

Learn more about the United Nations Sustainable Development Goals

<https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

<https://stairwaytosdg.eu/en/sdgs>



Learn more about the Sustainable Cities and Communities goal

<https://stairwaytosdg.eu/en/sdgs/11-sustainable-cities-and-communities>

<https://www.un.org/sustainabledevelopment/cities/>



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Sustainable Cities and Communities

Build your own sustainable city!



What are sustainable cities and communities?



Sustainable cities and communities is the United Nations Social Development Goal number 11 (SDG 11). It aims to make cities and human settlements inclusive, safe, resilient, and sustainable.

The world's population is constantly increasing and by 2050, it is expected that two-thirds of the world population will be living in urban areas.



In contrast, all urbanised areas in our world measure just about 3% of the total land on our planet. There is a very large contrast between the number of people living in cities and the area that is covered by them.

The concentration of people living closely together may cause issues on fresh water supplies, sewage, living environment, and public health. Cities account for between 60 and 80 percent of energy consumption and generate as much as 70 per cent of human-induced greenhouse gas emissions.



Some of these issues may be solved and/or prevented by making cities and human settlements more inclusive, safe, resilient, and sustainable on different levels.



Sustainable communities are:

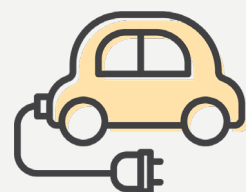
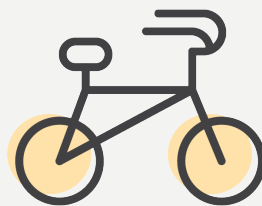
1. Environmentally sustainable in terms of cleanliness and efficiency.
2. Resilient to social, economic, and natural shocks. They are well prepared for natural disasters, which are increasing in intensity and frequency due to climate change.
3. Inclusive communities. They bring all dimensions of society and all groups of people—including the marginalized and vulnerable—into their markets, their services, and their development.
4. Competitive communities that can stay productive and generate jobs for members of the community.



It is crucial to think about how we can make our cities more sustainable in order to preserve the environmental ecosystem and to improve human well-being. This means thinking about how we build our cities, how mobility should be organised and how we produce food.

Sustainable mobility

Transportation and logistics have a big impact on air pollution and greenhouse gas emissions.



Examples of sustainable transportation are **walking, cycling** or using other **green vehicles**.

Sustainable transportation also contributes to a more active, healthy lifestyle and improves social interaction.



When the distances are bigger you can look for alternatives for the car such as public transport or carpooling.

Sustainable and inclusive infrastructures

Sustainable infrastructure refers to how the structural elements (private housing, public spaces, industry etc.) in your community are designed, built and how they operate.

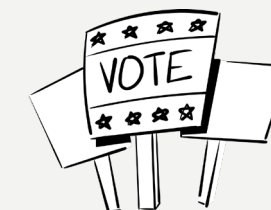
In order to be sustainable and inclusive, infrastructure should be designed to have as little environmental impact as possible and to contribute to the well-being of all members of your community (also the more vulnerable). How we build our communities today also impacts future generations!



Community participation

It is important to learn to argue for sustainable, resilient and inclusive infrastructure and mobility strategy within our own community.

This means engaging in local initiatives that promote sustainability or even, when old enough, run for elections in your town.



As an individual you can be a sustainability change agent by being aware of your values and principles and having the confidence and skills to stand up for your opinion. This means by showing leadership, considering other people's values, facilitating collaboration and co-creation to set up sustainability activities in your community.

How can we help achieve the SDG 11?



1. Commute in a sustainable way - bike, walk or take public transport. Save the car trips for when you've got a big group.
2. Take care of public spaces. Start yourself and inspire others to contribute to better public spaces - water the greenery, trim and plant trees, renovate sports areas and playgrounds, organize a clean-up.
3. Shop, eat and drink locally. Supporting neighbourhood businesses keeps people employed and circulates money back into your community.

