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QBOIDZ
STEAM LABS JUNIOR
CREATIVE BUILDER
STEAM LABS
INVENTOR
CODING LABS
DISCOVERING STEM

THE REAL STEM EXPERIENCE
QBOIDZ
STEAM LABS JUNIOR
CREATIVE BUILDER
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### DISCOVERING STEM

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**Products subject to change without notice. Information is correct at the time of print.**

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- Research & Development
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**Manufacturing**

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- Farm tractor - 10 bonus models set
- Racing car - 10 bonus models set
- Elephant - 10 bonus models set

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**Qboidz Building System**

- Classic Building System
- Mechanics Building System
- QBOIDZ Series
- Alligator - 5 bonus models set / Airplane - 5 bonus models set
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**CREATIVE BUILDER**

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**Qboidz Series**

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- Farm tractor - 10 bonus models set
- Racing car - 10 bonus models set
- Elephant - 10 bonus models set

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**STEAM LABS JUNIOR**

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- Learning about aircrafts...
- Learning about sea adventures...
- Learning about vehicles...

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A Toy System Emerging from Education

Engino-net Limited was founded in 2004 by Costas Sisamos in Cyprus. With degrees in Mechanical Engineering and Education, Costas worked for 10 years in Primary schools teaching Design & Technology. With a vision to inspire his students to become better problem solvers and future innovators, Costas started designing a new system of modular connectors that would enable students to build fast and easy fully functional technological models. The award of research capital by European Union supported the first 3 years of development and the first ENGINO® sets were launched in 2007 attracting the interest of international toy buyers and educational specialists. The patented ability of the system to snap fit on multiple locations while maintaining simple manufacturing methods was a feature that unleashed great potential. Since the launch, the system has received several local and international awards, while the company's R&D team continues to develop new innovations taking ENGINO® to the 3rd generation of construction toys. Now, with a product range of more than 60 different sets, ranging from simple structures and mechanisms to solar energy sets and wireless robotics, ENGINO® is one of the fastest growing companies in the field of STEM & Robotics. The company is one of the very few in the industry that has invested significantly to establish a European fully-automated factory, introducing vertical integration, from conception to manufacturing and retail.
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Research & Development
Transforming Innovative Ideas into Successful Products

Since its inception, ENGINO® has been focused on innovation and creativity. From drawing board to market shelves, several skills are required and a team of exceptional professionals has been assembled. This includes academics, engineers, product designers, illustrators, educational specialists and marketing experts. All research is carried out in house which assures effective communication between the team members and faster development time. In fact R&D has been a key element to ENGINO®'s success, with multiple research projects running simultaneously. Several patents and industrial designs have been issued and others are still pending. Our factory is equipped with the most modern software and CNC machinery to prototype and create new parts, while everything is tested vigorously to meet the highest standards of quality and functionality.
Manufacturing

Producing Effectively in Europe

Since 2012, all manufacturing of ENGINO® has been taking place in Europe, Cyprus, at our own fully automated factory. The factory has 3 sections: tool making, injection molding of plastic parts and packaging, allowing smooth control of the entire production process. The implementation of lean manufacturing methods and high level of quality control has led to the minimization of the production cost while also assuring fast lead-times and consistent quality.

Assuring our Quality

At ENGINO®, safety of kids is our top priority. Our organization, to guarantee compliance with the latest toy safety standards, implements very tight design and production processes, controlled through a vigorous ISO9001 management system. All our products are tested every year for mechanical and chemical properties and are certified by internationally approved labs for EN71 part 1-3, ASTM963-17, CPSC, Phthalates, EN62115, PAHs, SVHC and many more.
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The “Qboidz”, which consists of cube-like bricks for preschool children starting at the age of 3, the “Classic”, which is the original ENGINO® for kids of age 6 and above, and the more advanced “Mechanics” with precision engineered technical parts and gearing systems for children over 9 years old.

The ENGINO® System has now evolved into 3 Sub-Systems

3+ Qboidz
6+ Classic
9+ Mechanics

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The ENGINO® System has now evolved into 3 Sub-Systems

- **3+ Qboidz** Building System
- **6+ Classic** Building System
- **9+ Mechanics** Building System

One of the main reasons behind the inception of “QBOIDZ” was the inability of children under the age of 6 to linearly assemble the “Classic” ENGINO® components. Extensive research with cognitive psychologists and developmental experts showed that children of the younger age of 2-5, do not have adequate skills for a two-step side-lateral connection and neither the abstract reasoning to comprehend it. An innovative solution was developed in 2016 by designing a new type of “end-receptor”, a joint that would allow direct linear assembly with a single, one-step snap action. The new system became an immediate success, enabling children even from the age of 3 to achieve the ENGINO® snap-fit connection!

Together with these rods, a library of cubic blocks has been developed. Like most traditional large-scale brick systems, kids could stack one block over the other. The cubic shape also inspired the name “QBOIDZ”!

What differentiates “Qboidz” blocks from any other brick systems, is the incorporation of the original ENGINO® snap-fit geometries on the cube’s body! By selectively embedding the ENGINO® bi-directional receptors and the mushroom shaped plugs on the block’s sides, the possibility to connect rods onto blocks became a reality. Our QBOIDZ system is perhaps the only constructional toy that grows with the child, respecting his or her needs at every stage of their development, from the age of 3 to 6. Our theory which concurs with latest neurological research- is that by playing with blocks signals are sent to the brain and activate a particular area which relates to spatial perception and three-dimensional thinking. By stacking bricks, one section of this area is activated. More and more neurons are stimulated as children play and reconfigure their blocks.

At the age of 2 to 3, stacking bricks is one of the healthiest forms of play for kids. However, as they grow older, different levels of stimuli are needed to enhance their spatial perception. Traditional bricks only allow stacking, limiting brain activation to the particular region only. However, with QBOIDZ, side-building is possible, adding complexity to the creative process. This complexity activates adjacent neurons not previously triggered and create new neuron connections called synapses.

At ENGINO® research center we call these stages Levels of Dimensional Thinking™.
Fifth-dimensional Thinking - Coding with robotic parts: There are three generations of construction toys. The 1st was that of building structural models. The 2nd was the inclusion of mechanical elements that added motion to the models. New technologies introduced the 3rd generation, that of robotized constructions. The compatibility of the Qboidz system with ENGINO® extends to programmable controllers and sensors! This step into technology helps students acquire 21st century skills and learn coding through interdisciplinary STEM challenges.

One-dimensional Thinking - Stacking blocks vertically: Stack the patented cubic blocks (named Qboidz) vertically as with traditional brick systems.

Two-dimensional Thinking - Connecting blocks to the side: Connect the Qboidz blocks sideways to explore the 3D space, increasing building complexity while further developing hand-eye coordination, dexterity skills and spatial perception.

Three-dimensional Thinking - Combining blocks with beams: The next step is to fine tune the skills acquired in the previous level. Qboidz blocks can connect to a range of beams designed with a plethora of male and female connecting nodes in order to allow for more detailed constructions. These beams require a higher force of assembly, challenging older preschool children.

Forth-dimensional Thinking - Compatible with Engino system: The Qboidz parts, both blocks and beams, have embedded in their design the same geometries as the standard ENGINO® system that is suitable for older children, aged 6+. This ensures a smooth transition from one level to the next and enables full compatibility between a wide library of parts. By allowing growing children to combine these parts and work on a finer grid system, they can create more complex technical models.

Fifth-dimensional Thinking - Coding with robotic parts: There are three generations of construction toys. The 1st was that of building structural models. The 2nd was the inclusion of mechanical elements that added motion to the models. New technologies introduced the 3rd generation, that of robotized constructions. The compatibility of the Qboidz system with ENGINO® extends to programmable controllers and sensors! This step into technology helps students acquire 21st century skills and learn coding through interdisciplinary STEM challenges.
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6+ Classic Building System

The ENGINO® classic building system is perhaps the most advanced and versatile three dimensional construction toy system in the market today. The patented design of the parts allows connectivity of up to 6 sides simultaneously, while the unique extendable components lead to builds that were previously unthinkable, unleashing children’s creativity and imagination. The progressive building capability from simple to advanced is a consistent characteristic of all ENGINO® solutions, from tangible plastic parts to lesson plans and software, and it is at the core DNA of our pedagogical philosophy.

1. Building in one direction...
The ENGINO® rods can be connected in-line without the need of an intermediate connector, almost reducing to half the quantity of parts required to build models as compared to other systems. This is because the connecting plug's geometry is already embedded within each rod. The biggest advantage in requiring half the number of parts, besides simplicity, is the fact that students will need half the time to build their model, saving time to be allocated for being more creative by trying their own ideas.

2. Building in two directions...
The same rods which can be assembled horizontally in-line can also be connected vertically sideways! The unique plug geometry can click on any of the bi-directional side-holes of the rods, meaning that students can build without needing a new component- in two directions! Even though this is a big advantage by itself, the biggest innovation is that the rods can snap-fit on both sides of the rods simultaneously, something that greatly enhances the expandability of the system and reduces even more the number of parts needed to construct a model.

