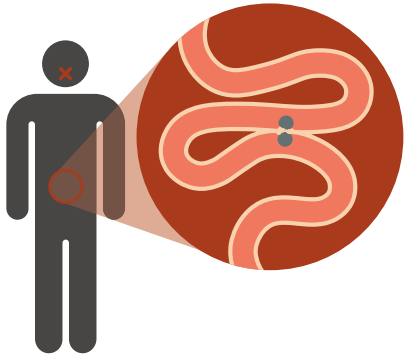
1+ PLAYERS

2+ MINUTES

14+ AGE

WARNING. Not suitable for children under 14 years. This product contains small magnets. Swallowed magnets can stick together across intestines causing serious injuries. Seek immediate medical attention if magnets are swallowed. This product is not a toy.

WARNING: Keep away from mouth, animals, and children who don't understand the dangers.



We have to be strict here, because ingestion of magnets is a serious issue and something we wish to make more people aware of. Magnets handled the right way are not dangerous unless they are being consumed by yourself, children or animals. So for your own and everyone else's safety, please follow this manual. We also suggest to count the pieces after they have been used to make sure you haven't left pieces laying around for children and animals to ingest. Magnets can cause an undesired reaction with pacemakers; keep the pieces at a safe distance to prevent problems.

RULES OF THUMB

Magnets are not food

Keep away from credit cards

Especially pacemakers

EATING MAGNETS WILL NOT MAKE YOU MORE ATTRACTIVE!
You are beautiful just the way you are.

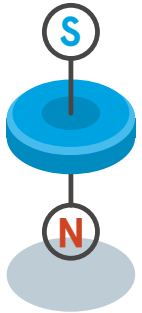
AND FINALLY: Always communicate these dangers when sharing magnets!

Creativity starts with Magination. A magnetic toolkit for hands-on learning and creativity.

Magination works as a deck of cards, where the pieces can be used to play an unlimited amount of games. The magnetic force will inspire you to find unique ways to use Magination, which makes it possible to both build and experiment with the pieces. In this attractive manual you'll learn how the pieces work, how to play exciting games, interesting experiments and even some magnetic physics. Prepare your inner scientist!

Magination is as much yours as it is ours. So we invite you to join us in the further development of Magination through our online community, where you'll be able to find new games, rate them, create your own, and never run out of magnificent ways to use Magination. We hope to see you there, because being creative is much easier when we're doing it together!
www.maginationgame.com

