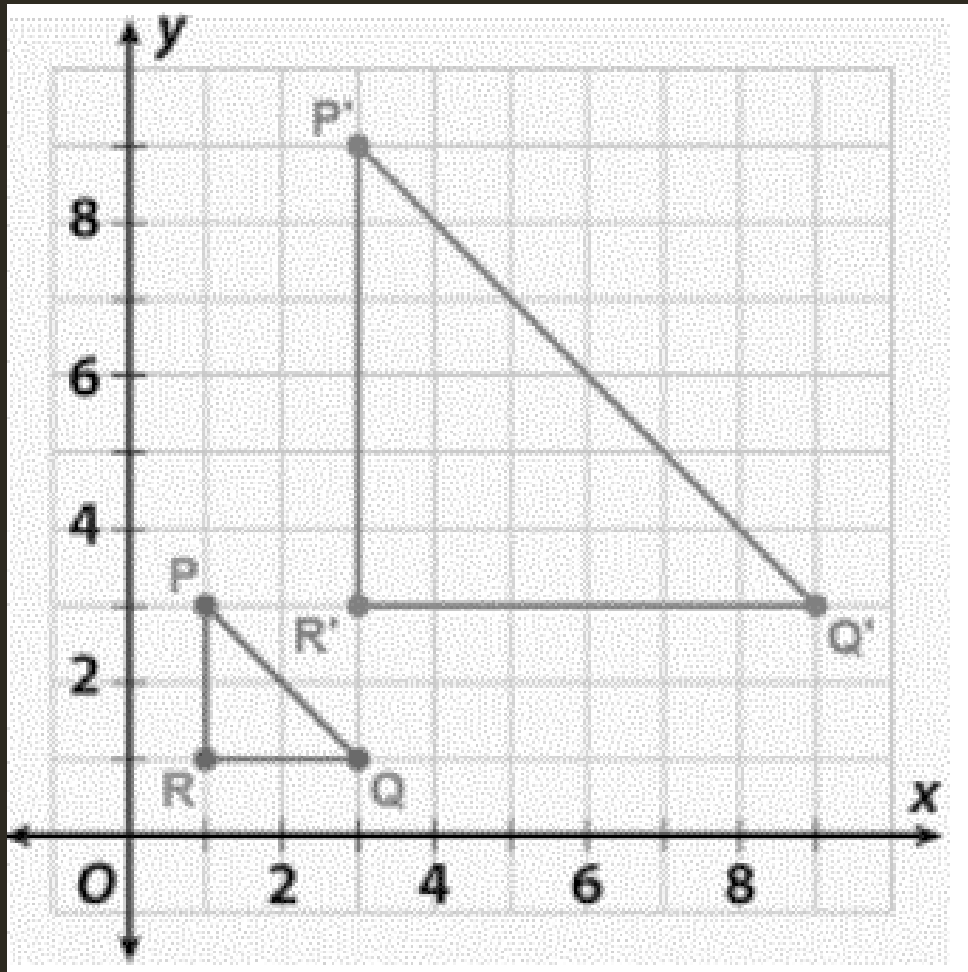


OPENING



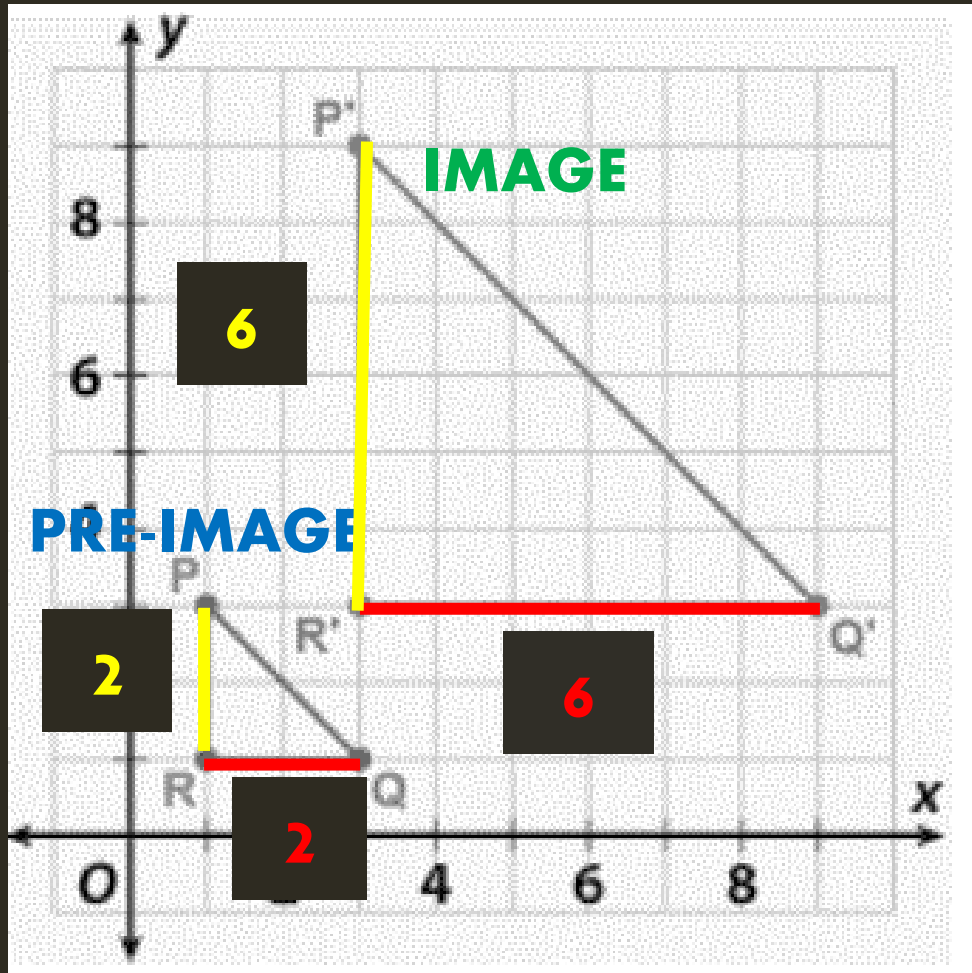
What is the scale factor of the similar figures on the left?

HELPFUL HINT

Use a pair of **horizontal sides** or **vertical sides** to find the scale factor.



OPENING



What is the **scale factor** of the similar figures on the left?

$$k = \frac{\text{image}}{\text{pre-image}} = \frac{6}{2} = 3$$

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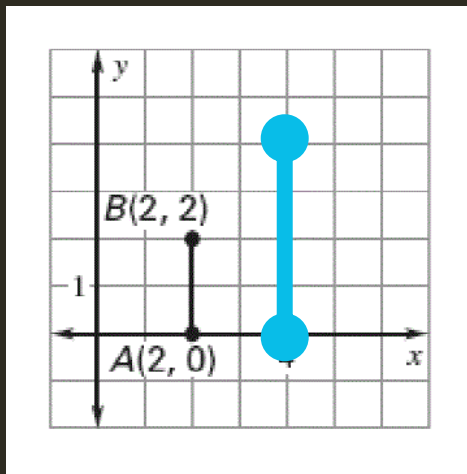
HOW DO I DILATE A FIGURE?

