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Geometry

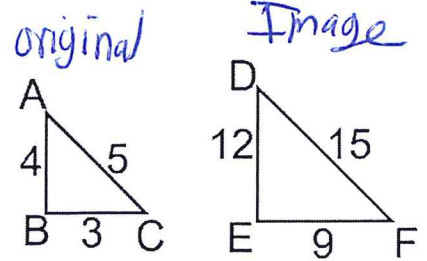
### Scale Factor

1. In the diagram below,  $\triangle DEF$  is the image of  $\triangle ABC$  after a dilation.

What is the scale factor of the dilation:

Numerically:

$$\frac{\text{image}}{\text{original}} = \frac{15}{5} = 3$$



Segments:

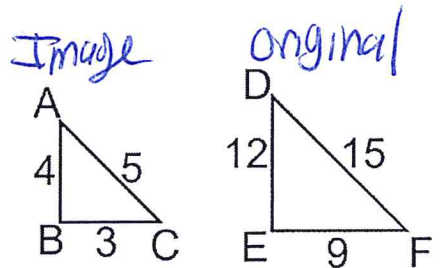
$$\frac{\text{image}}{\text{original}} = \frac{DE}{AB} \text{ or } \frac{EF}{BC} \text{ or } \frac{DF}{AC}$$

2. In the diagram below,  $\triangle ABC$  is the image of  $\triangle DEF$  after a dilation.

What is the scale factor of the dilation:

Numerically:

$$\frac{\text{image}}{\text{original}} = \frac{4}{12} = \frac{1}{3}$$



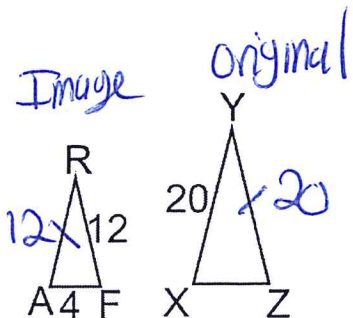
Segments:

$$\frac{\text{image}}{\text{original}} = \frac{AB}{DE} \text{ or } \frac{BC}{EF} \text{ or } \frac{AC}{DF}$$

3. In the diagram below, isosceles  $\triangle ARF$  is the image of  $\triangle XYZ$  after a dilation. What is the scale factor of the dilation:

Numerically:

$$\frac{\text{image}}{\text{original}} = \frac{12}{20}$$



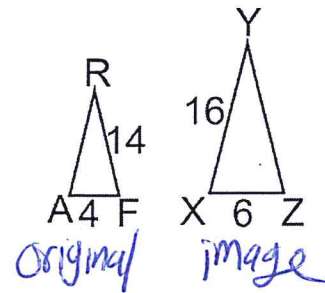
Segments:

$$\frac{\text{image}}{\text{original}} = \frac{AR}{XY} \text{ or } \frac{AF}{XZ} \text{ or } \frac{RF}{YZ}$$

4. In the diagram below,  $\triangle XYZ$  is the image of  $\triangle ARF$  after a dilation.

What is the scale factor of the dilation:

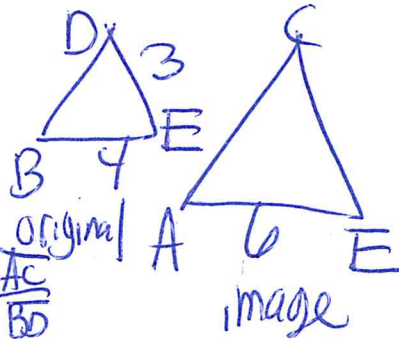
Numerically:  $\frac{\text{image}}{\text{original}} = \frac{6}{4} = \frac{3}{2}$



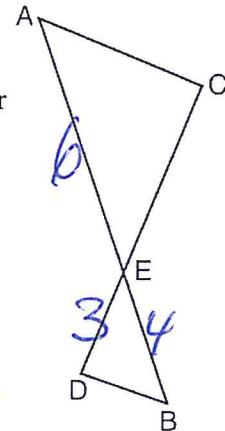
Segments:  $\frac{\text{image}}{\text{original}} = \frac{XZ}{AF} \cong \frac{ZY}{FR} \cong \frac{XY}{AR}$

5. In the diagram below,  $\triangle ACE$  is the image of  $\triangle BDE$  after a sequence of transformations. If  $\overline{AE} = 6$ ,  $\overline{DE} = 3$ , and  $\overline{EB} = 4$ , What is the scale factor

