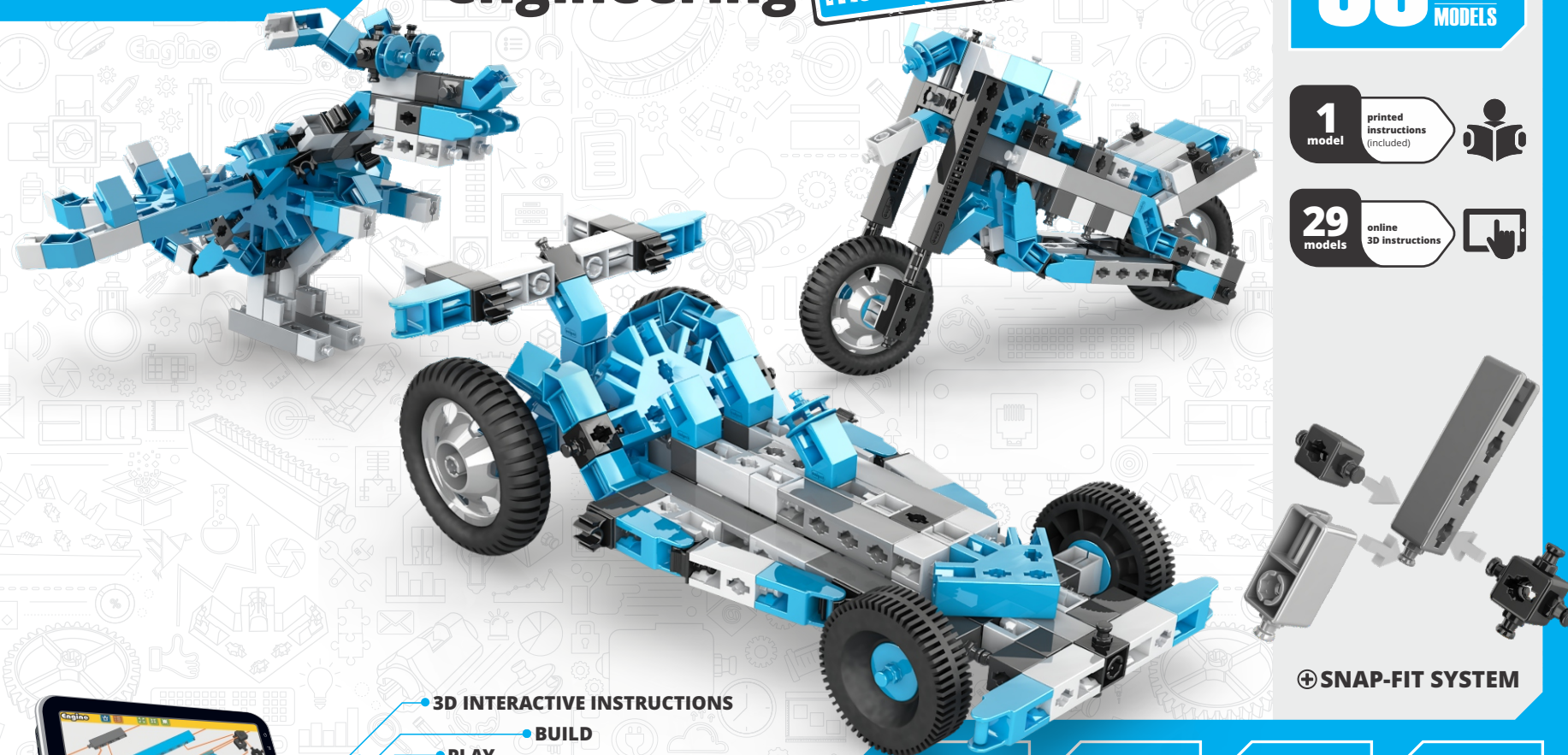
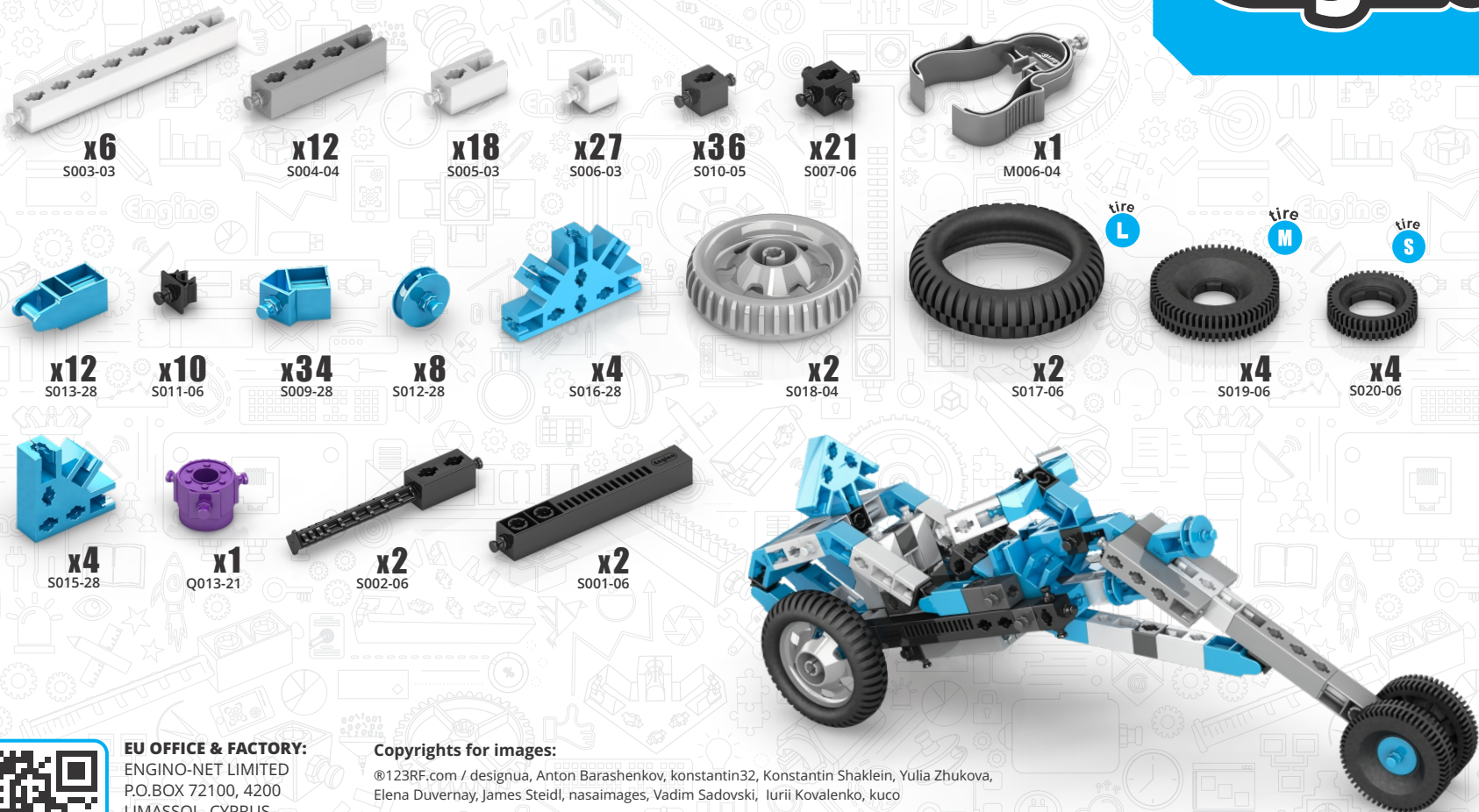


Bill of materials

Engine Engine

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30 IN 1
MODELS



1 model
printed instructions (included)

29 models
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SNAP-FIT SYSTEM

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WARNING:
 CHOKING HAZARD—Small parts.
 Not for children under 3 yrs.



Made in EUROPE

Product code:
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3D INTERACTIVE INSTRUCTIONS
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Building Instructions

3
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Extraction Tool
 For easy disassembly of small parts

Theory

Space exploration is probably the greatest achievement in recent human history. From the first launch of a satellite back in 1957 until today, many mysteries of our solar system have been unravelled. Orbiting satellites, landing probes and even manned missions are some of the highlights in this short-lived era of space exploration. Have you ever questioned how to launch a satellite? Ever wondered about the threats and dangers astronauts have to overcome when living in space?

The History of Space Exploration

Since the dawn of history humans were attracted by the stars of the night sky. Many civilizations believed that the celestial sphere was the perfect place for gods and superheroes to live. Such a hero was Icarus, a young man in ancient Greece who was captured along with his father by the Minoan King, kept by force inside the castle. They broke out by making wings from wax and started flying back to their homeland. Despite his father's advice, Icarus attempted to fly close to the Sun but due to the heat, his wings began to melt and he fell into the sea. Today, that sea is called the "Icarian" sea!



01

Lunar Rover

Astronauts of the three last Apollo missions had the opportunity to drive a rover on the surface of the Moon. Their car was named *Lunar Rover Vehicle* and allowed the astronauts to visit sites almost 8 kilometres away from their landing place. It was an electric vehicle which had a top speed of 13 kilometers per hour.



The rover was hinged inside the landing pod and occupied a volume not much bigger than a washing machine! All 3 rovers were left on the Moon, since folding them back to the pod was impractical.