STEPS:

- 1) Write down the coordinates of the vertices of the figure.
- 2) Multiply the x- and y-values by the scale factor.

Use the scale factor to find the coordinates of the dilated figure:

EX 1: $A(2, 0)$, $B(2, 2)$; $k = 2$



$$A (2 \times 2, 0 \times 2) \longrightarrow A' (\underline{4}, \underline{0})$$

$$B (2 \times 2, 2 \times 2) \longrightarrow B' (\underline{4}, \underline{4})$$

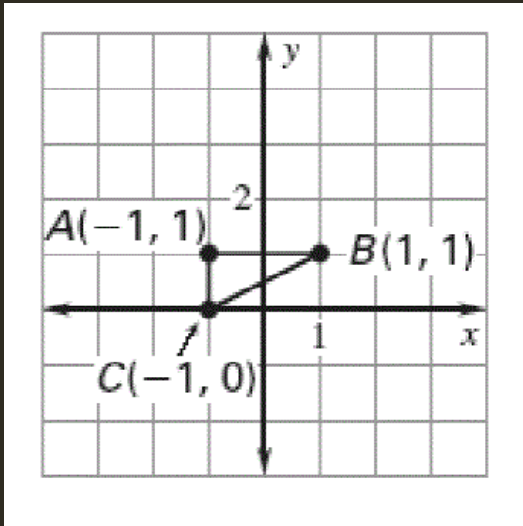
MORE GUIDED PRACTICE

STEPS:

- 1) Write down the coordinates of the vertices of the figure.
 - 2) Multiply the x - and y -values by the scale factor.
-

Use the scale factor to find the coordinates of the dilated figures:

EX 3: $A(-1, 1)$, $B(1, 1)$, $C(-1, 0)$) $k = 3$



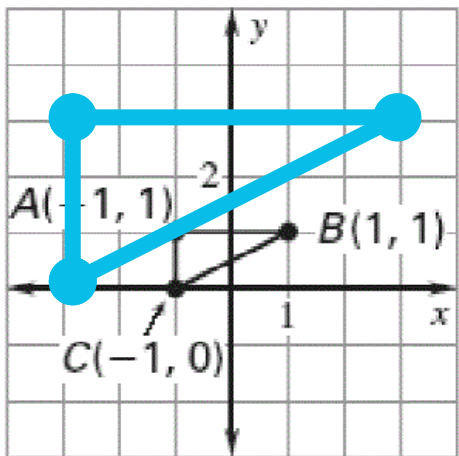
ON YOUR OWN

STEPS:

- 1) Write down the coordinates of the vertices of the figure.
 - 2) Multiply the x - and y -values by the scale factor.
-

Use the scale factor to find the coordinates of the dilated figures:

EX 3: $A(-1, 1)$, $B(1, 1)$, $C(-1, 0)$ $k = 3$



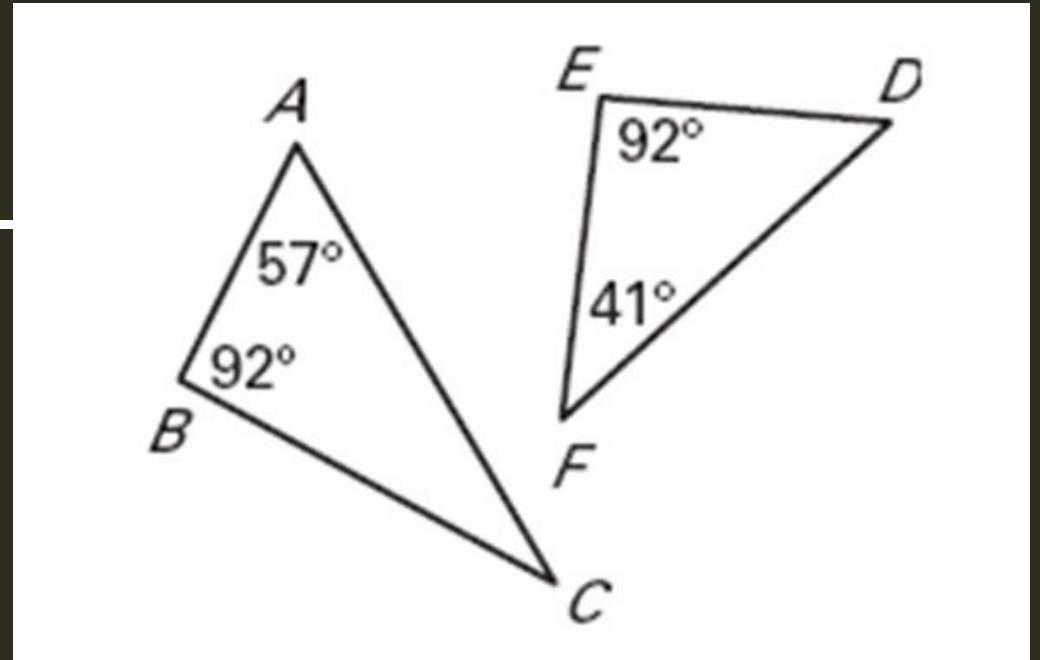
$$A (-1 \times 3, 1 \times 3) \longrightarrow A' (\underline{-3}, \underline{3})$$

$$B (1 \times 3, 1 \times 3) \longrightarrow B' (\underline{3}, \underline{3})$$

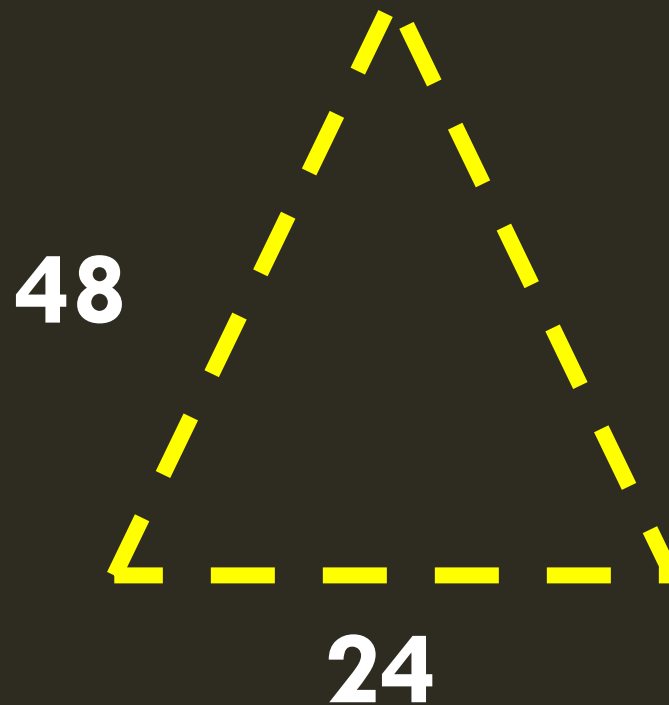
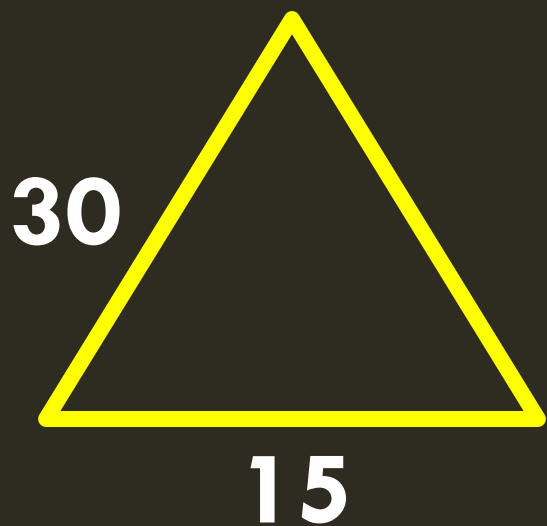
$$C (-1 \times 3, 0 \times 3) \longrightarrow C' (\underline{-3}, \underline{0})$$