3. Building in three directions...
The Classic ENGINO® system consists of “rods” and “connectors”. In essence, these “connectors” share the same geometrical designs as the rods, establishing a multiplier effect that enables a further reduction in the number of parts needed to construct a model. In most cases this means 4 times less parts are required to build a model as compared to other building systems. In effect, this means that students can not only create a model 4 times faster, but they can spent 4 times less effort to modify and experiment!
4. Building in fixed angles...
Modelling real-life machines and buildings requires also connecting components at an angle other than 90 degrees. The system includes 45-degree angular parts, which with the same ease can snap-fit on the rods and connectors to create more complex models.

5. Triangulating...
To make a frame stronger a technique called Triangulation is used, something which is clearly visible in many large bridges and wooden structures. With ENGINO®, triangulation is very easy to achieve, ideally with side-lengths of 15 units. Converting a structure from a flat two-dimensional shape to a three-dimensional one, for example adding pillars on floors when making a model of a house, is straightforward with ENGINO®. Simply snap a rod directly on the ELBOW or TEE connectors! These provide a change in the plane of building, without having any elements protruding, allowing also easy modification at any time without having to substitute these connectors with different ones.

6. Connecting in every angle...
The potential of the system is unleashed by “cloning” the innovative geometries to pivoted joints. A specially designed component acts as a pivot (called internally “swing rod”) and allows any angle of the 3D space to be created, not restricted by 45 or 90 degrees!

7. Connecting everywhere...
ENGINO® rods can connect one after the other and achieve longer sizes. However, these are restricted by the size of the smallest part, our unit dimension of 12.7mm. But how can a child build creatively when they want to freely triangulate a model, and the hypotenuse length is not matching the unit’s multiple? This is an unsolvable problem, and no building system has so far managed to solve it. Based on Pythagoras theorem, we should cut short a component to reach the required length, but this is of course not possible.
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At ENGINO® we like to keep things simple for kids and assign the hard, engineering problems to our researchers. An innovative solution has been developed: our extendable rods. With just 2 pieces that interlock, kids can twist and extend creating any length possible! This amazing feature, when combined with the pivoted joints, can lead to the creation of any triangular shape and to constructions that were previously inconceivable! The extendable rod replaces the need of numerous other components and maximizes the building capabilities of the system.

8. Connecting DIY surfaces...
The assembled components of ENGINO® can have a flush surface with no protrusions. This has been designed on purpose for a very unique and specific reason: To allow children to cover their models with flat surface panels without obstructions. These panels can be from paper, acrylic or wooden materials, which kids can draw, paint and cut to their own ideas, making the models more realistic. This feature is the first step into the maker-space era providing a bridge between construction toys and real DIY projects. Surfaces can attach very easily on ENGINO® models by using the latest designed lock-pins, which secure the panels on the Engino rods with a simple click!

9. Driving the Maker-space revolution…
The original problem ENGINO® tried to solve, was how to build models made from wooden dowels, for what back in 2004 was a “Design & Technology” classroom. This inspired the design of plastic modular wood connectors that could be used either as part of a toy or as consumables in DIY projects. The latest trends in education, with the Maker-space revolution, has created a new need for DIY building materials, making the ENGINO® wood connectors the ideal system to craft models with ease. These components are fully compatible with all other ENGINO® parts as they share same connecting features. This helps create hybrid models that combine plastic parts with wooden beams which can be cut to any size by students or hobby engineers. These wood connectors can also integrate with the DIY surfaces and their lock-pins, empowering open-ended projects for children and adults alike!
By 2012, ENGINO® had already started investing heavily in further research to develop our 3rd generation of construction toys. These are called in STEM academic circles Robotized Construction Kits. Such advanced kits require high-precision mechanisms and more robust constructions that could remain assembled and functioning even after vigorous use, such as in robotic competitions.

The ENGINO® philosophy prioritizes ease of play, creativity and pedagogy, rather than technical modeling. But, as more and more electronic controllers and sensors kept being added to the ENGINO® robots, the need for a specialized system became evident by 2017. That was when a big research project started to design, prototype, test and bring into production a new technical system that would still be abiding to our pedagogical values.

Our new Mechanics System, launched and patented early 2021, consists of a library of components that are working in conjunction with the Classic ENGINO® parts, preserving as much as possible the attributes of creativity and reconfigurability of the original system.

Students from the age of 9 can actively engage in advanced model's creation and dig further into the secrets of Science and Technology. As they grow older, they can use more specialized components to develop elaborate mechanisms that simulate real-life machines and robots. The Mechanics library includes around 100 different components, including new wheels and axles, beams and connectors and some impressing locking technologies, all compatible with the ENGINO® Classic parts!

How the System Works

To be able to construct more robust models, the Mechanics Beams are half-unit thickness as compared to the Classic Rods (6.2mm). They have simple cylindrical holes that allow a thick, strong axle to pass through and rotate freely with minimal friction. The unique design of these beams is to incorporate an octagonal base at every hole, which allows locking every 45 degrees when needed. Beams help create a strong structural frame and plates add robustness by providing more compact spacing.
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Students from the age of 9 can actively engage in advanced model’s creation and dig further into the secrets of Science and Technology. As they grow older, they can use more specialized components to develop elaborate mechanisms that simulate real-life machines and robots. The Mechanics library includes around 100 different components, including new wheels and axles, beams and connectors and some impressing locking technologies, all compatible with the ENGINO Classic parts!

How the System Works
To be able to construct more robust models, the Mechanics Beams are half-unit thickness as compared to the Classic Rods (6.2mm). They have simple cylindrical holes that allow a thick, strong axle to pass through and rotate freely with minimal friction. The unique design of these beams is to incorporate an octagonal base at every hole, which allows locking every 45 degrees when needed. Beams help create a strong structural frame and plates add robustness by providing more compact spacing.

1. Connecting the Beams...
Beams can connect adjacently with each other, like bricks, by using our specially designed snap-fit axles, yet, they can be also be connected linearly at various angles using our new patented beam connectors!

One of the biggest innovations of the ENGINO Mechanics system is how the Beams can connect easily to the Classic System using the special axle-adaptors.

2. Connecting the Wheels...
These axle-adaptors besides connecting Classic parts to Mechanics, they are best utilized for easily attaching our new low-friction wheels and gears to models. With larger models, it is possible to have the wheels breaking off due to their heavier weight. To solve this problem, a special component has been designed to be a hybrid between ENGINO Classic rods and Mechanics’ beams. This part enables a fully secure connection so that wheels or gears can remain attached to the models. There are various parts that combine these same geometries, offering a wide range of options to young builders for creating more functional mechanical and robotized models.
3. Connecting the Axles...
The new Mechanics system relies on axles to connect the various technical parts together. There are various axle sizes, with each one servicing a specific purpose and engineering application.

When making technical models, it is important to transfer motion longer distances. For this purpose, we have developed a range of axle connectors that allow the axles to snap-in. These connectors have various sizes and will join axles linearly, extending them to the length required. There is even a special part to connect an axle vertically on beams!

In many cases there is a need to change the direction of motion by an arbitrary angle. Transferring power at an angle is quite challenging, but engineers have actually figured it out by inventing the Universal joint centuries ago. The new Mechanics System includes even the specialized parts to model such a joint!

There is a unique design feature in all these axles, and that is the **slotted tip**. The tip has been designed with that patented shape for two purposes. The obvious one is to snap-fit when an axle is inserted in the receptive holes of beams, gears and wheels. The slot allows deflection of the tips and enable a smooth, repeatable click.

4. Locking the connections...
The second purpose of the slotted tip on the axles is what makes it a multi-purpose tool! A “lock-pin” can be inserted inside the slot and once it snaps in place, it can hold one part securely on the other, like a fastener. By attempting to pull the parts apart, the “lock-pin” wings inside the slot, restrict yhe axle's deflection and force the parts to remain connected. But, as easily as this pin is inserted, it is as easily removed! Just pull the pin out first, either by using fingers or with the innovative extraction tool, and parts are unlocked and released.
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5. Powering up the Models...
The ability to animate models using motors is the first step before introducing robotics. The new ENGINO® motors are designed with a snap fit removable axle so that it can be replaced easily when overstressed. The high-performance gearbox inside the casing achieves high torque and powers two outputs as an option, a fast one and a slower one, giving a 2-speed option to the user. There are two versions of the motor, one with built-in battery compartment and one with a robotics cable. Still, living in the new world of renewable energies, we could not have left out the possibility to power the motor only with solar energy! The solar panel of ENGINO® has a large surface to produce enough voltage when placed in direct sunlight, to power even large models such as the Ferris wheel!

6. Working with Gears...
The new mechanics system of ENGINO® includes a range of high-precession gears that provide a smooth motion and transmit power from a hand-driven crank or the motor to another position, changing speed and torque based on the mechanical advantage of simple machines. There are 3 sizes of spur gears, a modular worm drive that can stack to itself achieving longer worms, a rack gear to convert rotational motion to linear and a set of bevel gears to change the direction of motion by 90 degrees. The central axle hub of the gears connects with a snap-fit with the various shafts of the system and is held secure in place with the use of the patented locking pin, making sure that gears will stay in place even when stressed with higher loads!
7. Working with Pulleys...
In modern-day machines, gears are more regularly used due to their compact size and efficiency. However, another Simple machine, the pulley, has been in use since ancient times and it still has its applications! Younger students understand mechanical advantage easier when using pulleys, and the Mechanics system by ENGINO® has 3 sizes of pulleys that can be used interchangeably to perform several experiments and machine configurations.