Targets to help achieve the Sustainable Cities and Communities goal

TARGET 11-1



SAFE AND AFFORDABLE HOUSING

Ensure access for all to adequate, safe, and affordable housing and basic services (e.g., water, food...) and upgrade slums.



TARGET 11-2



AFFORDABLE AND SUSTAINABLE TRANSPORT SYSTEMS

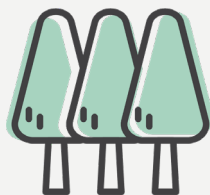
Provide access to safe, affordable, accessible, and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.

TARGET 11-3



INCLUSIVE AND SUSTAINABLE URBANIZATION

Enhance inclusive and sustainable urbanization and capacity for participatory, integrated, and sustainable human settlement planning and management in all countries.



TARGET 11-4



PROTECT THE WORLD'S CULTURAL AND NATURAL HERITAGE

Strengthen efforts to protect and safeguard the world's cultural and natural heritage.

TARGET 11-5



REDUCE THE ADVERSE EFFECTS OF NATURAL DISASTERS

Significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.

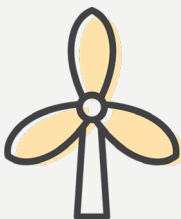


TARGET 11-6



REDUCE THE ADVERSE PER CAPITA ENVIRONMENTAL IMPACT OF CITIES

Reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.

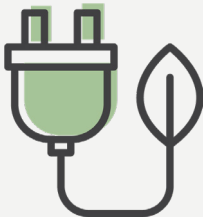


TARGET 11-7



PROVIDE ACCESS TO SAFE AND INCLUSIVE GREEN AND PUBLIC SPACES

Provide universal access to safe, inclusive, and accessible, green, and public spaces, in particular for women and children, older persons and persons with disabilities.



TARGET 11.A



STRONG NATIONAL AND REGIONAL DEVELOPMENT PLANNING

Support positive economic, social, and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning.



Substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.

TARGET 11.B



IMPLEMENT POLICIES FOR INCLUSION, RESOURCE EFFICIENCY AND DISASTER RISK REDUCTION



Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials.

TARGET 11.C



SUPPORT LEAST DEVELOPED COUNTRIES IN SUSTAINABLE AND RESILIENT BUILDING

Build your own sustainable city!

You will draw and build your own sustainable city. You can draw and create the road map, a river, where the buildings go, you are free to plan your city as you wish!

But **don't forget the goal:** a sustainable city and community.



Sphero will need to walk around your city, so don't forget that he **needs to fit on the roads and between the buildings!**



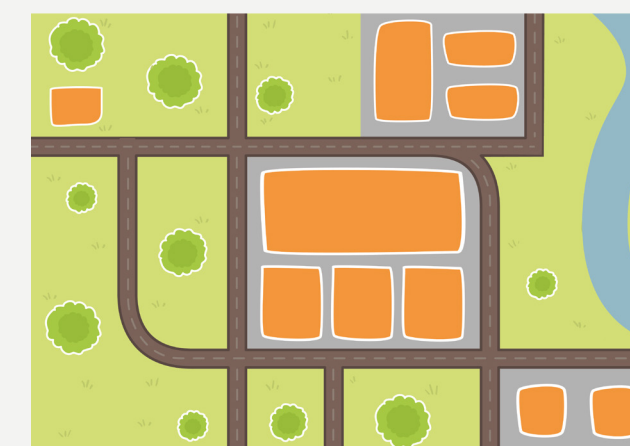
8 cm

1.

Start by measuring the space you have available to build your city. It can be an A3 or A4 piece of paper, or even a space on the floor of your house or classroom.

2.

On an A3 or A4 paper, draw a 2D map of what your city will look like. The roads, the green spaces, the buildings, whatever you consider essential for a future sustainable city, there is no limit to your imagination!