1) ARE THESE TRIANGLES SIMILAR? WHY OR WHY NOT?
If so, write a similarity statement.

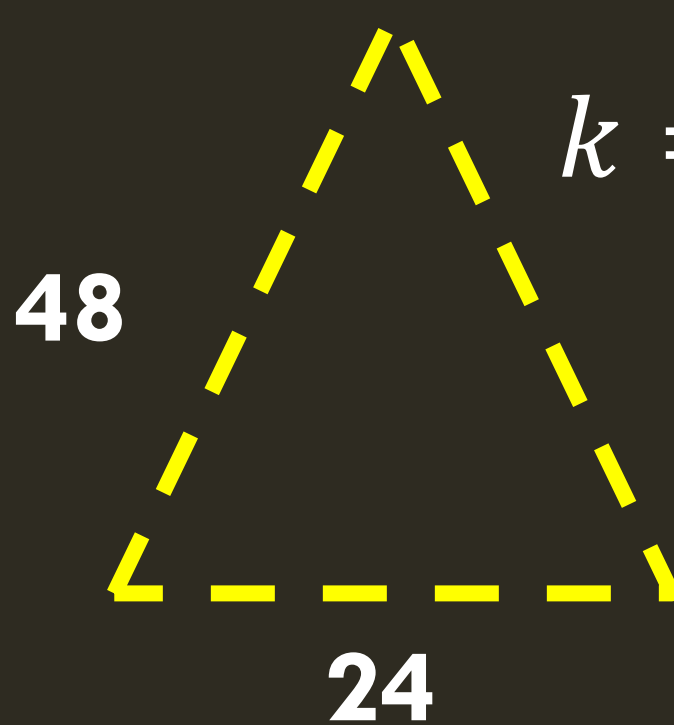
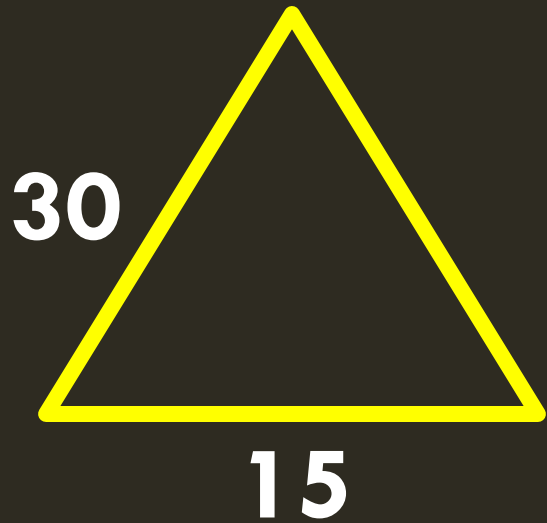
$\triangle ABC \sim$ _____



2) WHAT IS THE SCALE FACTOR?



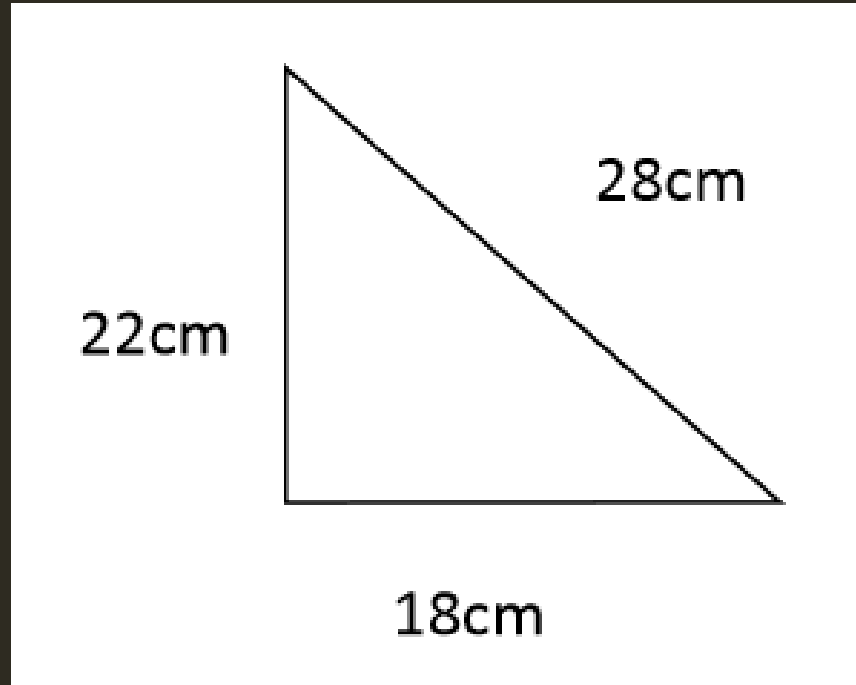
2) WHAT IS THE SCALE FACTOR?



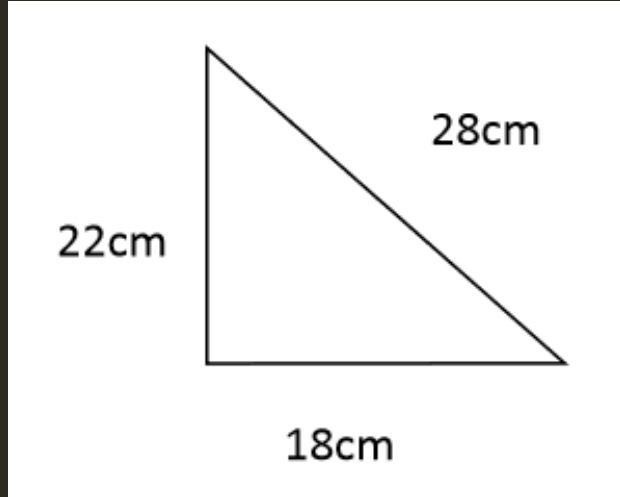
$$k = \frac{48}{30} = \frac{8}{5}$$

or 1.6

3) FIND THE PERIMETER OF THE FIGURE.