02

Did you know?

All objects (stars, planets, galaxies) attract each other because of gravity, which depends on the mass of the objects. Small objects (people, furniture etc) also attract each other, but the force is so weak due to the small amount of mass, that has no effect. In space, astronauts feel weightless because of the lack of gravity, while in larger planets they would weigh much more than in earth.



An astronaut is weightless in space

Milestones of space era

The first man who was sent to space was the Russian cosmonaut Yuri Gagarin. His journey lasted for 90 minutes, in which he completed one orbit of the Earth, travelling at 27,400 kilometres per hour.



1961

The greatest time in space exploration was probably the first manned mission to the Moon. Neil Armstrong was the first man to walk on a body outside of Earth! After a three day journey, the mission of "Apollo 11" reached the Moon. This historic moment was televised to the entire world.



1969



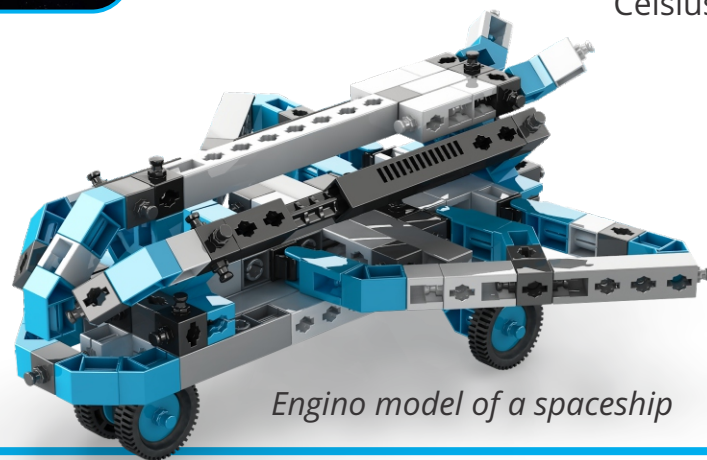
1957

Space exploration began with the launch of "Sputnik 1", the first satellite which was sent into orbit around the Earth. It had a diameter of 58 cm and carried 4 radio antennas for communication. Such an achievement triggered the race of conquering space!



1962

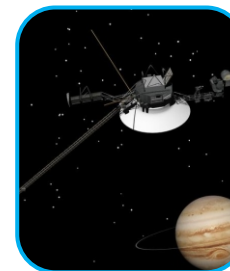
The first successful approach on another planet was achieved by "Mariner-5". The probe approached planet Venus and sent back valuable information. We learned that Venus has a temperature near 500 degrees Celsius.



Engino model of a spaceship

03

The Voyager 1 and Voyager 2 spacecrafts were launched. They were the first objects which obtained escape velocity of the solar system. Today, both spacecrafts are about 17.3 billion kilometres away from Earth, located at the boundaries between our solar system and interstellar space.



1977

The assembly of International Space Station (ISS) got started. The station is in orbit at 400 km over the Earth surface and fully constructed after multiple missions. Today, the facility can accommodate up to six astronauts, and orbits the Earth in every 90 minutes!



1999



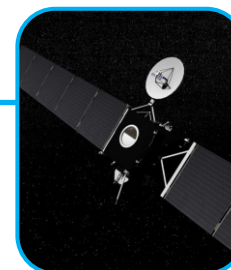
1970

The first robotic probe that collected sample from another body was "Luna 16". It took about 100 grams of rock from the Moon, which was sent back to Earth. Robotics were proved to be less expensive for space missions.



1996

The first mission that successfully landed on Mars was the "Pathfinder". The rover was 65 cm long and carried aboard 3 cameras which took the first pictures from the planet's surface.



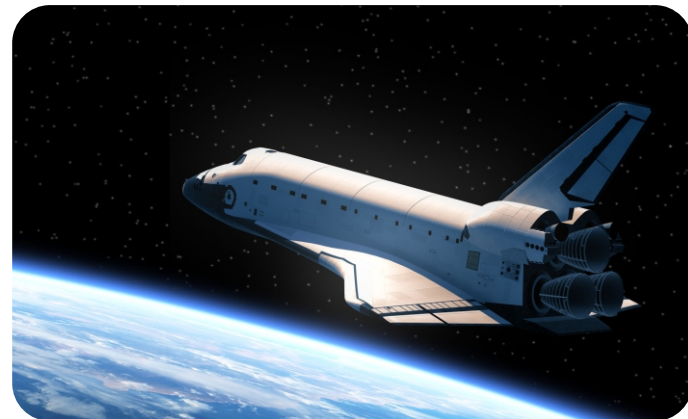
2004

The "Rosetta" mission was the first probe to orbit and land on a comet. It took 10 years to reach the selected target. Finally, in November 2014, a robotic machine landed on the comet's surface.

04

Space Shuttle

The American "Space Shuttle" program delivered an iconic symbol in space exploration. The program was designed so that the spacecraft can be attached to a rocket and sent to space, while it could be able to return back to Earth and land as an aeroplane. Its primary mission was to carry astronauts and equipment for the construction of the International Space Station. It also delivered several space telescopes and interplanetary missions. The Shuttle is the only winged manned spacecraft that has achieved orbit and landing. In addition, it is the only reusable manned space vehicle that has ever made multiple flights into orbit.



Future Space Transportation

Travelling among distant stars and galaxies is unfeasible with the existing technology. Nonetheless, the research is very active on improving the efficiency of space travelling and bringing novel ideas into action. An interesting prospect is space tourism, which includes adventures and entertainment in space for private personnel. Also, by improving space technology it could be possible to deliver packages worldwide in just 2 hours!

Quiz

Do you know the answer of these questions? Write a ✓ into the correct box.

1. On which of the following objects the force of gravity is stronger on the surface?

- Earth Jupiter Moon

2. In which year the first man walked on the moon?

- 1969 1961 1970

3. Throughout all the Apollo missions, how many people have walked on the moon?

- 1 24 12

4. How long does it take for the international space station to make one orbit around the Earth?

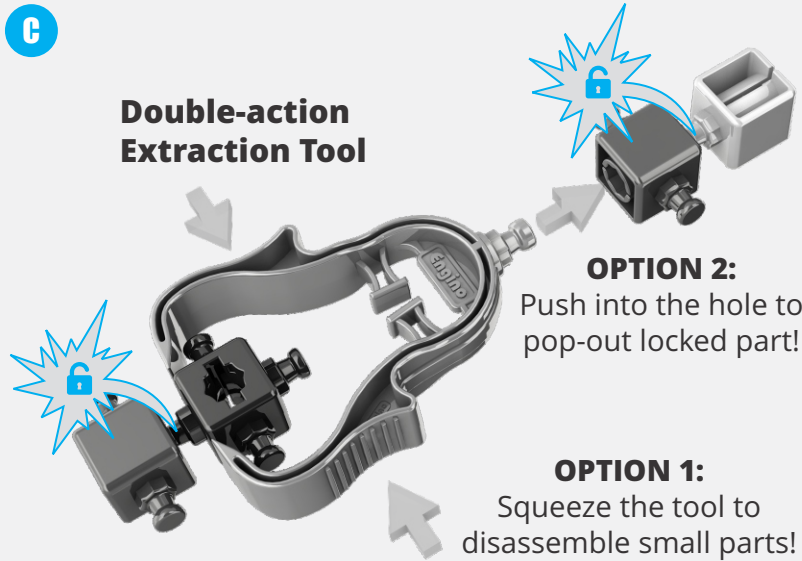
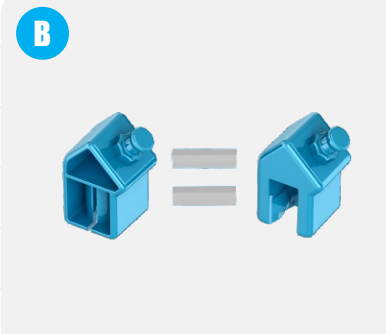
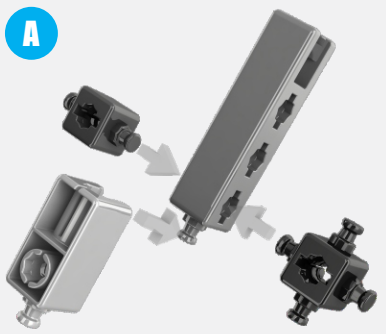
- 24 hours 90 minutes 7 days

More theory & experiments online!

