

Geometry

3. Parallel and Perpendicular Lines

3.1 Using Properties of Parallel Lines

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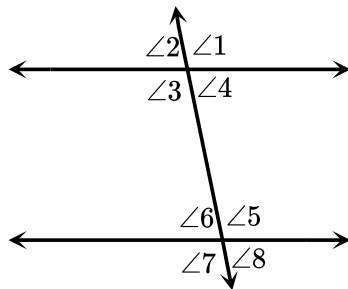
Exercises

Find all solutions to exercises via

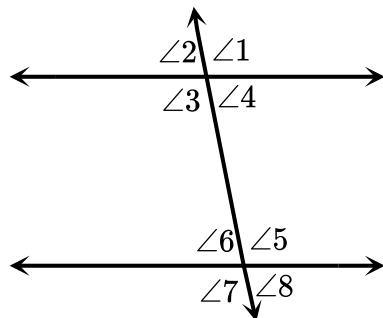
https://mathleaks.com/study/using_properties_of_parallel_lines or scan the QR code



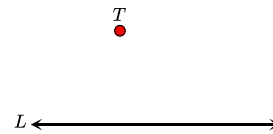
- 1.1** In the figure, find pairs of angles that are alternate interior angles and name them.



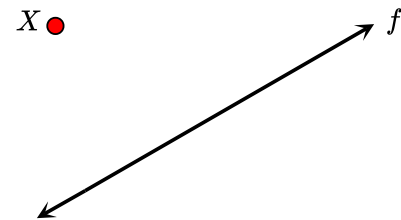
- 1.2** In the figure, find pairs of angles that are alternate exterior angles and name them.



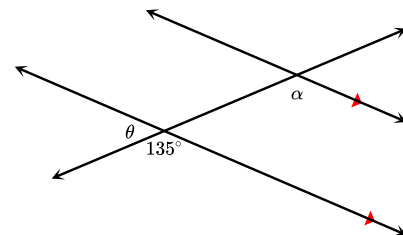
- 1.3** Draw a line through T that is parallel to L .



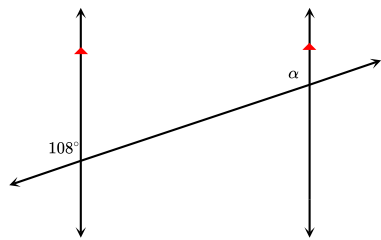
- 1.4** Draw a line through X that is parallel to f .



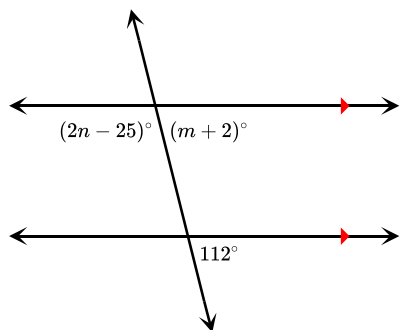
- 1.5** Determine the angle measures of θ and α .



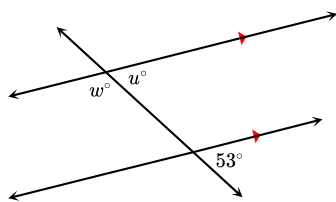
1.6 Find the measure of α .



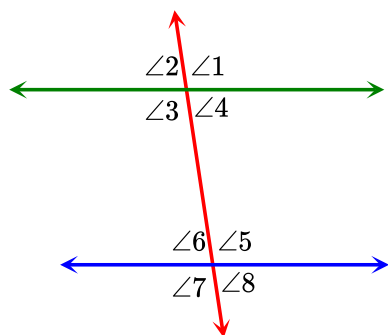
1.7 Calculate n and m .



1.8 Determine the values of u and w .



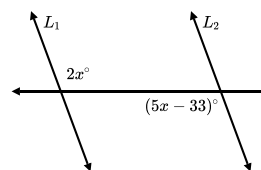
1.9 Find and name the pairs of corresponding angles formed by the transversal that intersects the lines.



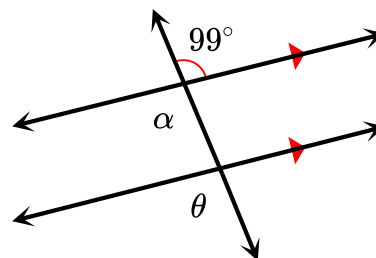
1.10 Draw two lines and a transversal. How many alternate exterior angles can you find?