3) FIND THE PERIMETER OF THE FIGURE.

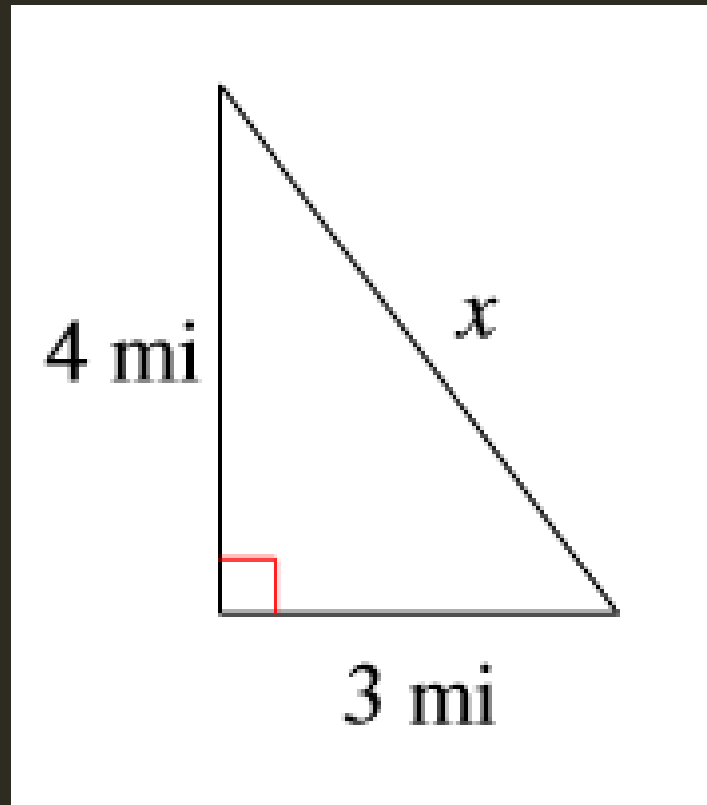


$$P = S_1 + S_2 + S_3$$

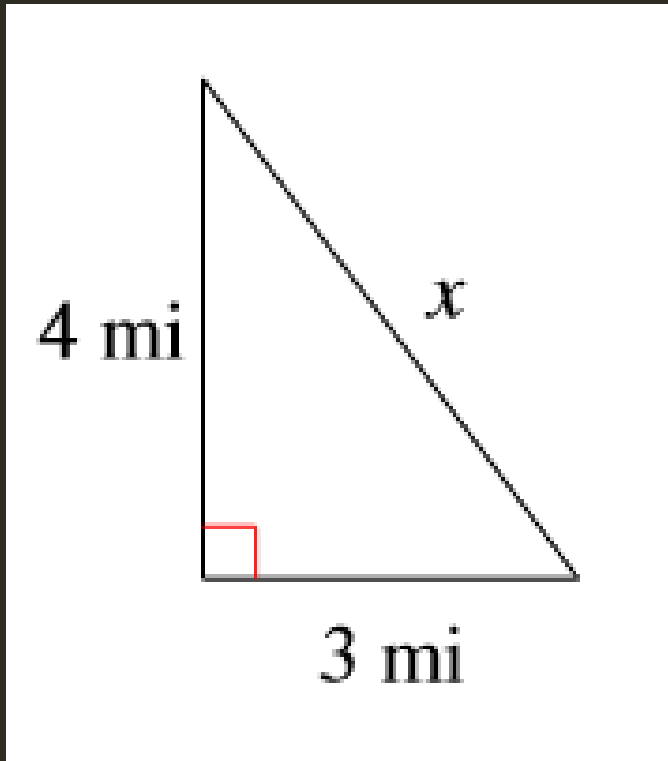
$$A = 28 \text{ cm} + 22 \text{ cm} + 18 \text{ cm}$$

$$A = 68 \text{ cm}$$

4) FIND THE MISSING SIDE LENGTH OF THE TRIANGLE.



4) FIND THE MISSING SIDE LENGTH OF THE TRIANGLE.



