Sadiq Public School

Do the right, fear no man

Subject:Mathematics Class: C2 Day: Friday 16 November 2024

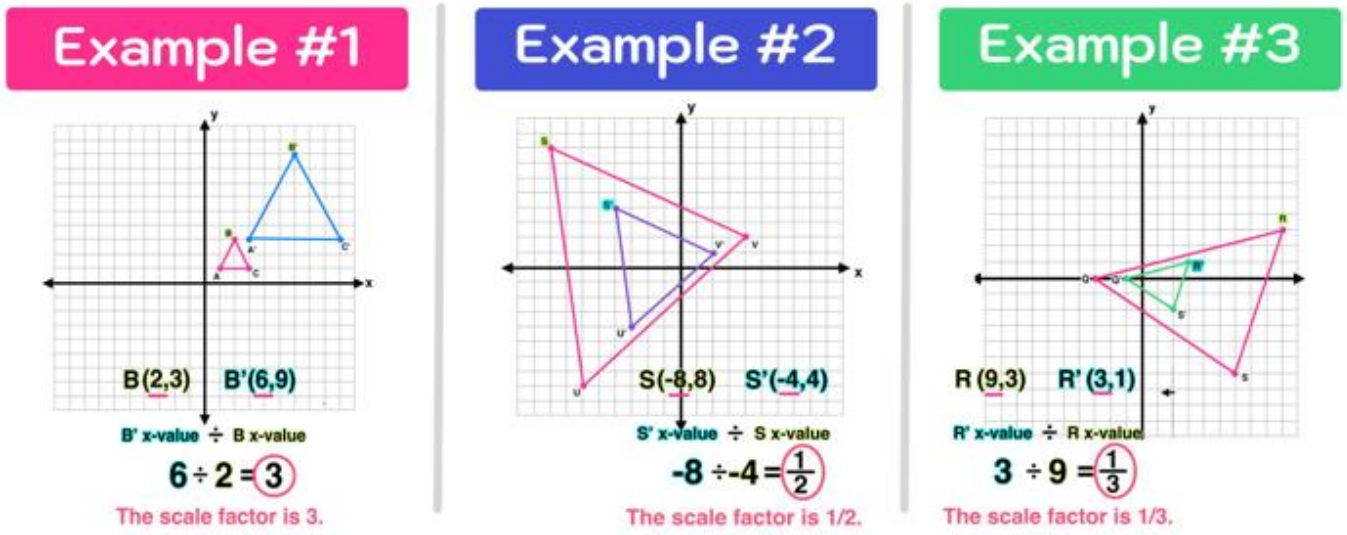
Geometrical Transformations Enlargement Chapter No.12

Inquiry: This lesson is about Transformations, Enlargement.

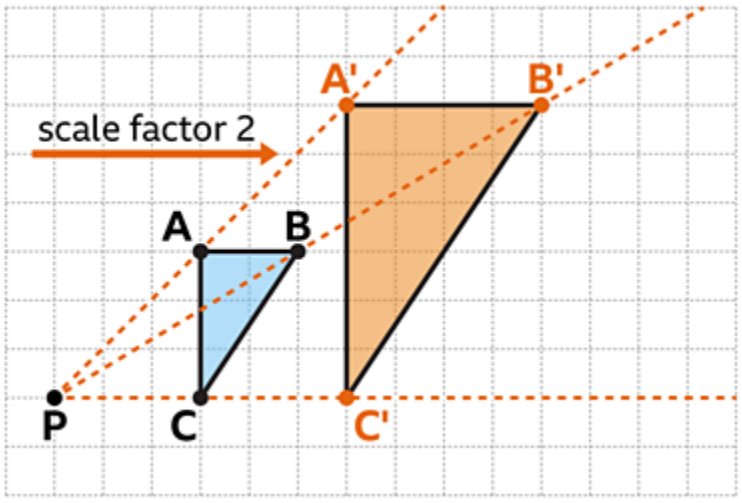
What is Enlargement? What are the factors on which enlargement depends? When does the image get smaller than object? Does positive or negative SF affect the orientation of image? How can we find center of enlargement if object and image are given?