www.engino.com/theory/ce301mm-a



Building Tips



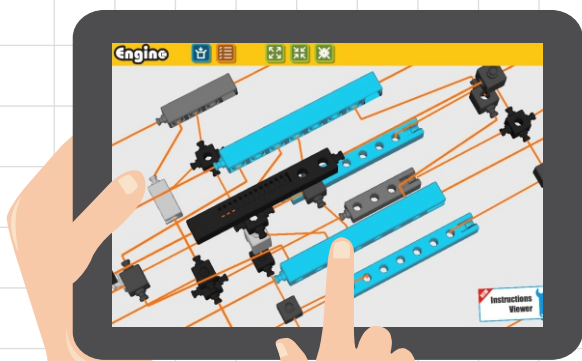
Free App

- A** Use your PC or tablet and go to the following link for more models:

www.engo.com/instructions/ce301mm-a

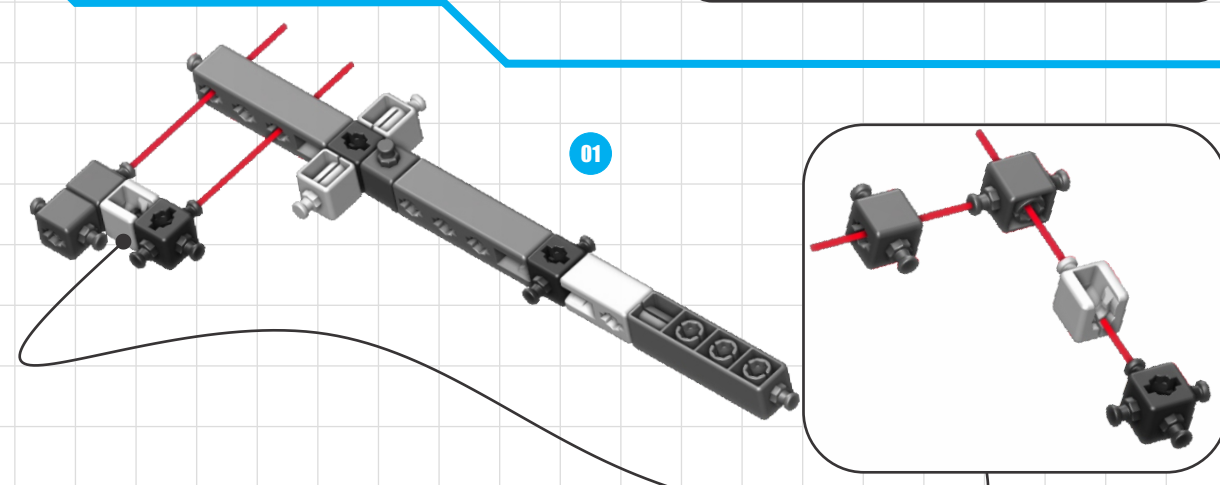
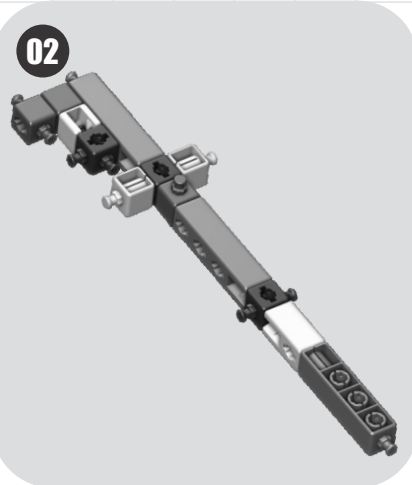
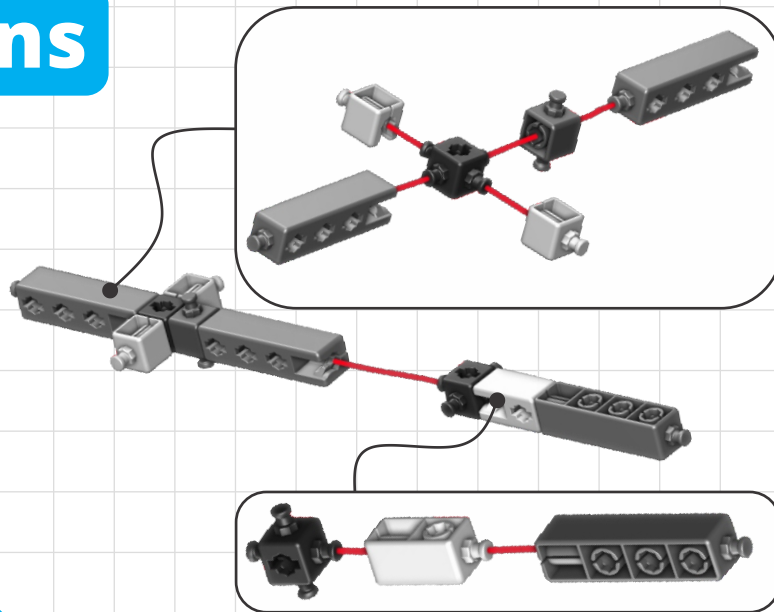
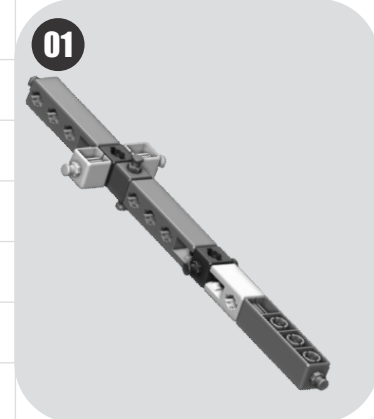
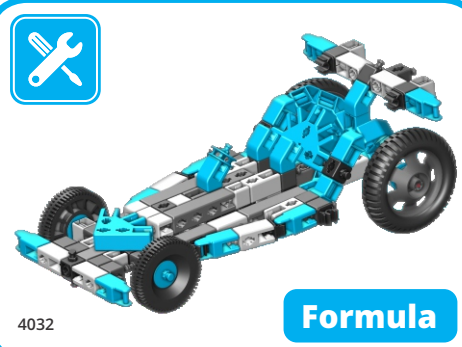
- B** Download the app to discover step-by-step instructions in 3D view!

Engino kidCAD (3D Viewer) app:

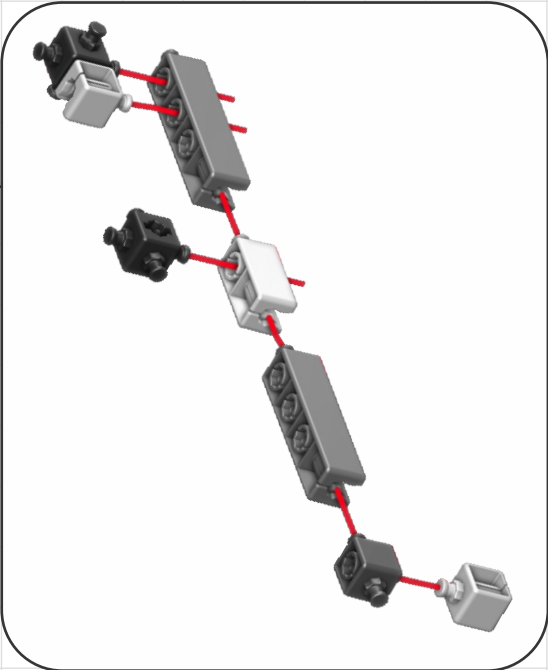
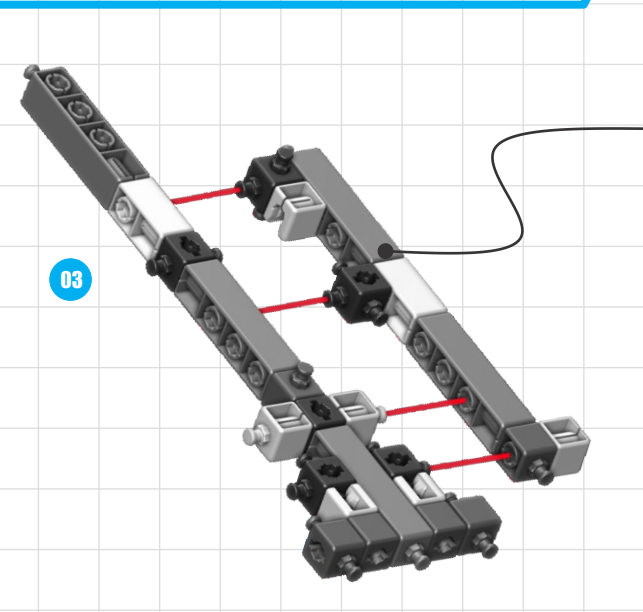
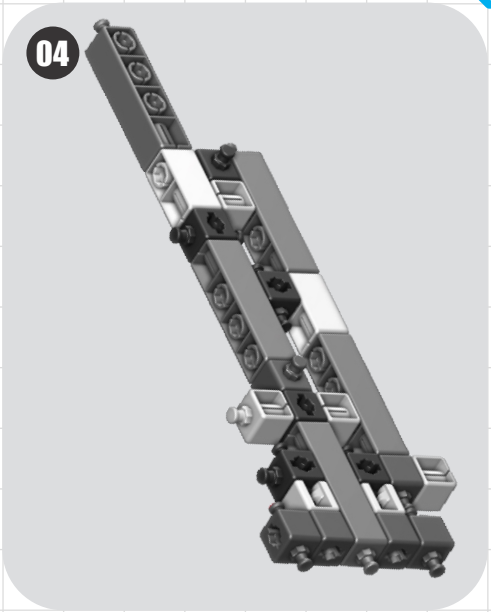
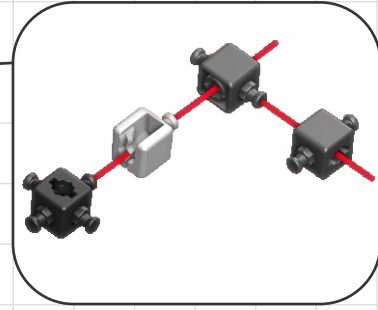
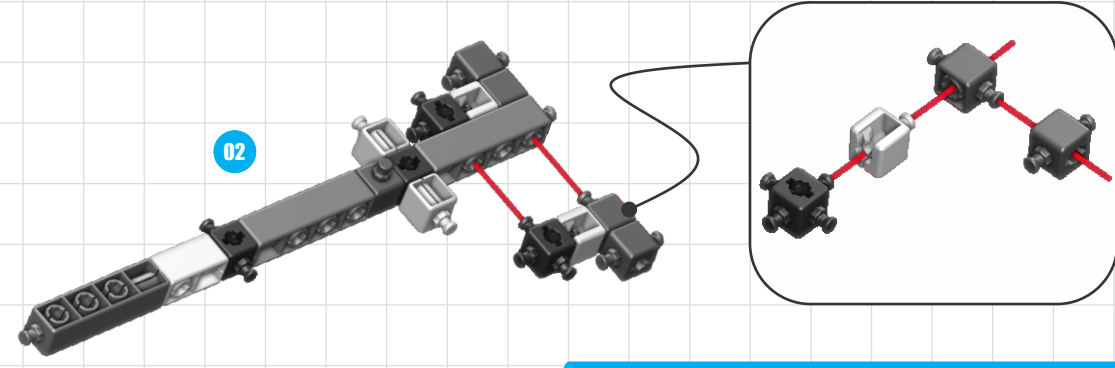
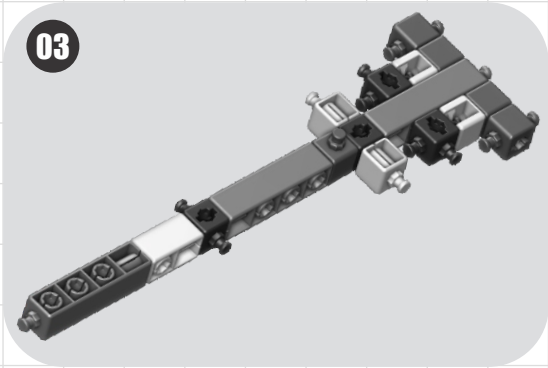