8. Working with Cams & Cranks...
To convert circular motion to reciprocal, such as the car engine, the use of cams is required. Students can learn valuable lessons through the deployment of cams in their models and understand how cams not only change the type of motion but can also act as timers. ENGINO® has two types of cams for teaching purposes, the traditional egg-shaped cam and the snail cam.

9. Working with Levers & Linkages...
The new beams of the Mechanics system has half the width of the Classic ENGINO® rods, making them more sturdy and robust, ideal to create levers and linkages and magnify motion. They can be combined with the simpler classic rods and accommodate variable complexity as per student's capabilities.

10. Making shafts...
Power transition can be achieved by using single pieces of axles or shafts. But when there is a need to reach longer distances, a single axle is not enough. The system includes axle connectors that can extend an axle to any length needed, simply by joining the axles together with snap-fit secure action. In addition to straight connectors, the ENGINO® system has Universal joints which are remarkable when attempting to change the angle of power transfer!
11. Making robots turn easily...
When students make robotic models, they are very often asked to program them for very common tasks such as line-following or obstacle avoidance. There are various methods to make a robotic car turn, but one of the most efficient ones which allows rotation on the same spot, is through the use of a central ball caster wheel. The metal sphere is captured in between two support wings and is allowed to rotate freely with minimal friction.
The new Qboidz™ system combines the award-winning snap-fit connectivity of Engino® system with the effortless building feature of stackable blocks! The system encourages preschool children to develop their cognitive, social and motor skills through fun and creative play. The Qboidz™ development is based on the latest pedagogical principles of STEM (Science, Technology, Engineering and Mathematics), aiming to provide both girls and boys with the necessary experience, skills and knowledge to cope with the technological advancements of the future. The parts are suitable even for 2 year olds but due to the complexity of some models, age 4-7 is recommended.

- Alligator 5 bonus models Set
- Airplane 5 bonus models Set
- Farm tractor 10 bonus models Set
- Racing car 10 bonus models Set
- Elephant 10 bonus models Set

Free app to view and manipulate 3D models!
Based on STEM education principles for preschool children.

STEM inspired!

Alligator 5 bonus models Set
Airplane 5 bonus models Set
Farm tractor 10 bonus models Set
Racing car 10 bonus models Set
Elephant 10 bonus models Set

Dimensions:
3.7 x 2.7 x 5.5 cm
Product code: QB40

Dimensions:
3.7 x 2.7 x 5.5 cm
Product code: QB41

Online 3D instructions
Printed instructions
Page 20

Based on STEM education principles for preschool children.
The new Qboidz system combines the award-winning snap-fit connectivity of the Engino system with the effortless building feature of stackable blocks! The system encourages preschool children to develop their cognitive, social and motor skills through fun and creative play. The Qboidz development is based on the latest pedagogical principles of STEM (Science, Technology, Engineering and Mathematics), aiming to provide both girls and boys with the necessary experience, skills and knowledge to cope with the technological advancements of the future. The parts are suitable even for 2 year olds but due to the complexity of some models, age 4-7 is recommended.

**Alligator** with 5 BONUS MODELS SET

Dimensions: 37 x 27 x 5.5 cm
Product code: QB40

**Airplane** with 5 BONUS MODELS SET

Dimensions: 37 x 27 x 5.5 cm
Product code: QB41

Free app to view and manipulate 3D models!
Based on STEM education principles for preschool children.

junior engineers 3+
Farm tractor with 10 BONUS MODELS SET

Dimensions: 41 x 28 x 5.9 cm

Product code: QB50
Racing car  with 10 BONUS MODELS SET
Dimensions: 46 x 29 x 5.9 cm
Product code: QB60

Dimensions:
41 x 28 x 5.9 cm
Product code:
QB50
Elephant with 10 BONUS MODELS SET

This new range titled STEAM LABS JUNIOR™ has been developed for preschool children, both boys and girls. The aim is to teach children about core subject knowledge, while also developing 21st century STEAM skills. The series covers 4 different topics that resonate with children of this age. The products are positioned as toy-books by bundling the box with the book and shrink-wrapping together. With the help of an adult, preschool children can learn interesting facts about each theme, while also building their model following the step-by-step instructions. More activities come next, such as coloring pictures, connecting dots, and tracing numbers or letters of the alphabet. Additional activities are included that help kids learn about shapes, colors and maths! These books come with our free Augmented Reality (AR) app that makes content much more engaging and entertaining!

Dimensions: 47 x 31 x 6.9 cm
Product code: QB70
This new range titled STEAM LABS JUNIOR™ has been developed for preschool children, both boys and girls. The aim is to teach children about core subject knowledge, while also developing 21st century STEAM skills. The series covers 4 different topics that resonate with children of this age. The products are positioned as toy-books by bundling the box with the book and shrink-wrapping together. With the help of an adult, preschool children can learn interesting facts about each theme, while also building their model following the step-by-step instructions. More activities come next, such as coloring pictures, connecting dots, and tracing numbers or letters of the alphabet. Additional activities are included that help kids learn about shapes, colors and maths! These books come with our free Augmented Reality app (AR) that makes content much more engaging and entertaining!

- Learning About Wild Animals...
- Learning About Aircrafts...
- Learning About Sea Adventures...
- Learning About Vehicles...

Free app to view 3D models

Building and learning of model

Learning the numbers

Story

Coloring activities

Book with theory, STEAM activities and building instructions
learning about wild animals

3+ appropriate for building
5 models to build
3 warranty years

learning about aircrafts

3+ appropriate for building
5 models to build
3 warranty years
learning about sea adventures

3+
appropriate for building
5
models to build
3 years
warranty

learning about Vehicles

3+
appropriate for building
5
models to build
3 years
warranty

Dimensions: 20.5 x 29 x 5.8 cm
Product code: STL13

Dimensions: 20.5 x 29 x 5.8 cm
Product code: STL14
The new CREATIVE BUILDER - Multimodel series, is the latest upgrade of the very successful 2017 INVENTOR line, which brings out the best of ENGINO®: the ability to build fast and easy as many models as possible! The classic building system is deployed, which makes the sets suitable for 6-year-olds, providing a stepping stone between the Qboidz and the Mechanics lines. Creativity development is the main focus of this series, starting from a 10-models set all the way to 120 models! All our sets from 30 models and above include the ENGINO® new 2-speed motor for animated builds, from cars to cranes to dinosaurs and helicopters. The only limit is the imagination of the child!
The new CREATIVE BUILDER - Multimodel series, is the latest upgrade of the very successful 2017 INVENTOR line, which brings out the best of ENGINO: the ability to build fast and easy as many models as possible! The classic building system is deployed, which makes the sets suitable for 6 year olds, providing a stepping stone between the Qboidz and the Mechanics lines. Creativity development is the main focus of this series, starting from a 10 models set all the way to 120 models!

All our sets from 30 models and above include the ENGINO new 2-speed motor for animated builds, from cars to cranes to dinosaurs and helicopters. The only limit is the imagination of the child!

**Dimensions:**
- 10 Models Multimodel Set: 22 x 16 x 5.5 cm
- 15 Models Multimodel Set: 26 x 19 x 5.5 cm

**Product code:**
- 1031
- 1531

**Warranty:**
- 6+ years warranty

**Appropriate ages:**
- 3 years

**Features:**
- Printed Instructions

**Models:**
- 10 Models Multimodel Set
- 15 Models Multimodel Set
- 20 Models Multimodel Set
- 25 Models Multimodel Set
- 30 Models Motorized Set - Multimodel Set
- 50 Models Motorized Set - Multimodel Set
- 90 Models Motorized Set - Multimodel Set
- 120 Models Motorized Set - Multimodel Set

**Printed Instructions:**
- page 27

**Engineers:**
- 6+ young engineers
20 Models
Multimodel Set

- 6+ Appropriate ages
- 3 years warranty
- Printed Instructions

25 Models
Multimodel Set

- 6+ Appropriate ages
- 3 years warranty
- Printed Instructions

Dimensions:

- 43 x 28 x 5.9 cm
- 31 x 23 x 5.5 cm
- 37 x 27 x 5.5 cm

Product code:

- 3030
- 2031
- 2531

Printed Instructions
30 Models
Motorized Set - Multimodel Set

Dimensions: 43 x 28 x 5.9 cm
Product code: 3030

50 Models
Motorized Set - Multimodel Set

Dimensions: 46 x 29 x 5.9 cm
Product code: 5030
90 Models
Motorized Set - Multimodel Set

7+
Appropriate ages

3
years warranty

Printed Instructions

Dimensions:
49 x 33 x 6.9 cm
Product code:
9030
MOTOR
POWER

Dimensions:
49 x 37 x 6.9 cm
Product code:
12030
MOTOR
POWER

page 31

Dimensions:
49 x 33 x 6.9 cm
Product code:
9030
MOTOR
POWER
120 Models

Motorized Set - Multimodel Set

Dimensions: 49 x 37 x 6.9 cm

Product code: 12030

7+ Appropriate ages

3 years warranty

Printed Instructions

Appropriate ages

Motorized Set

Motor POWER

Dimensions: 49 x 33 x 6.9 cm

Product code: 9030

Motor POWER

page 32
Getting children, especially girls, interested in construction building and engineering can be quite a difficult task. The brand new CREATIVE BUILDER - Designer Series, tackles this problem by linking imaginative play with 3D model creation. The vivid colours of lilac, fuchsia, light green and sky blue will surely intrigue our little friends and urge them to explore their creative side. The series ranges from 5 models set to 30 models with a motor. The line is also suitable for boys who like the design style of the series.
Getting children, especially girls, interested in construction building and engineering can be quite a difficult task. The brand new CREATIVE BUILDER - Designer Series, tackles this problem by linking imaginative play with 3D model creation. The vivid colours of lilac, fuchsia, light green and sky blue will surely intrigue our little friends and urge them to explore their creative side. The series ranges from 5 models set to 30 models with a motor. The line is also suitable for boys who like the design style of the series.