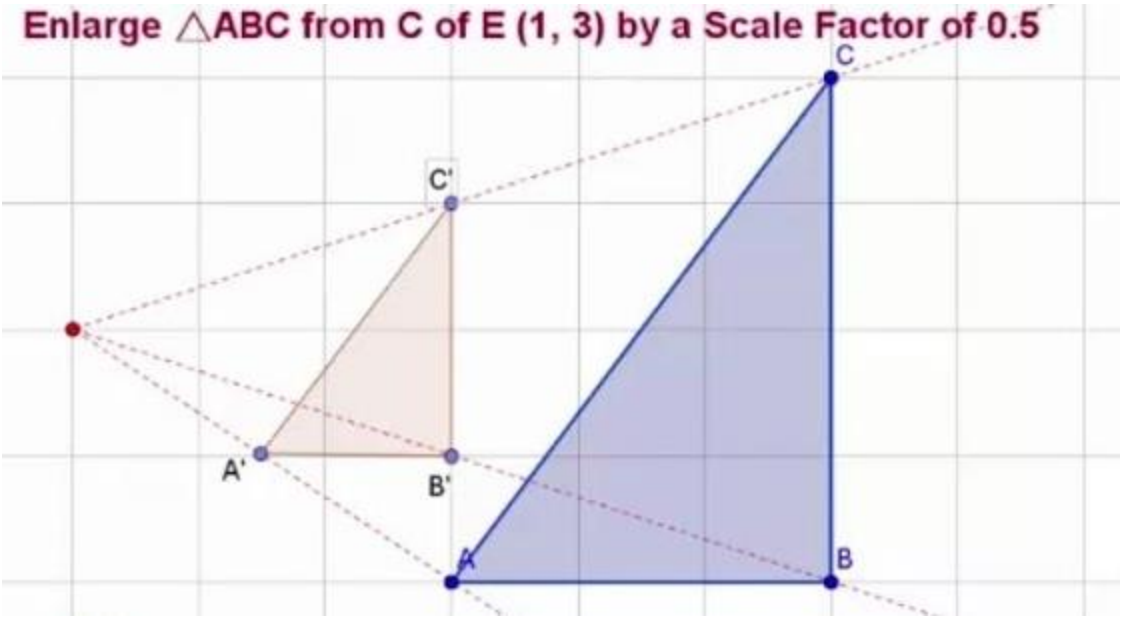
Information:

The Scale Factor: How to find scale factor?

