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Opening extract from **Mission Invent**

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MISSION INVENT

You love being an apprentice designer at Toy Towers, where they make the world's most amazing toys. You wish you could meet the owner, Mr. Jollypops.

You arrive one morning to find Mr. Jollypops's assistant waiting for you.

Mr. Jollypops wants to see you urgently. He will explain everything.

HOW INTRIGUING! WHAT COULD MR. JOLLYPOPS WANT WITH YOU? FIND OUT ON PAGE 12



No, clockwork mechanisms only got their name because they were first invented to drive the hands on clocks.

GO BACK TO PAGE 33 TO TRY AGAIN



No, a straight bar does not convert your pedaling power to turn the wheels.

GO BACK TO PAGE 28

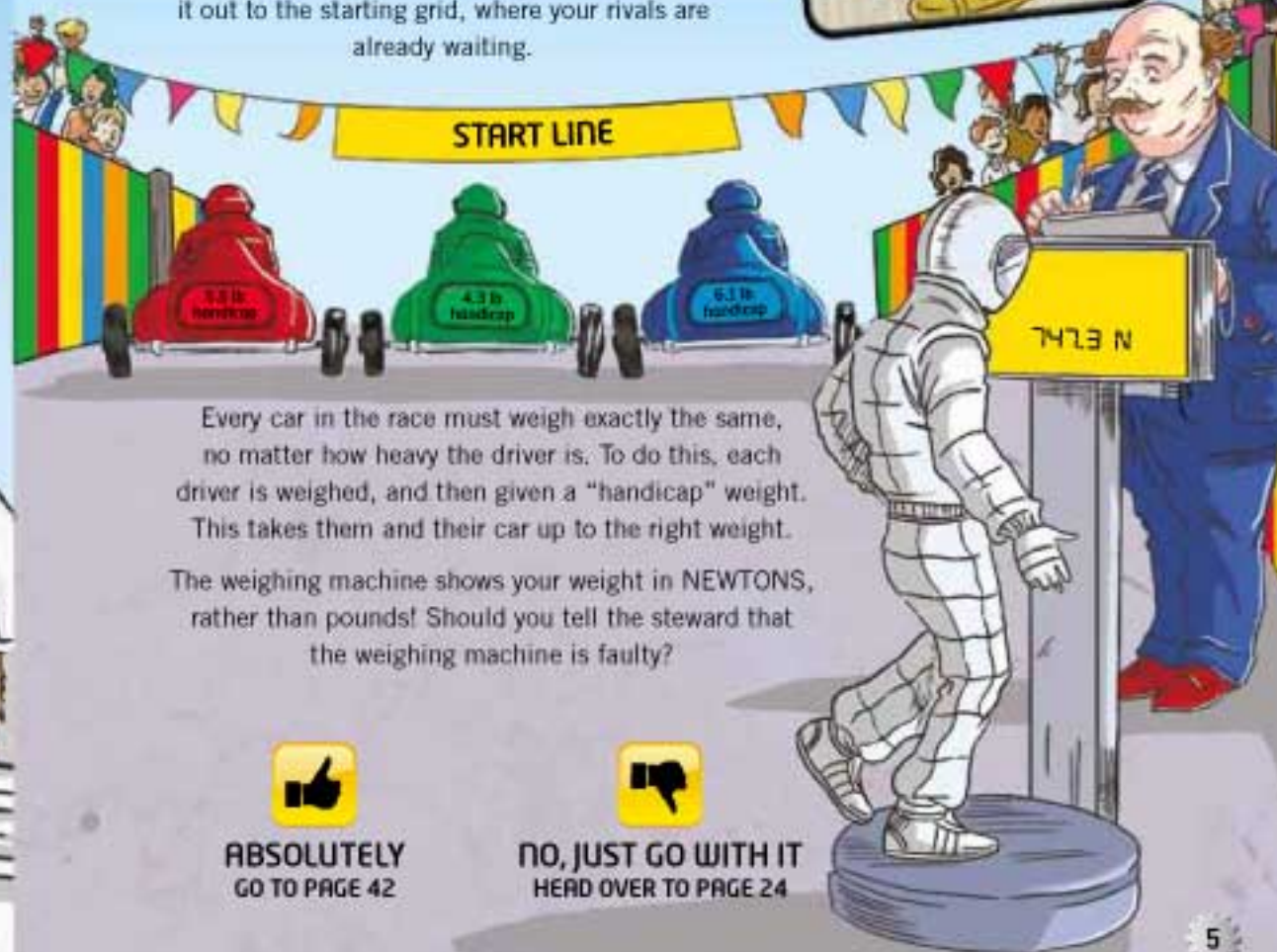


The next morning, the box is open and your camera is on the floor. There's a photo of some yellow shoes, but you don't recognize them.

Luckily, there's no damage to your car. You roll it out to the starting grid, where your rivals are already waiting.