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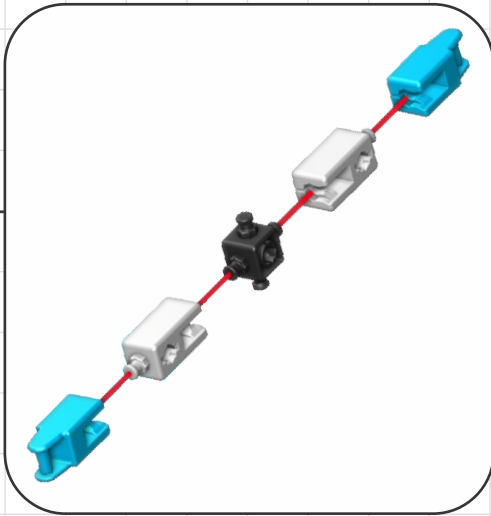
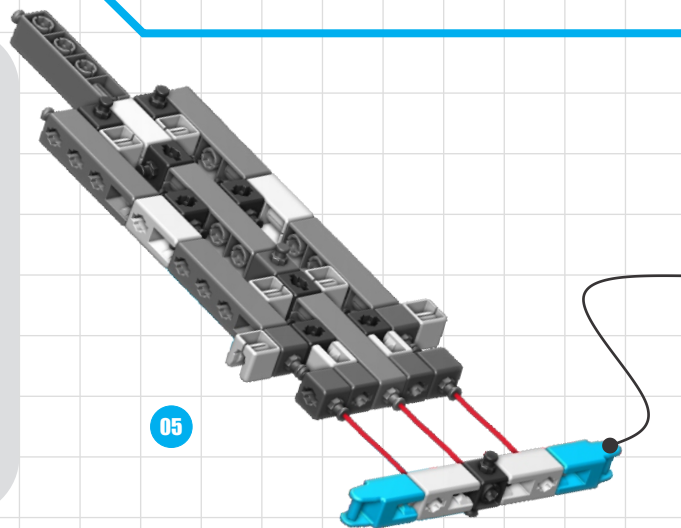
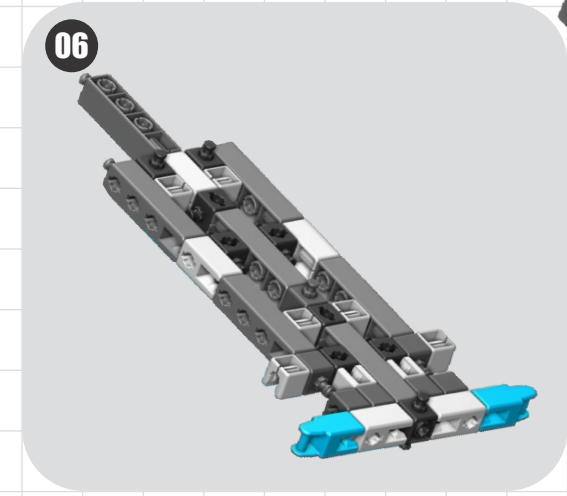
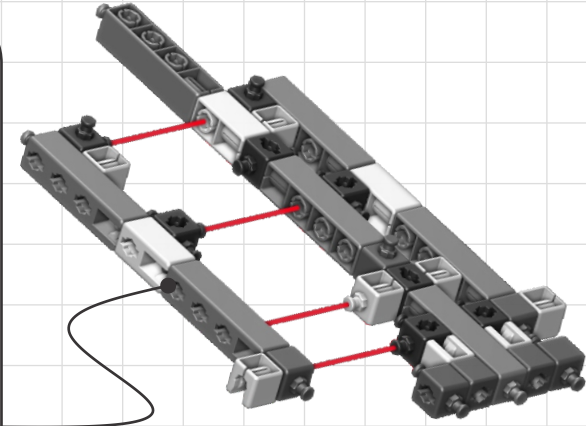
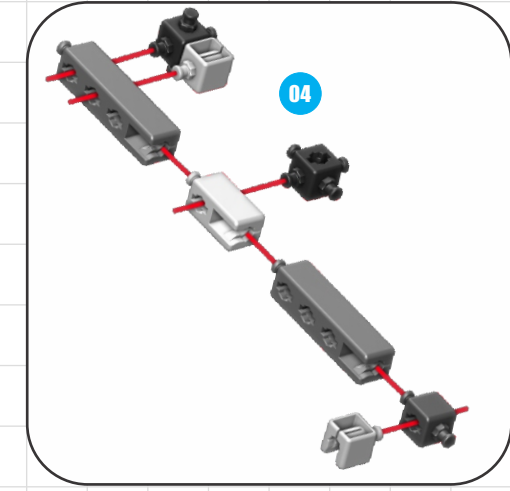
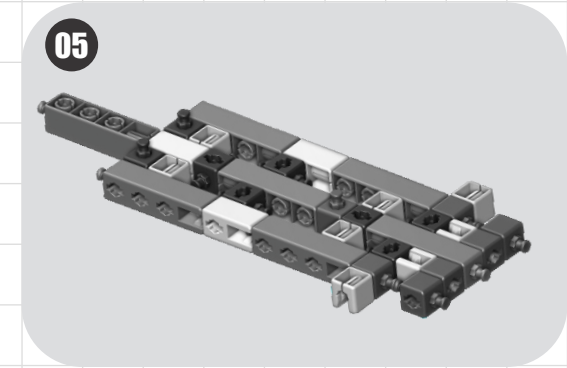
Building Instructions



