 # chage
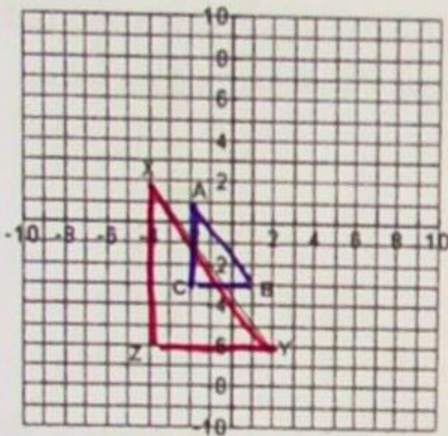
Dilations and Similar Figures

Under a transformation of a dilation, a figure will be similar to the pre-image. This means...

same measure

- the angle measures will remain the same (be congruent)

- parallel lines remain parallel

- BUT lengths of segments are NOT congruent, but be in equal ratio

Note: *same measure* ↓
$\cong$ means congruent to
$\sim$ means similar to

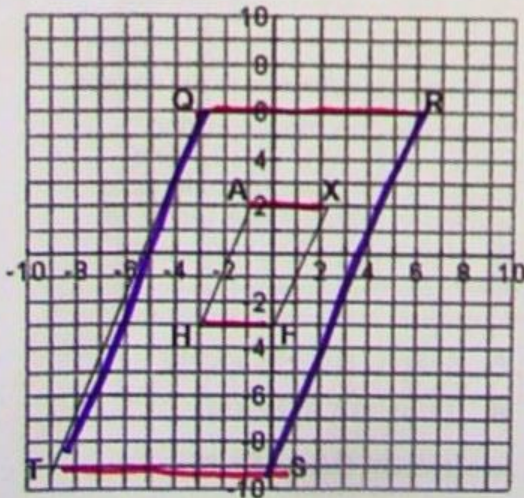Triangle ABC was dilated by a factor of 2 to create triangle XYZ

$\triangle ABC \sim \triangle XYZ$ **×2**

$\overline{CA} = 4\,units$ $\overline{XZ} = \underline{8}\,units$

$\overline{BC} = 3\,units$ $\overline{YZ} = \underline{6}\,units$

$\overline{AB} = 5\,units$ $\overline{XY} = \underline{10}\,units$

Name the congruent angles.

$\angle A \cong \underline{\angle X}$ $\angle B \cong \underline{\angle Y}$ $\angle C \cong \underline{\angle Z}$

Notice the ratio of all the segment measures remains the same.

Parallelogram QRST was dilated by a scale factor of $\frac{1}{3}$. Fill in the missing values.

Parallelogram QRST $\sim$ Parallelogram $\underline{AXFH}$

$\overline{QR} = \underline{9}\,units$ $\overline{AX} = \underline{3}\,units$

$\overline{TS} = \underline{9}\,units$ $\overline{HF} = \underline{3}\,units$

$\overline{QT} = 16\,units$ $\overline{AH}\,\cancel{XF} = 5\frac{1}{3}\,units$ $\frac{16}{3}$

$\overline{SR} = 16\,units$ $\overline{FX} = 5\frac{1}{3}\,units$

Name the congruent angles in the smaller parallelogram.

$\angle Q \cong \underline{\angle A}$ $\angle R \cong \underline{\angle X}$ $\angle S \cong \underline{\angle F}$ $\angle T \cong \underline{\angle H}$

Parallel

If $\overline{QR} \parallel \overline{TS}$, then $\overline{AX} \parallel \overline{HF}$. Therefore if $\overline{QT} \parallel \overline{RS}$, then name two other parallel segments.
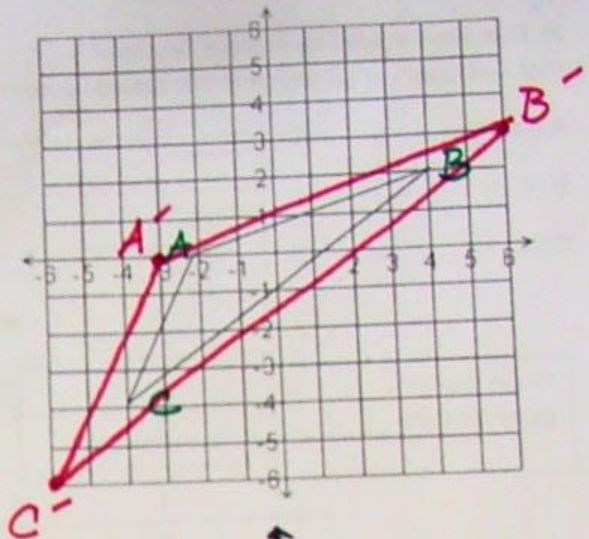
$\overline{AH} \parallel \overline{XF}$

multiply by 3, divide by 2

Dilate figure ABC by a **scale factor** of $\frac{3}{2}$.
Plot and label the original and the dilated figure.

A (-2, 0)   →   A' $(-3\ 0)$

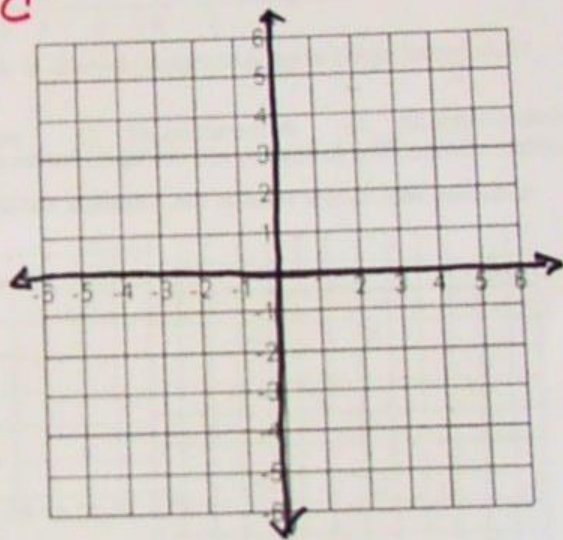B (4, 2)   →   B' $(6, 3)$

C (-4, -4)   →   C' $(-6, -6)$

State the general rule: $(x, y) \rightarrow (\frac{3}{2}x, \frac{3}{2}y)$

Homework

1) Dilate figure ABC by a scale factor of 2.
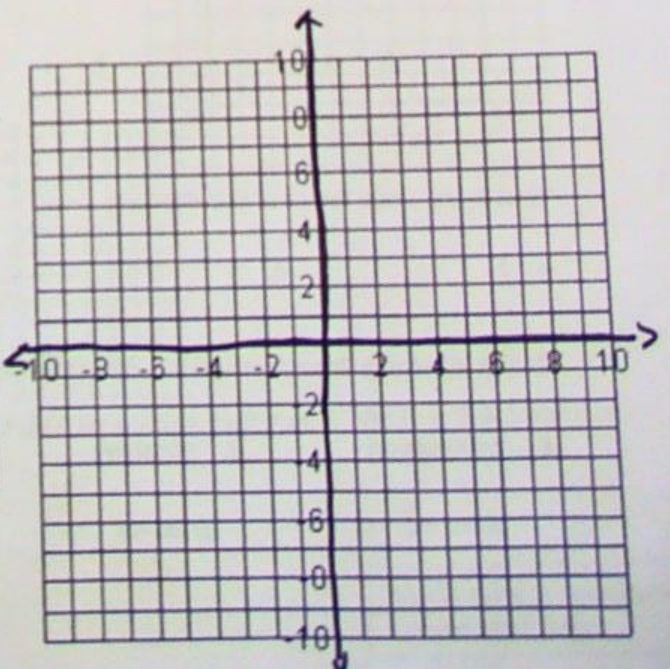Plot and label the original and the dilated figure.

A (-2, 1)   →   A' _____

B (-2, 3)   →   B' _____

C (3, 2)   →   C' _____

State the general rule: _____

2) Dilate figure ABC by a scale factor of $\frac{1}{2}$.
Plot and label the original and the dilated figure.

A (-10, 8)   →   A' _____

B (-8, 6)   →   B' _____

C (-6, -10)   →   C' _____

State the general rule: _____

Homework is continued on the next page.