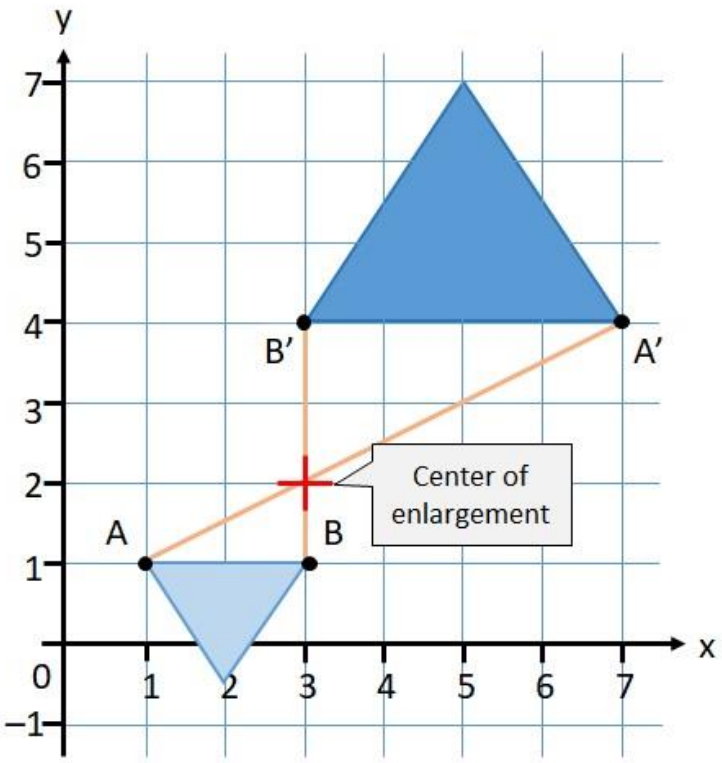


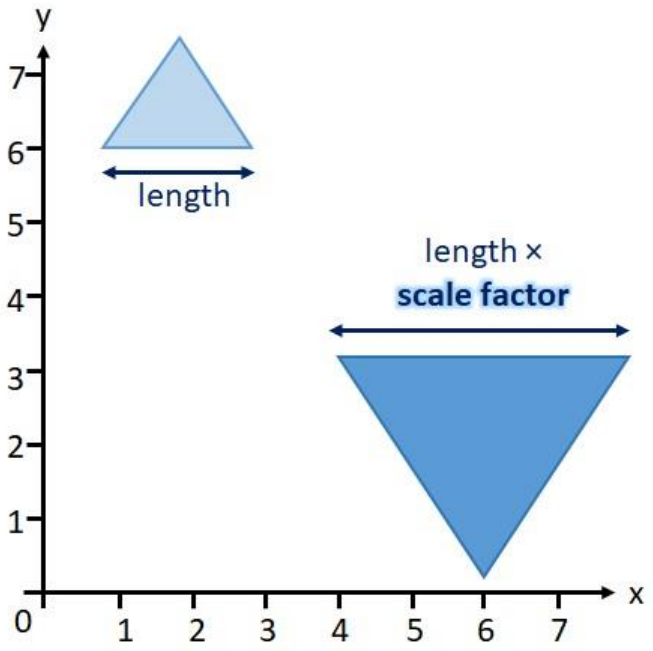
A positive Scale Factor:





A Negative Scale Factor:





Enlargement is the only non-isometric transformation in which size of the object changes either larger or smaller. Other Transformations are iso-metric.

The two factors on which Enlargement depends are:

1) Center of enlargement : The point about which the object is enlarged. It can be origin or any other point in xy-plane. If center is origin, we multiply the coordinates of object's vertices by scale factor and get the corresponding vertices of Enlarged image.

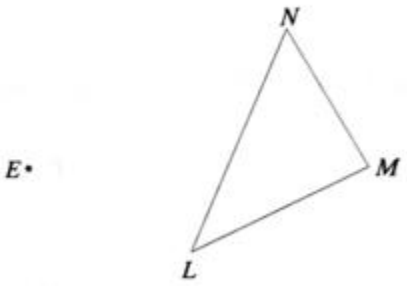
2) Scale factor: This is the ratio of image's length to corresponding object's length.

Or it is the ratio of distance of image from center to distance of object from center.

Example: See this solved example in book on page 356.

Worked Example 3 (Construction of Enlarged Figure with Scale Factor Between 0 and 1)

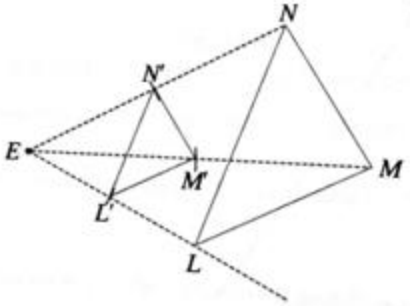
Enlarge $\triangle LMN$ with E as the point of enlargement and scale factor $\frac{1}{2}$.



Solution:

Construction Steps:

1. Join E to L.
2. With E as centre, use your compasses to mark off the point L' on EL such that $EL' = \frac{1}{2} EL$.
3. Repeat the above procedure for points M and N to get points M' and N'.
4. Join L' to M', M' to N' and L' to N' to obtain the image triangle $L'M'N'$.