10 Models Designer Set
Dimensions: 26 x 19.5 x 5.5 cm
Product code: IG10

15 Models Designer Set
Dimensions: 31 x 23 x 5.5 cm
Product code: IG15

15 Models Designer Set
Dimensions: 31 x 23 x 5.5 cm
Product code: IG15
**20 Models**  
Designer Set

- **6+** Appropriate ages
- **3** years warranty
- Printed Instructions

**30 Models**  
Designer Motorized Set

- **6+** Appropriate ages
- **3** years warranty
- Printed Instructions

The Machinery Series is another nice extension to the CREATIVE BUILDER line, which places emphasis on the construction of diggers, cranes and trucks, some of the most favorite play themes of 6 to 9 year old youngsters! The line consists of four different pack options, each one containing instructions for three different models. Children can build iconic machines such as a Backhoe Loader, a Telescopic Handler and a Skid Steer Loader. The larger set also includes a motor which brings the Machinery models to life.

Dimensions: 37 x 27 x 5.5 cm  
Product code: IG20

Dimensions: 43 x 28 x 5.9 cm  
Product code: IG30
The Machinery Series is another nice extension to the CREATIVE BUILDER line, which places emphasis on the construction of diggers, cranes and trucks, some of the most favorite play themes of 6 to 9 year old youngsters! The line consists of four different pack options, each one containing instructions for three different models. Children can build iconic machines such as a Backhoe Loader, a Telescopic Handler and a Skid Steer Loader. The larger set also includes a motor which brings the Machinery models to life.

- **Tipper Truck** Machinery Set
- **Wheeled Loader** Machinery Set
- **Backhoe Loader** Machinery Set
- **Tall Crane** Machinery Motorized Set

**Dimensions:**
37 x 27 x 5.5 cm

**Product code:** IG20

**Appropriate ages:** 6+

**Printed Instructions:**
6+
Tipper Truck
Machinery Set

- Dimensions: 31 x 23 x 5.5 cm
- Product code: JCB10

Wheeled Loader
Machinery Set

- Dimensions: 37 x 27 x 5.5 cm
- Product code: JCB20
Backhoe Loader
Machinery Set

Machinery Motorized Set
Tall Crane

Dimensions:
41 x 28 x 5.9 cm
Product code:
JCB30

Dimensions:
31 x 23 x 5.5 cm
Product code:
JCB10

Dimensions:
49 x 33 x 6.9 cm
Product code:
JCB40

Appropriate ages: 6+
Printed Instructions
3 years warranty

Appropriate ages: 6+
Printed Instructions
3 years warranty

Machinery Set
Tipper Truck

Machinery Motorized Set
Tall Crane

Years warranty: 3

Appropriate ages: 6+
Printed Instructions
3 years warranty

Appropriate ages: 6+
Printed Instructions
3 years warranty

Appropriate ages: 6+
Printed Instructions
3 years warranty

Appropriate ages: 3

Appropriate ages: 3

Years warranty: 3

Years warranty: 3
The new INVENTOR MECHANICS series has a thematic approach with multi model capabilities, featuring an impressive main model. A new library of patent-pending components has been added to the ENGINO® system which enhances both aesthetics and technical features. These parts include high-precession wheels, mechanisms and snap-fit curved surfaces. The smaller sets in the series are suitable for 7 year olds, while older children are challenged with the bigger sets which also include a geared motor. The top of range steps-up the complexity with Robotics technology, Bluetooth connectivity and software control.

- **Speed racer**  
  with 5 bonus models  
  Mechanics Set

- **Acrobatic plane**  
  with 5 bonus models  
  Mechanics Set

- **Quad bike**  
  with 5 bonus models  
  Mechanics Set

- **Tipper truck**  
  with 5 bonus models  
  Mechanics Set

- **Beach buggy**  
  with 5 bonus models  
  Mechanics Set

- **Custom bike**  
  with 5 bonus models  
  Mechanics Set

- **Excavator**  
  with 5 bonus models  
  Mechanics Set

- **Space shuttle**  
  with 5 bonus models  
  Mechanics Set

- **Race car**  
  with 10 bonus models  
  Motorized Set

- **4-wheeled extreme bike**  
  with 10 bonus models  
  Motorized Set

- **Offroader**  
  with 10 bonus models  
  Motorized Set

- **Double-blade helicopter**  
  with 10 bonus models  
  Motorized Set

- **GinoBot**  
  with 10 bonus models  
  Robotized Set
The new INVENTOR MECHANICS series has a thematic approach with multi model capabilities, featuring an impressive main model. A new library of patent-pending components has been added to the ENGINO system which enhances both aesthetics and technical features. These parts include high-precision wheels, mechanisms and snap-fit curved surfaces. The smaller sets in the series are suitable for 7 year olds, while older children are challenged with the bigger sets which also include a geared motor. The top of range steps-up the complexity with Robotics technology, Bluetooth connectivity and software control.

- **Speed racer**
  - with 5 BONUS MODELS MECHANICS SET
  - Dimensions: 22 x 16 x 5.5 cm
  - Product code: IN10
  - Appropriate ages: 7+
  - Printed Instructions

- **Acrobatic plane**
  - with 5 BONUS MODELS MECHANICS SET
  - Dimensions: 22 x 16 x 5.5 cm
  - Product code: IN11
  - Appropriate ages: 7+
  - Printed Instructions
Quad bike
with 5 BONUS MODELS MECHANICS SET

Tipper truck
with 5 BONUS MODELS MECHANICS SET

Dimensions: 31 x 23 x 5.5 cm
Product code: IN30

7+
Appropriate ages
3
years warranty
Printed Instructions

Dimensions: 26 x 19.5 x 5.5 cm
Product code: IN21

7+
Appropriate ages
3
years warranty
Printed Instructions

Dimensions: 26 x 19.5 x 5.5 cm
Product code: IN20
Beach buggy
with 5 BONUS MODELS MECHANICS SET

Custom bike
with 5 BONUS MODELS MECHANICS SET

Dimensions: 31 x 23 x 5.5 cm
Product code: IN30

Dimensions: 31 x 23 x 5.5 cm
Product code: IN31
Excavator
with 5 BONUS MODELS MECHANICS SET

7+
Appropriate ages

3
years warranty

Printed Instructions

Space shuttle
with 5 BONUS MODELS MECHANICS SET

7+
Appropriate ages

3
years warranty

Printed Instructions

Dimensions: 37 x 27 x 5.5 cm
Product code: IN40

Dimensions: 37 x 27 x 5.5 cm
Product code: IN41

Dimensions: 37 x 27 x 5.5 cm
Product code: IN42
**Excavator with 5 BONUS MODELS MECHANICS SET**

**Space shuttle with 5 BONUS MODELS MECHANICS SET**

**Race car with 10 BONUS MODELS MOTORIZED SET**

**4-wheeled extreme bike with 10 BONUS MODELS MOTORIZED SET**

*Appropriate ages: 8+*

*Warranty: 3 years*

*Printed instructions*
Offroader
with 10 BONUS MODELS MOTORIZED SET

9+
Appropriate ages

3
years warranty

Printed Instructions

Offroader with 10 BONUS MODELS MOTORIZED SET

Dimensions: 46 x 29 x 5.9 cm
Product code: IN60

Dimensions: 47 x 31 x 6.9 cm
Product code: IN70

MOTOR POWER

MOTOR POWER

Offroader with 10 BONUS MODELS MOTORIZED SET

Dimensions: 46 x 29 x 5.9 cm
Product code: IN60

Dimensions: 47 x 31 x 6.9 cm
Product code: IN70

MOTOR POWER

MOTOR POWER

Offroader with 10 BONUS MODELS MOTORIZED SET

Dimensions: 46 x 29 x 5.9 cm
Product code: IN60

Dimensions: 47 x 31 x 6.9 cm
Product code: IN70

MOTOR POWER

MOTOR POWER

Offroader with 10 BONUS MODELS MOTORIZED SET

Dimensions: 46 x 29 x 5.9 cm
Product code: IN60

Dimensions: 47 x 31 x 6.9 cm
Product code: IN70

MOTOR POWER

MOTOR POWER

Offroader with 10 BONUS MODELS MOTORIZED SET

Dimensions: 46 x 29 x 5.9 cm
Product code: IN60

Dimensions: 47 x 31 x 6.9 cm
Product code: IN70

MOTOR POWER

MOTOR POWER
Double-blade helicopter with 10 BONUS MODELS MOTORIZED SET

9+ Appropriate ages
3 years warranty
Printed Instructions

Dimensions: 47 x 31 x 6.9 cm
Product code: IN70

Dimensions: 46 x 29 x 5.9 cm
Product code: IN60

MOTOR POWER

Offroader with 10 BONUS MODELS MOTORIZED SET
The new STEAM LABS™ toybook series has been developed based on the latest pedagogical trend that incorporates "Arts" within the STEM wording. Even though art is an inherent part of the engineering design process, "A" puts emphasis on one of the highest brain functions of human beings, that of inspirational creativity. "Inspiration" has been the driving force behind all humanity's masterworks, either inventions, architecture, music, painting or literature. STEAM LABS™ toybook series innovate further by bundling the toy with the Theory & Activity book on the outside of the box, shrink-wrapped together. Each set includes sheets of paper with pre-defined sketches which kids can paint, cut and attach on their models. The books explain the theory about the subject and include smart experimental activities that relate to each theme. These books come with our free Augmented Reality app (AR) that makes content much more engaging and entertaining!

