

# Solution

You have 9 cards with descriptions about the volume of a cuboid on each.

1 by 2 by 28 cuboid 2 56	4 by 4 by 4 cube 16 74	2 by 4 by 7 cuboid 8 56
1 by 2 by 26 cuboid 2 52	2 by 4 by 6 cuboid 8 48	4 by 5 by 6 cuboid 20 120
4 by 5 by 7 cuboid 20 140	1 by 2 by 24 cuboid 2 48	1 by 4 by 14 cuboid 2 56

The challenge is to arrange them in the 3 by 3 grid below:

2 by 4 by 6 cuboid	1 by 2 by 24 cuboid	4 by 4 by 4 cube
1 by 4 by 14 cuboid	1 by 2 by 28 cuboid	2 by 4 by 7 cuboid
4 by 5 by 6 cuboid	1 by 2 by 26 cuboid	4 by 5 by 7 cuboid

## How to solve it:

To figure out this challenge, you first need to complete the surface area and volume for you on the left - volume is  $L \times W \times D$  whereas surface area is done by doing  $L \times W$ . As you can see, the volume 56 is repeated 3 times as is the surface area 2. On 1 sentence, 56 is the volume and 2 is the surface area, meaning that is the centre calculation. According to the 3rd rule, the middle column would consist of number sentences all with the surface area of 2. Take the numbers and put the smallest one on the top row in the middle

(1 by 2 by 24 because its volume is 48 so that means 1 by 2 by 26 goes on the bottom. Next, take the 3 calculations with the volume of 56 and (using the surface area) put the smallest in the left space of the middle row - 1 by 4 by 14 because the surface area is 4. The other number's surface area is 8 so it goes on the right. To find the placing of the other calculations, you need to look at the surface area and volume. Find the smallest calculation (2 by 4 by 6) and put it in the top left corner. Then you fill in the rest - look at grid. Now you have a full grid. Hope you got it correct.

$$(L \times W)$$

Surface Area

$$(L \times W \times D)$$

Volume

## Rules:

- As you go from left to right, the surface area of the shapes must increase.
- As you go from top to bottom, the volume of the shapes must increase.
- All the cuboids in the middle column must have the same surface area.
- All the cuboids on the middle row must have the same volume.