True or False?

When the statement below is revealed, write down your gut instinct, true or false, on your whiteboard.

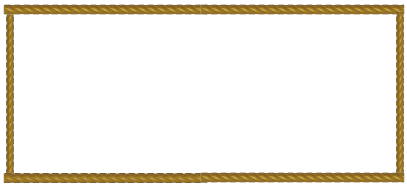
If two rectangles have the same perimeter then they will have the same area.

Testing it out...

Using a piece of rope, make a long thin rectangle.
How many students can fit into this space?

Testing it out...

Now use the same piece of rope but change the shape of the rectangle. See how many students you can fit into the space.



Testing it out...

Keep adjusting the shape of the rectangle, and notice which dimensions seem to allow you to fit the most students in the space.

True or False? - Revisited

Consider the same statement we began with. Write down True or False on your whiteboard based on your thoughts now.

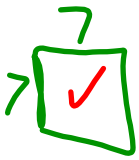
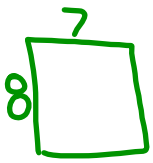
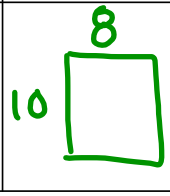
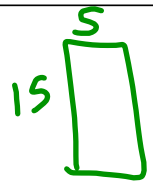
If two rectangles have the same perimeter then they will have the same area.

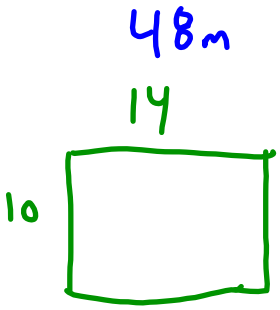
Let's investigate further....

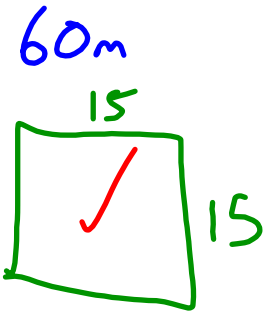
Each group will be given a perimeter. On your chart paper:

- draw at least 5 different rectangles with the same perimeter
- calculate the area of each rectangle
- draw (if you haven't already) a rectangle with this same perimeter that you think would have the largest area
- be prepared to justify how you know this rectangle has the largest possible area for the perimeter that you were given

Sharing our results

Perimeter	16m	28m	30m	36m	40m
Dimensions for largest area					

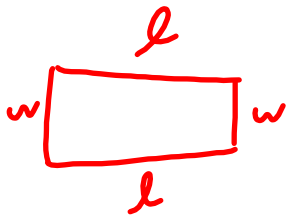




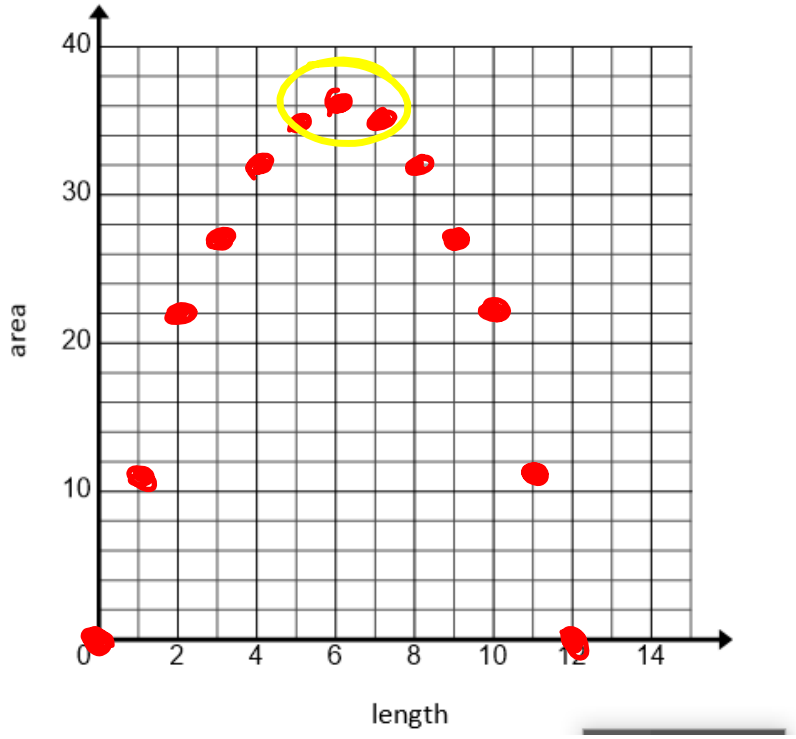
Handout example

Suppose you have 24 m of fence. Complete the table below to show all the possible dimensions of rectangles you could have.

