

Theorem 46. (SSS for similar triangles). If corresponding sides of two triangles are proportional then they are similar and their corresponding angles are equal.

Proof: We denote triangles as $\triangle ABC$ and $\triangle A'B'C'$. We assume that

$\frac{|A'B'|}{|AB|} = \frac{|C'B'|}{|CB|} = \frac{|A'C'|}{|AC|} = k$. Consider a central dilation $D_{O,k}$ with the

factor k . We denote the image of the $\triangle ABC$ under this dilation as $\triangle A''B''C''$.

1. $\triangle ABC \sim \triangle A''B''C''$.

2. $\frac{|A''B''|}{|AB|} = \frac{|C''B''|}{|CB|} = \frac{|A''C''|}{|AC|} = k$.

3. $\frac{|A'B'|}{|AB|} = \frac{|C'B'|}{|CB|} = \frac{|A'C'|}{|AC|} = k$

4. $|A''B''| = |A'B'|$, $|B''C''| = |B'C'|$, $|C''A''| = |C'A'|$.

5. $\triangle A''B''C'' \cong \triangle A'B'C'$.

6. $\triangle ABC \sim \triangle A'B'C'$.

1. Given ($\triangle A''B''C''$ is the image of the $\triangle ABC$ under a dilation)

2. From 1. .

3. Given.

4. 2. and 3. .

5. 4. and SSS.

6. 1. and 6..

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