**GinoBot**
with 10 BONUS MODELS ROBOTIZED SET

- **9+ Appropriate ages**
- **3 years warranty**
- **Printed Instructions**

**Dimensions:** 49 x 33 x 7.9 cm
**Product code:** IN90

**Page 47**
MOTORPOWER young 6+ engineers
The new STEAM LABS™ toybook series has been developed based on the latest pedagogical trend that incorporates “Arts” within the STEM wording. Even though art is an inherent part of the engineering design process, “A” puts emphasis on one of the highest brain functions of human beings, that of inspirational creativity. “Inspiration” has been the driving force behind all humanity’s masterworks, either inventions, architecture, music, painting or literature. STEAM LABS™ toybook series innovate further by bundling the toy with the Theory & Activity book on the outside of the box, shrink-wrapped together. Each set includes sheets of paper with pre-defined sketches which kids can paint, cut and attach on their models. The books explain the theory about the subject and include smart experimental activities that relate to each theme. These books come with our free Augmented Reality app (AR) that makes content much more engaging and entertaining!

- How Solar Energy Works?
- How Greenhouses Work?
- How Hydraulics Work?
- How Buoyancy Works?
- How Inertia Works?
- How Viruses Work?
The sets of this series are based on the ENGINO®’s Multi-level Learning System™. Each level corresponds to different skills that can be acquired through encompassing STEAM activities, starting from the practical (model building) going all the way to the abstract (learning through experiments).

**Level 1 - Building**: Use the included plastic parts and follow the building instructions to construct your model. Add skin surfaces to create a more complicated construction and make your model look more realistic!

**Level 2 - Drawing**: Give your model a more personal style by colouring the included surfaces, or step-up and be more creative by designing and painting your own theme from scratch.

**Level 3 - Experimenting**: Use the model you have built to carry out the suggested experiment and discover key scientific principles about the subject by yourself.

**Level 4 - Learning**: Read the theoretical section to enhance your knowledge with further information and amazing facts, becoming an expert in the field! Take the included quiz to test what you have learnt.

**SHARE skins online**: www.engino.com/stl/21

**Free Skins** available online! Download and print various skins to change the look of your models!
The sets of this series are based on the ENGINO's Multi-level Learning System™. Each level corresponds to different skills that can be acquired through encompassing STEAM activities, starting from the practical (model building) going all the way to the abstract (learning through experiments).

Level 1 - Building: Use the included plastic parts and follow the building instructions to construct your model. Add skin surfaces to create a more complicated construction and make your model look more realistic!

Level 2 - Drawing: Give your model a more personal style by colouring the included surfaces, or step-up and be more creative by designing and painting your own theme from scratch.

Level 3 - Experimenting: Use the model you have built to carry out the suggested experiment and discover key scientific principles about the subject by yourself.

Level 4 - Learning: Read the theoretical section to enhance your knowledge with further information and amazing facts, becoming an expert in the field! Take the included quiz to test what you have learnt.

Dimensions: 20.5 x 29 x 5.8 cm
Product code: STL20

Dimensions: 20.5 x 29 x 5.8 cm
Product code: STL23
how hydraulics work?

8+

4 models to build

3 year warranty

how buoyancy works?

8+

4 models to build

3 year warranty
The new robotic line called CODING LAB has been specially developed for robotic enthusiasts, who look for smart programmable gadgets of expandable and reconfigurable capabilities. The line is spearheaded by GinoBot™, the latest innovative robotics vehicle, with wi-fi and BT connectivity, ideal for Primary and Secondary school students but also hobbyist engineers. The ERP MINI™ takes this expertise to a higher level having independent sensors and controller, while ERP PRO™ is the top of the range with 3 motors, IR sensors and advanced mechanical elements. The CODING LAB line, through hands-on activities and real-life problem-solving challenges, can really help our next generation of inventors develop STEM expertise and acquire the so much needed 21st century skills.
GinoBot™ is the new expandable robot by ENGINO®! This innovative robotic vehicle has been developed to be ready-to-program, ensuring coding skills can be taught without losing time for constructing models from scratch. GinoBot™ has built-in connectors of ENGINO®, enabling structural and mechanical expansion. Expandability extends also to open electronics as GinoBot™ is connectable to Raspberry Pi®, Micro:bit® and Arduino® as well to ENGINO® ERP sensor modules (not included). This 4-wheel drive version of GinoBot comes with wifi and bluetooth, and has 2 colour sensors built-in at the bottom to follow coloured lines, an ultrasound sensor at the front, 3 Infrared distance sensors and 4 programmable RGB lights!

GinoBot™ Expandable Robot

Dimensions:
30 x 30 x 8.2 cm

Product code:
ROB10
ERP MINI™ is the spin-off of tested technologies by ENGINO®, used in schools globally to teach robotics and programming. This gadget version has advanced features and comes with a manually programmable controller that can also be connected with Bluetooth to smart devices or with a USB port to a PC. It is programmable with the KEIRO™ software and allows full reconfiguration to create robotic models and includes 2 Infrared distance sensors with 2 motors.

Dimensions: 32 x 32 x 9 cm
Product code: ROB20
ERP PRO™ is based on the first robotic platform of ENGINO® which has introduced a new era of innovations, leading the global STEM trend. The set, besides the 2 IR sensors and 3 motors, includes an extensive library of mechanical parts with gearing systems to build advanced models including a functional robotic arm and a grabber vehicle. ERP PRO comes with a manually programmable controller that can also be connected with bluetooth to smart devices or with a USB port to a PC. It is programmable with the KEIRO™ software and allows full reconfiguration to create robotic models and practice coding with algorithmic reasoning.
The purpose of STEM education - Science, Technology, Engineering and Mathematics - is to provide students with the necessary skills, knowledge and experience in order to cope with the technological challenges of the future. Modern pedagogical theories suggest that the study of engineering should be incorporated in all other subjects, starting from elementary level. DISCOVERING STEM series, offers a practical solution for facing all these educational issues, aiding the teacher to engage students in STEM disciplines in a fun, exciting and interesting way! The educational packages are also ideal as a home learning tool! The series covers a broad area of subjects: Mechanics and Simple machines, Structures, Newton’s Laws, Renewable Energy and even Programmable Robotics.
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- **STEM MECHANICS: Levers, Linkages & Structures**
- **STEM MECHANICS: Wheels, axles & Inclined planes**
- **STEM MECHANICS: Pulley drives**
- **STEM MECHANICS: Cams & Cranks**
- **STEM MECHANICS: Gears & Worm drives**
- **STEM STRUCTURES: Buildings & Bridges**
- **STEM NEWTON's LAWS:**
  - Inertia, Momentum, Kinetic & Potential Energy
- **STEM ASTRONOMY: Travelling to space**
- **STEM PALEONTOLOGY: How dinosaurs lived**
- **STEM SOLAR POWER: Converting Sunlight to Electricity**
- **STEM SIMPLE MACHINES**
- **STEM FLUIDS DYNAMICS**
- **STEM BOTANIC LABORATORY**
- **STEM ARCHITECTURE SET: Eiffel Tower and Sydney bridge**
- **STEM AMUSEMENT PARK: London Eye & Merry-Go-Round**
- **STEM ROBOTICS ERP MINI**
Mechanics: levers, linkages & structures

Learn how Levers are used to increase a force for lifting heavy objects and how you can create models with complex motion by connecting many levers together. Discover all the types of forces acting on structures and find out ways to reduce their effects. Build 16 working models such as a seesaw, a movable weight scale, a wheelbarrow, a parking gate, a toy with moving figures, a pantograph, a cube and a double deck bridge. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

- **build a wheelbarrow**
  - Construct this model of a wheelbarrow and learn how it is used to carry heavy loads, using the elements of levers: fulcrum, effort and load; discovering the properties of second-class levers.
  - How to carry heavy loads.
  - What a second-class lever is.