$$a^2 + b^2 = c^2$$

$$3^2 + 4^2 = c^2$$

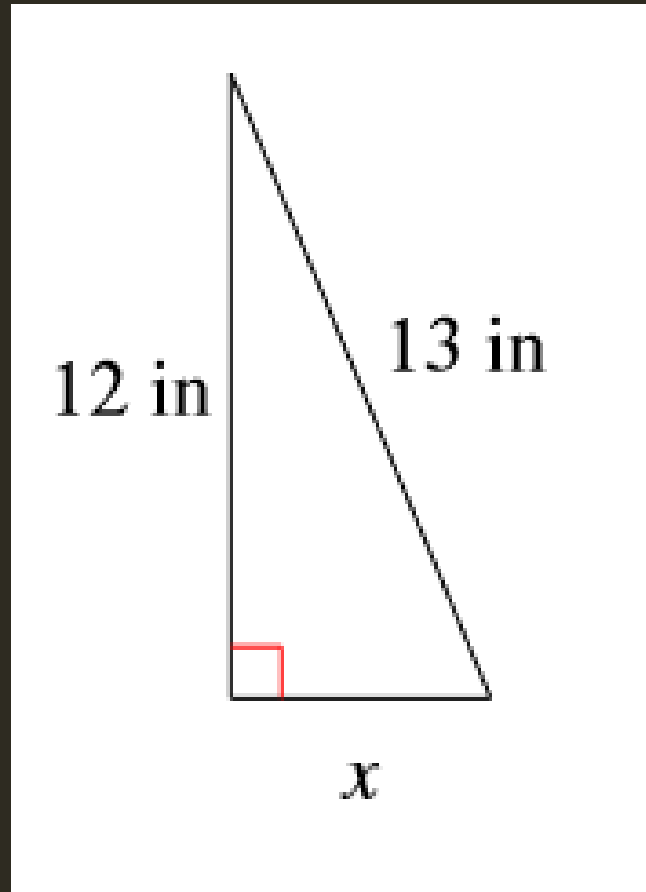
$$9 + 16 = c^2$$

$$25 = c^2$$

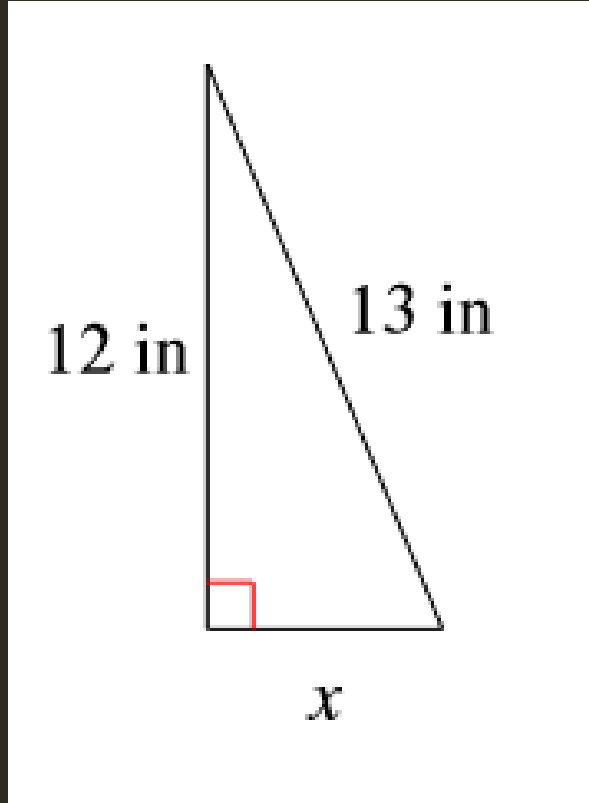
$$\sqrt{25} = \sqrt{c^2}$$

$$c = 5 \text{ mi}$$

5) FIND THE MISSING SIDE LENGTH OF THE TRIANGLE.



5) FIND THE MISSING SIDE LENGTH OF THE TRIANGLE.



$$a^2 + b^2 = c^2$$

$$12^2 + b^2 = 13^2$$

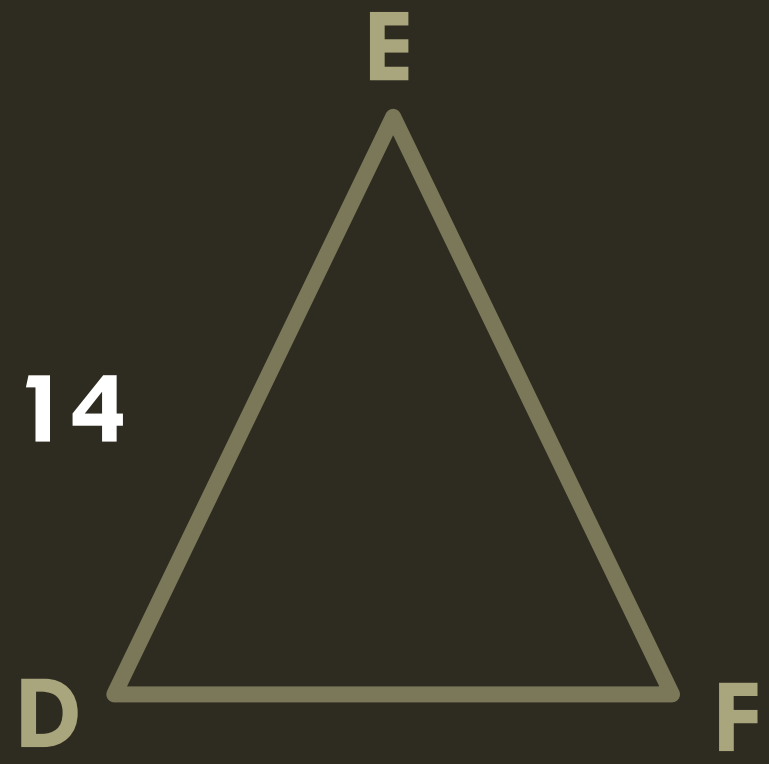
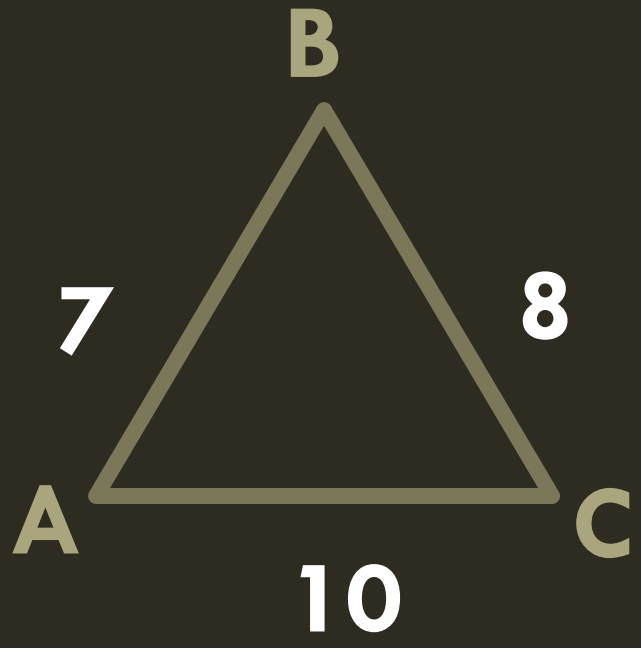
$$144 + b^2 = 169$$

$$\begin{array}{r} -144 \qquad -144 \\ \hline \end{array}$$

$$\sqrt{b^2} = \sqrt{25}$$

$$b = 5 \text{ mi}$$

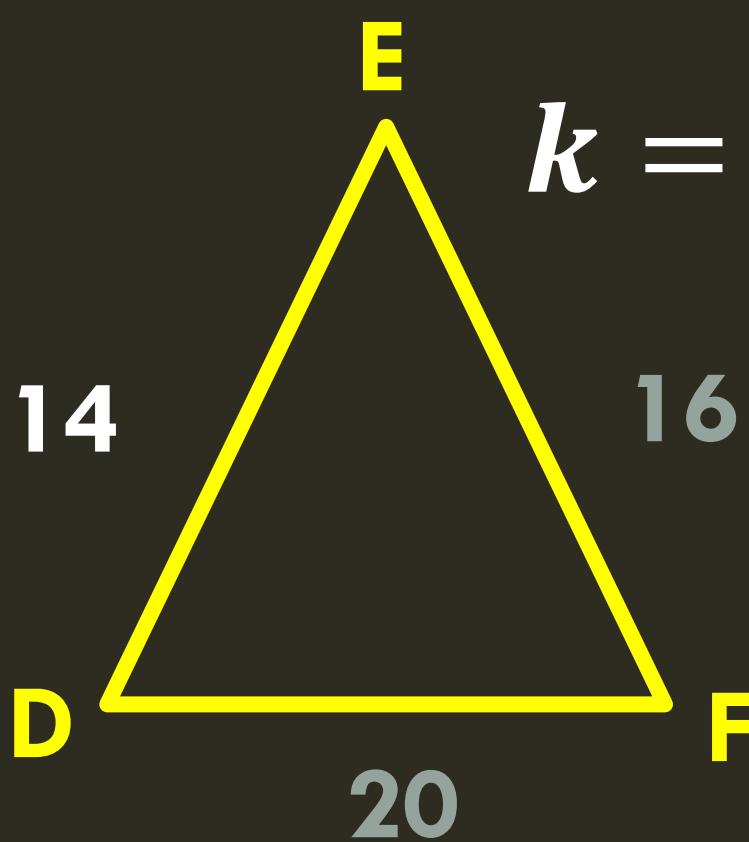
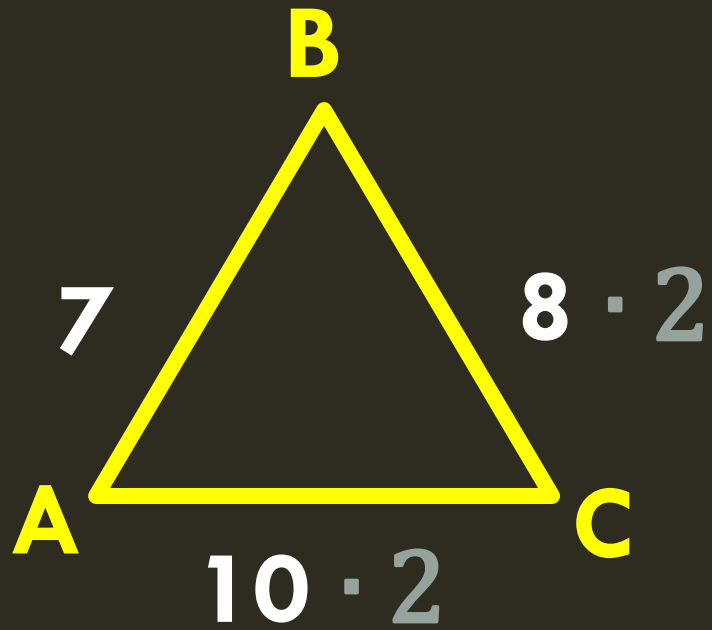
6) GIVEN $\triangle ABC \sim \triangle DEF$. WHAT IS THE **PERIMETER OF $\triangle DEF$** ?



