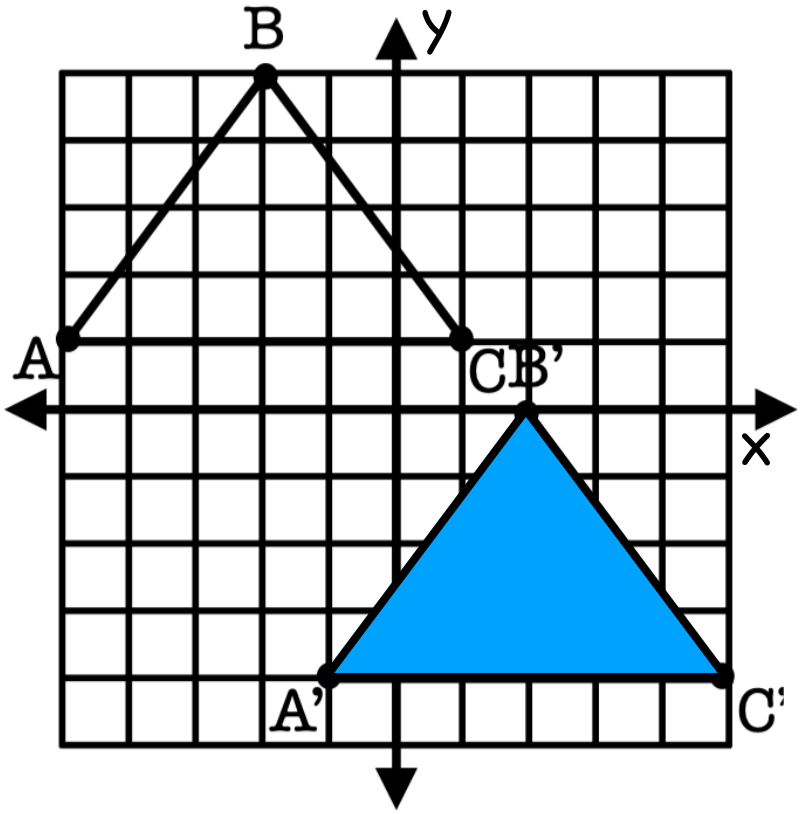
Translations

A TRANSLATION is a SLIDE!

The size, shape, and orientation stay the same.



ΔABC was translated 4 units right and 5 units down to form ΔA'B'C.

Write a Rule: $(x, y) \rightarrow (x + a, y + b)$

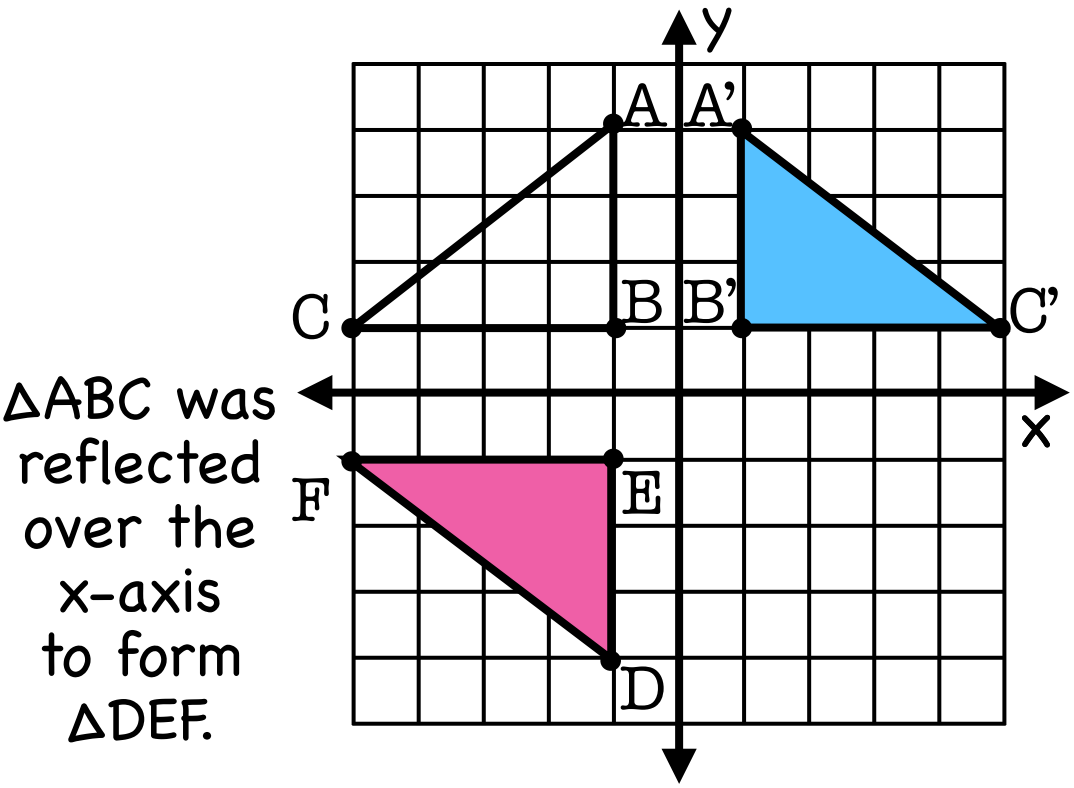
The number added to "x" moves left or right.
The number added to "y" moves up or down.

$$(x, y) \rightarrow (x + 4, y - 5)$$

Reflections

A reflection is a flip!

The size and shape stay the same.



ΔABC was reflected over the y-axis to form ΔA'B'C'.

ΔABC was reflected over the x-axis to form ΔDEF.

Rules:

Reflect over y-axis: $(x, y) \rightarrow (-x, y)$

Reflect over x-axis: $(x, y) \rightarrow (x, -y)$

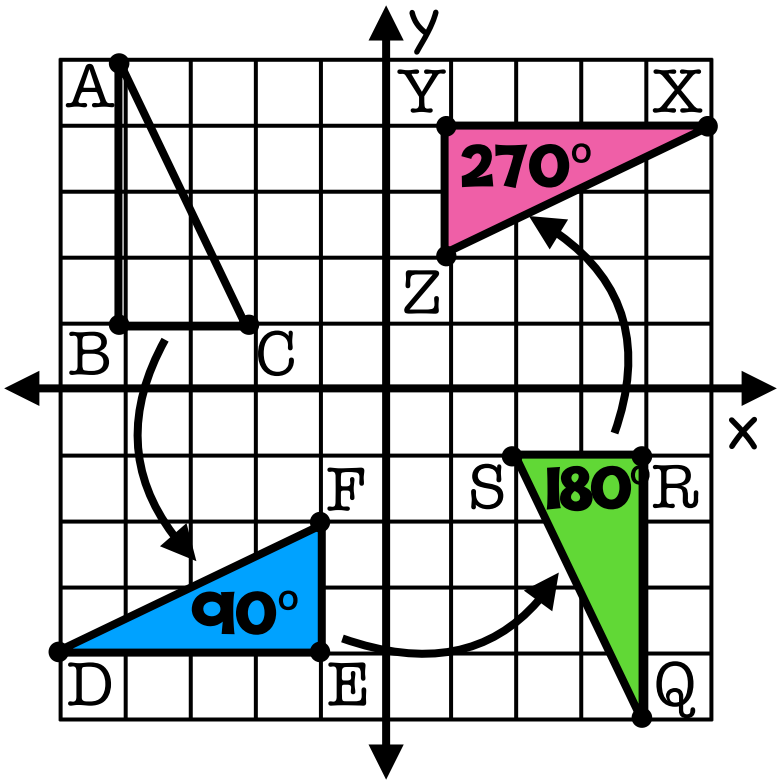
Reflect over $y = x$: $(x, y) \rightarrow (y, x)$

Reflect over $y = -x$: $(x, y) \rightarrow (-y, -x)$

Rotations

A Rotation is a TURN!

The size and shape, stay the same.

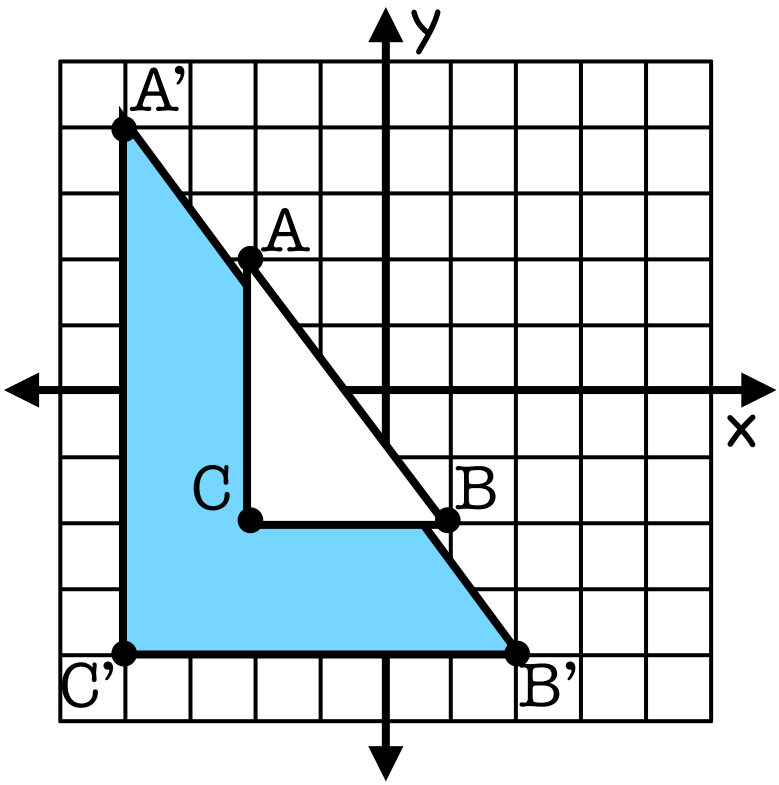


Use Rules!	90°	180°	270°
(x, y) →	(-y, x)	(-x, -y)	(y, -x)
A(-4, 5)	D(-5, -4)	Q(4, -5)	X(5, 4)
B(-4, 1)	E(-1, -4)	R(4, -1)	Y(1, 4)
C(-2, 1)	F(-1, -2)	S(2, -1)	Z(1, 2)

Dilations

A dilation is a stretch or a shrink!

The shape stays the same, but the size changes.



A(-2, 2)
B(1, -2)
C(-2, -2)

A'(-4, 4)
B'(-4, -4)
C'(2, -4)

ΔABC was dilated by a scale factor of 2 to form ΔA'B'C'

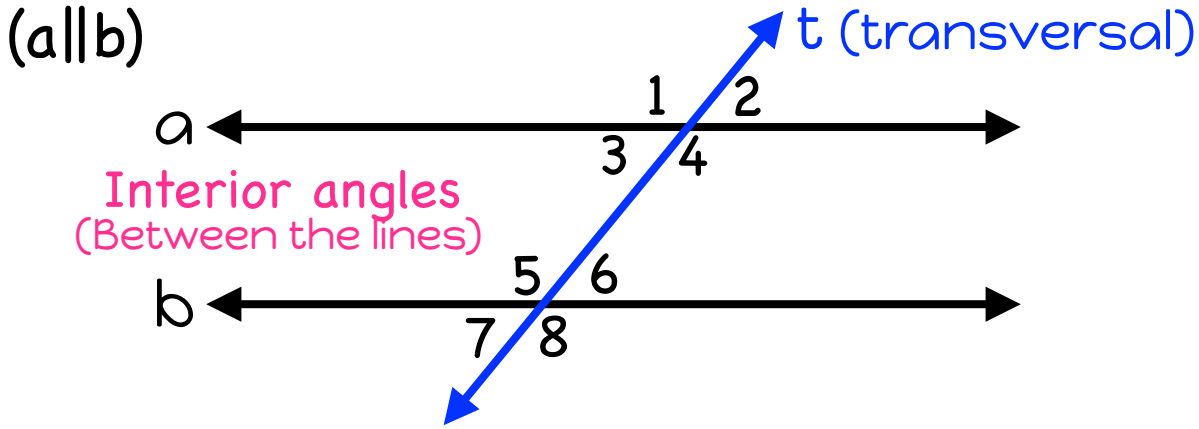
Write a Rule: $(x, y) \longrightarrow (kx, ky)$

Multiply each number by the scale factor, k.

Scale factor > 1 = Enlargement (bigger)

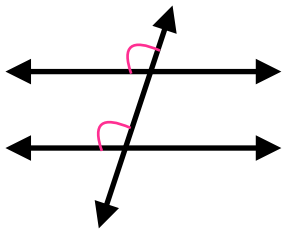
Scale factor < 1 = Reduction (smaller)

Angle pairs



corresponding:

Congruent angles in the same location, but on different lines.

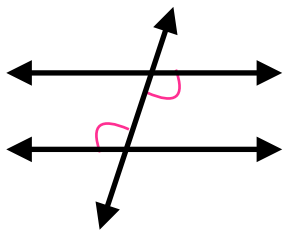


1 & 5
2 & 6
3 & 7
4 & 8

"Same seat, different table"

Alternate Interior:

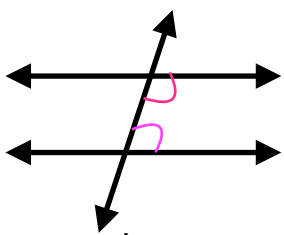
Congruent interior angles on opposite sides of the transversal.



4 & 5
3 & 6

Same-Side Interior:

Supplementary interior angles on the same side of the transversal.

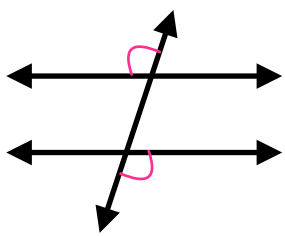


4 & 6
3 & 5

Supplementary = 180°

Alternate Exterior:

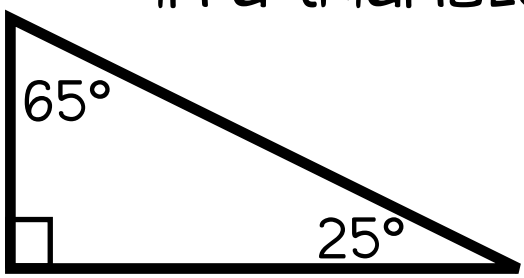
Congruent exterior angles on opposite sides of the transversal.



1 & 8
2 & 5

Triangle sum Theorem

The sum of the 3 interior angles in a triangle is always 180°



$a + b + c = 180°$

$65 + 90 + 25 = 180°$ 😊

Sometimes, you'll need to solve an equation!

Write an equation to find the value of x.

$a + b + c = 180°$

$2x + 3x + 6x - 7 = 180$

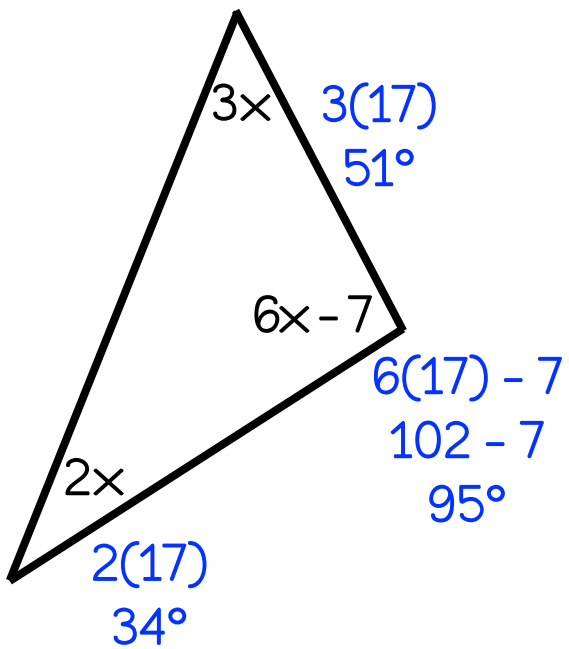
$11x - 7 = 180$

$+7 \quad +7$

$\frac{11x}{11} = \frac{187}{11}$

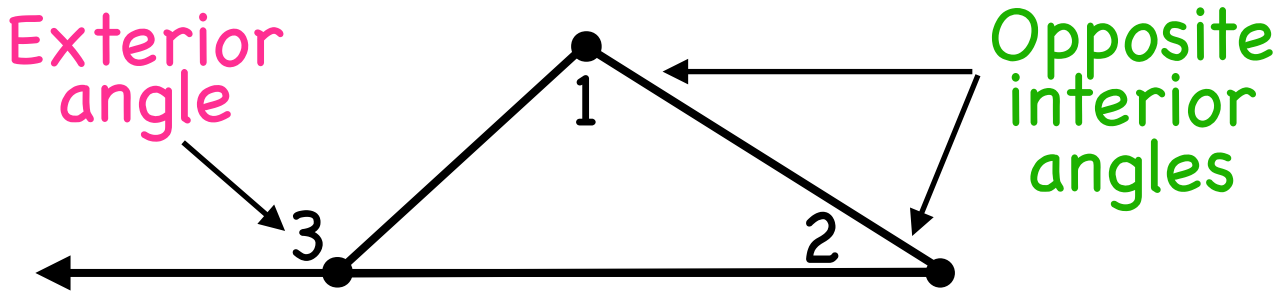
$x = 17$

Substitute x to find each angle measure.



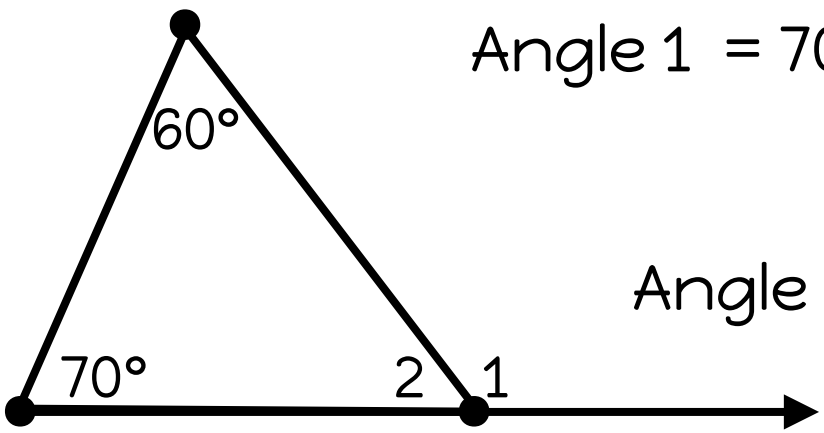
Exterior Angle Theorem

The exterior angle of a triangle is equal to the sum of the two opposite interior angles.



If $\angle 1 = 100°$ and $\angle 2 = 50°$, then $\angle 3 = 150°$

Find each missing angle measure:



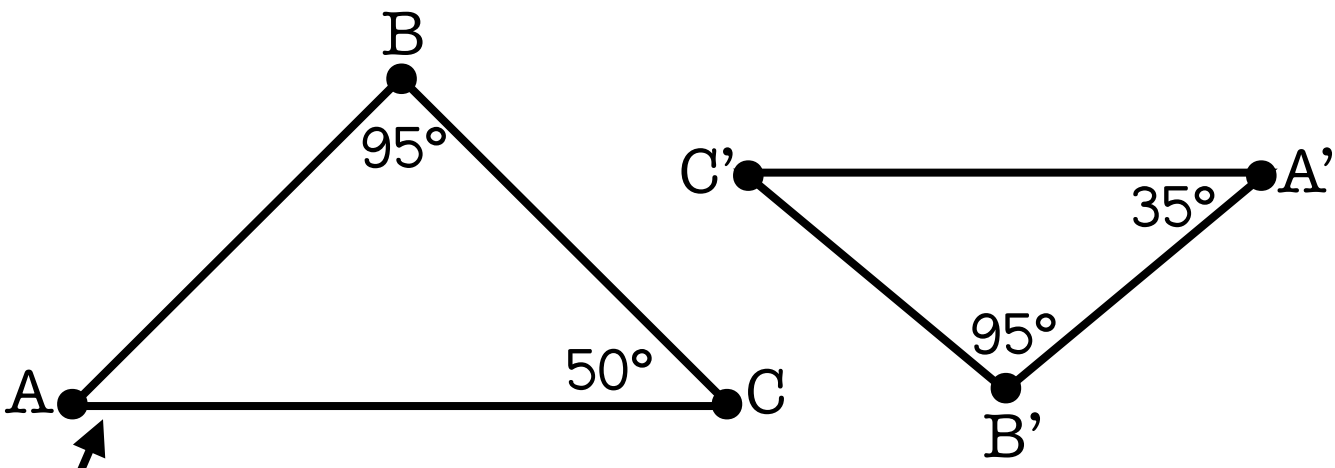
Angle 1 = 70 + 60
130°

Angle 2 = 180 - 130
50°

Straight line = 180°

Angle-Angle Δ Similarity

If two angles of a triangle are congruent to the corresponding angles of another triangle, then the triangles are similar.



Find the measure of angle A.
(If it's 35°, then the triangles are similar!)

$a + b + c = 180°$

$a + 95 + 50 = 180$

$a + 145 = 180$

$-145 \quad -145$

$a = 35$

In both Δs,

$\angle A = 35°$

$\angle B = 95°$

They are similar!