START LINE



Every car in the race must weigh exactly the same, no matter how heavy the driver is. To do this, each driver is weighed, and then given a "handicap" weight. This takes them and their car up to the right weight.

The weighing machine shows your weight in NEWTONS, rather than pounds! Should you tell the steward that the weighing machine is faulty?



ABSOLUTELY GO TO PAGE 42



NO, JUST GO WITH IT HEAD OVER TO PAGE 24



Right answer! Gravity is the force that pulls the roller coaster carriage faster and faster as it runs down the slope. It has no need of an engine!

You open the door and step out into the street.

YOUNG TOYMAKER OF THE YEAR COMPETITION HERE TODAY!

The Young Toymaker of the Year competition involves three tasks to test the ability of our young contestants. The winner will be awarded \$1 million!

CHALLENGE 1: BUILD A GO-KART

The fastest car in a straight-line race will win.
Hurry to your workstations!



Wow! What an event! You head to the garages. An announcement booms out from the loudspeakers.

YOU ALL RUN TO YOUR
WORKSTATIONS ON PAGE 31





Yes, wire-spoked wheels are perfect.
They're both light and strong.

One of the judges wanders
over to your workstation and
examines your car.



Nice body shape.
Are those the wheels you've
chosen? Some of the spokes bend
a little. Does that mean they
are damaged?

Think carefully.
He's testing your
know-how after all.
What do you answer?



YES, THEY MUST BE DAMAGED!
YOU NEED TO GET SOME NEW ONES QUICKLY.
HEAD OVER TO PAGE 27



NO, THE SPOKES ARE FINE.
THE FLEXIBILITY KEEPS THE WHEELS STABLE.
GO TO PAGE 33



Wrong. Think about what a
machine is—something that
makes a task require less effort.

GO BACK TO PAGE 43
AND TRY AGAIN



No, you'd need to affix
the pulley wheel to the
ceiling first.

GO BACK TO PAGE 20



Oh my. The
soldier may look
small, but he's
made of lead and weighs
200 pounds. As soon as
you step in the basket
and release the hook, you
both plummet downward.

GO BACK TO
PAGE 39 AND
TRY AGAIN



No, a gear and knob won't
allow you to turn the
mechanism inside the door.

GO BACK TO PAGE 30



No, the effort is the force
that you apply to a machine
to make something happen.

RETURN TO PAGE 42



That's right! Just as you finish
tightening the last nut, a stranger in
overalls strolls over, checks no one is
listening, then whispers:

Do you want a can of oil to
rub on your tires to make you
go faster?



Apart from the fact that it would be cheating, would it help you? What do you say?



**GREAT, THE OIL WILL
REDUCE THE FRICTION—
YOU'LL BE THE FASTEST OUT THERE!**
GO TO PAGE 16



**NO, OIL WILL JUST
MAKE THINGS HARDER.**
GO AWAY!
TURN TO PAGE 28



No, pushing the lever forward will only open the trapdoor further.

GO BACK TO PAGE 19
AND TRY AGAIN



No, an inflated balloon could drift away and the cheater could easily escape.

BACK TO PAGE 13
TO TRY AGAIN



Correct! By adding the rack and pinion, the steering mechanism works perfectly.

You line up at the starting point, ready for the next race.

START! You power along, moving from last to fourth. Cranky Colin crashes on the first bend because his steering fails. Candy Clockwork spins off the track too, because she takes the second bend too fast.



What do you do when you reach the bend?