SCALE FACTOR FORMULA

$$\text{*Scale Factor} = \frac{\text{Image Length}}{\text{Pre-Image Length}} = \frac{\text{NEW}}{\text{OLD}}$$

6) GIVEN $\triangle ABC \sim \triangle DEF$. WHAT IS THE PERIMETER OF $\triangle DEF$?



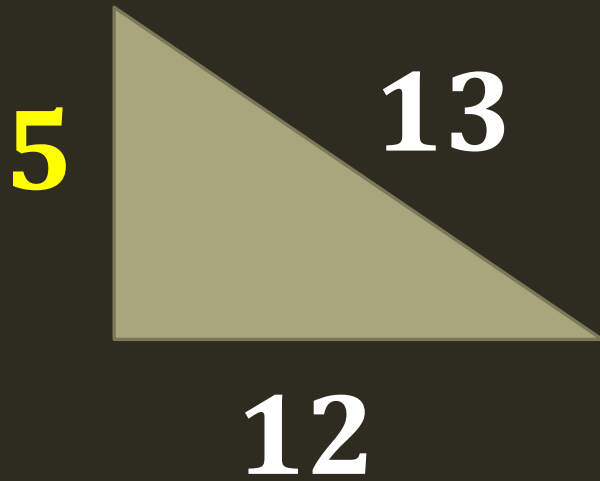
$$k = \frac{14}{7} = 2$$

$$P = 14 + 16 + 20$$

$$P = 50 \text{ units}$$

7) A RIGHT TRIANGLE WITH A HYPOTENUSE 13 UNITS LONG AND ONE LEG 12 UNITS LONG IS DILATED WITH A SCALE FACTOR OF 3. WHAT IS THE LENGTH OF THE SHORTEST SIDE OF THE NEW TRIANGLE?

7) A RIGHT TRIANGLE WITH A HYPOTENUSE 13 UNITS LONG AND ONE LEG 12 UNITS LONG IS DILATED WITH A SCALE FACTOR OF 3. WHAT IS THE LENGTH OF THE SHORTEST SIDE OF THE NEW TRIANGLE?



15

$$5 \times 3 = 15 \text{ units}$$

8) A BOY WHO IS 5 FT. TALL CASTS A SHADOW THAT IS 12 FT LONG. AT THE SAME TIME, A BUILDING NEARBY CASTS A SHADOW THAT IS 72 FT LONG. HOW TALL IS THE BUILDING? *Draw a picture.*

8) A BOY WHO IS 5 FT. TALL CASTS A SHADOW THAT IS 12 FT LONG. AT THE SAME TIME, A BUILDING NEARBY CASTS A SHADOW THAT IS 72 FT LONG. HOW TALL IS THE BUILDING? *Draw a picture.*



