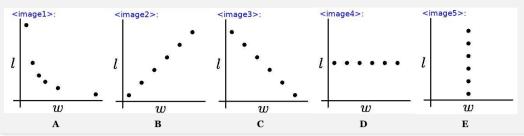
**Question:** Jorge's teacher asks him to plot all the ordered pairs \$ (w, l)\$ of positive integers for which \$ w\$ is the width and \$ l\$ is the length of a rectangle with area 12. What should his graph look like?

## Ground-Truth: A



**OVR:** < think > Okay, so Jorge needs to plot all the ordered pairs (w, l) where w is the width and l is the length of a rectangle with area 12. Both w and l are positive integers. Let me think about how to approach this.

First, the area of a rectangle is calculated by multiplying its width and length. So, we have the equation w \* l = 12. Both w and l have to be positive integers because they are dimensions of a rectangle, and you can't have a fraction of a unit in this context, right? The problem says positive integers, so we're dealing with whole numbers.

Alright, so I need to find all pairs of positive integers (w, l) such that when multiplied together, they equal 12. Let me list out the factors of 12. The factors of 12 are 1, 2, 3, 4, 6, and 12. But since both w and l have to be positive integers, each factor pair would be (1,12), (2,6), (3,4), and then their reverses. Wait, but since w is width and l is length, does the order matter? In the ordered pair (w, l), does it matter if we switch w and l? For example, is (2,6) different from (6,2)? Because if the rectangle has width 2 and length 6, that's the same as a rectangle with width 6 and length 2, just rotated. But the ordered pair (w, l) would be different. However, in terms of the graph, since we're plotting (w, l), the points would be distinct even if they are just swaps. But wait, the area is the same, but the coordinates are different. Hmm...

Therefore, we need to consider all possible ordered pairs (w, l) where w and l are positive integers, and w \* l = 12. Let's list all such pairs.

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Starting with w = 1: 1 * 12 = 12, so (1,12)
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- w = 2: 2 \* 6 = 12, so (2,6)
- w = 3: 3 \* 4 = 12, so (3,4)
- w = 4: 4 \* 3 = 12, so (4,3)
- w = 6: 6 \* 2 = 12, so (6,2) w = 12: 12 \* 1 = 12, so (12,1)

So the ordered pairs are (1,12), (2,6), (3,4), (4,3), (6,2), (12,1). Each of these is a distinct ordered pair.

So let's visualize this. The x-axis is w (width) from 1 to 12, and the y-axis is l (length) from 1 to 12. Each of these points should be plotted.

Looking at the options given:

(A) image1: shows points that seem to go from (1,12) down to (12,1), but maybe in a different arrangement.

Wait, but let me check the images.

(image1): a scatter plot with points arranged from left to right along the w-axis increasing, and I decreasing. So like (1,12), (2,6), (3,4), (4,3), (6,2), (12,1). But maybe not all points are there.

(image2): points increasing in both directions? Not sure.

(image3): Points decreasing in l as w increases, but maybe with gaps?

(image4): Points all along the w-axis, so l is constant? That can't be right because l would have to be 12 for w=1, 6 for w=2, etc.

(image5): Points all along the l-axis, so w is constant? Similarly, that's not possible.

Wait, but the correct plot should have points at (1,12), (2,6), (3,4), (4,3), (6,2), (12,1). So when plotted on a graph with w on the x-axis and l on the y-axis, these points would form a diagonal line from (1,12) to (12,1), but only at those specific integer points...

## Let's check the options again.

Assuming image1 has all six points in decreasing order, image2 might have some other arrangement, image3 maybe have some other arrangement, image4 all on w-axis, image5 all on l-axis.

But since the problem says \"positive integers\", and there are exactly six pairs, the correct graph should have six points. So image4 and image5 can be eliminated because they have multiple points on a single axis, which is not possible since for each w, l is determined (except when w=12, l=1 and vice versa). So image4 is points along w-axis (l=1?), but that's not correct. Similarly, image5 would have points along l-axis (w=1?), which is also not correct.

So between image1, image2, image3.

If image1 has points (1,12), (2,6), (3,4), (4,3), (6,2), (12,1), then image1 is correct. If image2 has points in a different order, maybe increasing, but since w is on the x-axis and l on y-axis, increasing w would correspond to decreasing l, so the points should form a decreasing trend...

Therefore, the correct answer is image1, which is option A. </think>

The problem requires plotting all ordered pairs (w, l) where w and l are positive integers such that the area (w \* l = 12). The factor pairs of 12 are (1, 12), (2, 6), (3, 4), (4, 3), (6, 2), and ((12, 1). These pairs form six distinct points on a graph with w on the x-axis and l on the y-axis. The correct graph should show all six points arranged in a decreasing trend from (1, 12) to (12, 1). Among the options, \*\*image1\*\* (Option A) correctly displays all six points in this pattern.