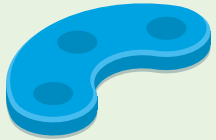
FUNCTIONALITY



Neodymium magnets inside

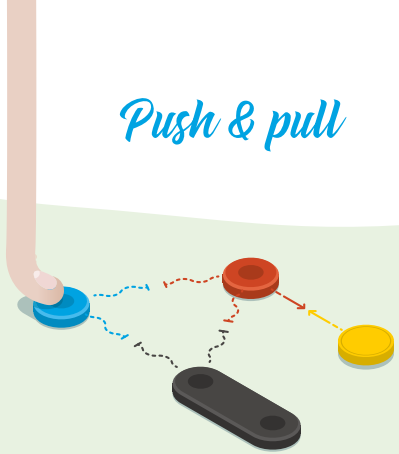
Single

Double

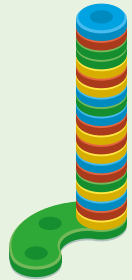


Triple

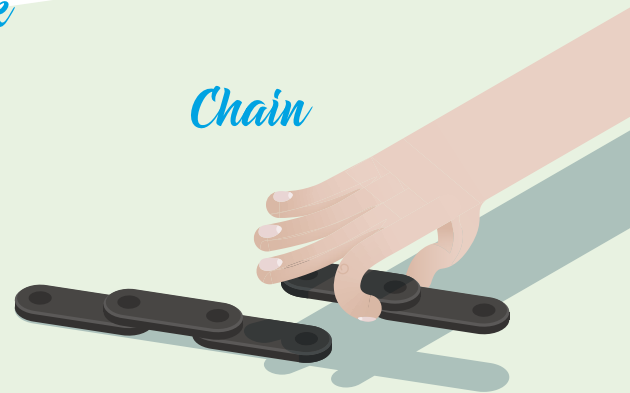
Push & pull



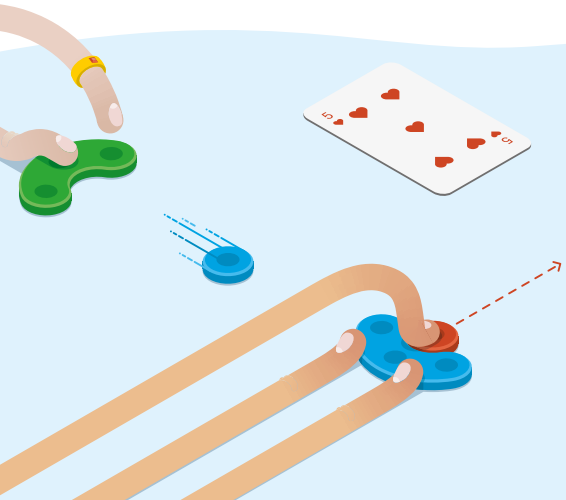
Stack



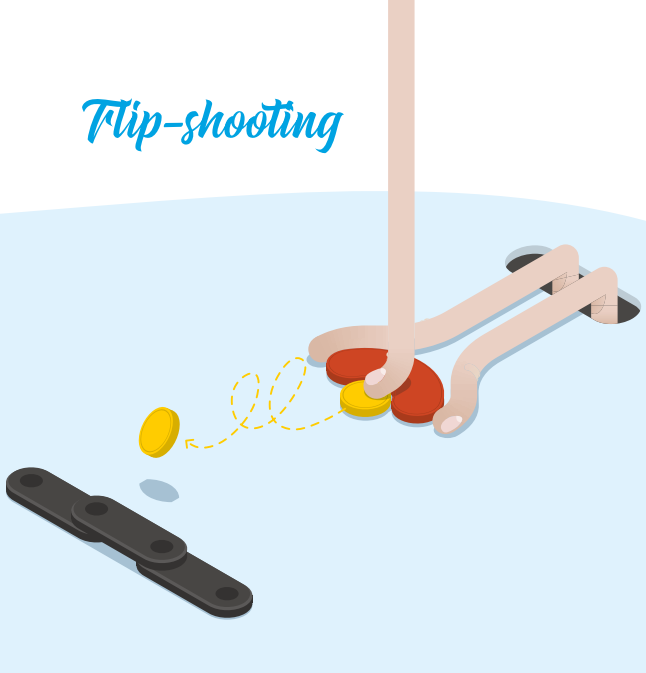
Chain



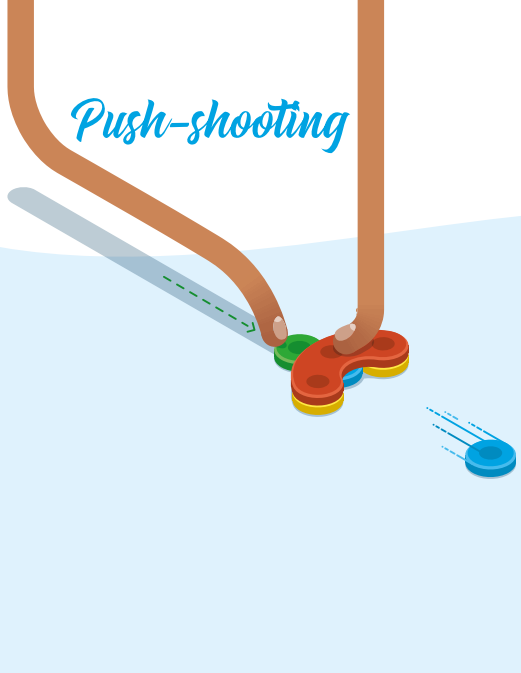
Shooting



Flip-shooting



Push-shooting



Claw-shooting

Games introduction

Now you know the basics, and it's time to introduce some actual games!

We have illustrated and explained multiple great games over the next following pages. You'll see the amount of pieces you need, illustrations and explained rules on the first two pages for each game. Keep in mind that these rules are only suggestions on how we believe the games can be played. Some games can recommend more pieces than you have at hand, but that shouldn't keep you from trying! The rules have been created to be challenged and modified - we want you to edit them.

Each game ends with a creative section to get you started on modifying and creating new rules. It starts with the most important question to trigger your creativity: **"What if..?"**

We love this question, and you should repeat it to yourself over and over again when playing and experimenting. We have added multiple questions to spark your imagination and inspire you to look beyond the rules we presented on the previous page. You'll notice that there are plenty of open spaces here, which is for you to write your own creative questions and ideas! Don't feel pressured to come up with your own games. Remember that you can always stop by the community for more games, discussions and inspiration from other like-minded people - here you'll also find short videos of all the games!

www.maginationgame.com

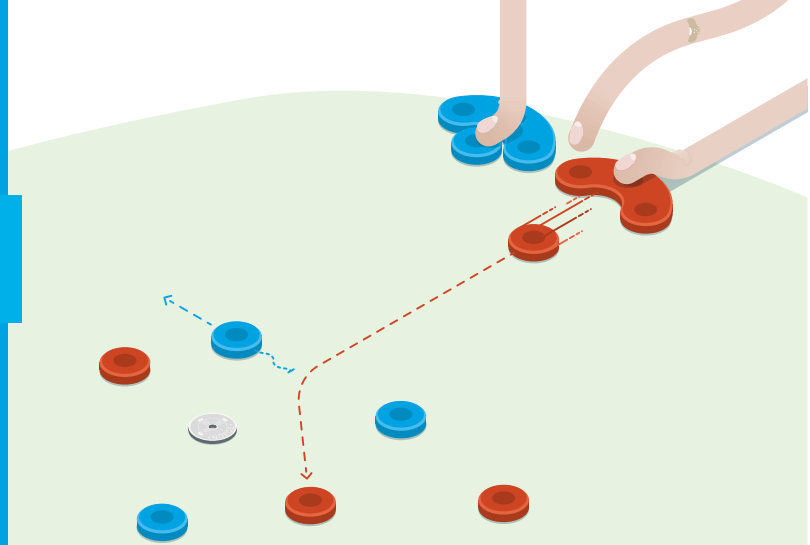
magCurling

2 Players

4 + 4

1 + 1

+ Object of choice



Rules

- Each player chooses one color for their Triple and four Singles.
- Put a target-object of your choice on the table and decide a line/area to shoot from.
- Players take turns to shoot one Single at a time to get closest to the object.
- It is allowed to hit/move the object with the Singles.
- If a player makes any Singles in the field connect, that player gets a negative point and the round resets.
- When the last Single is shot, the player closest to the object gets a point.
- That player gets extra points for each additional Single they got closer than the closest Single of the opponent.
- Rotate the starting player and start a new round.
- The player with most points, after each player has started three times, wins.

What if...

...the object is replaced with another Magination-piece?

...players shoot from different spots?

...all Singles are shot at the same time within five seconds?

...it's allowed to shoot from any direction?

...there are multiple objects, and players can score points on all of them?

...pieces that hit or move the object are removed?

...we add magnetic obstacles?

...the distance is increased and we shoot twice?

