Geometry Unit 9: Dilation and similarity

Bronx Early College Academy

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13 March 2023 - 31 March 2023

Learning Target: I can dilate a triangle

HSG.SRT.B.5 Use similarity criteria for triangles to solve problems 9.1 Monday 13 March

Do Now

1. $12 \times \frac{1}{3} =$
2. $10 \times \frac{7}{5} =$
3. Find x if $9 \cdot x = 15$

Lesson: Dilation, transformations, fraction operations
Test results, check Jumprope

Homework: Complete the classwork practice, Deltamath problem set

A dilation centered at the origin with scale factor $k = 2$

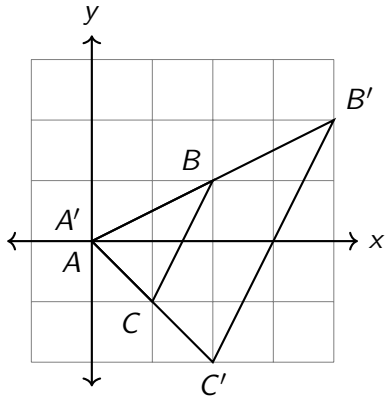
$\triangle ABC \to \triangle A'B'C'$

$A(0,0) \to A'(0,0)$
$B(2,1) \to B'(4,2)$
$C(1,-1) \to C'(2,-2)$

Dilation A transformation stretching objects on the plane by a scale factor away from a point

Center Dilation stretches figures away from a stationary point, the "center of dilation"

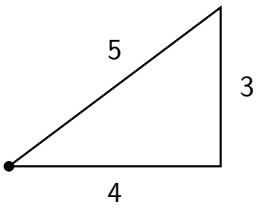
Scale factor The ratio k of the lengths of the corresponding sides of dilated figures



Learning Target: I can identify and explain similarity

HSG.SRT.B.5 Use similarity criteria for triangles to solve problems 9.2 Wednesday 15 March

Do Now: A triangle with side lengths 3, 4, and 5 is dilated by a factor of $k = 2$ centered at one of its vertices. Find the lengths of the image's sides.



Lesson: Similar objects, solving for scale factor k

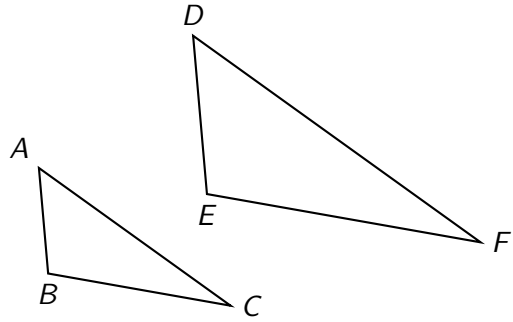
Homework: Complete the classwork practice, Deltamath problem set

Similarity, corresponding parts, and scaled proportions

Similarity Objects with the same shape, but not necessarily the same size, are similar. Their corresponding angles are congruent and their corresponding sides are proportional.

Notation This is the symbol for similar triangles: $\triangle ABC \sim \triangle DEF$

Definition Two figures are similar if one or more rigid motions and a dilation will carry one figure onto the other.



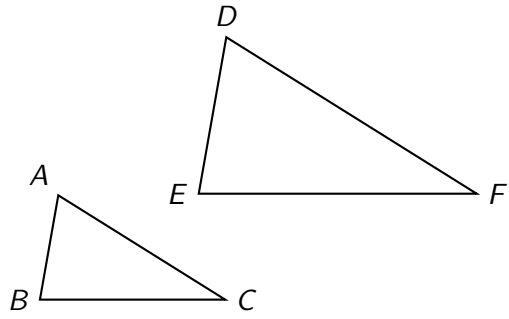
Learning Target: I can solve overlapping similar triangles

HSG.SRT.B.5 Use similarity criteria for triangles to solve problems 9.3 Thursday 16 March

Do Now: Given $\triangle ABC \sim \triangle DEF$, $k = 2$
If $BC = 4$, find EF
If $m\angle B = 80°$, find $m\angle E$