1.11 Draw two lines and a transversal. How many vertical angles can you find?

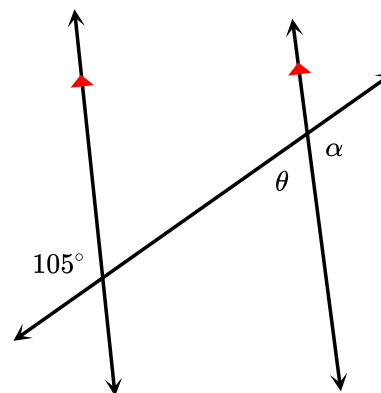
1.12 What value(s) of x would make L_1 and L_2 parallel?



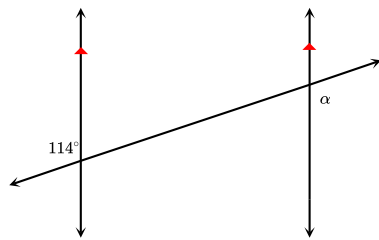
1.13 Find the measures of the angles α and θ .



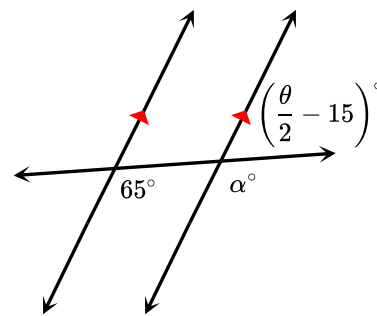
1.14 Determine the angle measure of α and θ .



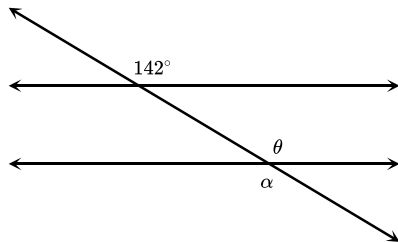
1.15 Find the angle measure of α .



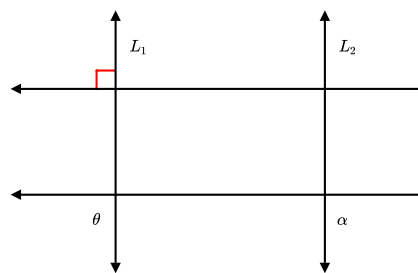
2.3 Use the figure to determine α and θ .



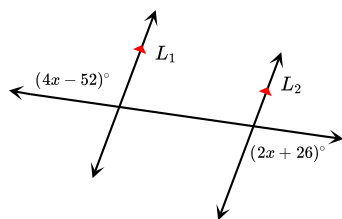
1.16 Determine the measure of angle θ and α .



2.4 Determine α and θ given that L_1 and L_2 are parallel.

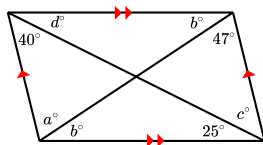


1.17 Find x .

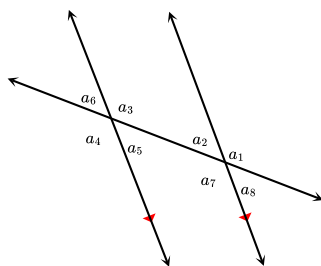


3.1 The Perpendicular Transversal Theorem says that, in a plane if a line is perpendicular to one of two parallel lines then it is also perpendicular to the other line. Prove the theorem.

2.1 Use the figure to determine the values a, b, c , and d .



2.2 Find all angles congruent to a_2 .



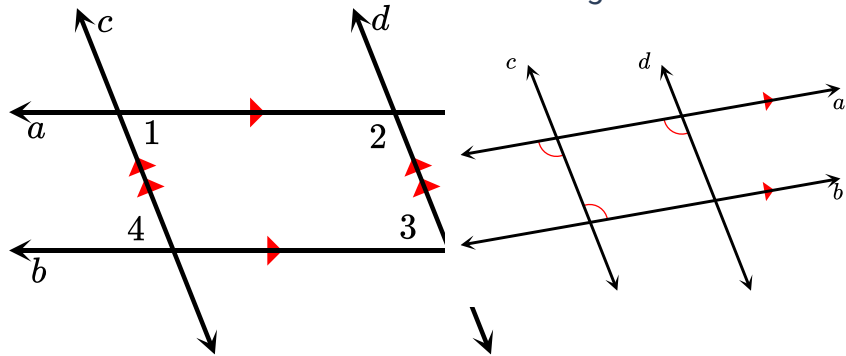
3.2 Ron-Jon has written a two-column proof for the statement

“The angles 1 and 3 are congruent”

given the figure below.

“The lines c and d are parallel”

is the figure below.



However, Ron-Jon forgot to explain two steps.

Statement	Reason
$a \parallel b$	
$\angle 2$ and $\angle 3$ are supplementary	Consecutive Interior Angles
$c \parallel d$	Given
$\angle 1$ and $\angle 2$ are supplementary	
$\angle 1 \cong \angle 3$	Parallel Opposite Angles Theorem

Help Ron-Jon complete the two-column proof.