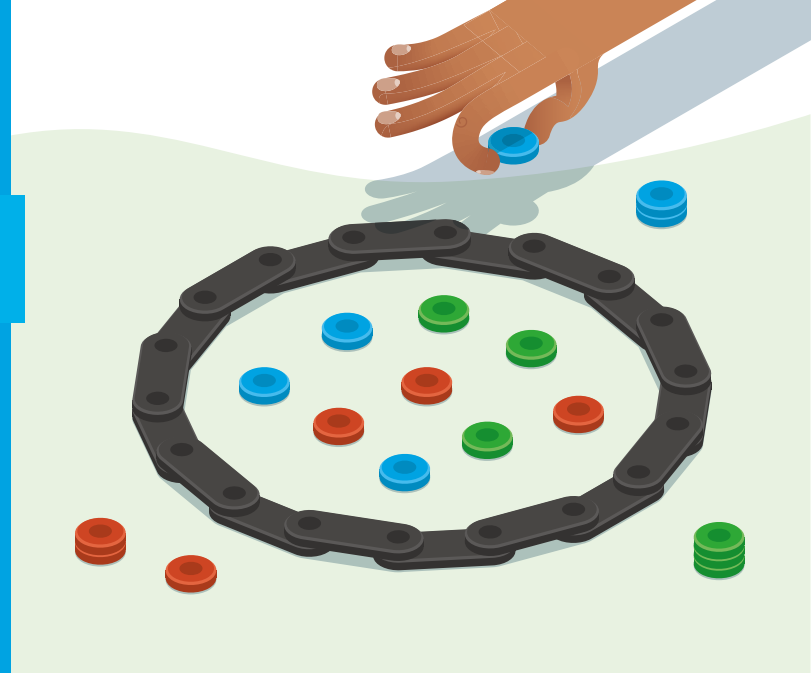
...Singles behind the object don't count?

magTension

2+ Players

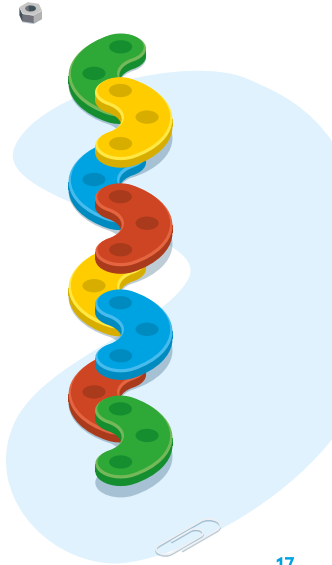
X 18

X 18



Rules

- Pairwise chain all Doubles and create a circle.
- Divide the Singles among the players, colors don’t matter.
- Players take turns to place one Single at a time inside the circle with the circular mark up.
- If a player causes two or more Singles to connect, that player loses the round.
- If a Single connects to the circle, the player has to place it back into the circle.
- It’s not allowed to move/adjust/manipulate the circle or the other already placed pieces.
- The player who lose the round decides the starting player next round.
- A player with three losses is knocked out of the game.
- Last player standing wins!



What if...

...a Triple is placed inside the circle?

...it's allowed to move/ adjust/manipulate the circle or other pieces?

...all the pieces are flipped upside-down?

...everyone worked as a team to get most pieces in?

...each player only has three seconds to place a Single?

...players have to use just one finger from each hand to place pieces?

...a player has to place an extra Single upon connecting to the circle?

...not yet placed Singles are kept in a stack connected on top of the circle?