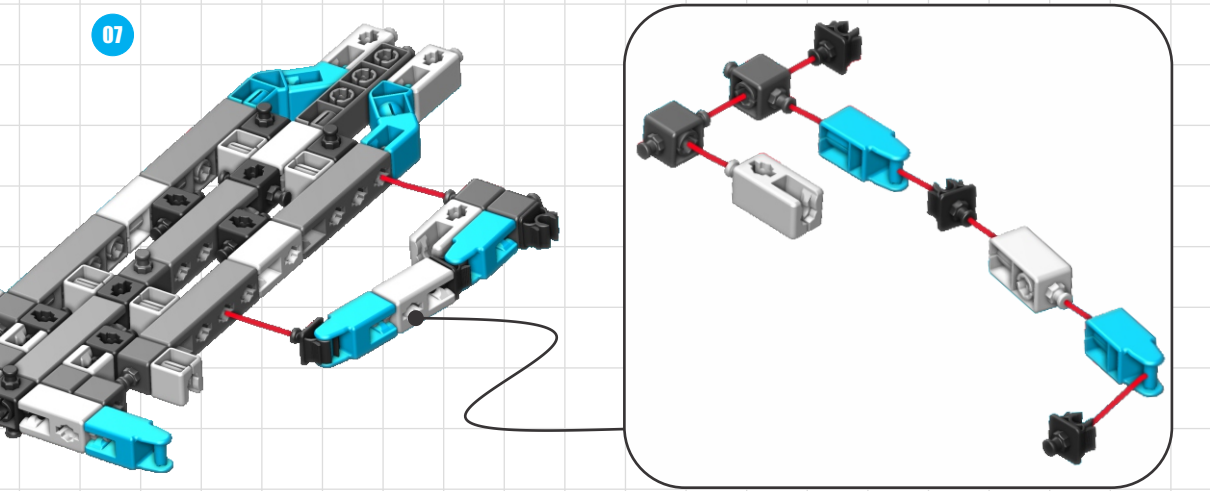
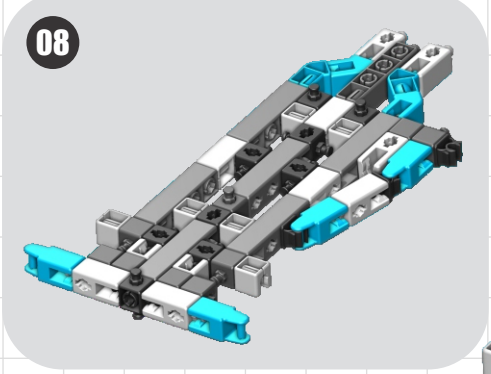
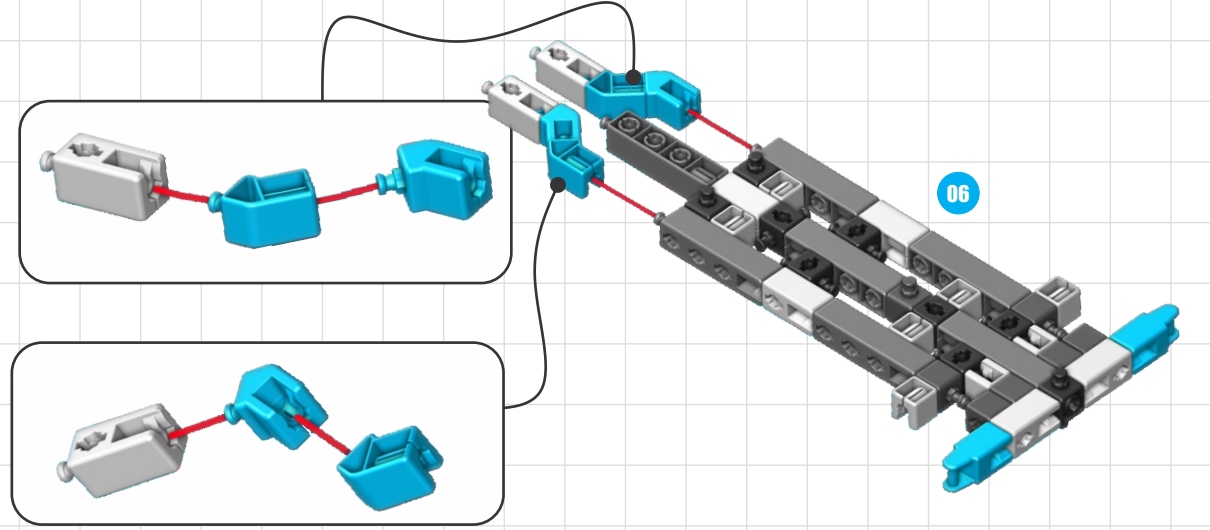
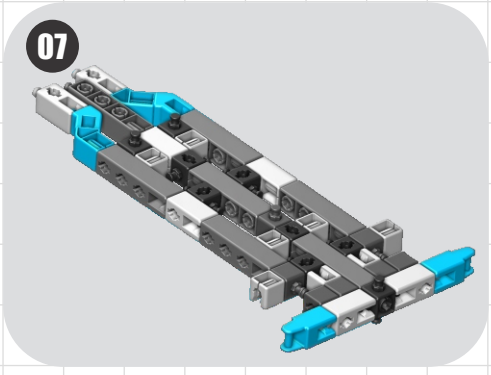
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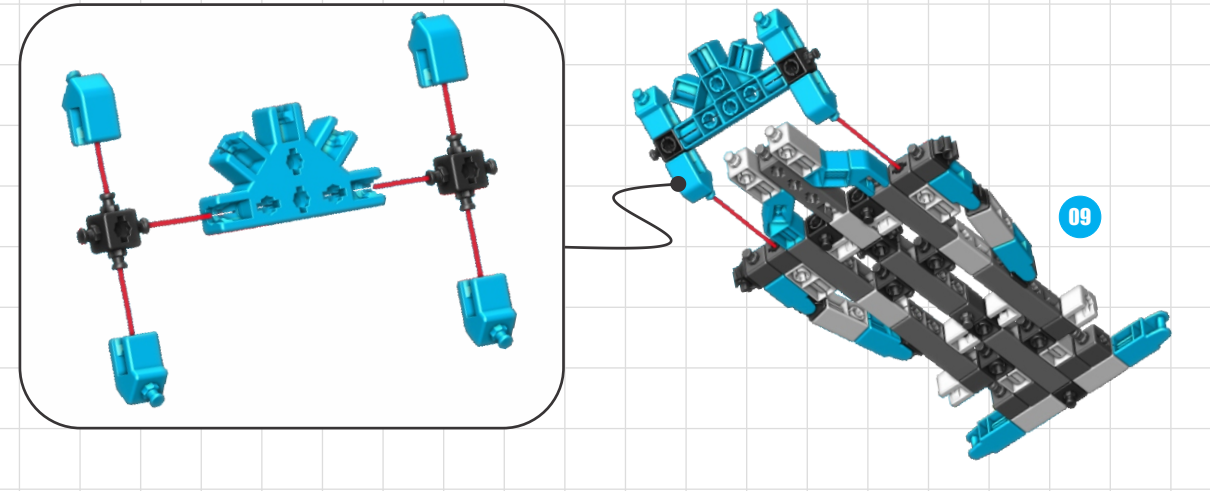
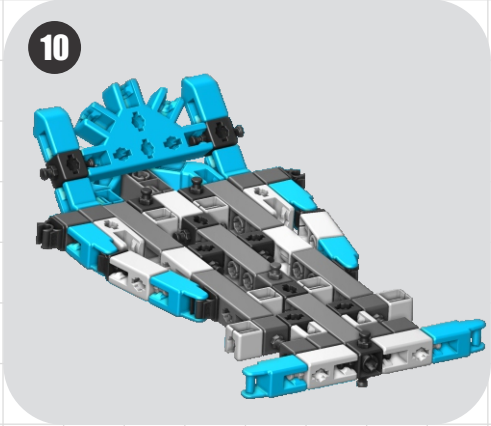
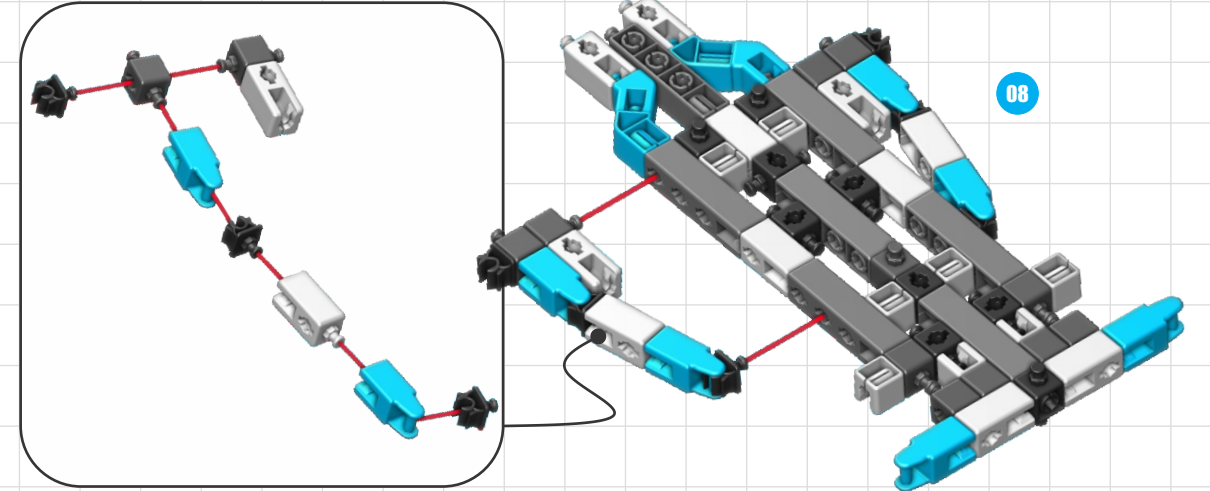
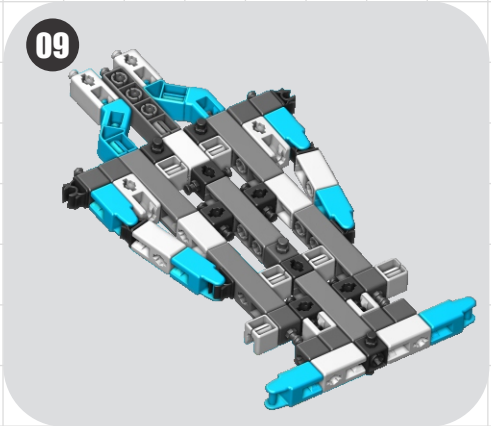
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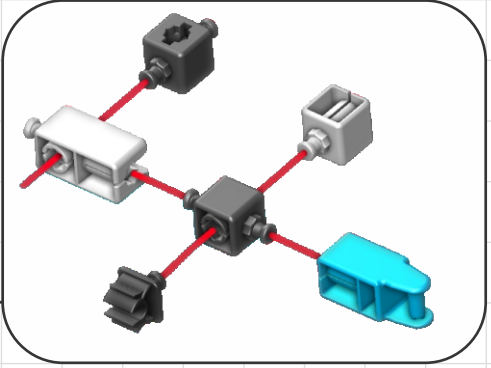
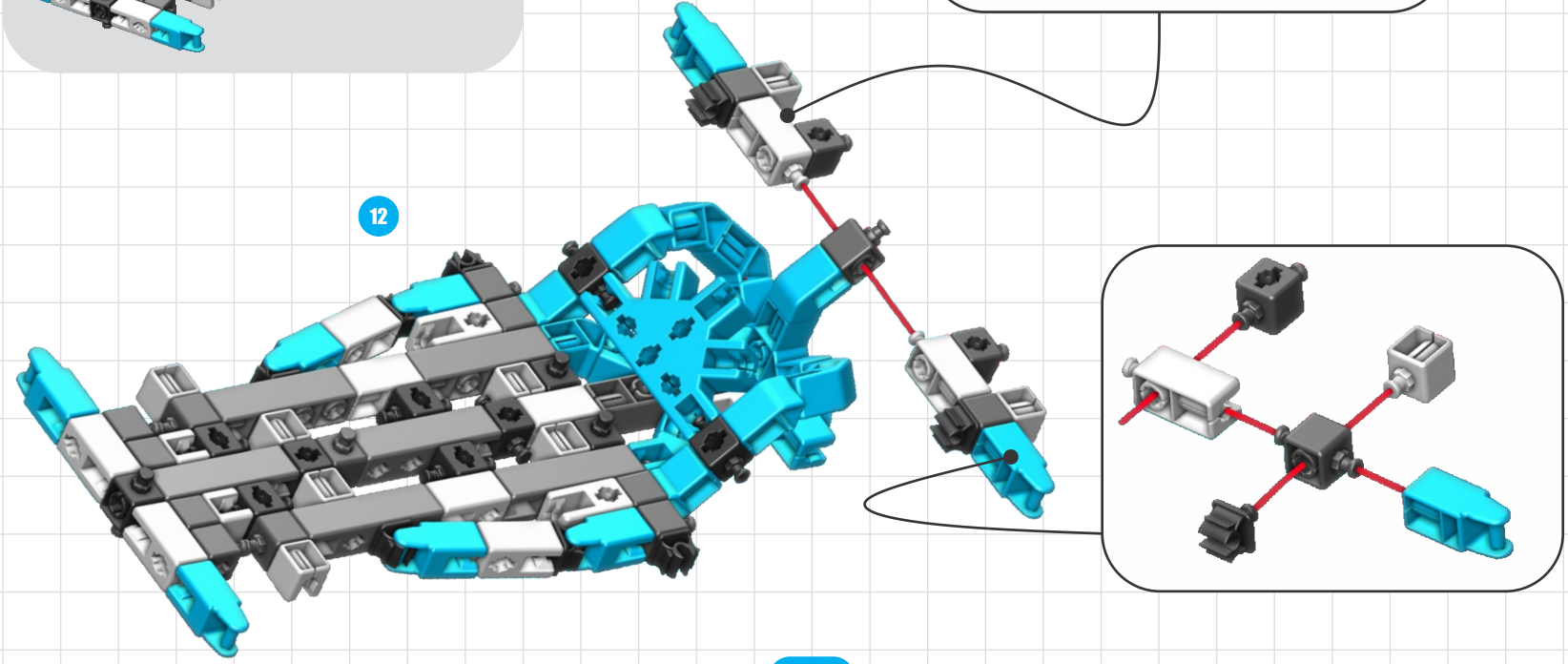
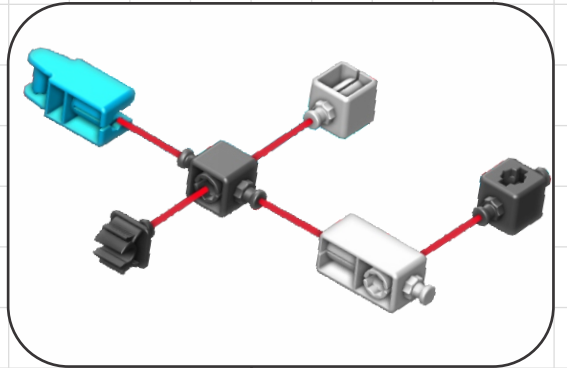
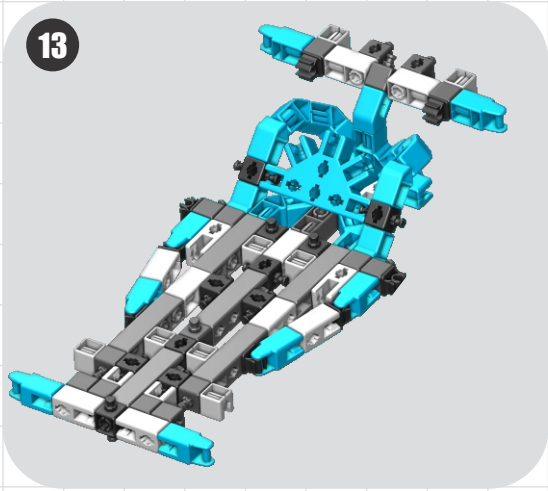
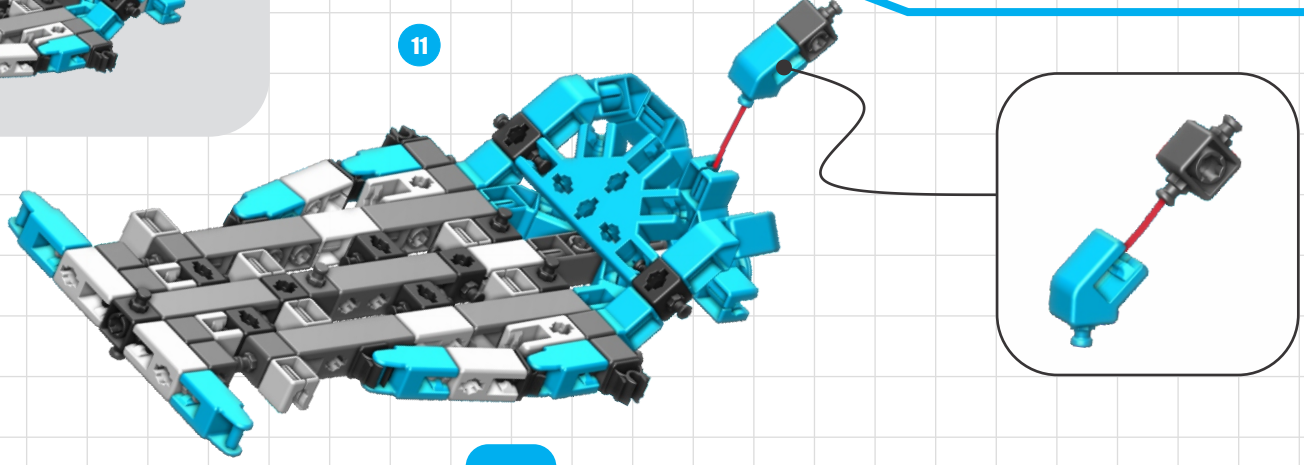
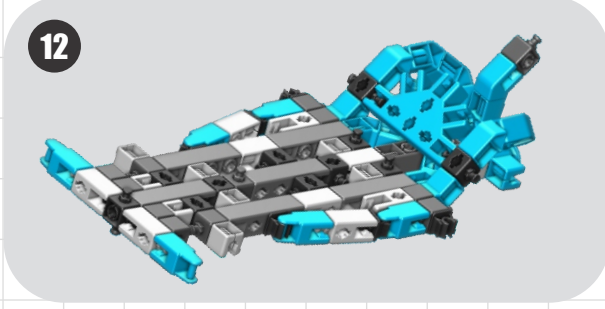
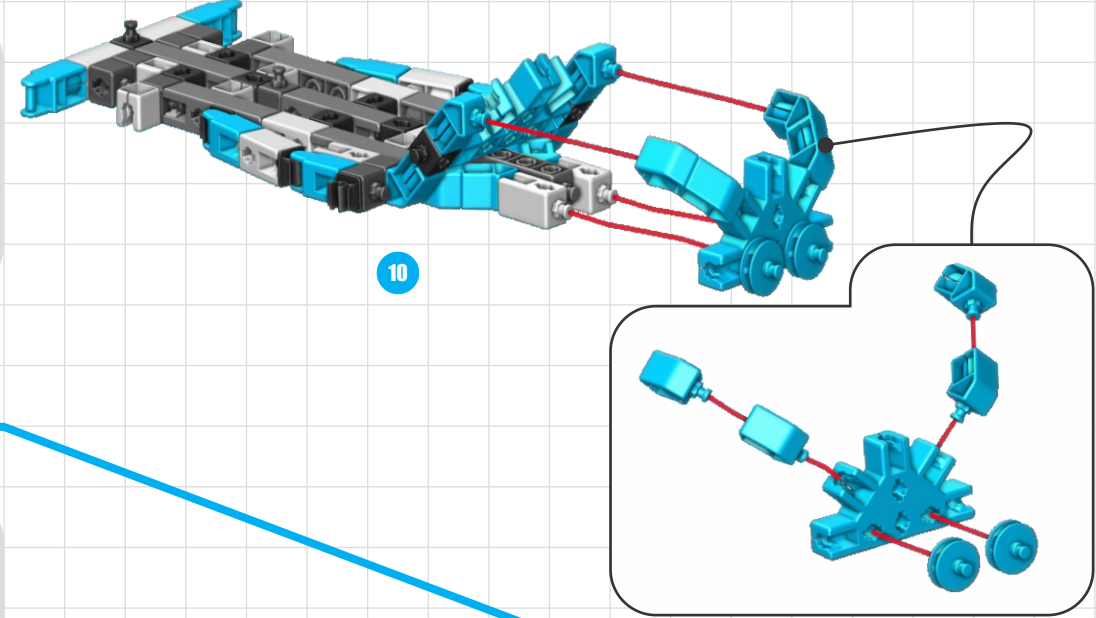
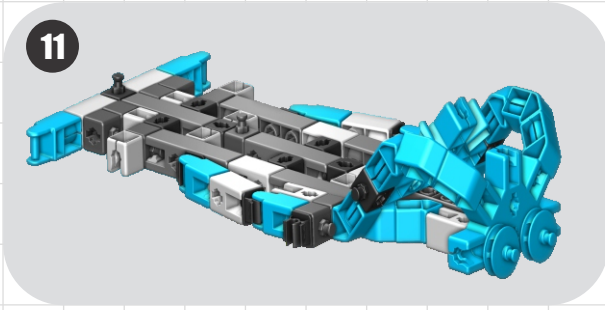
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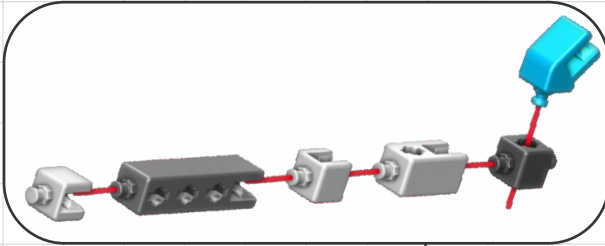