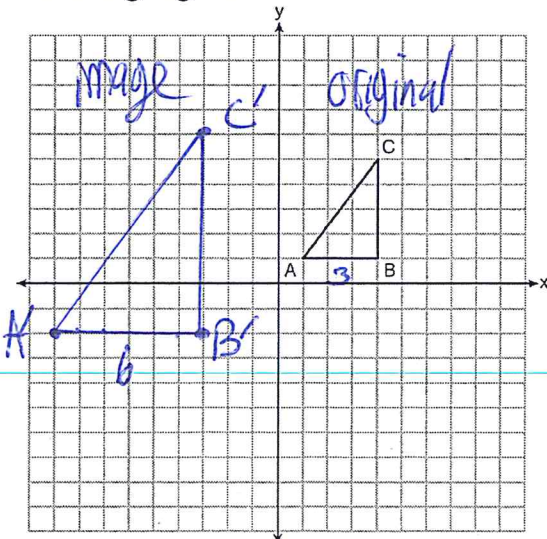
of the dilation:  
Numerically:  $\frac{\text{image}}{\text{original}} = \frac{6}{4} = \frac{3}{2}$



Segments:  $\frac{\text{image}}{\text{original}} = \frac{AE}{BE} \cong \frac{CE}{DE} \cong \frac{AC}{BD}$



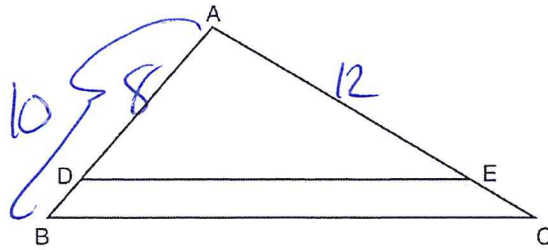
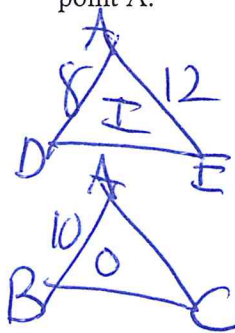
6. In the diagram below,  $\triangle ABC$  has coordinates  $A(1, 1)$ ,  $B(4, 1)$ , and  $C(4, 5)$ . The coordinates of its image after a sequence of transformations is  $A'(-9, -2)$ ,  $B'(-3, -2)$ , and  $C'(-3, 6)$ . What is the scale factor of the dilation numerically and using segments?



$\frac{\text{image}}{\text{original}} = \frac{6}{3} = 2$

$\frac{A'B'}{AB} \cong \frac{A'C'}{AC} \text{ or } \frac{B'C'}{BC}$

7. In the diagram shown below,  $\triangle ADE$  is the image of  $\triangle ABC$  after a dilation of  $k$  centered at point A.



$$k = \frac{\text{image}}{\text{original}}$$

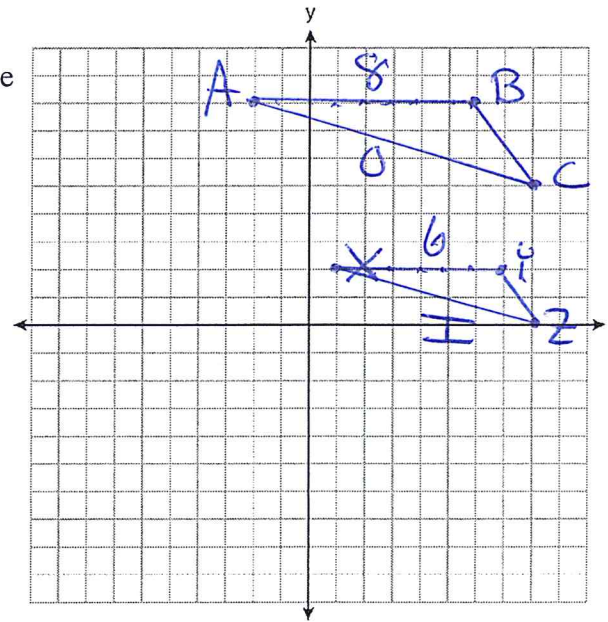
$$k = \frac{8}{10}$$

$$k = \frac{4}{5}$$

If  $AB = 10$ ,  $AD = 8$ , and  $AE = 12$ , what is the value of  $k$ ?

8.  $\triangle ABC$  has coordinates  $A(-2, 8)$ ,  $B(6, 8)$ , and  $C(8, 5)$ . The coordinates of  $\triangle XYZ$ , the image of  $\triangle ABC$  after a sequence of transformations is  $X(1, 2)$ ,  $Y(7, 2)$ , and  $Z(8, 0)$ . What is the scale factor?