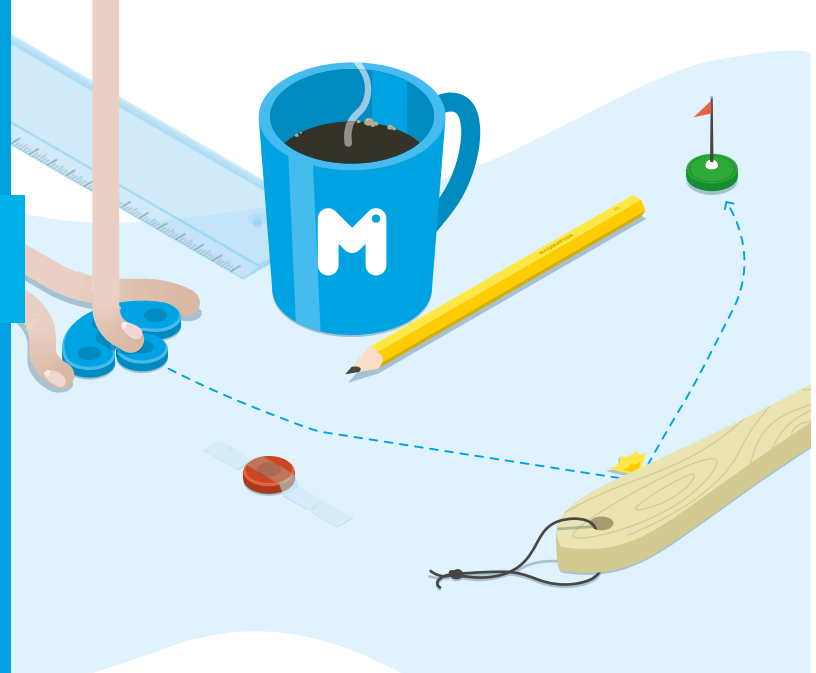
magGolf

2+ Players

X 2

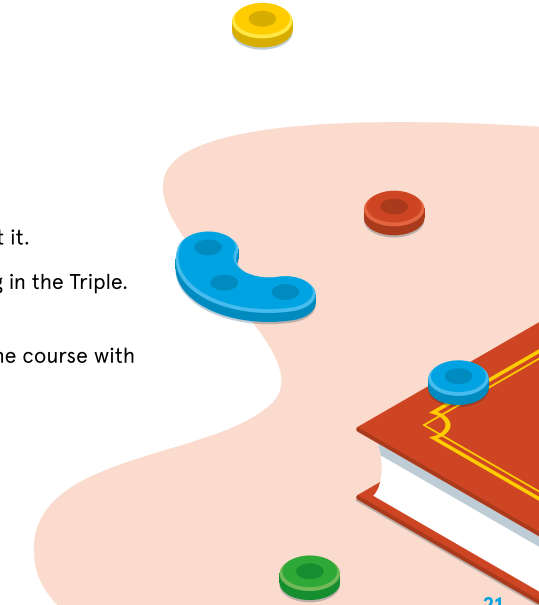
X 1

+ Objects of choice



Rules

- Create a course with objects and obstacles to shoot between.
- Decide where to start and where the goal is.
- Place a Single upside down as the goal. It should be possible to hit it.
- When shooting, place your finger on the Single first and then bring in the Triple. Do this to avoid moving the Single before the shot!
- First player shoots a Single from the start and tries to complete the course with as few shots as possible and connect to the goal-Single.
- Then it's the next player's turn to complete the course.
- The player with fewest shots wins!



What if...

...we create huge courses on the floor?

...there are multiple courses where the winner has the least amount of shots in total?

...magnetic obstacles are added to curve, block or attract shots?

...the Triple was replaced with one or two Singles?

...there are hard-to-hit objects that "teleport" the Single to advantageous locations?

...there are multiple players in the course on the same time?

...there are checkpoints and players can knock each other out of the course?

...the Single is pushed through the course and the quickest wins?

...players can modify the Triple through the course?

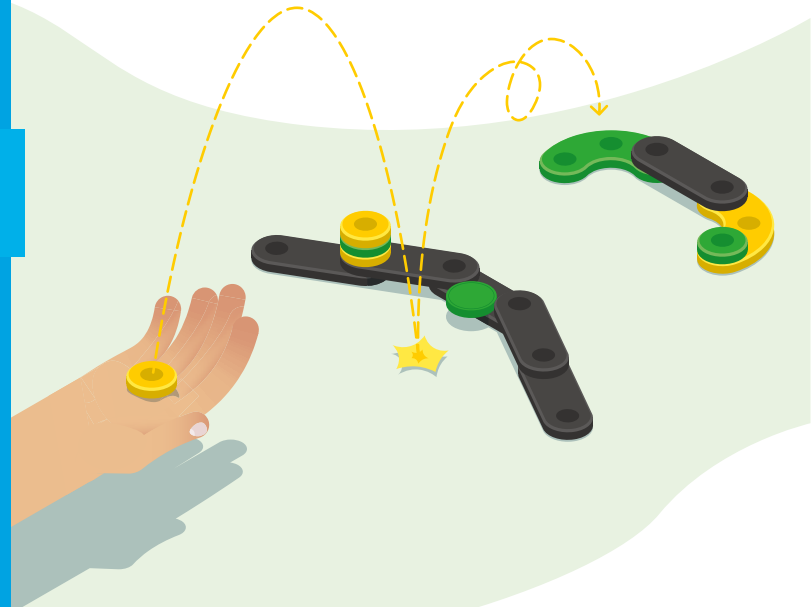
magThrow

2 Players

6 + 6

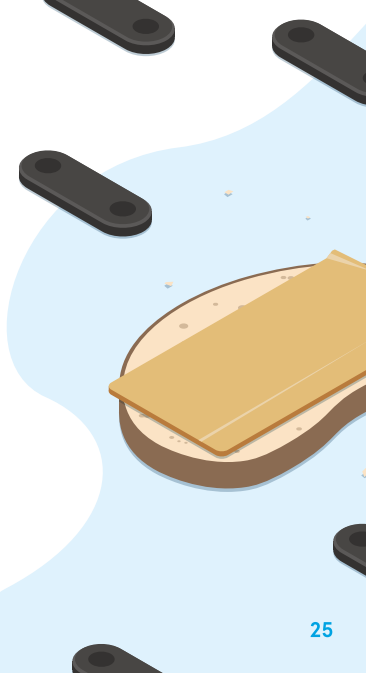
X 6

X 2



Rules

- Create two rows, one with Doubles and one behind with Triples and a Double.
- Each player chooses a color for their six Singles.
- Players take turns to throw one Single at a time to score points.
- The Single has to bounce before the first row. No bounce = 0 points.
- All Singles connected on top of a row with the circular mark up give points.
- The first row gives 1 point per Single, the second row gives 2 points per Single.
- When all Singles are thrown once, points are received.
- Rotate the starting player and start a new round.
- The player with most points, after each player has started three times, wins!



What if...

...the player on top or bottom of a stack receives all the points in the stack?

...Singles with the circular mark down that connects to a row is worth more points?

...points can only be scored by being the first Single on a spot?

...there are multiple structures and rows to score different points?

...we build a circle and bounce from the center of it?

...players get extra points to score on the Triple with their color?

...the "bounce rule" is removed?

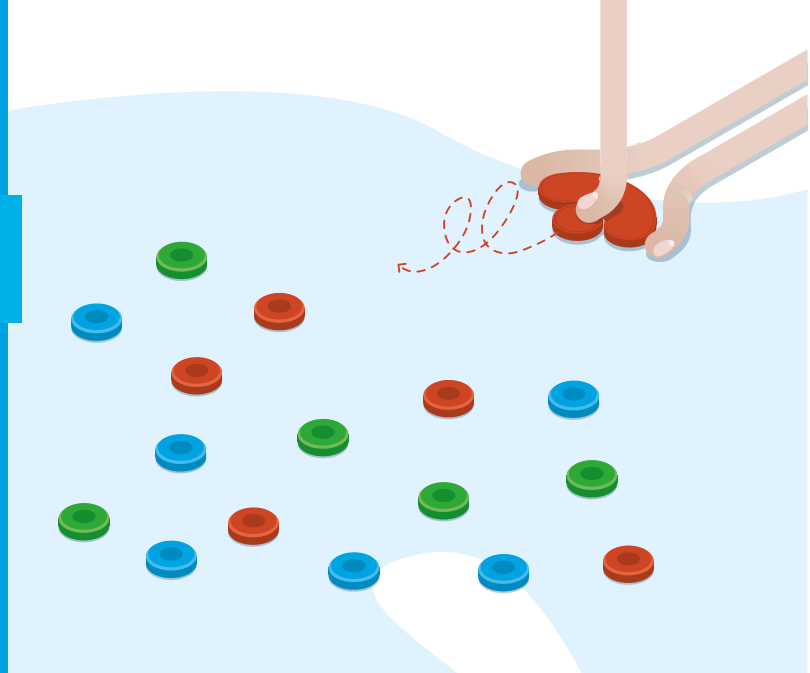
...all players throw Singles at the same time?