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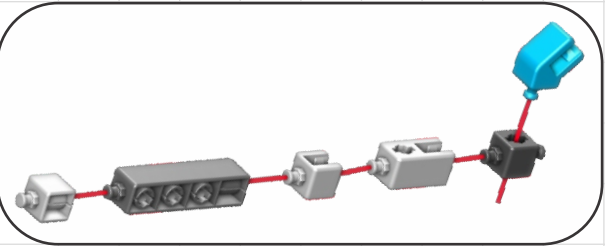
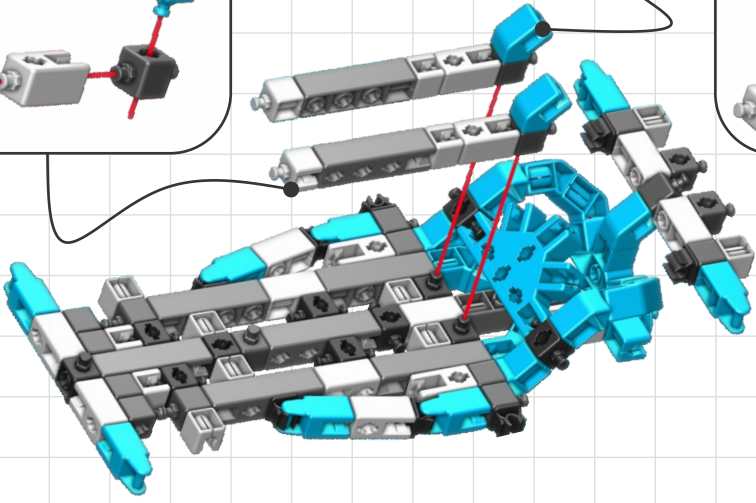