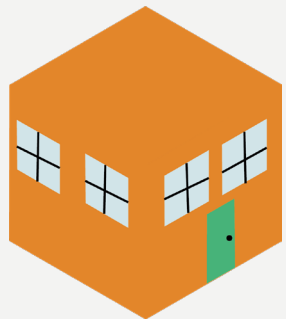
You can divide roles. Members of the team can be builders, others draw the nets, etc. Team work is key to build a sustainable city!

3.

In order to build your 3D city, you have only some geometric forms available, so take that into consideration when drawing your 2D city map.

4.

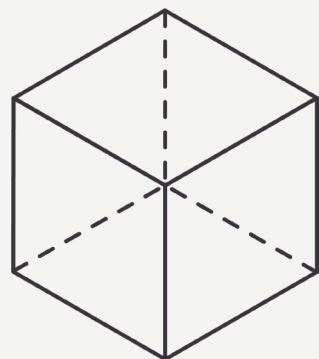
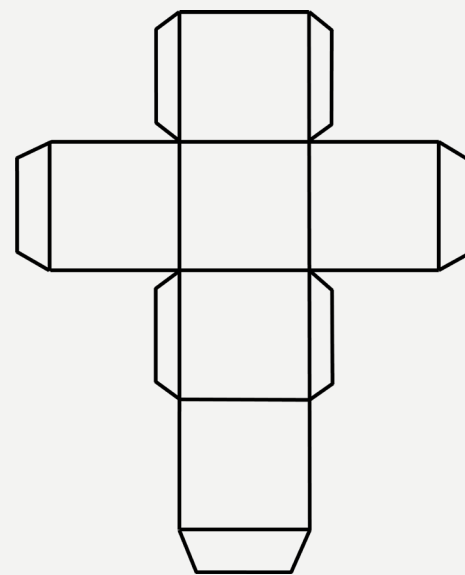
Check how many buildings you want and which shapes (geometric forms). Draw the nets on the paper, cut and glue them!



If you want a building like this, that resembles a cube.

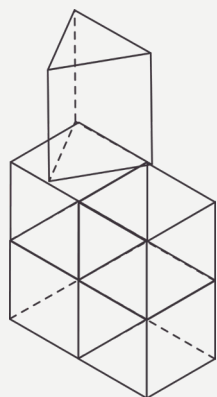


Draw the net



You will get a geometric form ready to be your building!

Cut and glue the net

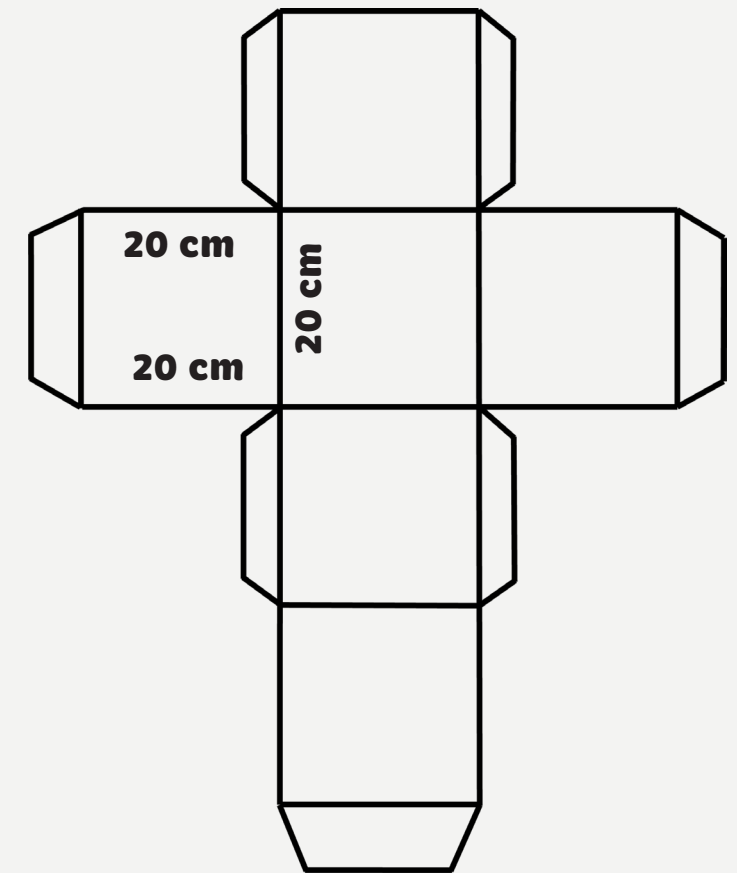
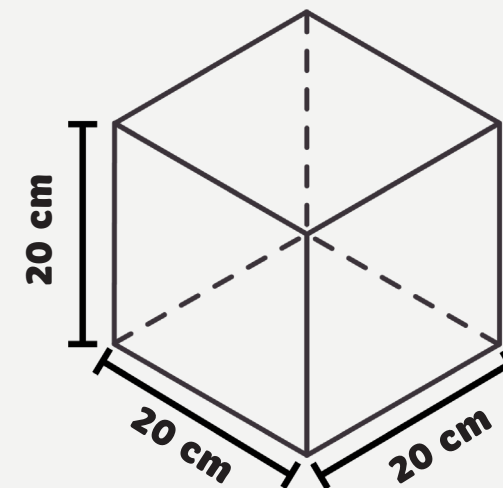