magCollect

3 Players

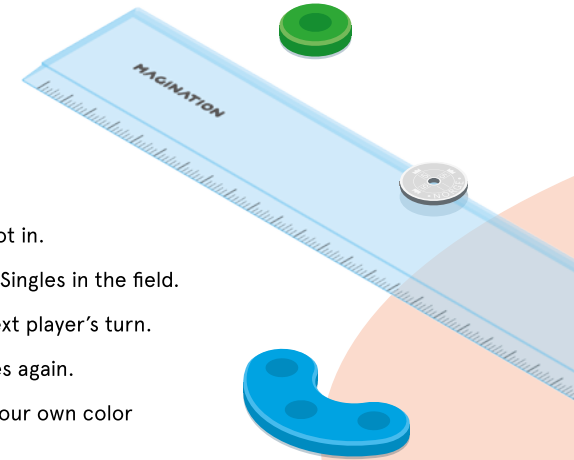
6 + 6 + 6

1 + 1 + 1



Rules

- Each player chooses a color for their Triple and Single.
- Place Singles in a field at random, five of each color.
- Decide a location to flip-shoot from and which order you shoot in.
- Players take turns to flip-shoot one Single at a time to collect Singles in the field.
- Collect the stack created by the flip-shot Single before the next player's turn.
- Other stacks created should be spread out to individual Singles again.
- Count points after all Singles have been collected. Singles in your own color give 3 points each and other colors give 1 point each.
- Rotate the starting player and create a new field of Singles.
- The player with most points, after each player has started two times, wins!



What if...

...players can flip-shoot from any direction?

...some colors gave negative points?

...players who create multiple stacks get a penalty?

...the Single-field is created by shooting Singles out?

...color combinations/patterns of the stack is worth more points?

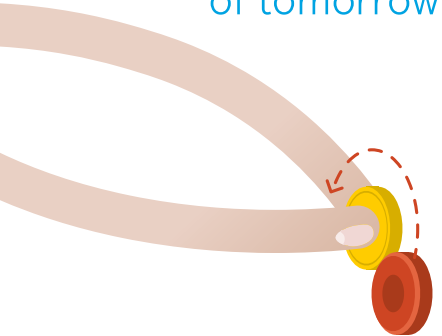
...there's a maximum amount of points you can receive in a stack?

...shots that doesn't connect to anything is left in the field?

...players can shoot Singles back in the field?

