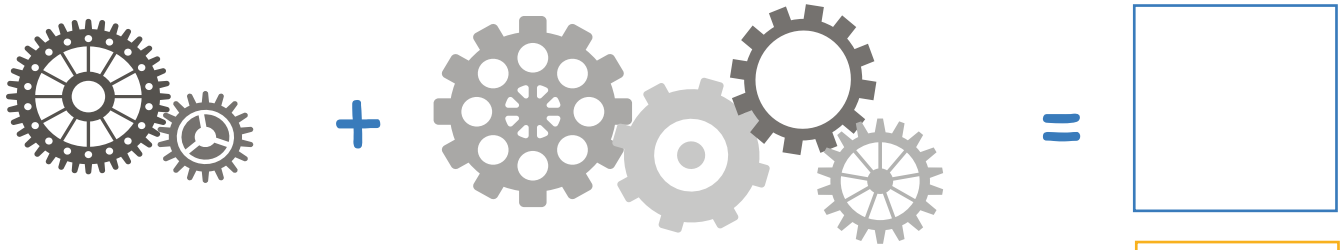
Answer: Smooth – glass, metal, plastic, ice rink.
Rough – bark, rubber tyre, stones, moss. The ball will roll more quickly over a smooth surface.

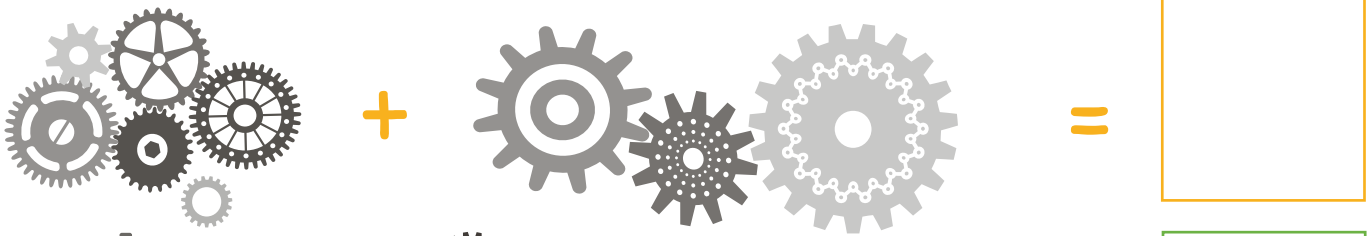
Picture credit: Freepik.com

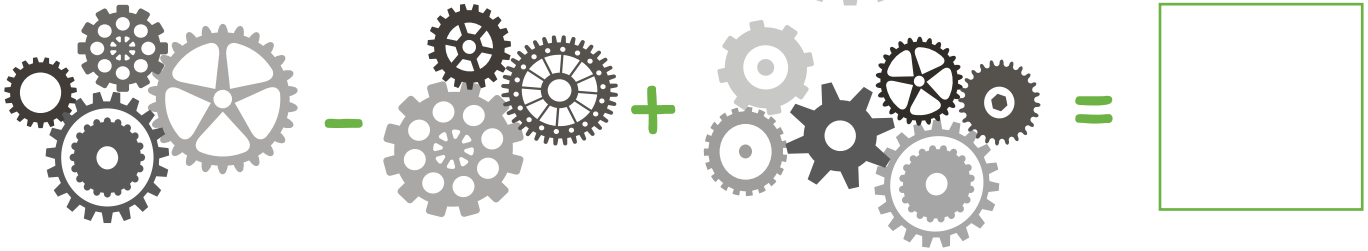
GEAR UP!

You'll see lot of gears at The MAD Museum helping the mechanical art and toys to work. How many gears can you see here? Add them up and write your answers in the boxes.

A 

B 

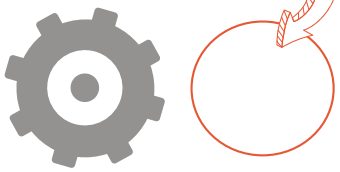
C 

D 

DID YOU KNOW

Gears have teeth around the edge called cogs. If you slot the cogs of two gears together and spin one gear round, it makes the other gear turn too.

HOW MANY COGS CAN YOU COUNT ON THIS GEAR? WRITE IT HERE.



Answer: A. 8 gears, B. 6 gears, C. 9 gears, D. 7 gears.
There are 8 cogs on the gear.

MAKE A
MOVING PICTURE (1 OF 2)

Make this picture come to life using a slider mechanism. Here's how:

1. Cut along the dotted line in the picture.
2. Cut out our MAD Museum inventor on the next page – or draw your own character.
3. Stick the inventor to a lollipop stick or a tab of card.
4. Holding onto the stick or card tab, make your inventor move from one side of the workshop to the other.

WHY NOT MAKE UP A STORY ABOUT THIS PICTURE?

Picture credit: Freepik.com

MAKE A
MOVING PICTURE (2 OF 2)

Cut out our MAD Museum inventor to be in your picture or draw your own character in the box on the right.

ASK YOUR TEACHER HOW TO MAKE HIS ARM MOVE TOO USING A LEVER MECHANISM!