Lesson: Flexibly applying similarity to situations

Homework: Complete the classwork practice, Deltamath problem set

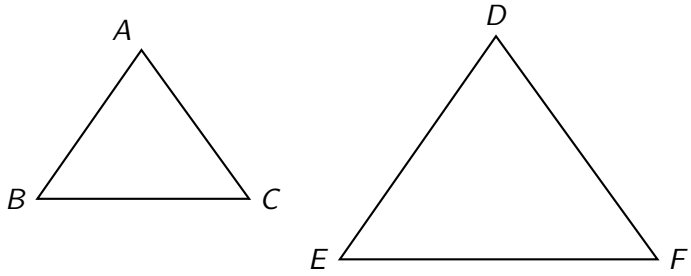


"Solve" a triangle by finding all of is sides' and angles' measures

Given $\triangle ABC \sim \triangle DEF$

$BC = 4$, $EF = 6$, $AB = 3$

$\text{m}\angle B = 55°$, $\text{m}\angle D = 70°$



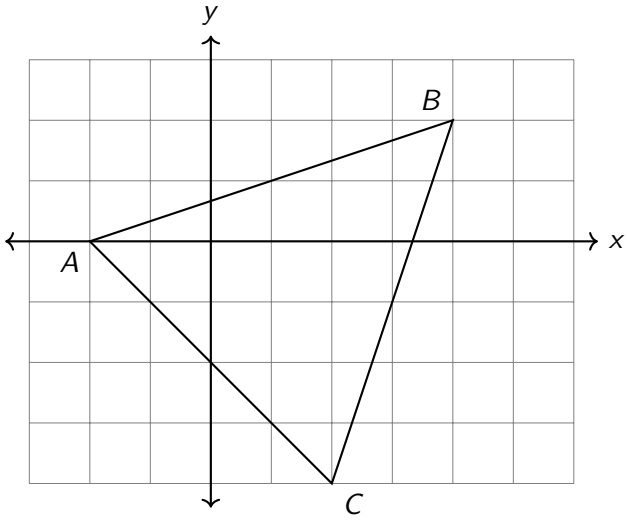
Apply a dilation centered at the origin with scale factor $k = \frac{1}{2}$

$\triangle ABC \rightarrow \triangle A'B'C'$

$A(-2, 0) \rightarrow$

$B(4, 2) \rightarrow$

$C(1, -2) \rightarrow$



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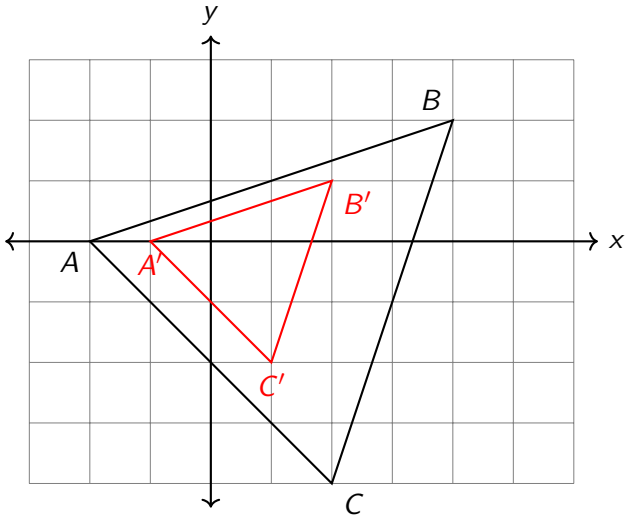
Note: slope is invariant under dilation



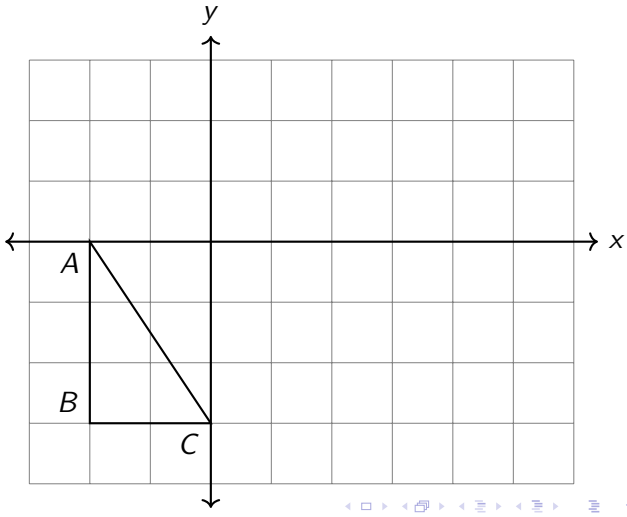
Learning Target: I can compose dilations with other transformations

HSG.SRT.B.5 Use similarity criteria for triangles to solve problems 9.4 Friday 17 March

Do Now:
First reflect $\triangle ABC$ over the y-axis
Then slide it up one and the right 3

Lesson: Applying dilation and rigid motions in compositions

Homework: Complete the classwork practice, Deltamath problem set



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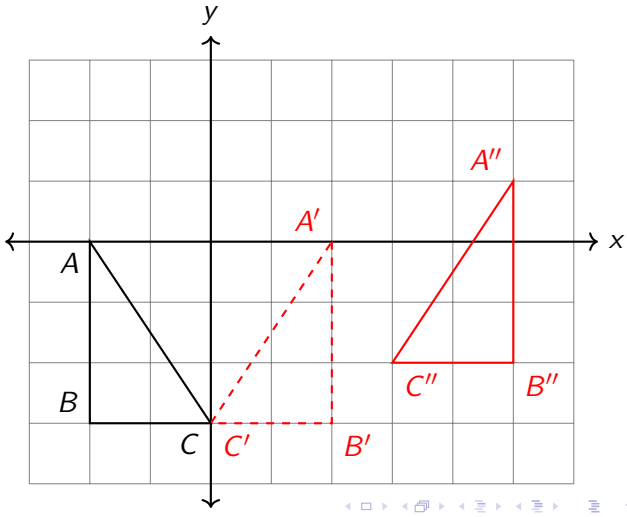

Notebook check scoring

Start quickly at the beginning of class: notebook, pencil, folder, calculator; get to work

Jumprope mastery score

1. I have a notebook $\rightarrow$ 1
2. I have class notes $\rightarrow$ 2
3. I have stars indicating I quickly sit down and write the learning target $\rightarrow$ 3
4. I have stars and I complete the Do Now right away $\rightarrow$ 4