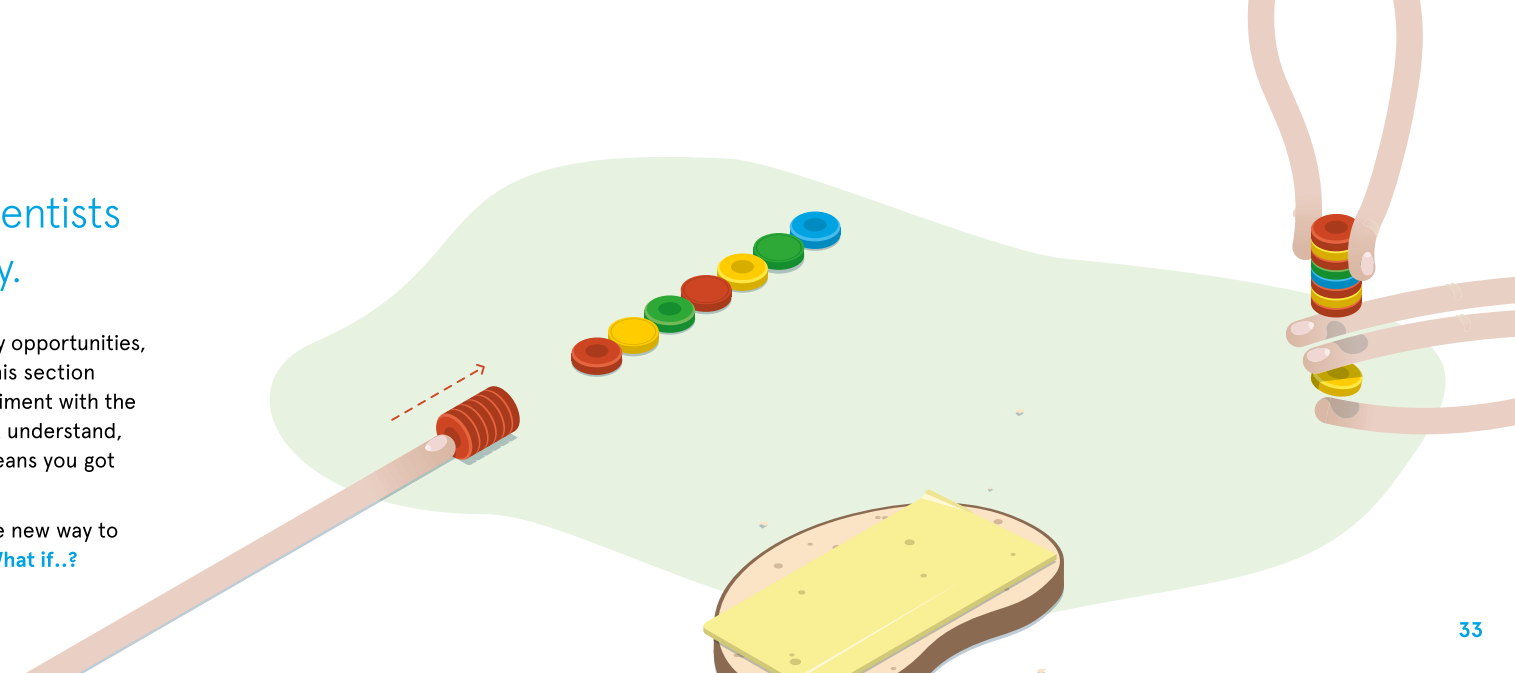
Experiments and inspiration

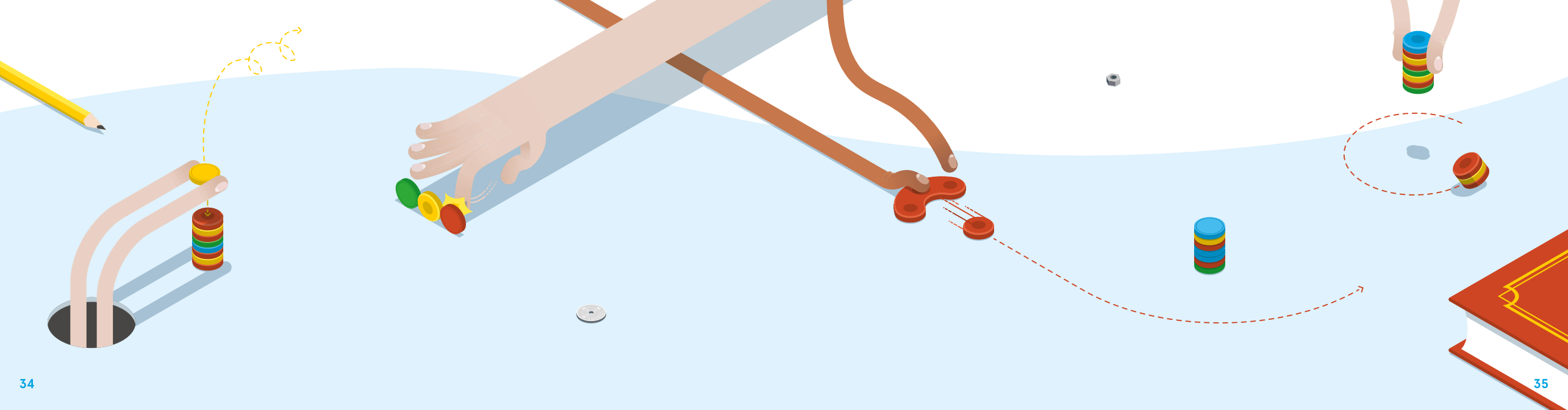
An important part of Magination is to inspire the scientists of tomorrow through magnetism and creativity.



Magnetism is a fascinating force with many opportunities, and it should be experimented with! In this section you'll see some of the ways you can experiment with the pieces. If there are illustrations you don't understand, or are difficult to emulate: great! That means you got something to test and learn more about.

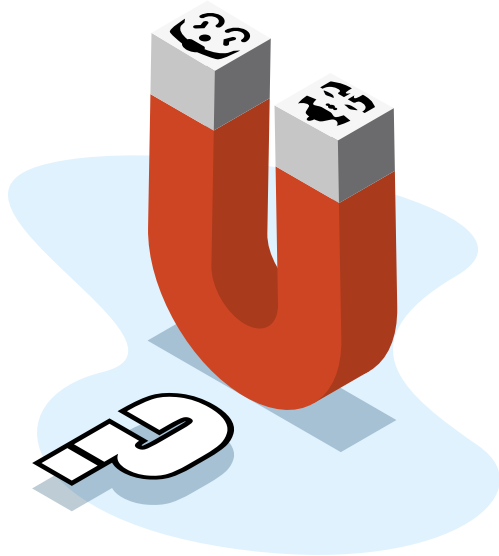
Maybe your experiments lead to an entire new way to use Magination, or magnets in general? **What if..?**





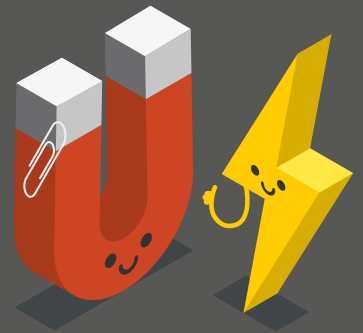
How do they work?

Physics and writing provided by Nils Mulder



We have all come across magnets, whether it is from simple refrigerator magnets, to train sets we played with as kids, or even ultra-powerful magnets from access-restricted physics labs. When we released the Magination GIFs on the internet, the response was enormous, and the most frequently asked questions was **"How do they work?"***

*Yes, usually in reference to Insane Clown Posse's well-known song "Miracles".



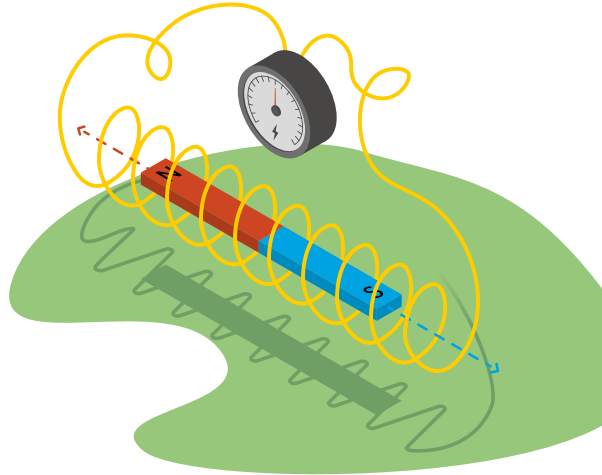
This seems like a straightforward question to answer, but to come up with a simple and sophisticated answer without spewing out too much hardcore physics seems tough. Why? Well, magnets are complicated.