BOY



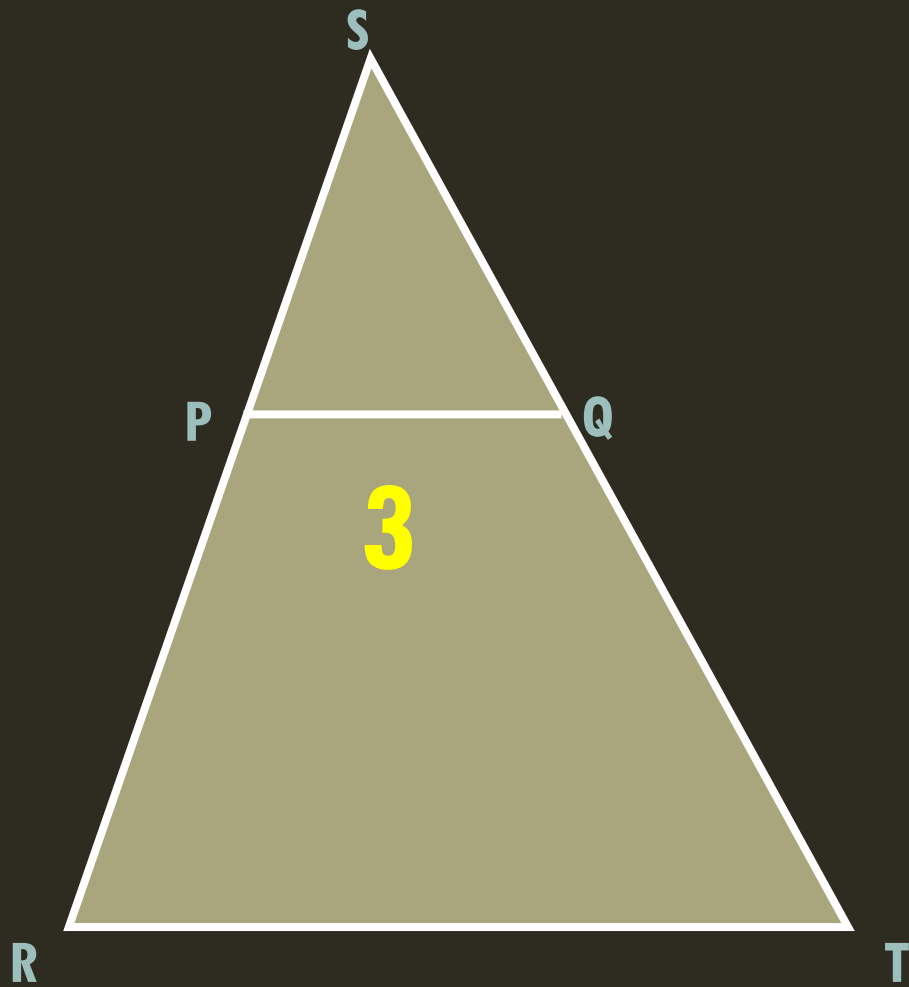
BUILDING

$$\frac{x}{5} = \frac{72}{12}$$

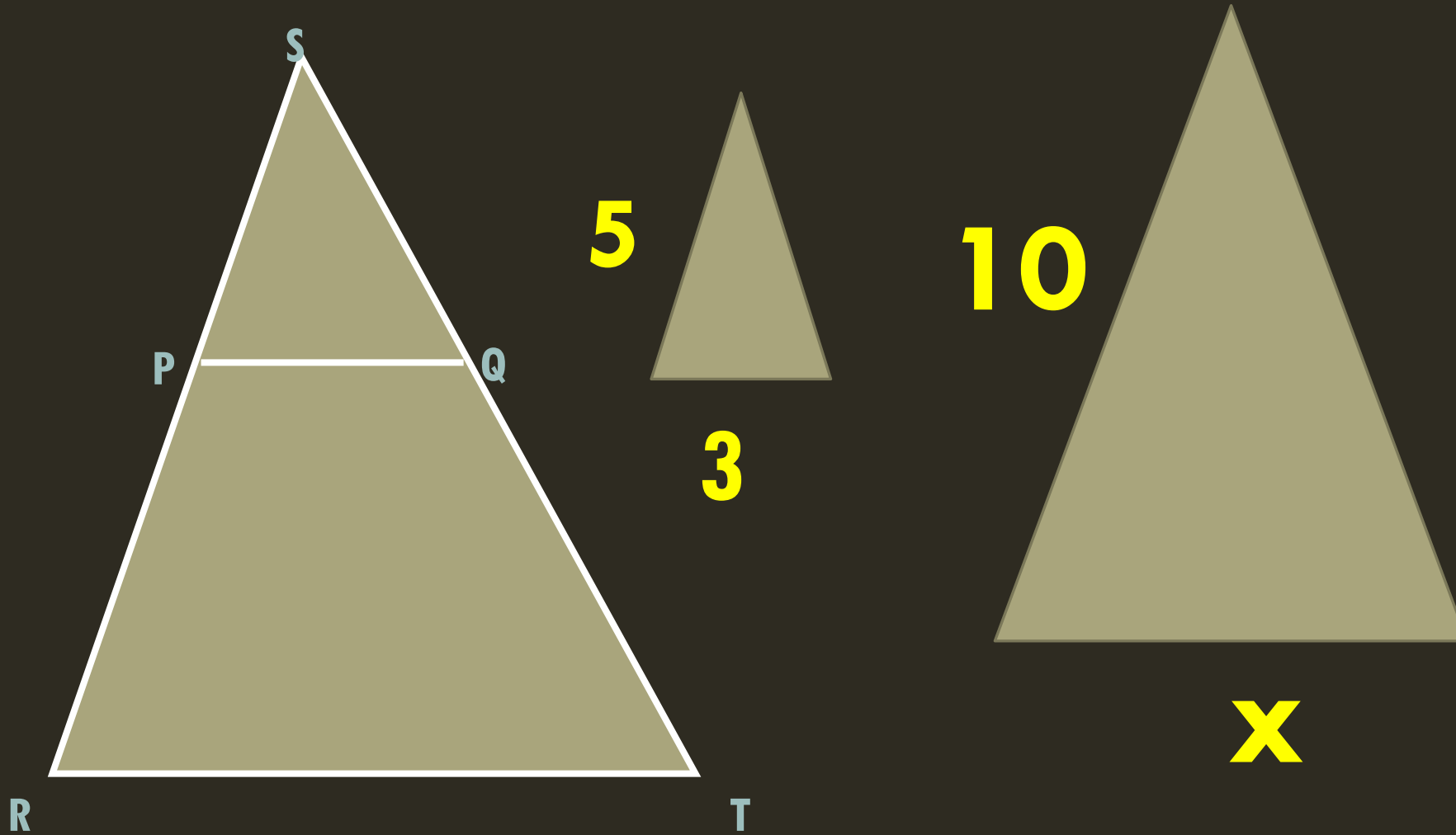
$$12x = 360$$

$$x = 30$$

9) $SP = 5$. $SR = 10$. What is the length of segment RT ?



9) $SP = 5$. $SR = 10$. What is the length of segment RT ?