You can build buildings with different shapes by stacking different geometric forms!

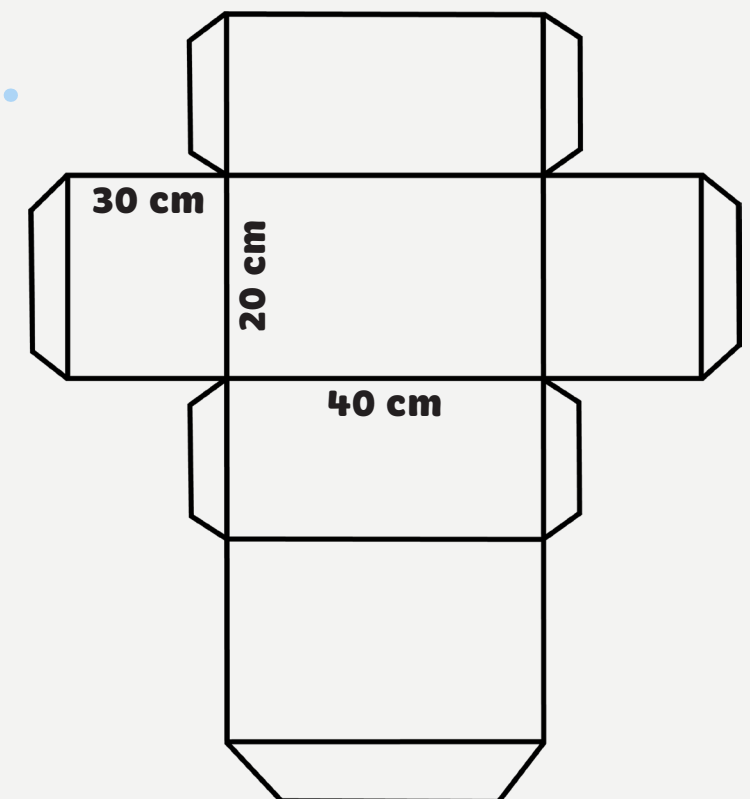
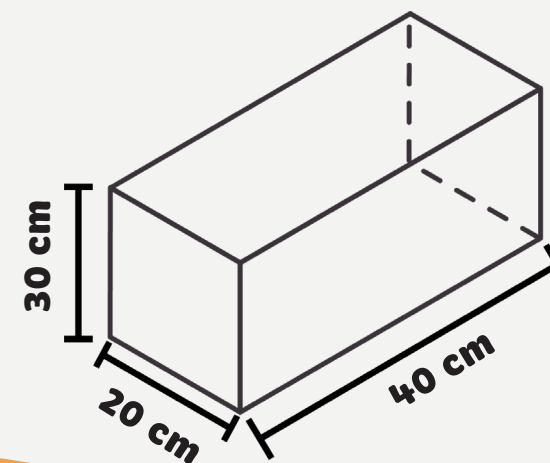
Geometric forms you can use