- **build a folding platform**
  - This model of a folding platform is fully operational and will help you discover how several levers connected together create a linkage that helps us raise the platform. Experiment and discover how we can gain mechanical advantage using Levers.
  - What a parallel linkage is.
  - How levers and linkages work together.

- **build a double deck bridge**
  - Bridges can change type through specific modifications. This is simulated easily with the Engino system. Transform a single beam bridge into a double deck bridge and check the rigidity of the two models.
  - What are the different types of forces.
  - How to create a rigid bridge.

- **build a lever crane**
  - Make a working model of a lever crane and learn how it is used for lifting heavy objects, without falling over to the other side. Compare your model with a real one and learn about first-class levers.
  - How to lift heavy objects.
  - What a first-class lever is.
Physics laws: inertia, friction, circular motion & energy conversion

Learn all about Newton’s laws of motion which are the basis of classical mechanics that still describe most everyday life situations. Experiment with kinetic and potential energy in order to discover the properties of energy and how it is transformed from one form to the other. Build 6 working models such as a crash test rig, a rocket launcher, a sharpening wheel, a bow and arrow, a rubber car and an inertia test platform. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

- What Newton’s 1st and 2nd Law of motion are.
- What inertia is and how it works.
- What escape velocity is.
- What friction affects the motion of a body.
- What Newton’s 3rd law of motion is.
- How energy converts in different forms.
- Newton’s 3rd law of action and reaction.
- How levers and linkages work together.
- What a first-class lever is.
- How to lift heavy objects.
- How friction affects the motion of a body.
- What Newton’s 3rd law of motion is.
- How to create a rigid bridge.
- How to carry heavy loads.
- How levers are used to increase a force for lifting heavy objects and how you can create models with complex motion by connecting many levers together.
- What Newton’s 3rd law of action and reaction.
- How energy converts in different forms.
- Newton’s 3rd law of action and reaction.
- How inertia is and how it works.
- What escape velocity is.
- What friction affects the motion of a body.
- What Newton’s 3rd law of motion is.
How cars work?

Cars, or automobiles, are probably the most common way for transporting humans and goods. They may vary in size and design, but all are defined as motor vehicles that run primarily on roads and have wheels. Cars came into global use during the 20th century and our developed economies depend on them. Who was the inventor of the car? What are the basic parts of a car and how do they work? How crucial is safety and comfort for passengers? Which physical laws car engineers need to know?

**Build a formula**

Formula cars are the elite of motorsports and automobile technology. They are designed for ultimate aerodynamic downforce and maximum performance.

- Which are the most popular motorsports?
- What is mechanical advantage?

**Build a sports car**

Motor sports drive excellence in car design and innovation in automobile engineering. Build this sports car and read how fuel is burned into power and which are the basic parts of a car.

- How do pistons work inside the engine?
- What is the role of the gearbox?

**Build an off-roader**

This experimental model can be used to verify that cars with shorter wheelbase are more suitable for off-road driving. Experiment with the model to discover:

- How the design affects the performance?
- What is breakover angle?

**Build a micro car**

This micro car model demonstrates that compact and elegant designed cars are ideal solutions for city centre driving. Read the booklet and learn the challenges of driving in city centre.

- Why small cars help in traffic jams?
- What are airbags and anti-lock brakes?
Cars, or automobiles, are probably the most common way for transporting humans and goods. They may vary in size and design, but all are defined as motor vehicles that run primarily on roads and have wheels. Cars came into global use during the 20th century and our developed economies depend on them. Who was the inventor of the car? What are the basic parts of a car and how do they work? How crucial is safety and comfort for passengers? Which physical laws car engineers need to know?

How cars work?

How aircrafts work?
technology of machines

Travelling with an aircraft for holidays or for business is a very common activity. Airplanes are made to combine fast transportation and safety. The development of aviation is considered as one of the highlights in human history, since it has totally changed the way we travel around the Earth. Are you interested to become a pilot? How do pilots control a plane and do acrobatic manoeuvres? Which forces affect a flight? How do helicopters fly?

build a gunship helicopter

Some of the most powerful helicopters can carry tons of load and support ground forces. This large model of gunship helicopter features long rotor blades and big fuselage.

- How do helicopters support firefighters?
- Why drones are important for monitoring?

build a single proplane

This model features the propeller which was the first mechanism for propulsion. Even today, acrobatic aircrafts use this technology to achieve their manoeuvres!

- How do pilots control an aircraft?
- Which aircraft holds the speed record?

build a chinook

Chinook is an iconic helicopter with two rotor blades. This powerful machine can carry numerous passengers and lift outstanding amount of load.

- What is moment of inertia?
- How do helicopters counterbalance torque?

build a helicopter

Helicopters are a special category in aviation. Their ability to land and take off vertically makes them ideal for emergency and rescue scenarios. Build your helicopter model and discover:

- How do helicopters fly?
- Why do helicopters need a tail rotor?
Levers & linkages

Learn how Levers are used to increase a force for lifting heavy objects and how they can change the direction of motion. Find out how you can create models with complex motion by connecting many levers together and learn how these Linkages can be applied to various machines. Build 16 working models such as a seesaw, a movable weight scale, a wheelbarrow, a parking gate, a toy with moving figures, a pantograph and two types of linkages. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

- build a wheelbarrow
  Construct this model of a wheelbarrow and learn how it is used to carry heavy loads, using the elements of levers: fulcrum, effort and load; discovering the properties of second-class levers.
  - How to carry heavy loads.
  - What a second-class lever is.

- build a letter scale
  Construct a fully functional model of a letter scale and learn how small objects like envelopes and paper are weighed. Experiment and discover on your own the reasons why a scale might sometimes produce wrong indications.
  - How to weigh light objects.
  - What are the reasons for weighing errors.

- build a folding platform
  This model of a folding platform is fully operational and will help you discover how several levers connected together create a linkage that helps us raise the platform. Experiment and discover how we can gain mechanical advantage using Levers.
  - What a parallel linkage is.
  - How levers and linkages work together.

- build a parallel scale
  This weight scale of parallel linkages will introduce you to the concept of linkages and help you understand how they work. Find out about parallel motion and how it is used to efficiently weight objects.
  - What a linkage is.
  - How parallel motion is created.

Dimensions: 37 x 27 x 5.5 cm
Product code: STEM01
Levers & linkages

Learn how Levers are used to increase a force for lifting heavy objects and how they can change the direction of motion. Find out how you can create models with complex motion by connecting many levers together and learn how these Linkages can be applied to various machines. Build 16 working models such as a seesaw, a movable weight scale, a wheelbarrow, a parking gate, a toy with moving figures, a pantograph and two types of linkages. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

- How the size of the wheel matters.
- How the size of the axle affects motion.

Wheels, axles & inclined planes

Learn how wheels and axles use friction to move objects easily and how big tyres compare to small tyres. Find out how an inclined plane can be used for lifting heavy objects and how another form of inclined plane, the wedge, is used in every day applications. Build 14 working models such as a launching platform, a door with knob, a well, an airport staircase, an experimental ramp and a splitting wedge. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

- How the wheel and axle connect.
- How a wheel is used as a lever.

- How a staircase relieves us from effort.
- What the mechanical advantage of a plane is.

- How inclined planes work.
- What inclination is.

Dimensions: 37 x 27 x 5.5 cm
Product code: STEM02
Pulley drives

Learn how pulley drives can be used to transfer force with reduced friction and how they can increase force or speed at amazing levels. Pulleys have been used for thousands of years and are essential parts of complex machines in modern times, solving many technological problems. Build 8 working models such as a material lift, a stationary bike, a crane bridge, a blender, a construction crane and a windmill. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

- build a stationary bike
  Play with this realistic model of a stationary bike and learn how simple machines work together in order to produce an outcome. Experiment and discover how velocity depends on the pulley’s size.
  - How simple machines work together.
  - What the relation between force-velocity is.
- build a crane bridge
  Construct this model of a crane bridge and try to lift some objects, finding out how pulleys can help you lift heavy objects easily. Compare your model with different real life cranes and learn their differences.
  - How to lift heavy objects with a pulley.
  - How real-life cranes work.
- build a construction crane
  This model of a construction crane is another example of the use of pulleys. Experiment and learn how force is transferred from one point to another and how we can gain mechanical advantage.
  - How to transfer force.
  - What the mechanical advantage of pulleys is.
- build a windmill
  Construct this model of a high speed windmill and learn how pulleys can be used to transfer power from one position to another. Experiment and discover how a small pulley can drive a larger one and how the speed changes from one pulley to the other.
  - What a belt drive is and how it is used.
  - How to increase or decrease pulley’s speed.