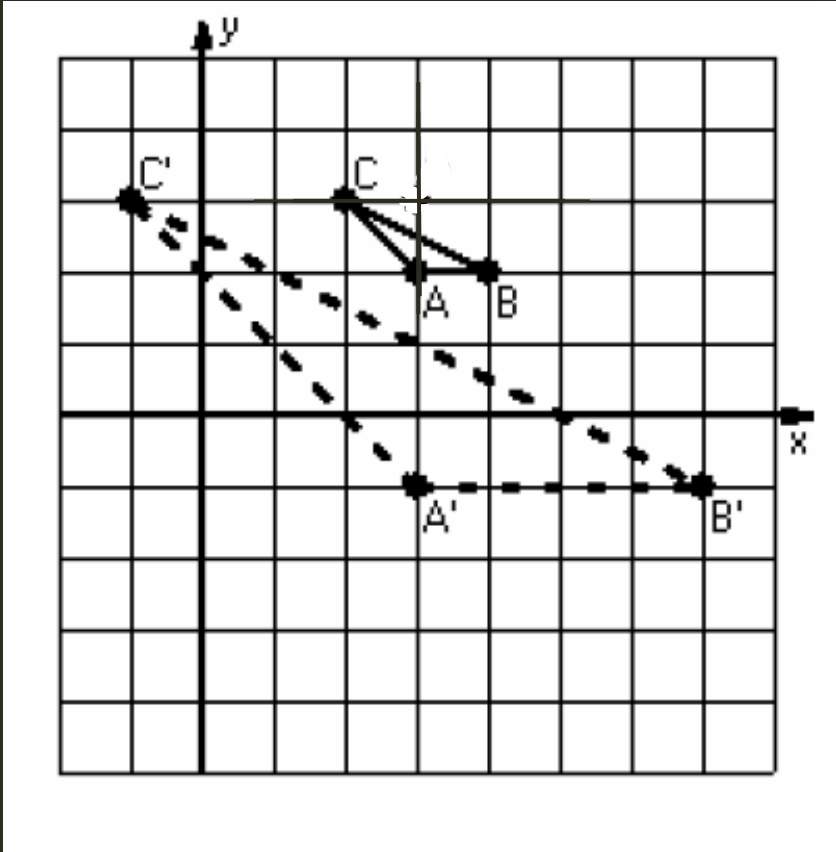


$$\frac{10}{5} = \frac{x}{3}$$

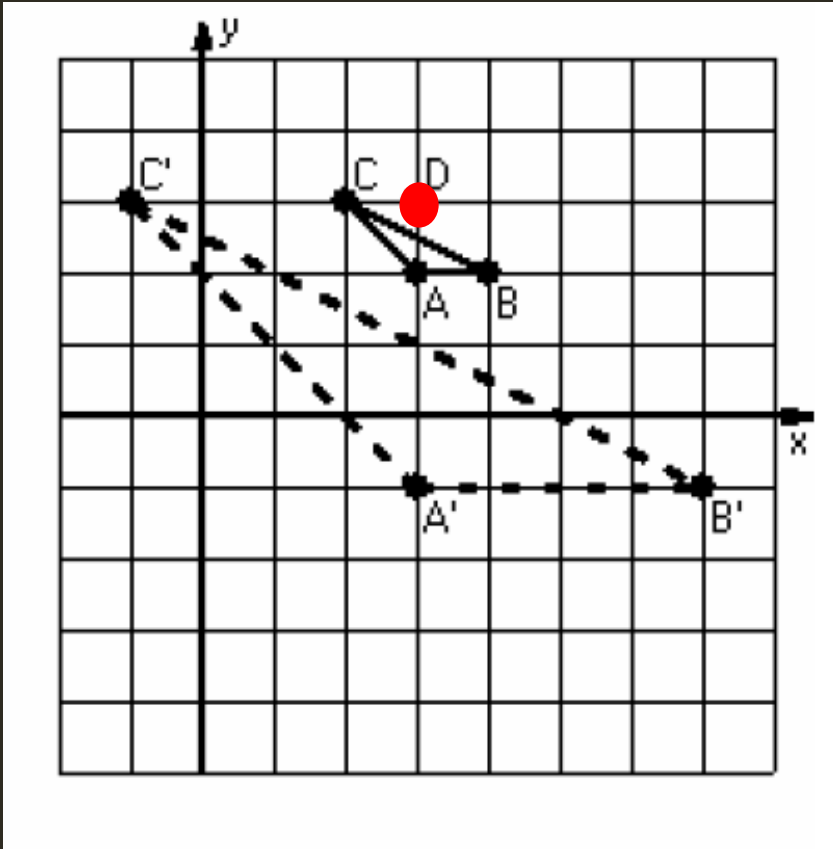
$$30 = 5x$$

$$x = 6$$

10) Triangle ABC is dilated to form triangle $A'B'C'$.
What is the center of the dilation?

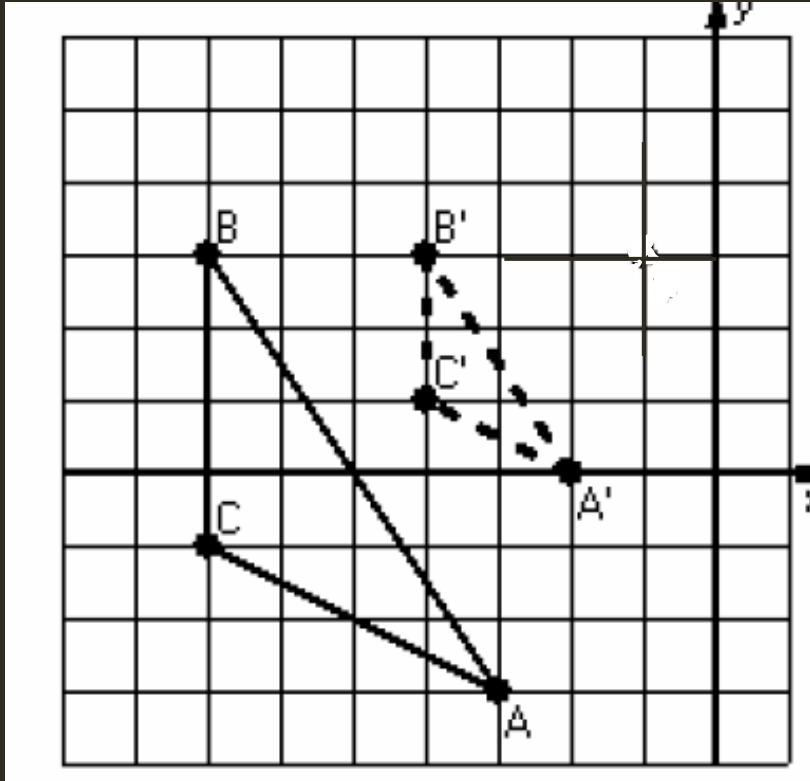


10) Triangle ABC is dilated to form triangle A'B'C'.
What is the center of the dilation?

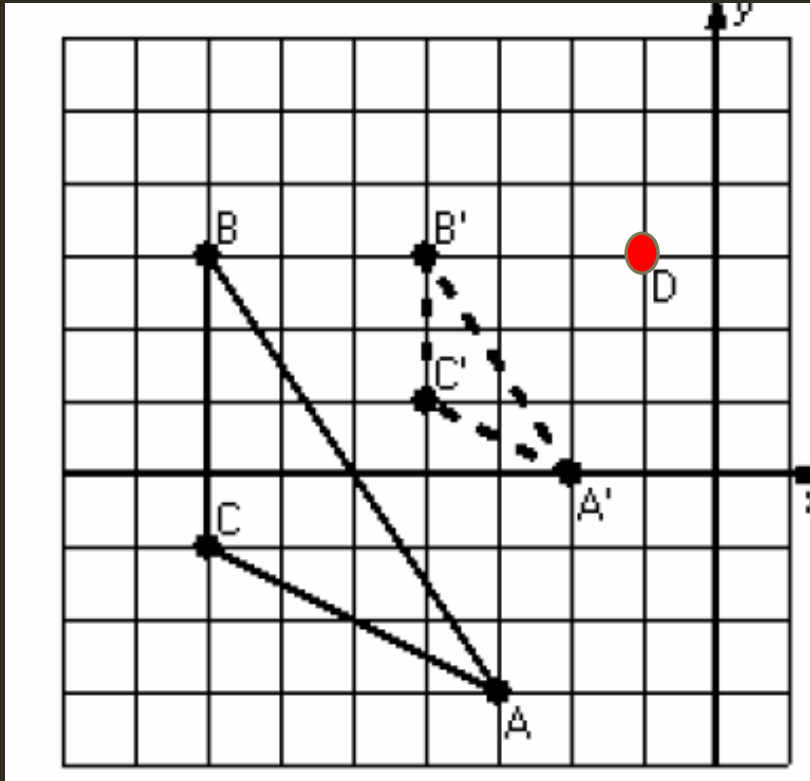


**The center of dilation
is at (3, 3).**

11) Triangle ABC is dilated to form triangle $A'B'C'$.
What is the center of the dilation?



11) Triangle ABC is dilated to form triangle $A'B'C'$.
What is the center of the dilation?



**The center of dilation
is at $(-1, 3)$.**