Perimeter	Length	Width	Area
24m	1	11	$11m^2$
24m	2	10	$20m^2$
24m	3	9	$27m^2$
24m	4	8	$32m^2$
24m	5	7	$35m^2$
24m	6	6	$36m^2$
24m	7	5	$35m^2$
24m	8	4	$32m^2$
24m	9	3	$27m^2$
24m	10	2	$20m^2$
24m	11	1	$11m^2$



Graph

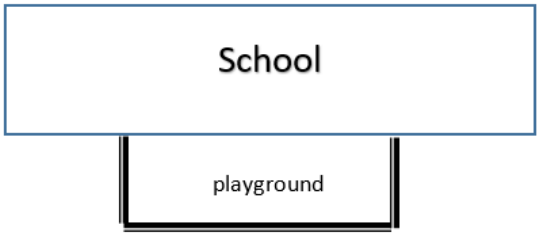


The Playground

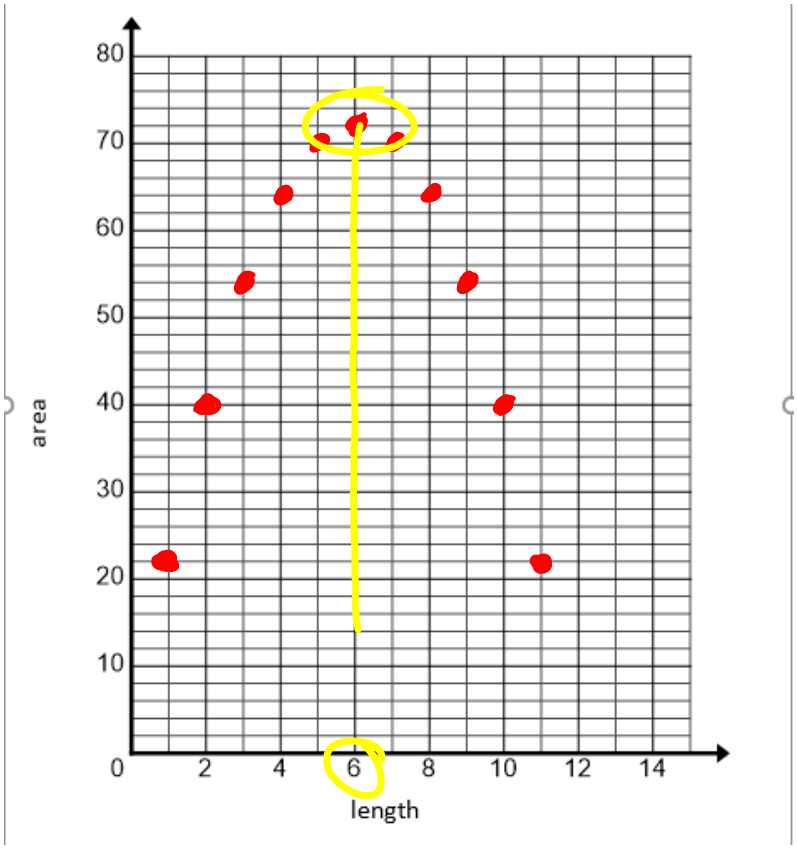
Parkwood elementary school is fencing in an area for their new kindergarten classes. The school has been allocated 24m of fence.

They only need to put the fence on 3 sides of the playground because the school will be along the fourth side.

Predict what length and width would create the playground with the largest area.



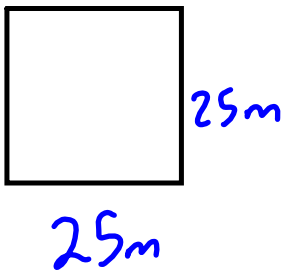
Length	Width	Area
1	22	22
2	20	40
3	18	54
4	16	64
5	14	70
6	12	72
7	10	70
8	8	64
9	6	54
10	4	40
11	2	22

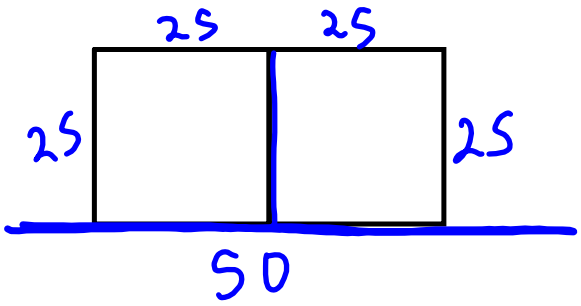

80
70
60
50
40
30
20
10
0
2
4
6
8
10
12
14
area
length

Summarize

If you had a friend away from class how would you explain to them how to find the dimensions of a rectangle with the largest possible area?

If you have 100m of fence what dimensions give the largest area for: 4 sides? 3 sides?





4 Sides = 1 square

3 sides = 2 squares