Dimensions:
37 x 27 x 5.5 cm

Product code:
STEM03

8-16+

10 pages of theory and amazing facts!
2 pages of revision quiz!
3 pages of experimental activities!
15 pages of step by step instructions!

page 65
Pulley drives

Learn how pulley drives can be used to transfer force with reduced friction and how they can increase force or speed at amazing levels. Pulleys have been used for thousands of years and are essential parts of complex machines in modern times, solving many technological problems. Build 8 working models such as a material lift, a stationary bike, a crane bridge, a blender, a construction crane and a windmill. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

Cams & cranks

Learn how you can transmit power using cams and cranks and how they can be used to convert reciprocal to linear motion. Discover how these mechanisms are crucial elements of many machines even though they are not considered as “Simple Machines”. Build 8 working models of cams & cranks such as a fishing crane, an oil pump, a moving figure, a moving bridge, a sewing machine and a flying eagle. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

Dimensions:
37 x 27 x 5.5 cm

Product code:
STEM04

8-16+

page
65 66
Gears & worm drives

Learn how gears can easily reduce or increase speed, change force or transfer motion from one position to another. Discover how worm drives are used to greatly reduce rotational speed and how screws can convert rotational motion to linear, while greatly increasing force. Build 12 working models such as an experimental crane, a gearbox, a carousel, a helicopter, a screw press and a crane with a rotating arm. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

- **build a carousel**
  A visit to the playground excites both children and grown-ups! Build this model of a fully functional carousel and see how you can rotate the seats at very high speeds. Observe how the seats move higher and higher as they rotate faster and faster!
  - How to increase rotating speed.
  - How to change the direction of motion.

- **build a helicopter**
  This helicopter has high speed rotor blades, powered by 2 crown gears with a high gear ratio. The gears are used to change the direction of motion from horizontal to vertical, while motion is transferred by a series of interconnected shafts.
  - How to increase rotating speed.
  - How to change the direction of motion.

- **build a crane with rotating arm**
  Follow the instructions to build a model of a crane with a rotating arm and discover the relationship between the worm drive's characteristics and the gears' revolutions. Learn about the usefulness of the rachet mechanism and how it works.
  - Relation between gear's teeth and revolutions.
  - What a rachet mechanism is.

- **build a folding platform with a screw**
  The folding platform model uses the Engino worm as a screw, similar to the vice model. It converts rotational motion to linear and pushes or pulls the sissor-type linkages to raise or lower the platform.
  - How to lift objects using linkages.
  - How a screw behaves like an inclined plane.

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8-16+

Dimensions:
37 x 27 x 5.5 cm

Product code:
STEM05
**Structures**

Learn all about buildings and how they literally support our lives! Experiment with different types of bridges and find out how their architecture design provides massive weight support. Discover all the types of forces applied and how engineers manage to reduce their effects. Build 9 working models such as a house, a pyramid and various types of bridges: beam, arch, truss, cable-stayed and suspension bridge. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

- **build a cable-stayed bridge**
  This exciting model of a cable-stayed bridge is another type of a cable bridge. One famous example of this bridge is the Rio-Antirion bridge in Greece, the world’s longest multi-span cable-stayed bridge.
  - How long spans can be supported effectively.
  - How tension gives stability to the bridge.

- **build a suspension bridge**
  This fascinating model of a suspension bridge will introduce you to a special type of bridges, the cable bridges! Learn through experimentation how the tension of the cables supports the deck of the bridge.
  - Which are the different types of cable bridges.
  - What are their advantages

- **build an arch bridge**
  Build a realistic model of an arch bridge and learn the properties of the arch! See how this bridge can become stable and support a lot of weight by transferring it to the abutments.
  - How weight is redistributed.
  - Which are the elements of an arch bridge.

- **build a truss bridge**
  Build two models of a truss bridge, one with the trusses over the deck and one with the trusses under the deck! Learn how triangulation offers great stability and rigidity to a structure. Discover the different types of simple bridges.
  - Which are the different types of truss bridges.
  - How triangulation strengthens a structure.
**Newton’s laws**

Learn all about Newton’s laws of motion which are the basis of classical mechanics that still describe most everyday life situations. Experiment with kinetic and potential energy in order to discover the properties of energy and how it is transformed from one form to the other. Build 8 working models such as a ballistic catapult, a gravity fan, a collision car, a moving cabin, a balloon powered plane and a dragster. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

- **build a gravity fan**
  Build a model of a fan which can rotate by the force of gravity! Place the construction between 2 tables and allow the weight of 4 wheels to fall down. As it falls, the string attached rotates the fan blades faster and faster.
  - How potential energy converts to kinetic.
  - The acceleration of gravity and speed.

- **build a balloon-powered plane**
  There are many ways to store energy, one is with a balloon. Build this model and see how plane starts flying around the base when the balloon is allowed to release its air. Change the balloon’s position and learn about moments and centrifugal force.
  - What centrifugal and centripetal forces are.
  - How balloon energy converts to kinetic.

- **build a dragster car**
  This fascinating model of a dragster is not only a huge model (60 cm long) but is also self propelled by an elastic spring. Learn by experimenting how the energy stored in a tight rubber band can convert to kinetic energy and speed!
  - How to store energy in a rubber band.
  - Converting energy from one form to another.

- **build a ballistic catapult**
  In ancient times, cities were protected by walls and the only way to destroy them was with the catapult. This model simulates the real catapult’s function and can be tested to see how the force of gravity affects motion and projectile distance.
  - How gravity affects the path of motion.
  - Newton’s 3rd law of action and reaction.

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**Dimensions:**

37 x 27 x 5.5 cm

**Product code:**

STEM07

**8-16+**

**12** pages of theory and amazing facts!

**3** pages of revision quiz!

**6** pages of experimental activities!

**16** pages of step by step instructions!

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Learn how rockets are launched into space and how spacecrafts explore the solar system. Learn about the mission to the Moon and how astronauts live in the International Space Station (ISS). Discover the science of space exploration and the hazardous threats of space environment. Build 5 models such as a rocket, a landing pod, scale, a space robot and a space shuttle. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!
Learn all about Newton's laws of motion which are the basis of classical mechanics that still describe most everyday life situations.

Experiment with kinetic and potential energy in order to discover the properties of energy and how it is transformed from one form to the other. Build 8 working models such as a ballistic catapult, a gravity fan, a collision car, a moving cabin, a balloon powered plane and a dragster.

You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

12

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Dimensions: 37 x 27 x 5.5 cm
Product code: STEM07

Astronomy travelling to space

Learn how rockets are lunched into space and how spacecrafts explore the solar system. Learn about the mission to the Moon and how astronauts live in the International Space Station (ISS). Discover the science of space exploration and the hazardous threats of space environment. Build 5 models such as a rocket, a landing pot, scale, a space robot and a space shuttle. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

8-16+

Astronomy

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14

pages of theory and amazing facts!

3

pages of revision quiz!

8

pages of experimental activities!

13

pages of step by step instructions!

Dimensions: 31 x 23 x 5.5 cm
Product code: STEM08

Astronomy travelling to space

Learn how rockets are lunched into space and how spacecrafts explore the solar system. Learn about the mission to the Moon and how astronauts live in the International Space Station (ISS). Discover the science of space exploration and the hazardous threats of space environment. Build 5 models such as a rocket, a landing pot, scale, a space robot and a space shuttle. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

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Astronomy travelling to space

Learn how rockets are lunched into space and how spacecrafts explore the solar system. Learn about the mission to the Moon and how astronauts live in the International Space Station (ISS). Discover the science of space exploration and the hazardous threats of space environment. Build 5 models such as a rocket, a landing pot, scale, a space robot and a space shuttle. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

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Paleontology: how dinosaurs lived

Learn all about the dinosaurs and how they lived in the prehistoric era on Earth. Build 5 motorized dinosaur models such as a brontosaurus, a stegosaurus, a triceratops, a pterodactyl and an ankylosaurus and bring the to motion. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

- **build a triceratops**
  Construct a motorized model of this 3-horned prehistoric creature! An iconic dinosaur who weighted more than an elephant. Set this dinosaur into motion and learn some amazing facts about its physical size and nutrition.
  - What does its name mean?
  - When were first fossils discovered?

- **build a brontosaurus**
  Build one of the most iconic dinosaurs who lived during the Jurassic period! Brontosaurus was a gigantic dino with a long neck and tail. Bring this dino to life with a motor and learn how its used its body as armour!
  - How big was the brontosaurus?
  - Why paleontologists seek for fossils?

- **build a ankylosaurus**
  Ankylosaurus was one of the last dinosaurs remaining before the large extinction event that occurred at the end of the Mesozoic Era. The prominent feature of Ankylosaurus was its sharp armour of knobs, plates and spikes.
  - Which animal has a similar armour?
  - How big were its sharp spikes and bones?

- **build a pterodactyl**
  Did you know that dinosaurs had cousins who could fly? Contrary to their large size and mass, pterodactyls had the ability to fly and attack their pray from above. Learn more about this flying reptile of the Jurassic Period.
  - Do they have descendants who survived?
  - How could they fly?

**Dimensions:**
37 x 27 x 5.5 cm

**Product code:**
STEM09
Learn all about the dinosaurs and how they lived in the prehistoric era on Earth. Build 5 motorized dinosaur models such as a brontosaurus, a stegosaurus, a triceratops, a pterodactyl and an ankylosaurus and bring them to motion. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

**Build a Solar Chopper Car**
Construct this exciting model of a chopper car and experience the power of the sun. Learn how solar panels work and how weight can be manipulated to control speed.

- How solar panels work.
- How weight affects speed.

**Build a Solar Winch Crane**
Create this fascinating model of a winch crane and use it for lifting light loads. Learn how force is transferred from one point to another, what the mechanical advantage is and how it can be used.

