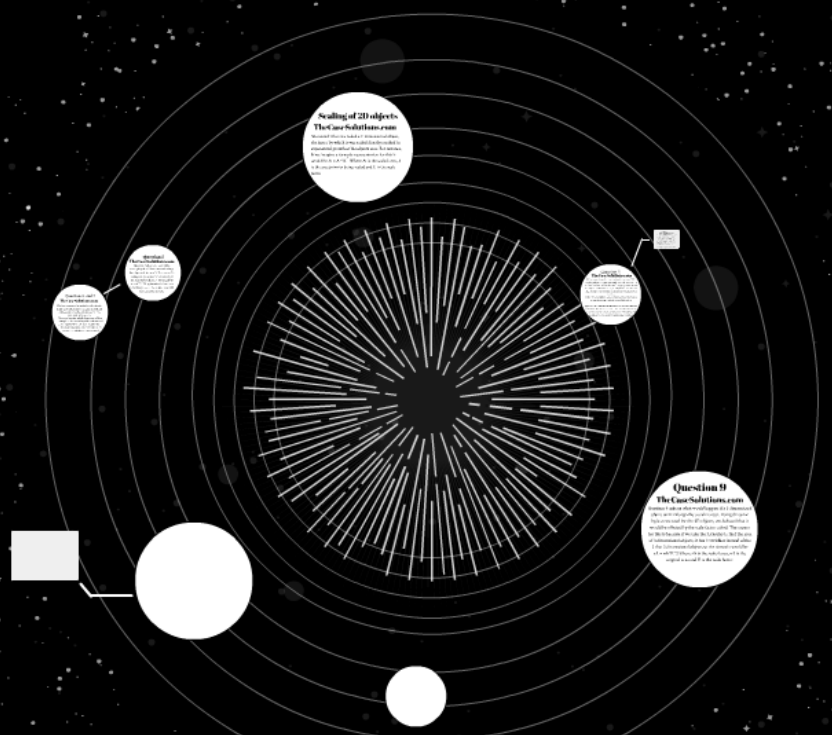
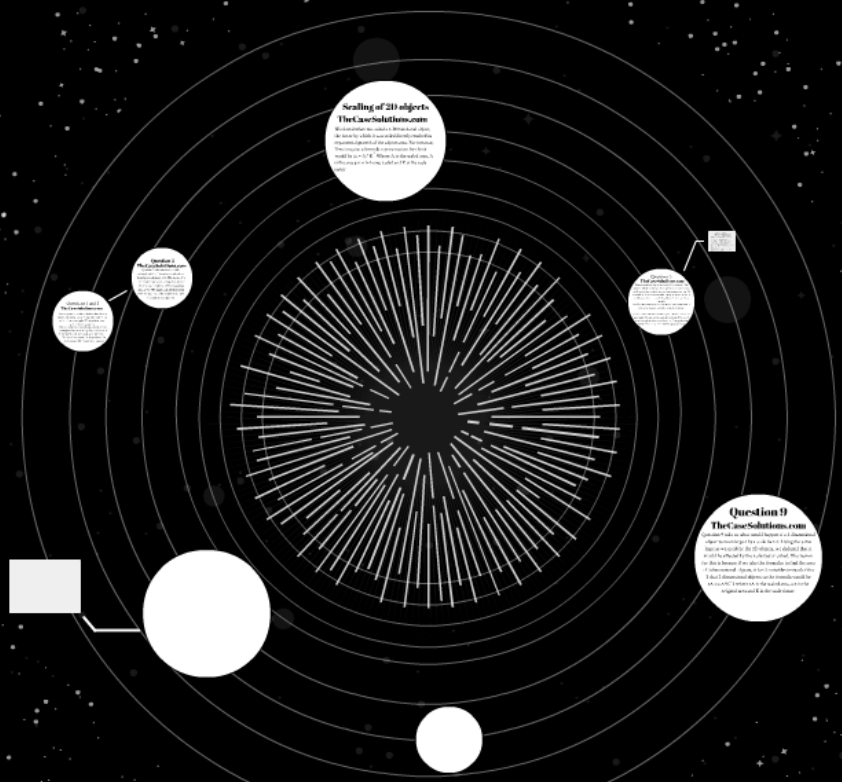


TTTech (A):Seeking Growth and Scale in New and Existing Markets

TheCaseSolutions.com



TTTech (A):Seeking Growth and Scale in New and Existing Markets

TheCaseSolutions.com

Questions 1 and 2

TheCaseSolutions.com

The first question on this worksheet asks what the lengths and widths a 20cm^2 rectangle could be and to list at least 5 examples. We decided on 1*20, 20*1, 2*10, 10*2, and 5*4.

The second question asks the dimensions of these rectangles if they were enlarged by a scale factor of 2. We found 2*40, 40*2, 4*20, 20*4 and 8*10.

