Designing a Playground

**Brief:**
Your school wants to apply for federal funding to build a new playground. As part of the grant application process the administration has decided to take suggestions from students on the design of the playground. Your task is to design a playground that will fit in the area of your school that your teacher indicates. You must include a map of your playground which shows a variety of shapes such as quadrilaterals and triangles on the ground. These can be garden beds, paths, or sections around playground equipment. Your map must include the mapping conventions. A second map needs to contain details about the shapes within your playground (angles, sides). You must also hand in a 3D model of a climbing frame that you design.

**Key question to address:**
1. How do we measure and map the land set aside for the playground?
2. How much space do we have for the playground, and how is it laid out?
3. What kind of equipment would we like to include in a playground?
4. How much garden would we like to include?
5. What 2D shapes do we need to include in our design?
6. What 3D shapes do we need to include in our playground equipment?
7. What mapping conventions do we need to know about and use?
8. How do we create scale drawings and models?

**What you need to create:**
1. A map with your playground drawn. It needs to include at least one path, and some locations for playground equipment. It should be coloured appropriately with each colour explained in your key (e.g. red means the area for the swings). The map needs to follow conventions (key, North point, orientation to North, scale and grid references). Your design needs to incorporate tessellating shapes.
2. A photocopy of your original map should also be included, with all of the geometric properties of the shapes marked in. This includes angles, the length of each side, and congruent and parallel sides marked for every shape.
3. Optional extra: An area usage map, with the areas of each different type of land use marked and calculated (e.g. the area of concrete paths, the area of sand surrounding equipment and the area of garden beds). Consider using these to determine what fraction of your total land area is designated to each usage.
4. A 3D model of one piece of your playground equipment. This needs to be created to scale. Accompanying the model should be a net, and drawings of the 3D shape from at least two different view-points.
5. A page explaining why you have chosen this design. Explain what the good points are and how you decided what was important. Also hand in your draft designs along with comments on why you changed your mind.