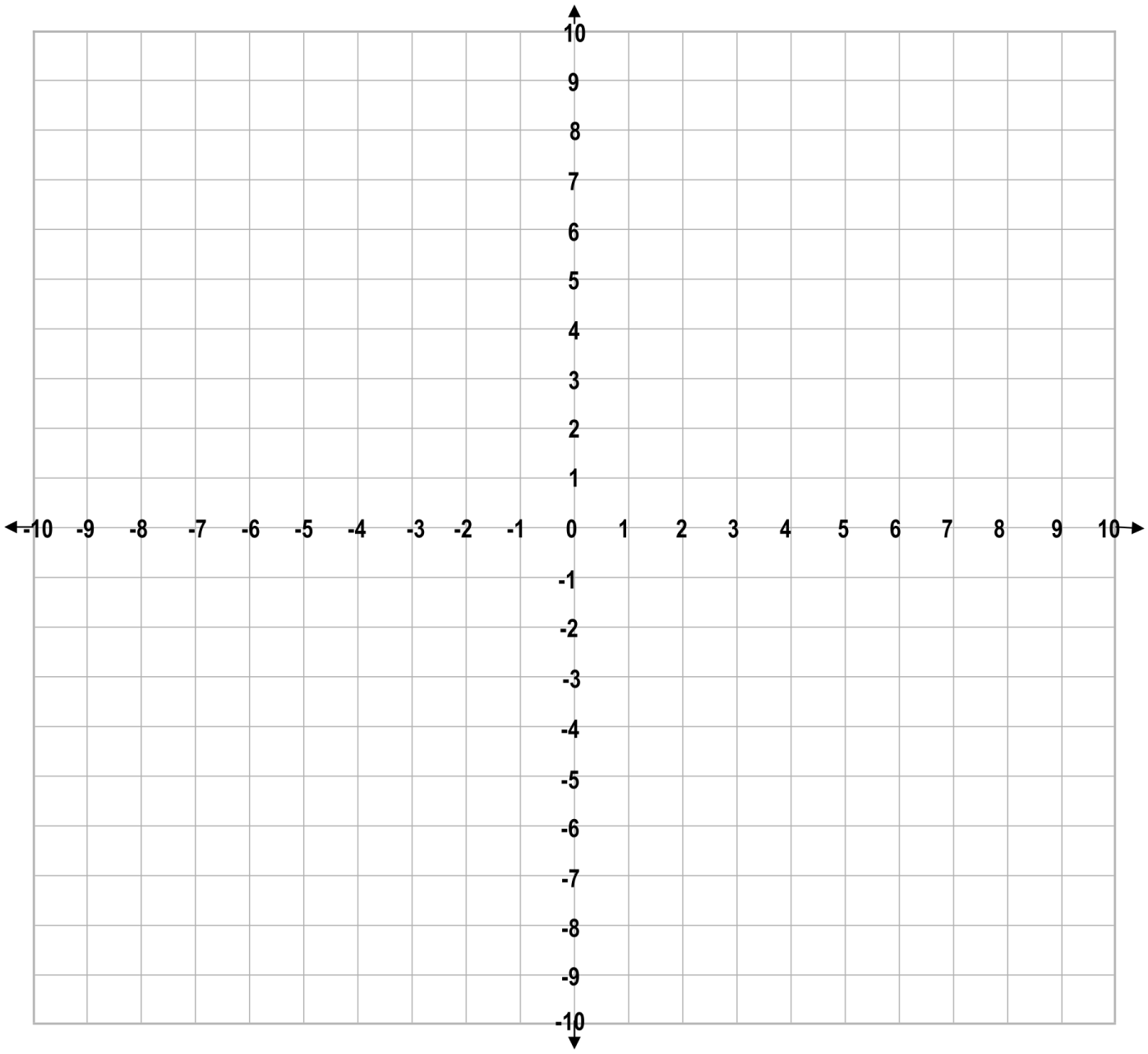
Practice:

Ex. 12 B

Q No.2: Draw on graph paper triangle PQR with P (2 , 2) , Q (5 , 3) , R (3 , 5). Enlarge triangle PQR with Q as the point of enlargement and scale factor 3.

Q No.5: Draw on graph paper triangle ABC with A (1 , 1) , B (3 , -1) , C (0 , 0). triangle ABC is enlarged to PQR with E (4 , 4) as the enter of enlargement and scale factor $\frac{1}{2}$. Find the coordinates of P , Q , R.

Note: You can use the following graph sheet for these questions.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