We found these areas to be the product of the original area with the scale factor squared.

Question 3
TheCaseSolutions.com

Question 3 asks you to start with a rectangle with a different area and enlarge them by a scale factor of 2. We chose a 6*3 rectangle to use as an example(an area of 18). The end result is a 12*6 rectangle(an area of 72). We again noticed these areas to be the product of the original area with the scale factor squared.

Scaling of 2D objects

TheCaseSolutions.com

We found when we scaled a 2-Dimensional object, the factor by which it was scaled directly resulted in exponential growth of the objects area. For instance, If we imagine a formula representation for this it would be $A_2 = A_1 * K^2$ Where A_2 is the scaled area, A is the area prior to being scaled and K is the scale factor

Question 5

TheCaseSolutions.com

With our new formula, we can easily solve question 5. This question asks us to enlarge a rectangle by a scale factor of 3, 4, and 5 and see how it effects the area. I am going to use our 4*5 rectangle as the example rectangle. If we plug in the scale factor and the area of our rectangle we get the new rectangles to be equal to

20*(x)^2 where x is the scale factor we use. The answers are an area of 80 units sq., 180 units sq. and 500 units sq.

Question 5 also asks what would happen if we used a fractional scale factor. We can use the exact same formula. If we use the same rectangle and use a scale factor of 1/2 we get the new area of 20*(1/2)^2 or 20*1/4 which equals 5 units sq.

Question 6, 7 and 8

TheCaseSolutions.com

Question 6 asks what would happen if you enlarged a rectangle by K. If we plug in K to our formula we get the new area to be equal to A*(K)^2

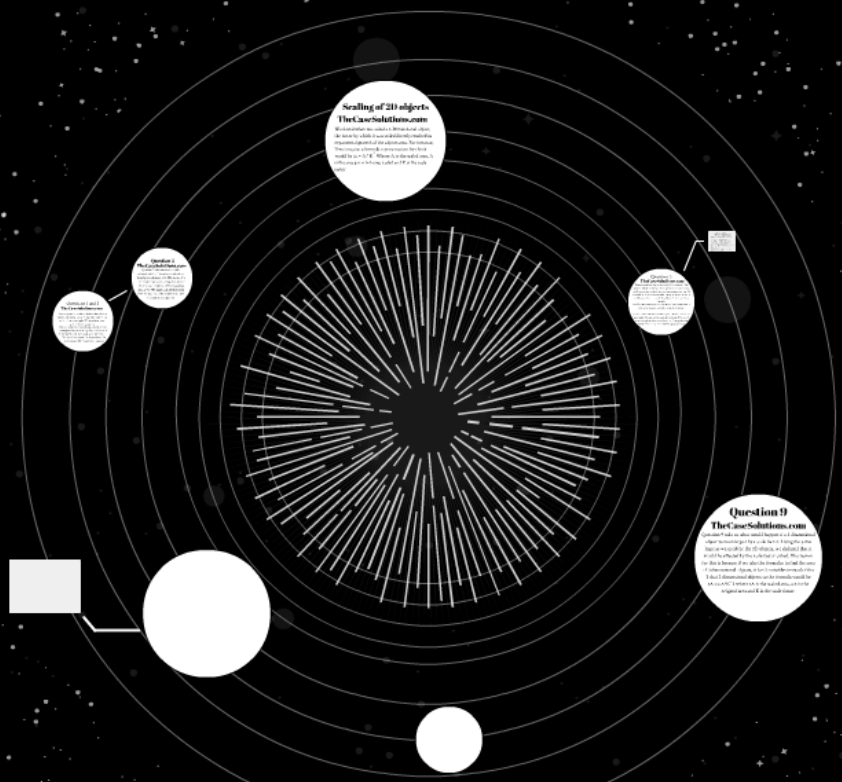
Question 7 asked us to justify this conclusion, so I'll explain why the formula works the way it does. All 2 dimensional object has a formula to find is area, and all these formula uses one variable times another variable. For instance, a circle uses the radius squared(uses it twice), a rectangle is found by multiplying length times width and a triangle is found by base times height divided by 2. Since the scale factor effects both of these variables, and you are multiplying them together, the area is effected by the scale factor squared

Question 8 asks if it applies to other plane objects and I believe the explanation for Q.7 explains why it does.

Question 9

TheCaseSolutions.com

Question 9 asks us what would happen if a 3 dimensional object were enlarged by a scale factor. Using the same logic as we used for the 2D objects, we deduced that it would be effected by the scale factor cubed. The reason for this is because if we take the formulas to find the area of 3 dimensional objects, it has 3 variables instead of the 2 that 2 dimensional objects so the formula would be sA = oA*K^2 where sA is the scaled area, oA is the original area and K is the scale factor.



TTTech (A):Seeking Growth and Scale in New and Existing Markets

TheCaseSolutions.com