

Calculate the perimeter of every figure and try to find the scale factor (“fattore di scala”) respect to F.

figure	base	height	perimeter	scale factor
F				
A				
B				
C				
D				

The length of base 1 is \_\_\_\_\_, the length of height 1 is \_\_\_\_\_.  
 The perimeter of figure 1 is \_\_\_\_\_, the scale factor is \_\_\_\_\_.

What can you observe?

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## The process you observe is named DILATION

A dilation is a transformation that changes the size of a figure. It can become larger or smaller, but the shape of the figure doesn't change. To complete a dilation you need:

1. a center point;
2. a scale factor.

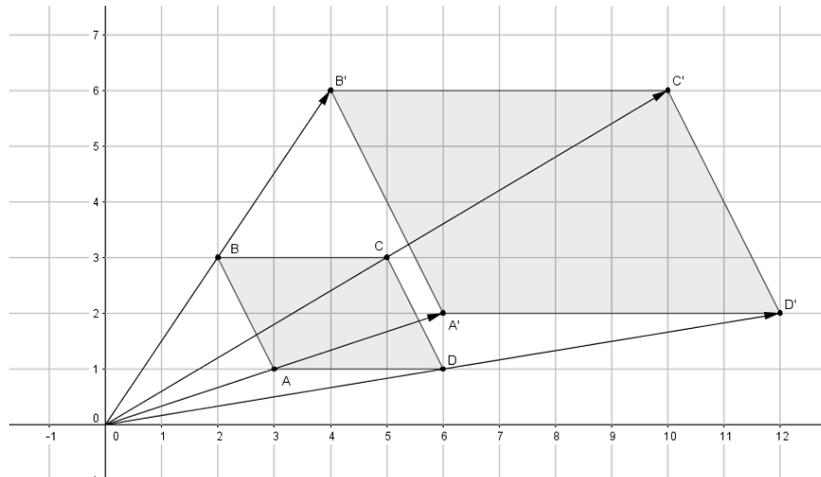
The initial object is called the pre-image and the object after the dilation is called the image.

A general formula to calculate the length of a segment of a dilated image is

$$\text{Image} = (\text{Preimage}) * (\text{Scale Factor})$$

For example: you have a segment  $AB = 7$  cm and you have to dilate it by a scale of  $\frac{1}{2}$ . You can determine  $A'B' = 7 * \frac{1}{2} = 3,5$  cm.

Example: dilate the figure ABCD with scale factor 2 using O as center point.



Where can you find dilation in nature or real life?

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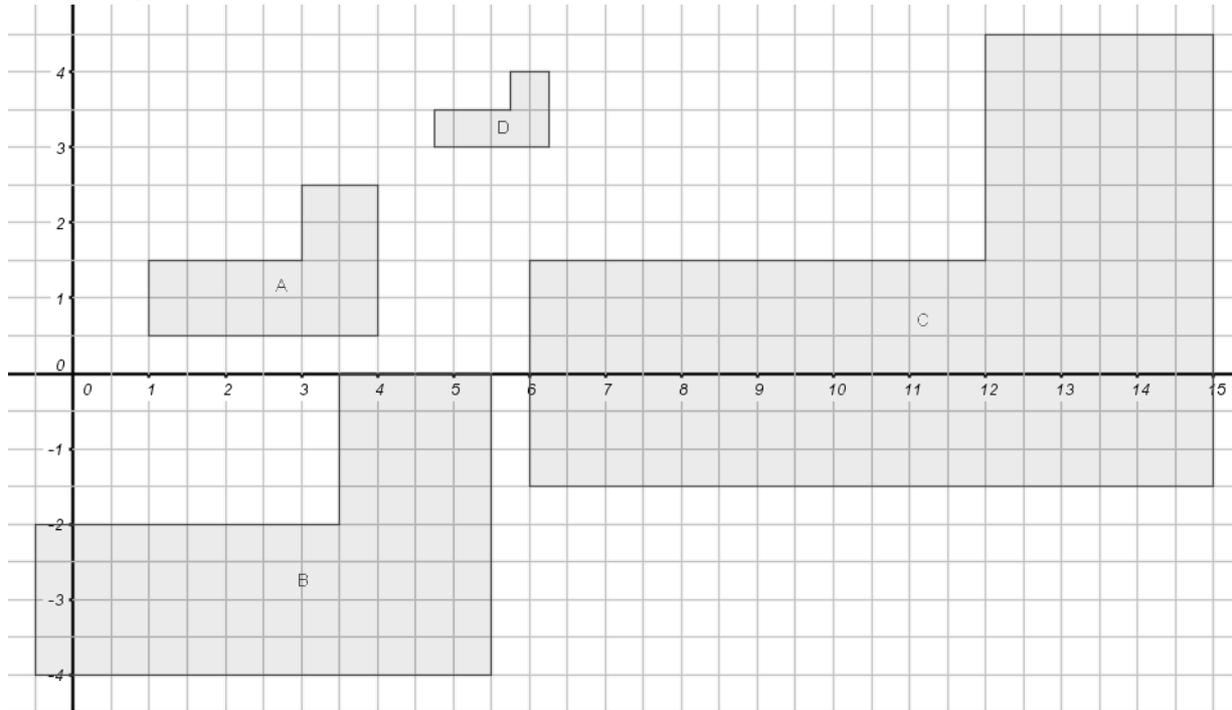
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## EXERCISES:

1. The diagram below shows the shape A,B,C,D.

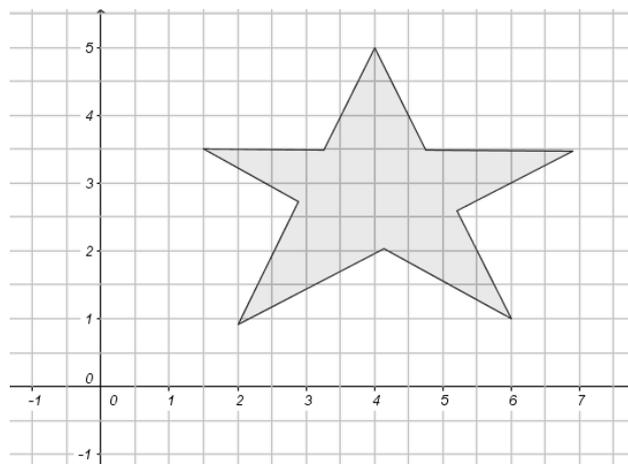


What scale factor is used for each of the dilation below:

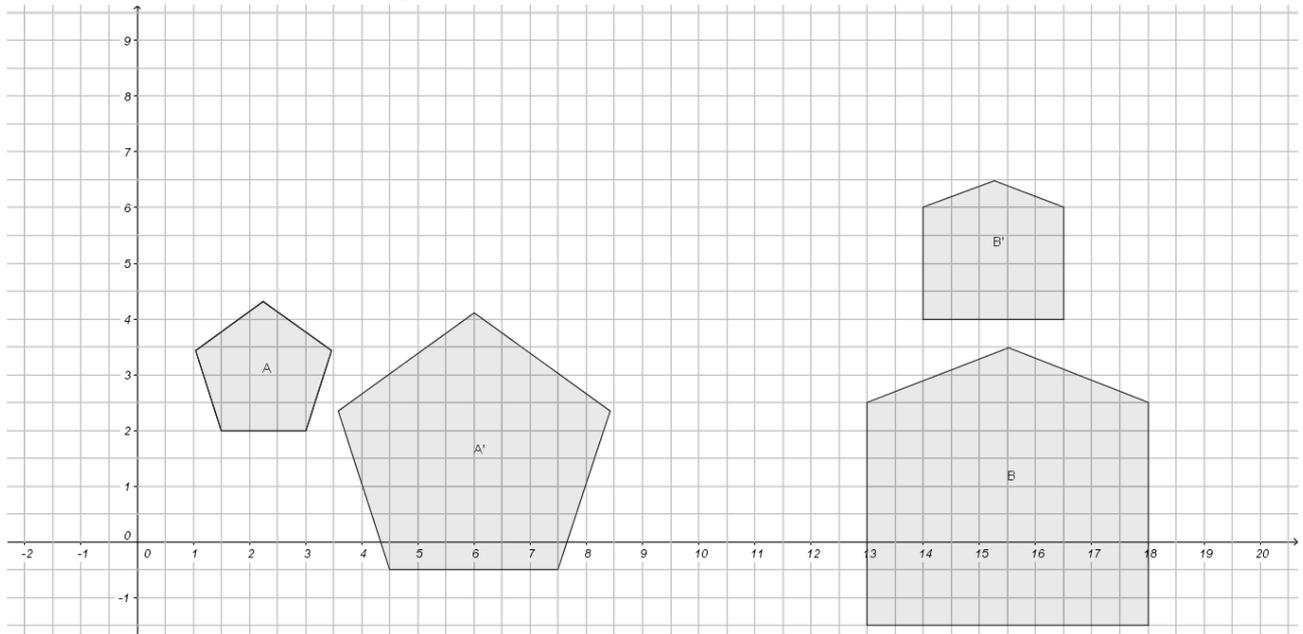
- A dilate to B
- C dilate to D
- D dilate to A
- A dilate to D

2. Draw a rectangle that has sides of length 3 and 6 cm. Draw dilation of it using scale factor 2,  $\frac{1}{3}$  and  $\frac{1}{2}$ .

3. Copy the following diagram, using  $(0;0)$  as the center of dilation; dilate the shape with scale factor 4.



4. For each of the following dilation find the center point and the scale factor



5. Construct a map to explain the dilation to your classmates.