Optimizing Perimeter and Area

Part I – Fixed Area

Open **4C 5.4.1 – Fixed Area** found in the MAP4C shared folder in your Google Drive.

In this investigation, you will be manipulating rectangles with fixed areas.

Remember: when you have a **fixed area**, you want to **minimize perimeter**!

1. Move the point labeled "Set Area" to a number you like. *Keep it less than 30*
2. Record your fixed area in the table below.
3. Move the point labeled "Set Width" making the width very small, and very large.
4. Describe the rectangle when the width is very small and when it is very large.

5. Continue to move the "Set Width" point, keeping an eye on the perimeter. Get the perimeter as small as you can and then stop.
6. Record the length, width and perimeter in the table below.
7. Complete your table by getting values from 3 other groups.

Group	Fixed Area	Length	Width	Perimeter
Your Group				

8. Describe how to optimize (minimize) perimeter given a fixed area.

Part II – Fixed Perimeter

Open **4C 5.4.2 – Fixed Perimeter** found in the MAP4C shared folder in your Google Drive.

In this investigation, you will be manipulating rectangles with fixed perimeters.

Remember: when you have a **fixed perimeter**, you want to **maximize area**!

1. Move the point labeled "Set Perimeter" to a number you like. *Keep it less than 30*
2. Record your fixed perimeter in the table below.
3. Move the point labeled "Set Width" making the width very small, and very large.
4. Make a prediction about when the area will be maximized.

5. Continue to move the "Set Width" point, keeping an eye on the area.
   Get the area as large as you can and then stop.
6. Record the length, width and area in the table below.
7. Complete your table by getting values from 3 other groups.

Group	Fixed Perimeter	Length	Width	Area
Your Group				

8. Describe how to optimize (maximize) area given a fixed perimeter.

Part II – Enclosing Three Sides

Open **4C 5.4.3 – Enclosing Three Sides** in the MAP4C shared folder in your Google Drive.

In this investigation, you will be manipulating rectangles formed by a set amount of materials on three sides (imagine an area enclosed along the side of a barn or a river).

Remember: when you have a **fixed amount of material**, you want to **maximize area**!

1. Move the point labeled "Set Amount of Material" to a number you like.
2. Record your fixed amount of material in the table below.
3. Move the point labeled "Set Width" making the width very small, and very large.
4. Make a prediction about when the area will be maximized.

5. Continue to move the "Set Width" point, keeping an eye on the area.
   Get the area as large as you can and then stop.
6. Record the length, width and area in the table below.
7. Complete your table by getting values from 3 other groups.

Group	Fixed Amount of Material	Length	Width	Area
Your Group				

8. Describe how to optimize (maximize) area given a fixed length of material to enclose an area on only three sides.

Optimization

__Perimeter__

When we are trying to "optimize" the perimeter of a given area, we are looking to

__ __ __ __ __ __ __ __ the perimeter.

__Formulae__

__Area__

When we are trying to "optimize" the area of a space given the perimeter, we are

looking to __ __ __ __ __ __ __ __ the area.

__Formulae__

__Area on Three Sides__

When we are trying to "optimize" the area of a space that will be enclosed on three

sides and we are given the amount of materials available, we are looking to

__ __ __ __ __ __ __ __ the area.

__Formulae__