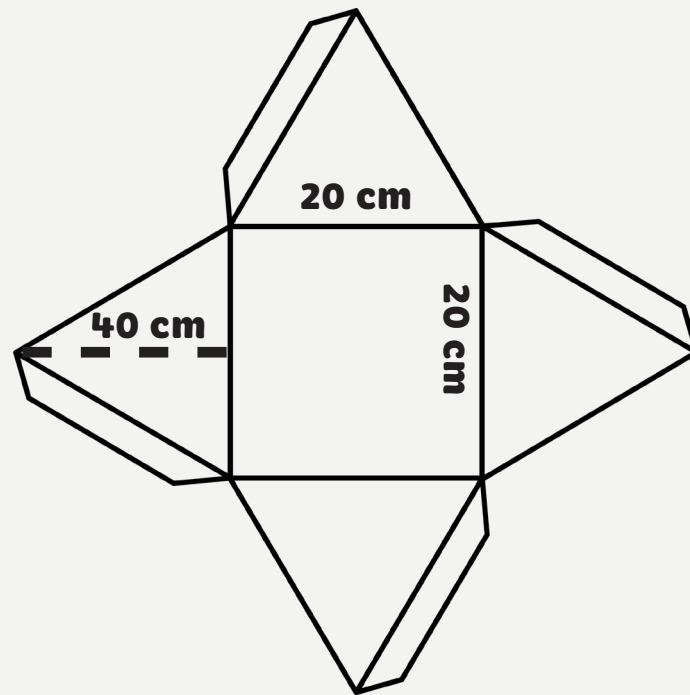
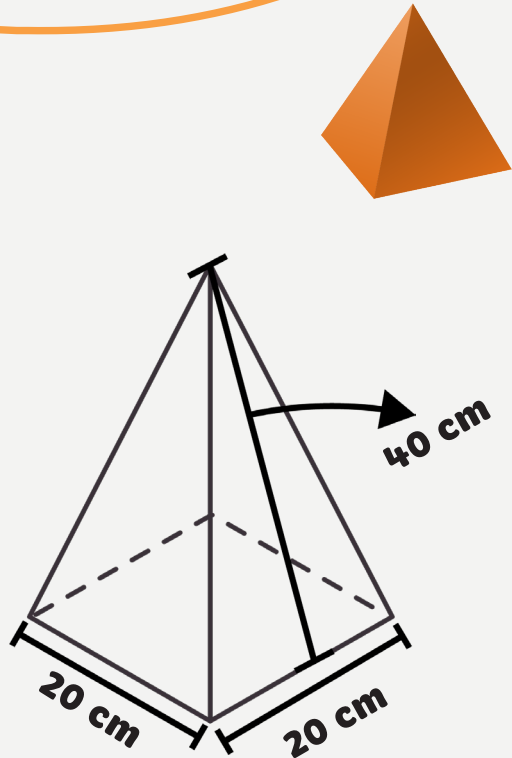
Cube