- How real life cranes work.
- How force is transferred.

**Build a Solar Robot**
Combine two modern technological advancements into one model: the solar powered robot. Observe the energy transformation from solar to electrical.

- What the latest technology advancements are.
- How energy changes forms.

**Build a Drawbridge**
Build this amazing model of a drawbridge and become a traffic controller for cars, ships and pedestrians. Learn how pulleys and strings work together to move objects in the desired direction, using the power of the sun.

- How real life bridges work.
- How pulleys help to move objects.

**Solar Power**
Climate change and global warming urge scientists to take action and save our planet by reducing carbon emissions. The sun can provide free energy for all of our needs, however, we need to convert it to a useful form. This set includes one 3V solar panel that powers an electrical motor, along with instructions for 16 solar powered models such as a chopper car, a fan, a plane, a robot and a winch crane. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!

- 12 pages of theory and amazing facts!
- 3 pages of revision quiz!
- 3 pages of experimental activities!
- 12 pages of step by step instructions!

Dimensions: 43 x 28 x 5.9 cm
Product code: STEM30
Simple machines

This set is a combination of the basic 5 sets of “Discovering STEM” series and covers all simple machines mechanisms. These mechanisms offer a mechanical advantage and are crucial elements of many machines and devices. They are designed to multiply or reduce force, increase or decrease speed and convert one type of motion to another. Build 60 working models that cover the subjects of levers, the wedge, the wheel and axle, the screw, the inclined plane, the pulley, as well as the more advanced gears and linkages! You can find easy-to-follow building instructions for all models either online or in the booklets included. These comprehensive booklets provide detailed explanations of the different scientific principles applied and incorporate innovative experimental activities for hands-on learning. Quiz sections for each chapter are also available to challenge your newly acquired knowledge!

Dimensions: 43 x 28 x 5.9 cm

Product code: STEM40
This set is a combination of the basic 5 sets of “Discovering STEM” series and covers all simple machines mechanisms. These mechanisms offer a mechanical advantage and are crucial elements of many machines and devices. They are designed to multiply or reduce force, increase or decrease speed and convert one type of motion to another. Build 60 working models that cover the subjects of levers, the wedge, the wheel and axle, the screw, the inclined plane, the pulley, as well as the more advanced gears and linkages! You can find easy-to-follow building instructions for all models either online or in the booklets included. These comprehensive booklets provide detailed explanations of the different scientific principles applied and incorporate innovative experimental activities for hands-on learning. Quiz sections for each chapter are also available to challenge your newly acquired knowledge!

Dimensions:
43 x 28 x 5.9 cm

Product code:
STEM40

70 pages

25 pages of step by step instructions!

16 pages of revision quiz!

16 pages of experimental activities!
Fluid dynamics

One of the most important areas in physics is the study of fluids and their fundamental principals. Water and air are the two most important elements for life and both are categorized as fluids. Air motion is what determines the temperature in our rooms. Pipelines are providing water to our homes. Industrial and construction machines use hydraulics to easily lift heavy objects. Airplanes and ships change direction by using aerodynamics and hydrodynamics respectively. Have you ever wondered why objects sink in water, while others float? How does blood flow in our body? How do water tanks operate? With this set you can build 6 different models, including a boat and a submarine, as well as various experimental rigs to learn all about fluid dynamics! Printed building instructions for 4 models are included and 2 more models are available online and through the free kidCAD app for smart devices.

build a submarine
Colourful fish, strange species, coral landscapes, shipwrecks and even ancient cities are only 5% from the total treasures one can find in deep oceans! Build your own submarine and experiment with it to learn how the principles of buoyancy help drive these ships.

- What Archimedes Principle is.
- How submarines use buoyancy to dive deep.

build a siphon device
Have you ever wondered how you can empty the fluid from a tank when there is no hole on its bottom? The siphon device can transfer fluids from one container to another! Experiment with this model and magically swap water between the two cups.

- What a siphon device is.
- How can you create an “upward” flow.

build the communicating vessels
Since ancient Rome, water was transferred throughout towns by connecting large containers of water. Build and discover how communicating vessels work and observe the level of water inside the tube.

- How communicating vessels work
- What artesian wells are.

build a hydraulic platform
Hydraulics have multiple applications in engineering. Build an experiential platform which moves by the use of hydraulic pressure from pistons. Learn how pressure is transferred inside tubes and watch it lifting heavy objects with little effort.

- What Pascal law states.
- How a hydraulic press works.
One of the most important areas in physics is the study of fluids and their fundamental principals. Water and air are the two most important elements for life and both are categorized as fluids. Air motion is what determines the temperature in our rooms. Pipelines are providing water to our homes. Industrial and construction machines use hydraulics to easily lift heavy objects. Airplanes and ships change direction by using aerodynamics and hydrodynamics respectively. Have you ever wondered why objects sink in water, while others float? How does blood flow in our body? How do water tanks operate? With this set you can build 6 different models, including a boat and a submarine, as well as various experimental rigs to learn all about fluid dynamics! Printed building instructions for 4 models are included and 2 more models are available online and through the free kidCAD app for smart devices.

Build this amazing, fully functional greenhouse model and see your seeds fertilize and grow! Interested to become a young agriculturist? Control the conditions inside your greenhouse and monitor how your plants are affected by temperature, moisture and light levels. Take care of your plants and provide them with proper ventilation through your greenhouse movable parts. Learn about photosynthesis and the life cycle of beans.

**Botanic laboratory**

Build an ox-driven plough
Learn about the history of agriculture and how people used draft animals (e.g. oxen or bulls) to cultivate the soil. Recreate a scene of a common farming technique from the past by constructing this exciting model of an ox-driven plough.

- What is the history of agriculture?
- How was the ox-driven plough used?

Build a gearbox
Build this simple model of a gearbox and experiment with different gear set-ups. Learn how to calculate the gear ratio even when more complex set-ups are assembled. The windows of your greenhouse open and close using gears.

- What is a gearbox?
- How to calculate the gear ratio?

**Dimensions:**
46 x 29 x 5.9 cm

**Product code:**
STEM47

**8-16+**

10ml plastic syringe to water the plants with precision.

seeds and soil not included

x12 pots & plastic tray included for planting and growing seed.

11 pages of theory and amazing facts!
3 pages of revision quiz!
2 pages of experimental activities!
22 pages of step by step instructions!

**8-16+**

Seeds and soil not included

x12 pots & plastic tray included for planting and growing seed.

10ml plastic syringe to water the plants with precision.

**Build this amazing, fully functional greenhouse model and see your seeds fertilize and grow!**

**Interested to become a young agriculturist? Control the conditions inside your greenhouse and monitor how your plants are affected by temperature, moisture and light levels.**

**Take care of your plants and provide them with proper ventilation through your greenhouse movable parts. Learn about photosynthesis and the life cycle of beans.**
Architecture set

The Architecture set demonstrates the ability of ENGINO® to build huge models of impressive size and style, appropriate for ages of 8+. Children discover different types of structures and build two oversized models of the Sydney Bridge and the Eiffel Tower! The set is completed with smaller size models including a cable-stayed bridge, suspension bridge, arch bridge, truss bridge and house from printed instructions booklet and online. The hands-on activity book contains all that students need to know about technological advancements in architecture, with theory and exciting experiments and quizzes with their solutions.

- **14 pages** of theory and amazing facts!
- **2 pages** of revision quiz!
- **4 pages** of experimental activities!
- **44 pages** of step by step instructions!

**Dimensions:**
49 x 37 x 16 cm

**Product code:**
STEM55
The Architecture set demonstrates the ability of ENGINO to build huge models of impressive size and style, appropriate for ages of 8+. Children discover different types of structures and build two oversized models of the Sydney Bridge and the Eiffel Tower! The set is completed with smaller size models including a cable-stayed bridge, suspension bridge, arch bridge, truss bridge and house from printed instructions booklet and online. The hands-on activity book contains all that students need to know about technological advancements in architecture, with theory and exciting experiments and quizzes with their solutions.

Amusement park set

In amusement parks, the main attractions are often the exciting, fast rides or the romantic, slow wheels that offer spectacular views from above. This set includes one geared motor to power four large-scale models of such rides: Ferris wheel, London Eye, merry-go-round and booster ride. Additionally, you can experiment with gears by building four smaller models such as a gearbox, an experimental crane, a carousel and a planetarium. You can find easy-to-follow building instructions for all models either online or in the booklet included. The booklet provides detailed explanations of the different scientific principles applied and incorporates innovative experimental activities for hands-on learning. A Quiz section is also available to challenge your newly acquired knowledge!
ERP SPECIFICATIONS:
- ARM Cortex-M4 32-bit processor, 64 MHZ.
- 512 kB flash/64 kB RAM.
- USB full speed port (12 Mbit/s).
- Onboard membrane buttons for manual programming.
- 4 input - output ports. Connect up to 2 sensors digital or analogue and up to 2 motors (servo or analogue).
- Power source: 3 x AAA batteries (not included).

Utility app:
EnginoRobot BT™ app:

Dimensions:
49 x 37 x 8 cm

Product Code:
STEM60