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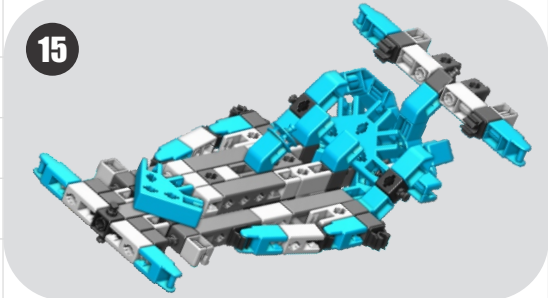
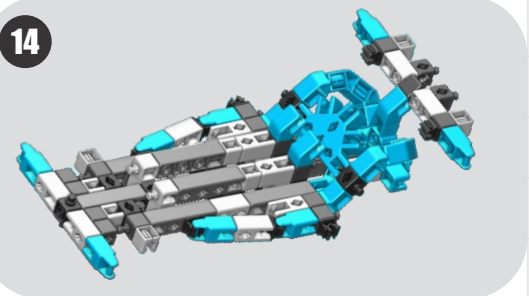
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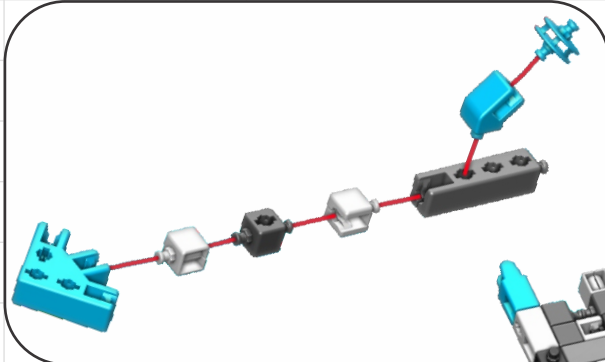
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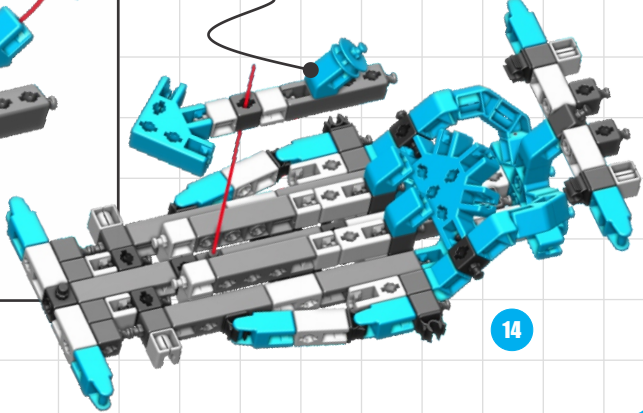
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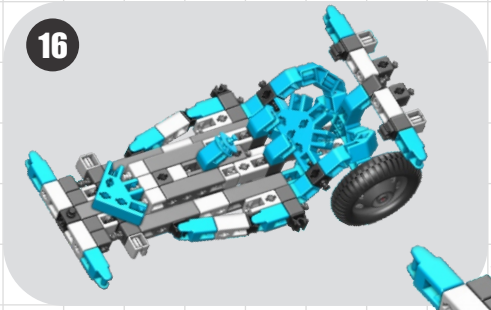
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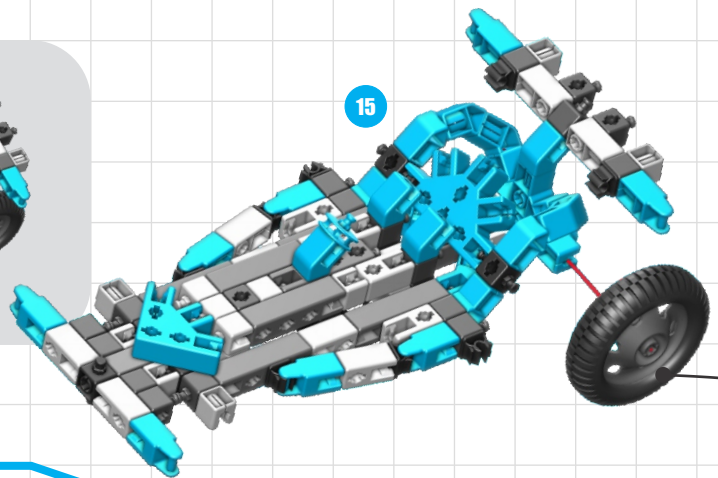
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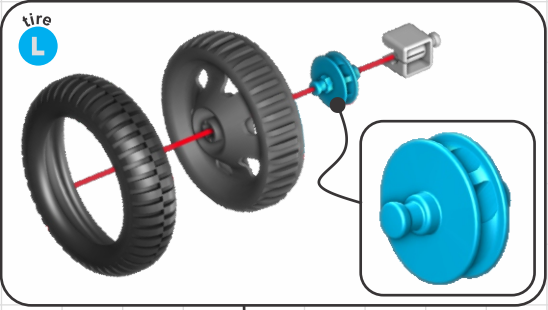
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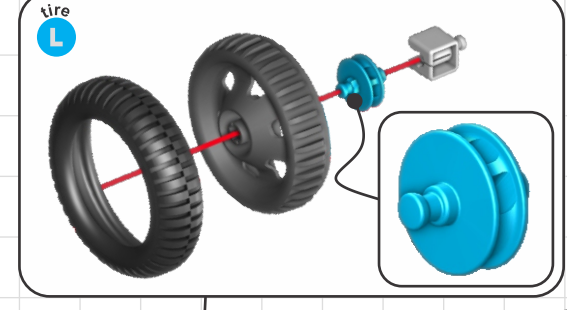
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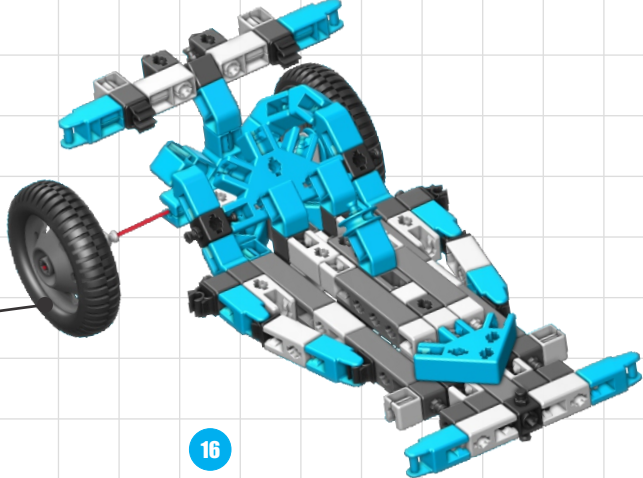
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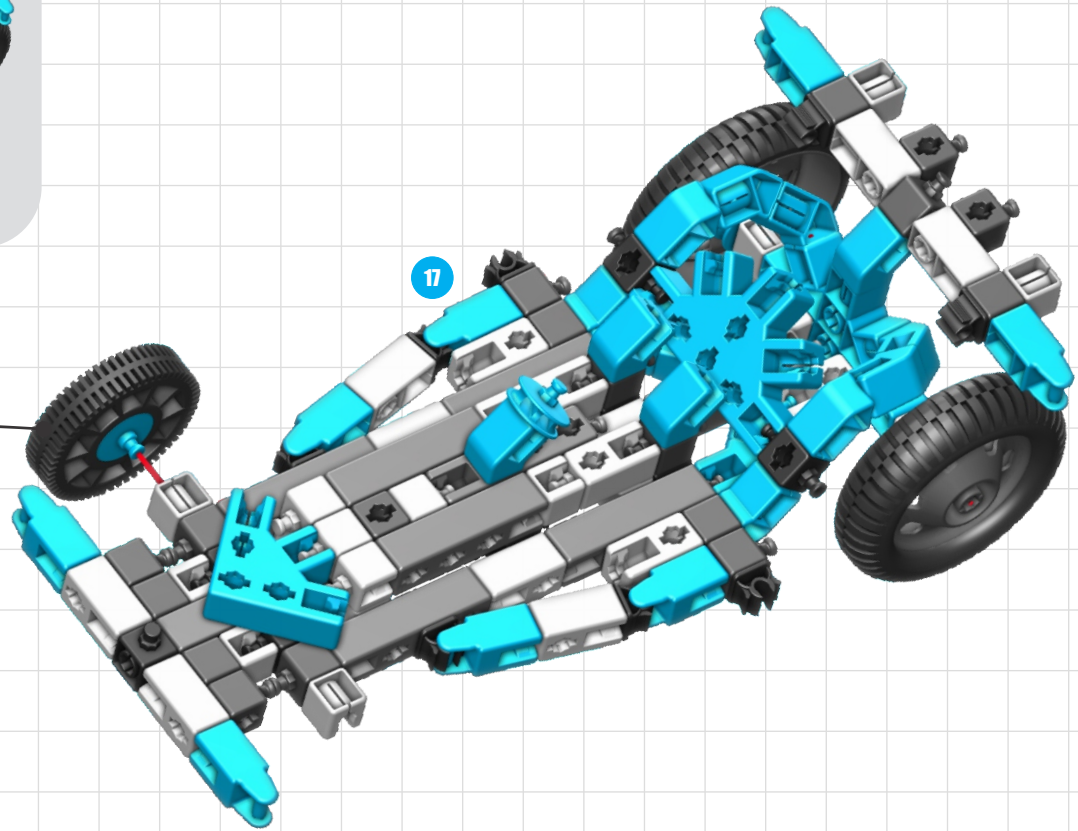
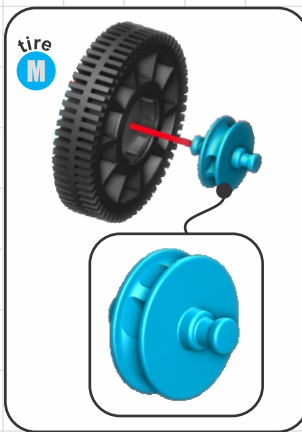
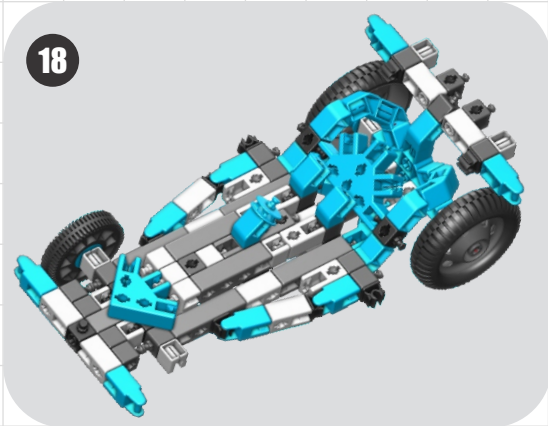