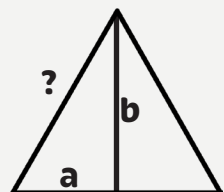
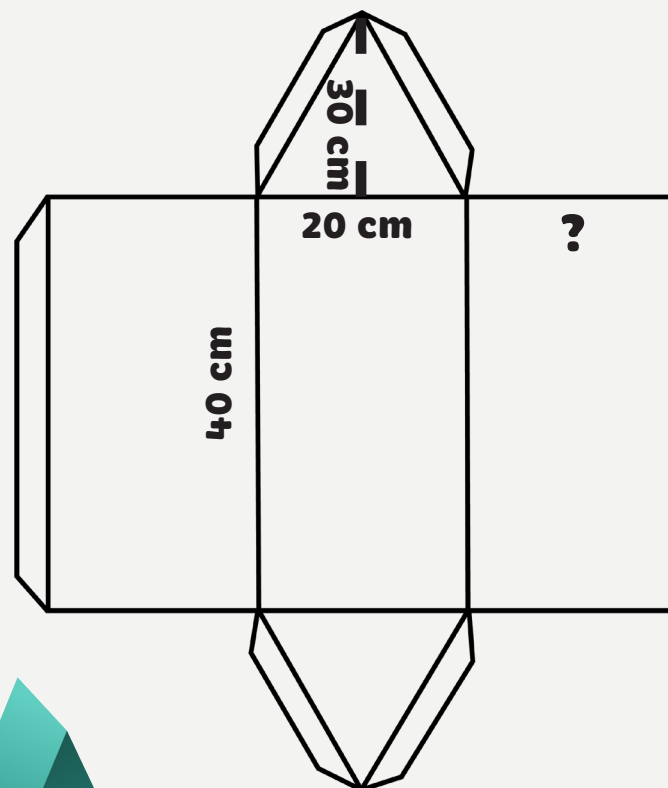
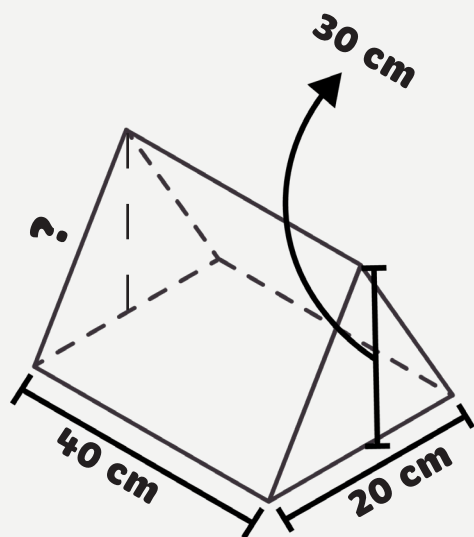
Rectangular Prism



Square Pyramid



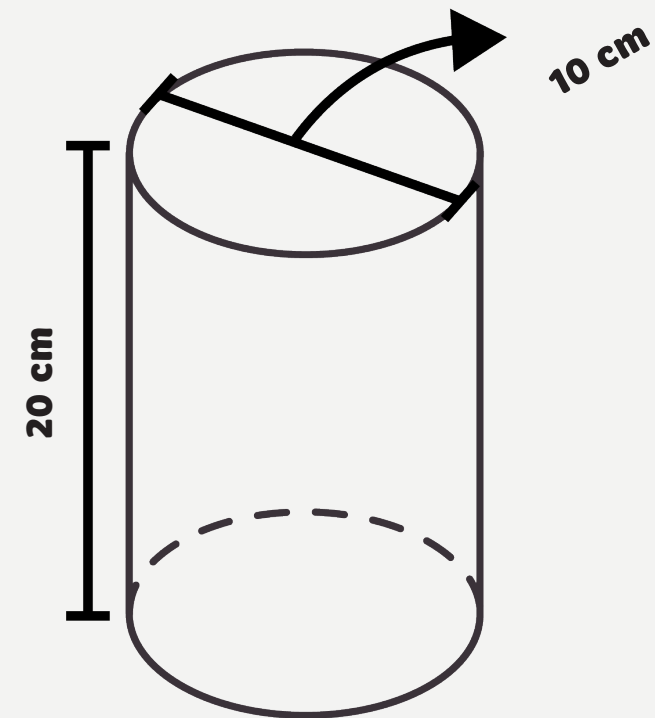
Triangular Prism



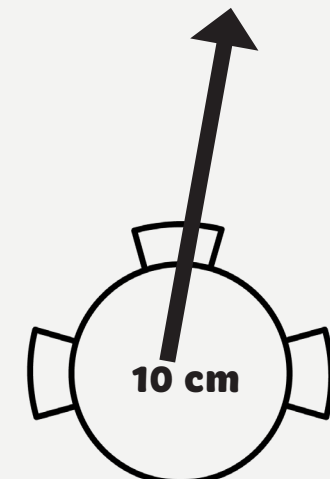
Size is equal to:
 $a^2 + b^2 = c^2$
 $c = \sqrt{a^2 + b^2}$
 $c = \sqrt{10^2 + 30^2}$
 $c = 32$



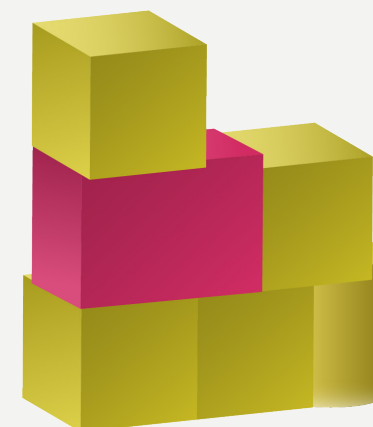
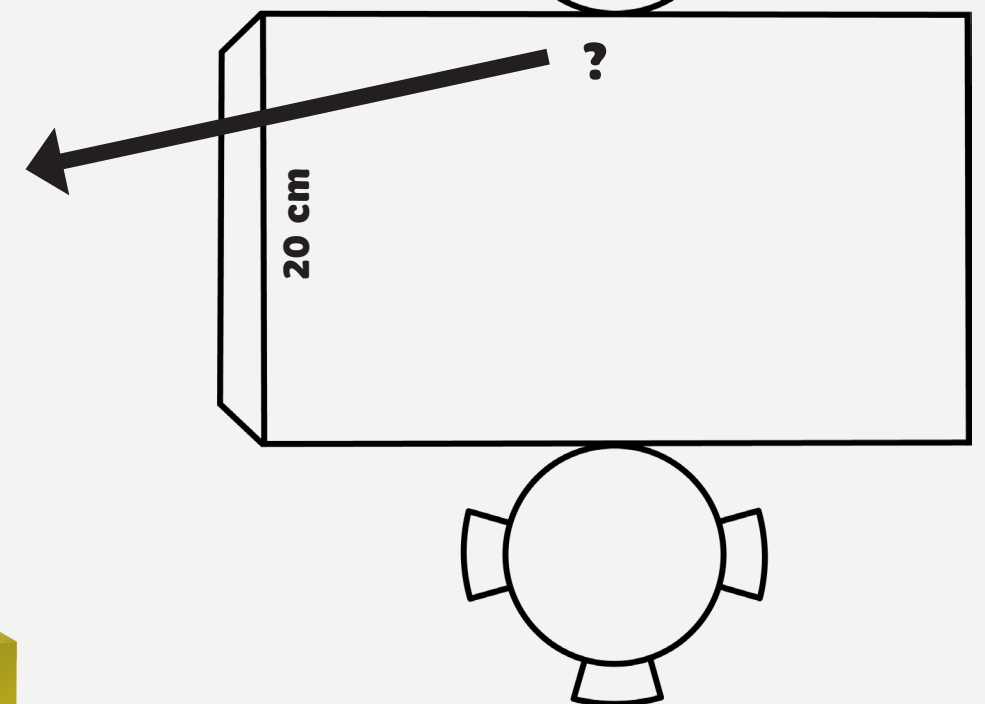
Cylinder



If the diameter is 10cm,
the radius is 5cm



Size is equal to:
 $2 \times 3,14 \times 5$
 $(2 \times \pi \times r)$

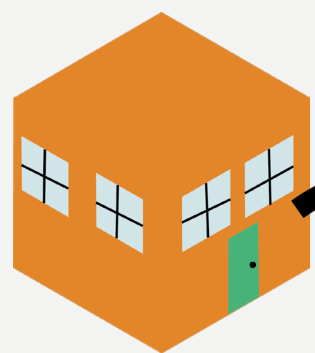


Another example of different geometric forms stacked to form a building.

Decorating your buildings!

1.

Choose the wall of the building that you want to decorate and measure its size. Draw it with the right dimensions on a piece of paper.



20 cm



Imagine that you want to decorate this wall of the building. It is a square so all sides are 20cm.

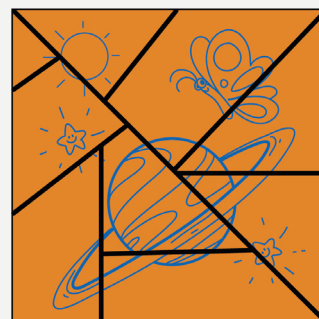
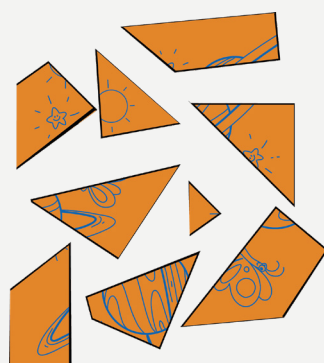
2.

After drawing it on the piece of paper, start decorating it as you want. Maybe you want that side of the building to have windows, a door, or be just a piece of art.



3.

After having your decoration done, you are going to create your own tangram! Draw geometric shapes inside your building wall design and cut them.

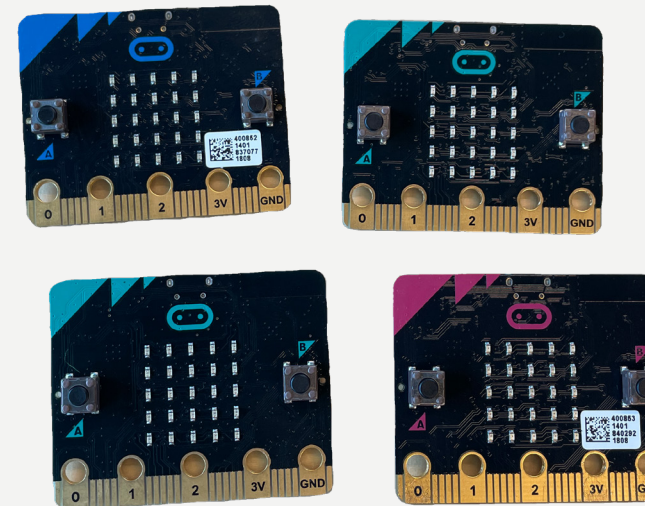


4.

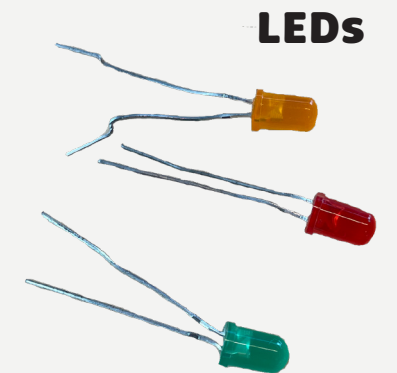
Now, give the cut pieces to one of your team colleagues and watch them build your puzzle while decorating the building!

Smart city kit

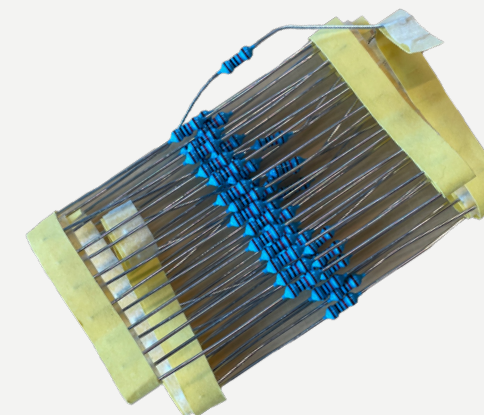
micro:bit



LEDs



Resistors



Battery pack



Croc clip leads