Magnetism is a property that not all materials possess. To understand why, we have to dive deep into some physics – but don't worry! We'll keep it relatively simple. For starters it's good to know that magnetism is closely related to electricity; they are like close buddies who enjoy being in each other's presence.

Back in the year 1831, English scientist Michael Faraday conducted a world famous experiment to show that magnetism and electricity are in fact related. He did this by leading a bar magnet through a looped copper wire which was connected to a Galvanometer (a sensitive current-measuring device). The motion of the bar magnet made the Galvanometer react – a current was going through the wire! So the motion of the magnet near the copper wire induced a current!

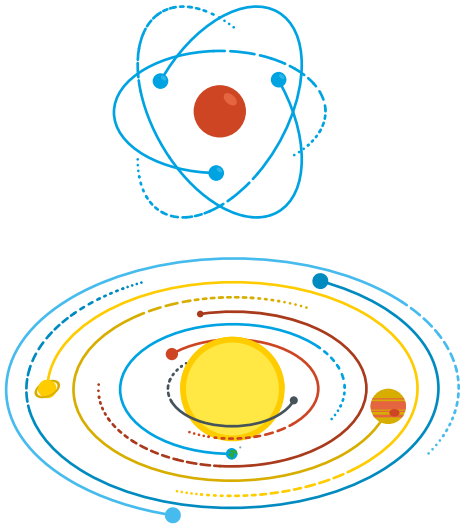
In fact, it was also discovered that moving charges (like electrons) induce a magnetic field! So it works both ways.

*This is not how the experiment actually looked like in 1831!



At the time, there was no broad interest in this phenomenon; at the very best it was a cool party trick. Make the needle on the galvanometer jump by moving a magnet close to it. Yey! It is even said that the Prime Minister at the time asked Faraday about his discovery and what it was good for, upon which Faraday replied; "Sir, what good is a newborn child?". His point is that you don't know if your child, or for this sake the relationship between electricity and magnetism, will grow up to do something huge. In this case, huge is an understatement. Because of this relationship we have electricity to keep our food cold, our water hot and our computers online. As a matter of fact, you probably wouldn't have any of the things you see around you today, if it wasn't for this startling discovery!

So, electricity and magnetism are related. *Now what?*



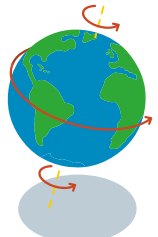
To understand why some materials are magnetic and some not, we have to look closer at how materials are built up. Everything around us is built up by atoms. In the simplified version, all atoms contain a positively charged nucleus (consisting of protons and neutrons) and negatively charged electrons orbiting the nucleus. In this simplified view, you can think of the electrons as the planets orbiting the sun, which here is represented by the nucleus. The electrons orbit the nucleus at different distances – just like the planets!

As we now know from Faraday's discovery, magnetic fields arise from charge in motion – and this is exactly what the electrons are. As they orbit the nucleus they induce a magnetic field!

*This is not how atoms or our solar system actually looks like!

In addition, the electrons have a property that is called spin. It would be tempting to explain the spin of electrons as the spin the Earth has around its own axis. This is because the Earth's spin gives rise to a magnetic field (the Earth consists of a bunch of charges), and this is also what electron spin does.

The similarities however, stop there. The electrons only act like they're spinning very, very quickly, thus producing a magnetic field. In addition, electrons have spin up or spin down (counteracting directions). Why they only act like they're spinning very fast is more thoroughly explained by quantum mechanics (the physical laws for things that are smaller than about 100 nanometers, where all sorts of craziness happen), but we'll leave that one alone. Why? Well, an electron isn't really a particle with well-defined radius or volume;

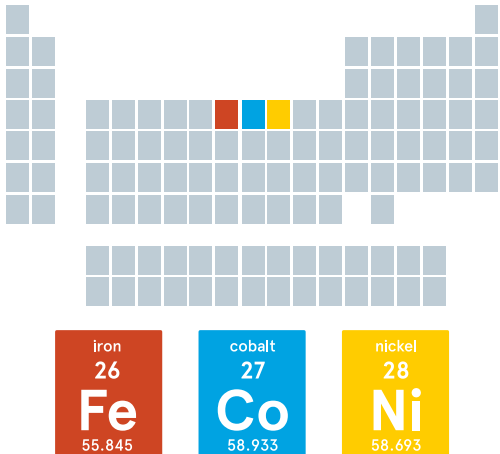


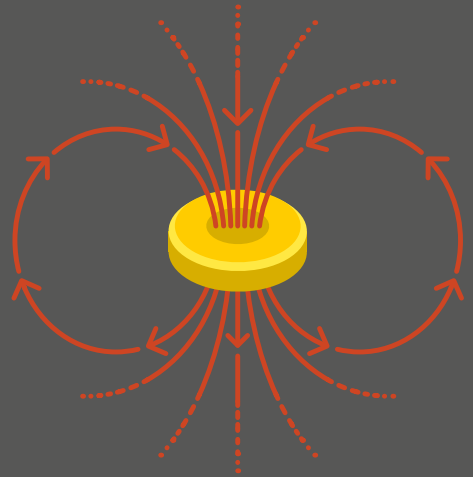
it is more like a point in space, and therefore it doesn't have an axis to spin around. But if it could in fact spin, the measured magnetic field that is produced by this motion is so big that the electrons would have to spin faster than the speed of light, which Einstein and about a zillion others (small overstatement) proved to be impossible. Ooof. Let's not go deeper into the woods here.

The take away message is that an electron's spin gives rise to a magnetic field, and this property is called spin because it's kind of (but not at all) like, the Earth's spin around its own axis.

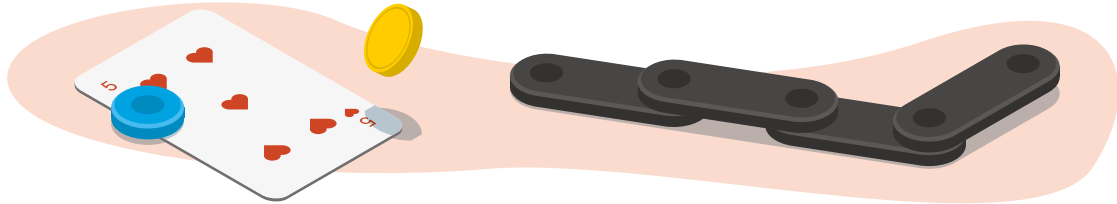
Okay, so atoms with electrons that act like they spin create a magnetic field, but why isn't everything magnetic then? In most cases, the net magnetic field is cancelled out because the atoms contain equal amounts of electrons with spin up and spin down. When they don't, the result is a charge in some direction, and the atoms are magnetic!

Having a bunch of magnetic atoms isn't necessarily enough to be magnetic, as the atoms have to align their magnetic fields as well. When they do, the material is "ferromagnetic". The only common ferromagnetic materials in room temperature are iron, cobalt and nickel. Within these materials we find "domains", which are clusters of atoms aligned the same way. If all these domains point in different directions, even they can cancel each other out! With a strong external magnetic field, you can force these domains to align, and create a magnet!



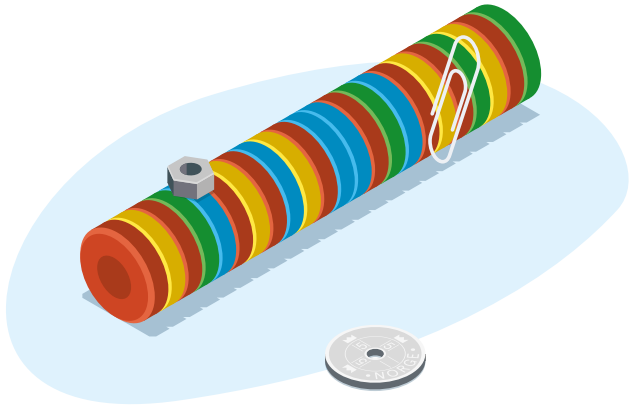


A magnet has a north pole and a south pole. Equal poles repel each other, while opposite poles attract each other (you have probably experienced this already). The poles are places where the magnetic field is concentrated and either leave, or go into the magnet. By convention, the place where the magnetic field leaves the material is called the north pole, and the place the field come into the material is called the south pole. You might be surprised to hear that the geographical North Pole is basically the same as the magnetic south pole. In fact, the north pole on a compass points towards the magnetic south pole, not the North Pole! A cool thing about the magnetic field is that it has no specific point of origin. It just goes in loops between the north pole and the south pole and through the magnet again.



The thing to understand is that magnetic poles always show up in pairs – never alone. They're kind of like an annoying couple who never have time to be with their friends unless they come together. There are theories about magnetic monopoles, but these have never been confirmed experimentally. So if you one day decide to cut a magnet in half, you would end up with two magnets (the metaphor about couples ends here – do not try to cut them in half to see if they're still a couple). Want to see it for yourself? Stack some Single pieces - the stack will have one north and one south pole altogether, and act as "one magnet". Now split the stack in half and you will have two magnets – each one with a north and a south pole!

In one of our GIFs we played magTension. When you put a lot of individual magnets close to each other in a confined space, crazy things may happen. At a certain point, the repelling fields will be so strong, that the slightest change in it will cause a strong repulsive force on its neighbor – which might flip over. This will disturb the magnetic fields of the magnets next to it – which suddenly will be attracted by the flipped Single piece. They will hurry towards it, and in the flustercluck of changing magnetic fields, they might align and smack together into a smooth looking magnetic bar.

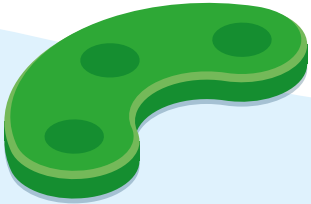


You now know a little more about magnets! Go dazzle your friends with your magtastic skills and knowledge!

We have only scratched the surface of what humanity knows about magnetism in this manual. Hopefully, we have tickled your curiosity. There are still many mysteries out there that have yet to be discovered. How are particles like electrons are charged in the first place? Nobody actually knows this. Yet. That's what makes magnetism and science so exciting. There are theories and experiments being conducted and tested every day. Who knows what the future will bring? We don't know that either, but you can be a part of it!

TL;DR – too long; didn't read

A magnetic field comes from a magnet.
A magnet consists of many small magnets aligned in the same direction.



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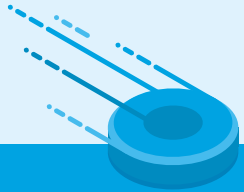

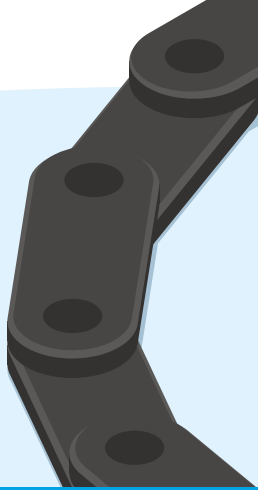

WARNING:
Choke hazard

WARNING:
Magnet hazard