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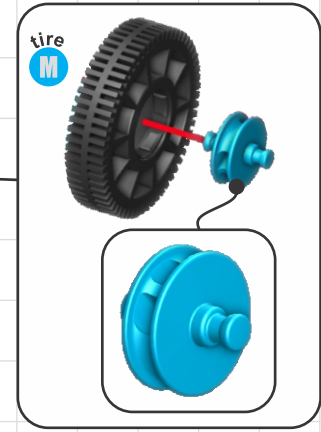
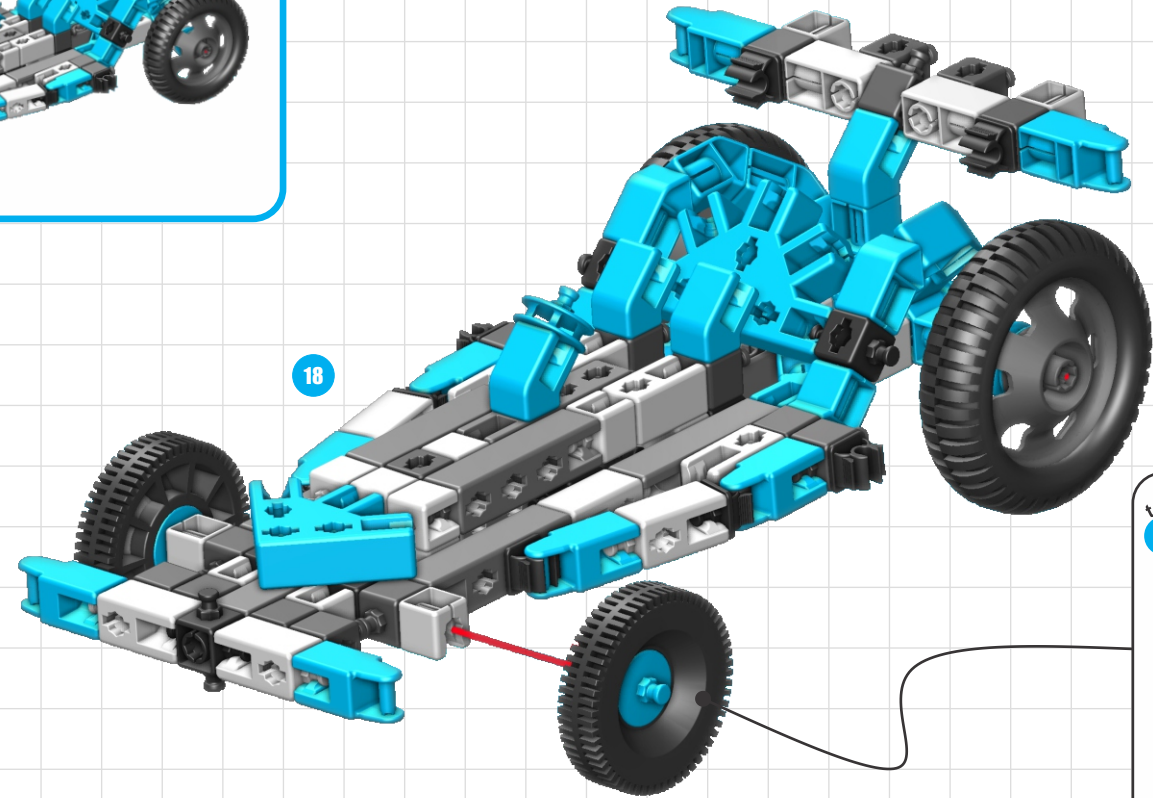
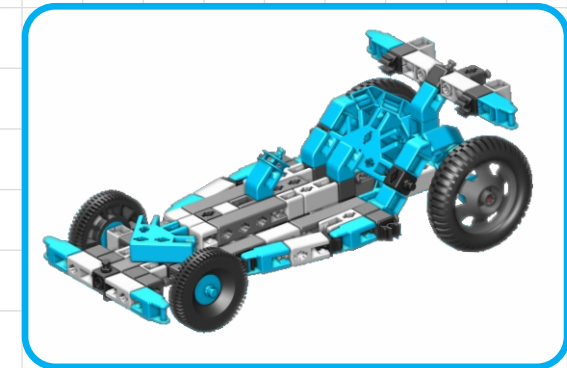


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