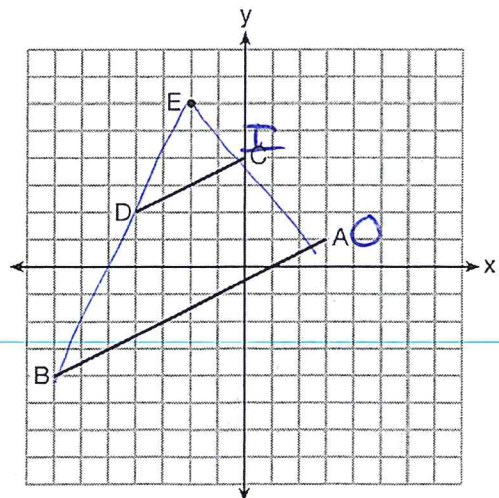
$$\frac{\text{image}}{\text{original}} = \frac{6}{8} = \frac{3}{4}$$



9. In the diagram below,  $\overline{CD}$  is the image of  $\overline{AB}$  after a dilation of scale factor  $k$  with center  $E$ .

Which ratio is equal to the scale factor  $k$  of the dilation?

- 1)  $\frac{EC}{EA}$
- 2)  $\frac{BA}{EA}$
- 3)  $\frac{EA}{BA}$
- 4)  $\frac{EA}{EC}$

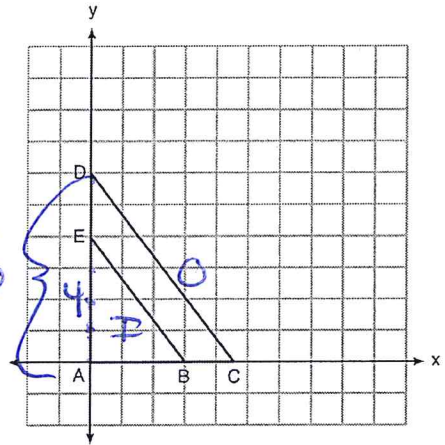


10. In the diagram below,  $\triangle ABE$  is the image of  $\triangle ACD$  after a dilation centered at the origin. The coordinates of the vertices are  $A(0, 0)$ ,  $B(3, 0)$ ,  $C(4.5, 0)$ ,  $D(0, 6)$ , and  $E(0, 4)$ .

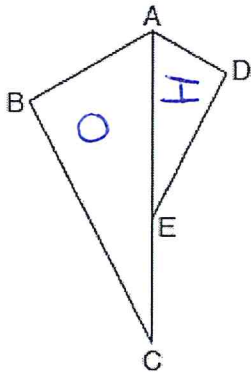
The scale factor of dilation is

- 1)  $\frac{2}{3}$
- 2)  $\frac{3}{2}$
- 3)  $\frac{3}{4}$
- 4)  $\frac{4}{3}$

$$\frac{\text{image}}{\text{original}} = \frac{4}{6} = \frac{2}{3}$$

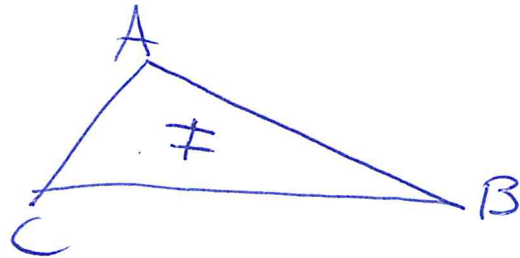
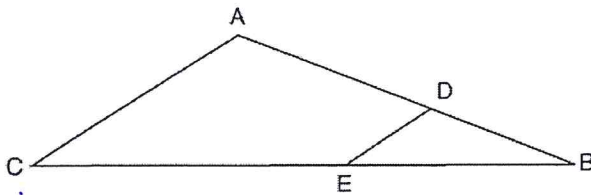


11. In the diagram below,  $\triangle ADE$  is the image of  $\triangle ABC$  after a reflection over the line  $AC$  followed by a dilation centered at point  $A$ . What is the scale factor of the dilation?



$$\frac{AD}{AB} \text{ or } \frac{DE}{BC} \text{ or } \frac{AE}{AC}$$

12. In the diagram below,  $\triangle ABC$  is the image of  $\triangle DBE$  after a dilation centered at point  $A$ . What is the scale factor of the dilation?



$$\frac{\text{image}}{\text{original}}$$

$$\frac{AC}{DE} \text{ or } \frac{AB}{DB} \text{ or } \frac{CB}{EB}$$

