

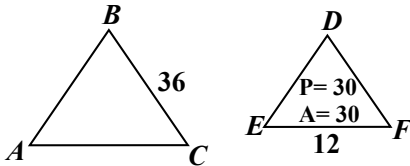
Perimeter and Area Similarity

If two triangles are similar, then all of their parts have a relationship. You already know that, for similar triangles, angles are congruent and sides are proportional (similar). Today, you're going to use similarity to determine Perimeter and Area. There are two rules:

Perimeter Fraction = Scale Fraction	Area Fraction = (Scale Fraction) ²
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EXAMPLE

Given $\triangle ABC \sim \triangle DEF$, find the perimeter and area of $\triangle ABC$.

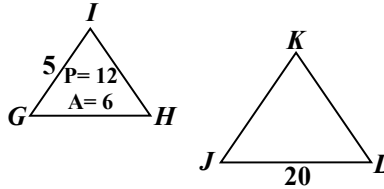


Make fractions out of what you know.
From the statement, $\triangle ABC$ is on top!

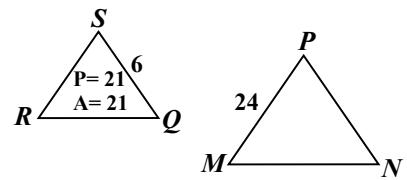
Scale	Perimeter	Area
$\frac{36}{12} = \frac{3}{1}$	$\frac{P}{30}$	$\frac{A}{30}$

Perimeter = Scale $\frac{P}{30} = \frac{3}{1}$ $P(1) = 3(30)$ $P = \boxed{90}$	Area = (Scale) ² $\frac{A}{30} = \left(\frac{3}{1}\right)^2$ $\frac{A}{30} = \frac{9}{1}$ $\frac{30}{30} = \frac{1}{1}$ $A(1) = 9(30)$ $A = \boxed{270}$
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1. Given $\triangle GHI \sim \triangle JKL$, find the perimeter and area of $\triangle JKL$.

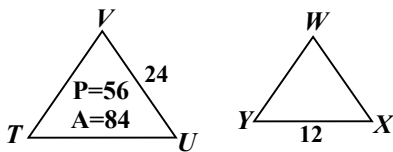


2. Given $\triangle MNP \sim \triangle QRS$, find the perimeter and area of $\triangle MNP$.



EXAMPLE

Given $\triangle TUV \sim \triangle WXY$, find the perimeter and area of $\triangle WXY$.

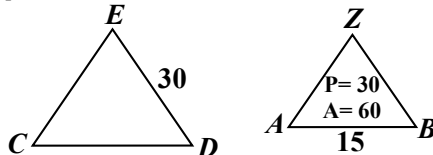


Make fractions out of what you know.
From the statement, $\triangle TUV$ is on top!

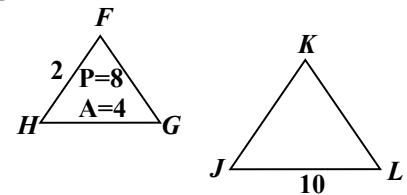
Scale	Perimeter	Area
$\frac{24}{12} = \frac{2}{1}$	$\frac{56}{P}$	$\frac{84}{A}$

Perimeter = Scale $\frac{56}{P} = \frac{2}{1}$ $56(1) = 2(P)$ $56 = 2P$ $28 = P$ $P = \boxed{28}$	Area = (Scale) ² $\frac{84}{A} = \left(\frac{2}{1}\right)^2$ $\frac{84}{A} = \frac{4}{1}$ $84(1) = 4(A)$ $84 = 4A$ $21 = A$ $A = \boxed{21}$
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3. Given $\triangle ZAB \sim \triangle CDE$, find the perimeter and area of $\triangle CDE$.

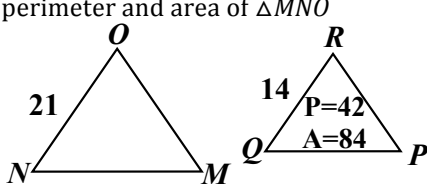


4. Given $\triangle FGH \sim \triangle JKL$, find the perimeter and area of $\triangle JKL$.



EXAMPLE

Given $\triangle MNO \sim \triangle PQR$, find the perimeter and area of $\triangle MNO$



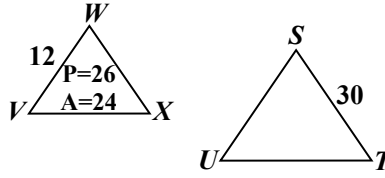
Make fractions out of what you know.
From the statement, $\triangle MNO$ is on top!

Scale	Perimeter	Area
$\frac{21}{14} = \frac{3}{2}$	$\frac{P}{42}$	$\frac{A}{84}$

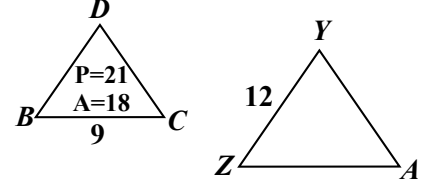
Perimeter = Scale	Area = (Scale) ²
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$\frac{P}{42} = \frac{3}{2}$	$\frac{A}{84} = \left(\frac{3}{2}\right)^2$
$2(P) = 3(42)$	$\frac{A}{84} = \frac{9}{4}$
$2P = 126$	$A(4) = 9(84)$
$P = \boxed{63}$	$4A = 756$
	$A = \boxed{189}$

5. Given $\triangle STU \sim \triangle VWX$, find the perimeter and area of $\triangle STU$.



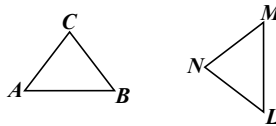
6. Given $\triangle YZA \sim \triangle BCD$, find the perimeter and area of $\triangle YZA$.



For the proofs below, the triangles are the same. The only thing that changes is the given information. This change will determine which property you use. Your answer choices are: **SSS**, **SAS**, and **AA**.

7. Given: $\frac{AB}{LM} = \frac{BC}{MN}$, and $\angle B \cong \angle M$

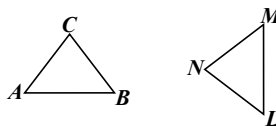
Prove: $\triangle ABC \sim \triangle LMN$



Statements	Reasons
1. $\frac{AB}{LM} = \frac{BC}{MN}$, and $\angle B \cong \angle M$	1. Given
2. $\triangle ABC \sim \triangle LMN$	2. [?]

8. Given: $\frac{AB}{LM} = \frac{BC}{MN}$, and $\frac{BC}{MN} = \frac{AC}{LN}$

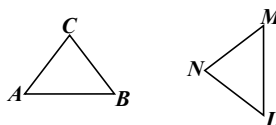
Prove: $\triangle ABC \sim \triangle LMN$



Statements	Reasons
1. $\frac{AB}{LM} = \frac{BC}{MN}$, and $\frac{BC}{MN} = \frac{AC}{LN}$	1. Given
2. $\triangle ABC \sim \triangle LMN$	2. [?]

9. Given: $\angle A \cong \angle L$, and $\angle C \cong \angle N$

Prove: $\triangle ABC \sim \triangle LMN$



Statements	Reasons
1. $\angle A \cong \angle L$, and $\angle C \cong \angle N$	1. Given
2. $\triangle ABC \sim \triangle LMN$	2. [?]