

Sim!Cong!

Sim!Cong! is a didactical card game to learn the Congruence/Similarity Theorems for triangles.

Number of players. Any number of players.

Aim. This card game is about the Congruence Theorems and the Similarity Theorems for triangles. There are two given triangles with sides a, b, c and a', b', c' . The opposite angles are called α, β, γ and α', β', γ' respectively. The aim of the game is proving that the two triangles are congruent or similar!

Material. There are 5 Congruence Theorem cards, 5 Similarity Theorem cards, and 21 Assumption cards.

Beginning. 1 Congruence Theorem card, 1 Similarity Theorem card, and 2 Assumption cards are placed openly on the table.

Round. All players play at the same time. 1 additional Assumption card is placed openly on the table when all players agree that the given assumptions and theorems are not enough to prove that the triangles are congruent or similar.

Winning declaration (Congruence Theorem). A player has to pick up the Congruence Theorem card and explain why the Assumption cards on the table, together with this theorem, are enough to prove that the two triangles are congruent. If this is the case, the player has won. If this is not the case, the player has lost and the game goes on with the remaining players.

Winning declaration (Similarity Theorem). A player has to pick up the Similarity Theorem card and explain why the Assumption cards on the table, together with this theorem, are enough to prove that the two triangles are similar. If this is the case, the player has won. If this is not the case, the player has lost and the game goes on with the remaining players.

Congruence Theorem

SSS

Two triangles are congruent if three pairs of corresponding sides are equal in length.

Congruence Theorem

SAS

Two triangles are congruent if two pairs of corresponding sides are equal in length, and the included angles are equal in measurement.

Congruence Theorem

ASA/AAS

Two triangles are congruent if two pairs of corresponding angles are equal in measurement, and one pair of corresponding sides is equal in length.

Congruence Theorem

SsA

Two triangles are congruent if two pairs of corresponding sides are equal in length, and the pair of angles opposite to the bigger of these sides (or to any of them, if they are equal) are equal in measurement.

Congruence Theorem

HL

Two right-angled triangles are congruent if their hypotenuses and one pair of corresponding legs are equal in length.

Similarity Theorem

S:S:S

Two triangles are similar if all pairs of corresponding sides have lengths in the same ratio.

Similarity Theorem

S:A:S

Two triangles are similar if two pairs of corresponding sides have lengths in the same ratio, and the included angles are equal in measurement.

Similarity Theorem

AA

Two triangles are similar if two pairs of corresponding angles are equal in measurement.

Similarity Theorem

S:s:A

Two triangles are similar if two pairs of corresponding sides have lengths in the same ratio, and the pair of angles opposite to the bigger of these sides (or to any of them, if they are equal) are equal in measurement.

Similarity Theorem

H:L

Two right-angled triangles are similar if their hypotenuses and one pair of corresponding legs have lengths in the same ratio.

Side

1

$$a = a'$$

Side

1

$$b = b'$$

Side

1

$$c = c'$$

Angle

1

$$\alpha = \alpha'$$

Angle

1

$$\beta = \beta'$$

Angle

1

$$\gamma = \gamma'$$

Side ratio 1

$$\frac{a}{a'} = \frac{b}{b'}$$

Side ratio 1

$$\frac{b}{b'} = \frac{c}{c'}$$

Side ratio 1

$$\frac{c}{c'} = \frac{a}{a'}$$

Side ≧

$$\begin{aligned} a &\leq b \\ a' &\leq b' \end{aligned}$$

Side ≧

$$\begin{aligned} b &\leq c \\ b' &\leq c' \end{aligned}$$

Side ≧

$$\begin{aligned} c &\leq a \\ c' &\leq a' \end{aligned}$$

Side ≧

$$\begin{aligned} b &\leq a \\ b' &\leq a' \end{aligned}$$

Side ≧

$$\begin{aligned} c &\leq b \\ c' &\leq b' \end{aligned}$$

Side ≧

$$\begin{aligned} a &\leq c \\ a' &\leq c' \end{aligned}$$

Angle **90°**

$\alpha = 90^\circ$
 $\alpha' = 90^\circ$

Angle **90°**

$\beta = 90^\circ$
 $\beta' = 90^\circ$

Angle **90°**

$\gamma = 90^\circ$
 $\gamma' = 90^\circ$

Side **JOKER**

Choose one of the following equalities:

$a = a'$
 $b = b'$
 $c = c'$

Angle **JOKER**

Choose one of the following equalities:

$\alpha = \alpha'$
 $\beta = \beta'$
 $\gamma = \gamma'$

Side ratio **JOKER**

Choose one of the following equalities:

$\frac{a}{a'} = \frac{b}{b'}$
 $\frac{b}{b'} = \frac{c}{c'}$
 $\frac{c}{c'} = \frac{a}{a'}$

About

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Card template inspired from: "Creating playing cards using TikZ"
<https://tex.stackexchange.com/questions/47924/creating-playing-cards-using-tikz>