**TURN YOUR STEERING
WHEEL SHARPLY**
HEAD TO PAGE 36



SLOW DOWN
GO TO PAGE 22

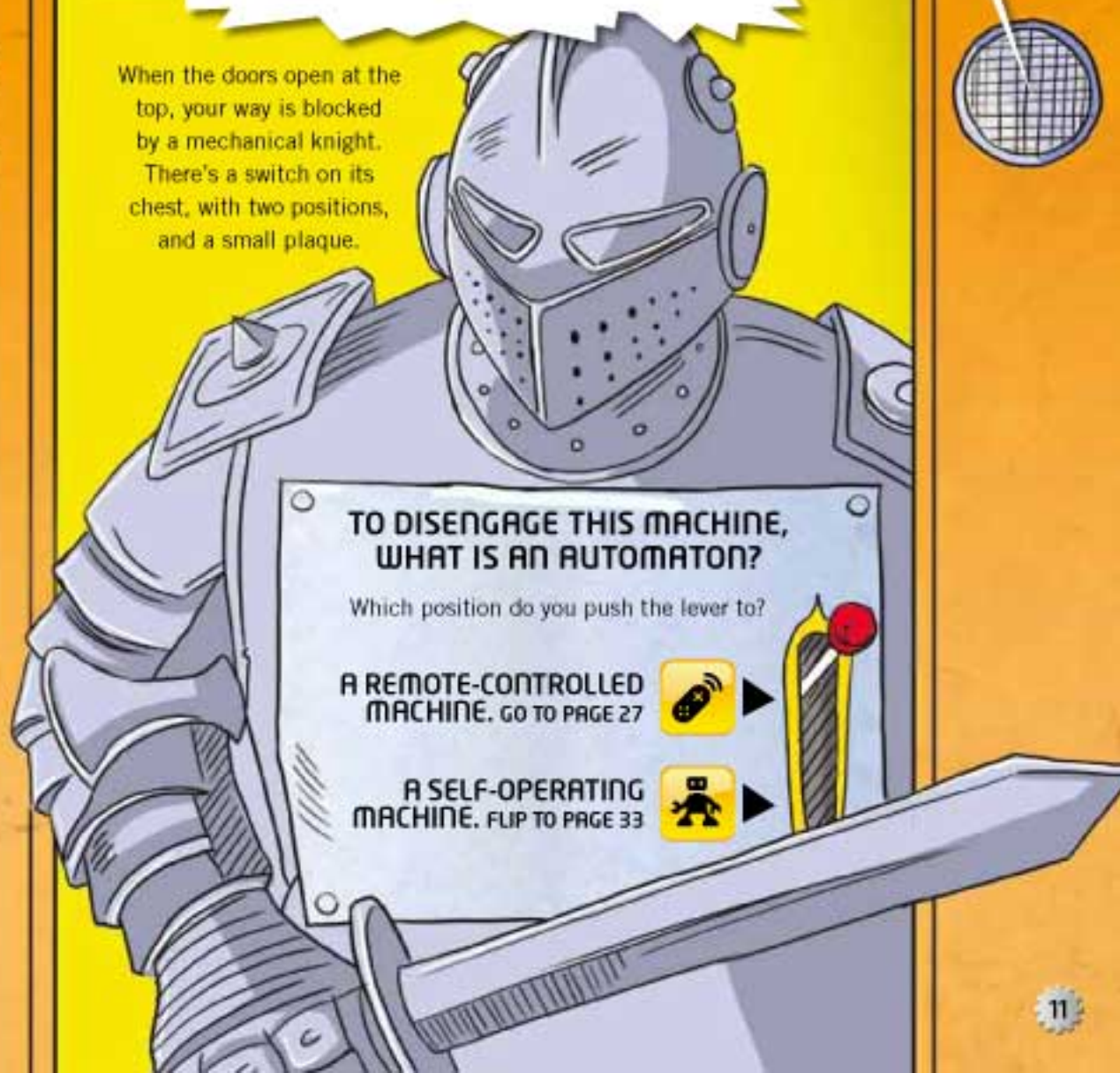


Yes, a piston provides the strong pushing force. You whiz up the tower!

A crackly voice comes from a speaker in the elevator.

This is Mr. Jollypops. I have something important to tell you—but only if you can pass the tests and reach my office. Good luck!

When the doors open at the top, your way is blocked by a mechanical knight. There's a switch on its chest, with two positions, and a small plaque.



**TO DISENGAGE THIS MACHINE,
WHAT IS AN AUTOMATON?**

Which position do you push the lever to?

**A REMOTE-CONTROLLED
MACHINE. GO TO PAGE 27**



**A SELF-OPERATING
MACHINE. FLIP TO PAGE 33**





Mr. Jollypops's office is at the top of the highest tower, so you need to take the superfast elevator. There's a bright red sign on the elevator door.

**TO OPEN THE DOORS,
ANSWER THIS QUESTION:
IS THIS ELEVATOR
HYDRAULIC OR
PNEUMATIC?
PRESS THE CORRECT
BUTTON.**

Clue: The elevator uses fluid
to move

HYDRAULIC



TURN TO
PAGE 21

PNEUMATIC



HEAD OVER
TO PAGE 37



No, in a suspension bridge, the bridge is suspended from looping cables hung between towers. You don't have cables or anything to hang them from.



GO BACK TO PAGE 32



CHALLENGE 2: ORAL EXAM

You are each taken into a room to answer questions in front of a panel of judges.

Question one:
Which Greek scientist came up with the theory
of levers more than 2,000 years ago?



ARCIMBOLDO
GO TO PAGE 20



ARCHAEOPTERYX
HEAD TO PAGE 33



ARCHIMEDES
FLIP TO PAGE 43



Great, a camera will do the trick!

You have a few leftover parts on your workstation. If you're smart, you can fix the camera so it will pop up and take a picture the moment anyone opens the box.

Which part should you use to affix the camera to the box?



BALLOON
GO TO PAGE 10



RUBBER BAND
TURN TO PAGE 19



COIL SPRING
FLIP TO PAGE 36



All of these are important elements of more complex machines, but they aren't simple machines.

GO BACK TO PAGE 23
AND TRY AGAIN



No, electricity is a force, but it plays no part in the movement of a roller coaster. Roller coasters are driven by gravity and momentum alone.



No, you've spelled out motion, which is the power of movement.

CHOOSE AGAIN ON PAGE 41



GO BACK TO PAGE 29
AND TRY AGAIN

