Learning Targets:

- I can create an equation to model a real-world situation
- 1. I plan on purchasing three types of animals, diamondbacks, mongooses, and pythons. Research has shown that these animals prefer living in rectangular pens and do not like to intermingle with other animals. Thus, I need to put them in different pens. Also, I have been told that these animals become jealous easily, so I must make sure that the three pens have the <u>exact</u> same area. To save on the cost of fencing, the three pens will be placed beside each other with a one heavy duty fence between them, which are delineated by the thick segments in the figure shown below. This heavy duty fence costs \$7 per meter, while the fence along the outer boundary of the pens costs only \$3 per meter. If I have \$360 to spend on the fencing for these three pens, what should be the length of the heavy duty fence between them so as to maximize the area of the pen for each animal?

diamondback pen	mongoose pen	python pen

2. Suppose instead I plan on purchasing four types of animals, instead of three, so that I now need four rectangular pens having the <u>exact</u> same area. To save on the cost of fencing, the three pens will be placed beside each other with a one heavy duty fence between them, which are delineated by the thick segments in the figure shown below. This heavy duty fence costs \$7 per meter, while the fence along the outer boundary of the pens costs only \$3 per meter. If I have \$360 to spend on the fencing for these three pens, what should be the length of the heavy duty fence between them so as to maximize the area of the pen for each animal?