

City Master Plans



Purpose

WALT (We are learning to...)

- ✓ Revise and improve our knowledge of all areas of shape, location and measurement
- ✓ Understand how to find information without teacher assistance
- ✓ Set ourselves a challenge
- ✓ **Articulate** our thinking
- ✓ Not stay stuck
- ✓ Move on independently
- ✓ Work as a member of a larger team
- ✓ Stay on task
- ✓ Check our own work and make sure we have done all that the teacher has asked
- ✓ Make smart choices and not let blockers distract us.

You'll be successful if....

- ✓ You feel more confident understanding the mathematical terms associated with space, location and measurement
- ✓ You are able to clarify and define unknown terms as a group
- ✓ You are able to articulate your thinking and explain how you have met the task requirements.
- ✓ You move independently between tasks and stay on task all the time
- ✓ Your team works constructively together
- ✓ You don't stay stuck on a task.

Know their weaknesses and try hard to improve on these things.

'Piggy Back' onto the ideas of others.

Work with a range of different people

Listen and react to what others say

Check their work to make sure they have finished everything the teacher asked

Don't stay stuck!

Have an idea or plan before they start work

Use what they already know when they learn something new

Stay on task and don't let blockers distract them.

City Name: _____

Group Members: _____

What do you need to do?

The people of Simbola have had their old city destroyed! They are holding a competition to find a design for a new city. Your task, as a group, is to create an entry for their design competition!



They will have a blank block of land to build on, so your model should be built from the ground up on the block of land you have been provided with. It should meet as many of the requirements as possible.

There are two parts to the task, which should be worked on **concurrently**.

Before you start however, you have ten minutes read through the instructions, talk and plan within your group. You cannot collect any materials, move around or write anything down at this point, just discuss. You should also come up with a name for your new city.

Part One

Once planning time is up, you can begin constructing the model of your city. The Simbola people love maths, and have based their city requirements on mathematical concepts. Try to meet as many of their requirements as possible. You can use any resources you have access to. Do not waste them.

Don't forget to make your city **aesthetically** pleasing. Remember small things like naming streets, buildings, creating parks, lighting, signage etc.

Part Two

You need to be able to show how you have met each of the requirements of the city design in order to win the competition. You will do this by creating a Powerpoint. You need to articulate your thinking by using photos and text to explain how you have met what is required from the city. There are some examples to the right. If you can't explain the reasoning, the requirement has not been met.

Angles

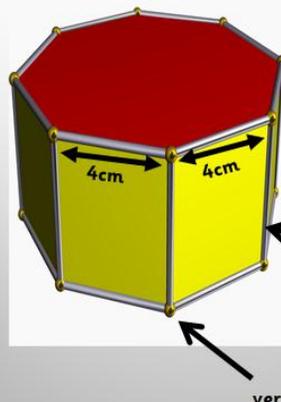


We have met the requirements for having an obtuse angle here. We know this is correct because the angle is more than 90 degrees, but less than a straight line.

This is an example of a straight line in our city. You can tell it is straight because it has no corners or bends.



Buildings



This building is an octagonal prism. You can tell this because it has two octagonal faces (8 sides) and eight rectangular faces. It also has 16 vertices and 24 edges.

Its base has a perimeter of 32cm, which you can tell because each length is 4cm long.

Requirements

The Simbolan people love maths, and have a number of requirements to meet when designing their city with maths in mind. The city building competition will be judged by awarding one point for every criteria met below. Don't forget to justify how you have included each point. You can include other items in the city.

There will also be a score out of 5 awarded for city aesthetics, a score out of 5 for presentation and a score out of 5 for teamwork.

- ✓ Streets are 2cm **wide** throughout the city
- ✓ At least 1 set of **parallel** streets
- ✓ A **perpendicular** intersection
- ✓ A **diagonal** street running NE to SW
- ✓ An intersection with 2 **acute angles**
- ✓ An intersection with a **reflex angle**
- ✓ An intersection with 4 **right angles**
- ✓ An intersection with a round about with a **diameter** of 6cm in the middle section
- ✓ A park with an **area** of 68sq cm
- ✓ A car park with a **perimeter** of 60cm
- ✓ Three skyscrapers 200mm **tall**
- ✓ An intersection with a **35° angle**
- ✓ An intersection with a **120° angle**
- ✓ An intersection with a **255° angle**
- ✓ A petrol station
- ✓ A school
- ✓ A footy oval with a **length** of 10cm.
- ✓ A **square based pyramid**
- ✓ A **triangular prism**
- ✓ At least 3 different **rectangular prisms**. The name of the building should be written on the front. It should be named after the area of the front face of the building (ie, 36sq cm Towers)
- ✓ A **pentagonal prism**
- ✓ A lake with a **perimeter** of 50cm, but with at least 1 non straight side
- ✓ A Court House **north** of the school
- ✓ A town hall **south** of the lake
- ✓ A supermarket **west** of the oval
- ✓ A mayor's house **north east** of the petrol station.
- ✓ Some **cube** shaped buildings
- ✓ A flag pole of 15cm **high**
- ✓ A flag with an **area** of 150sq mm
- ✓ A field with 24 shrubs, arranged in an **array**.
- ✓ A town square with **tessellated** paving.
- ✓ A house with a **symmetrical** yard
- ✓ 2 **congruent** town houses
- ✓ A town clock showing 3:45pm in **24 hour time**.
- ✓ A town water
- ✓ 1m of powerlines
- ✓ A street with the houses numbered in **roman numerals**.
- ✓ A post office **adjacent** to the town hall

