**WEEK 17 – Architect of a Zoo**

**Unit:** Measurement and Geometry

**Grade:** Intermediate (9)

**Curriculum Expectations**
**MPM 1D/MFM 1P:** solve problems involving the areas and perimeters of composite two-dimensional shapes

**SEL:** recognize that testing out different approaches to problems and learning from mistakes is an important part of the learning process, and is aided by a sense of optimism and hope

**Activity
1)** For this activity, you are the architect of a new zoo and you are to design the animal exhibits to meet the requirements needed for the animals and the requirements of the land that you own as the zoo.  **2)** The contractors that you are working with have pre-set designs that they will use to create the animal exhibits with pre-set areas. You may combine these shapes together in any way you would like to make composite shapes. The animals have minimum surface area requirement for their exhibit depending on the animal and the zoo has a maximum amount of land that can be used based on the property it sits on. These are listed on the activity sheet below.
**3)** Through aprocess of estimating, trial and error, you must use the set designs to develop a zoo that meets the requirements, assembling shapes together within the zoo’s boundaries. You can assume that the walkway is run between the exhibits, so leave a little space for them.
**4)** Once you have completed the zoo design, test to see if you can make another or if there is a more efficient way to meet the requirements

**Check for Understanding**
I understand how to create composite shapes to meet set criteria
I can calculate the area and perimeter of composite shapes
I understand the relevance of calculating area and perimeter in real life situations

**Materials**
Recording sheet (attached below), pencil, information sheet below or internet access, calculator

The Zoo’s boundaries measure in a square 500 metres x 500 metres. You may sketch your final configuration of animal exhibits in the above layout

Below are the contractors set designs for animal exhibits. You will need to combine these shapes to make composite shapes to meet the needs of the various animals as outlined in the chart below.

60m

80m

80m

90m

80m

100m

80m

80m

Animal Exhibit Requirements

|  |  |  |
| --- | --- | --- |
| **Animal** | **Minimum Surface Area Required** | **Special Requirements** |
| Monkeys | 12,500 m2 |  |
| Tigers | 20,000 m2 |  |
| Giraffes | 20,000 m2 |  |
| Petting zoo animals | 25,000 m2 | Must take the form of a rectangle for easy entrance and exit |
| Hippo | 17,500 m2 | Must have a circular pool for the animals to swim in |
| Bears | 17,500 m2 | Must have a circular pool for the animals to swim in |
| Pandas | 12,500 m2 |  |

Recording Sheet

|  |  |  |  |
| --- | --- | --- | --- |
| **Animal** | **Number and Shapes Used to Meet Requirements** | **Sketch of Design** | **Area and Perimeter of the composite shape** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |