

3-4

Parallel and Perpendicular Lines

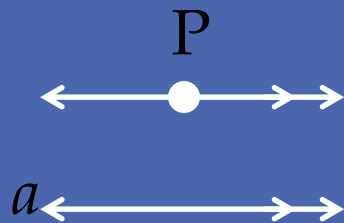
OBJECTIVE

To relate parallel and perpendicular lines

KEY CONCEPTS

Parallel
Postulate

Through a point not on a line,
there is one and only one line
parallel to the given line.

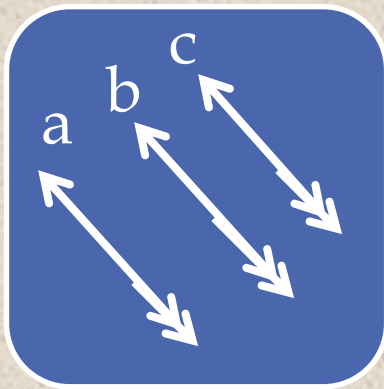


There is exactly one line
through P parallel to line a .

KEY CONCEPTS

Transitive
Property of
Parallel Lines
Theorem

If two lines are parallel to the same line, then they are parallel to each other.

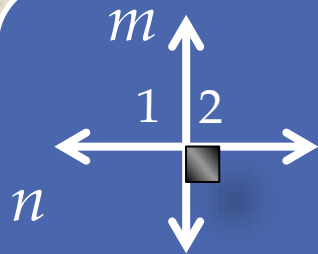


If $a \parallel b$ and $b \parallel c$, then $a \parallel c$.

KEY CONCEPTS

Equal
Measure
Linear Pair
Theorem

If two intersecting lines form
a linear pair of congruent
angles, the lines are
perpendicular.

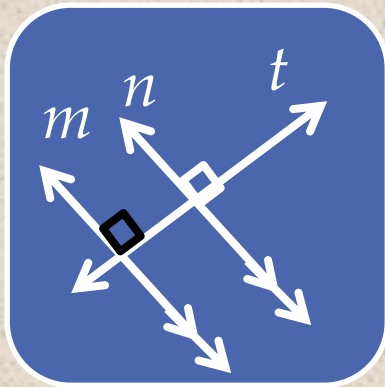


If $\angle 1 \cong \angle 2$, then $m \perp n$.

KEY CONCEPTS

Perpendicular
Transversal
Theorem

In a plane, if a line is perpendicular to one of two parallel lines, then it is also perpendicular to the other.

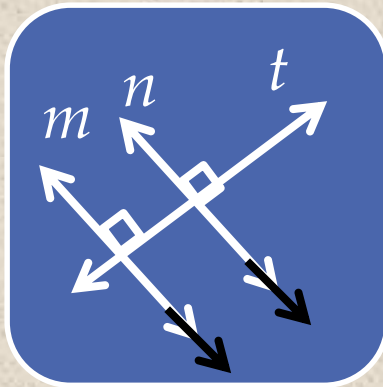


If $n \perp t$ and $m \parallel n$,
then $m \perp t$.

KEY CONCEPTS

Theorem
3-4-3

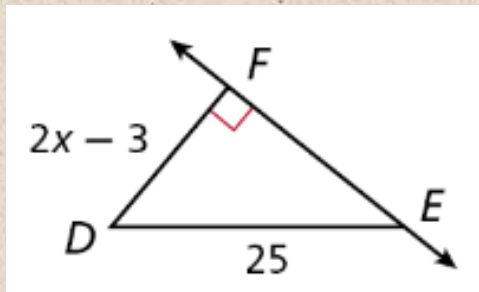
In a plane, if two lines are perpendicular to the same line, then they are parallel to each other.



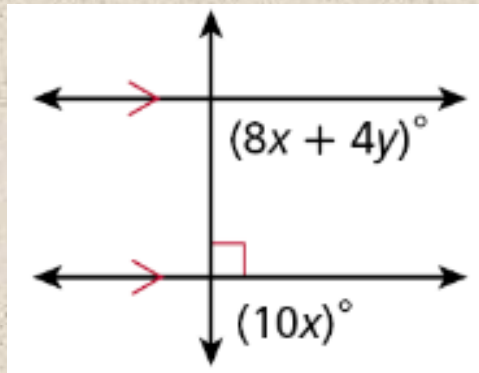
If $m \perp t$ and $n \perp t$, then
 $m \parallel n$.

CLASS WORK

1. Write and solve an inequality for x .

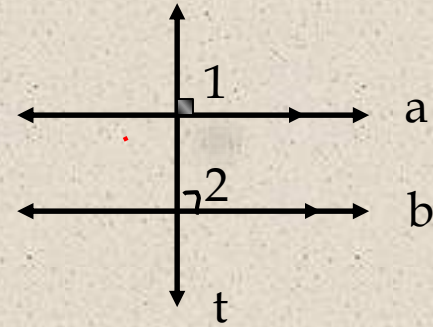


2. Solve to find x and y in the diagram.



Given: $a \parallel b, a \perp t$

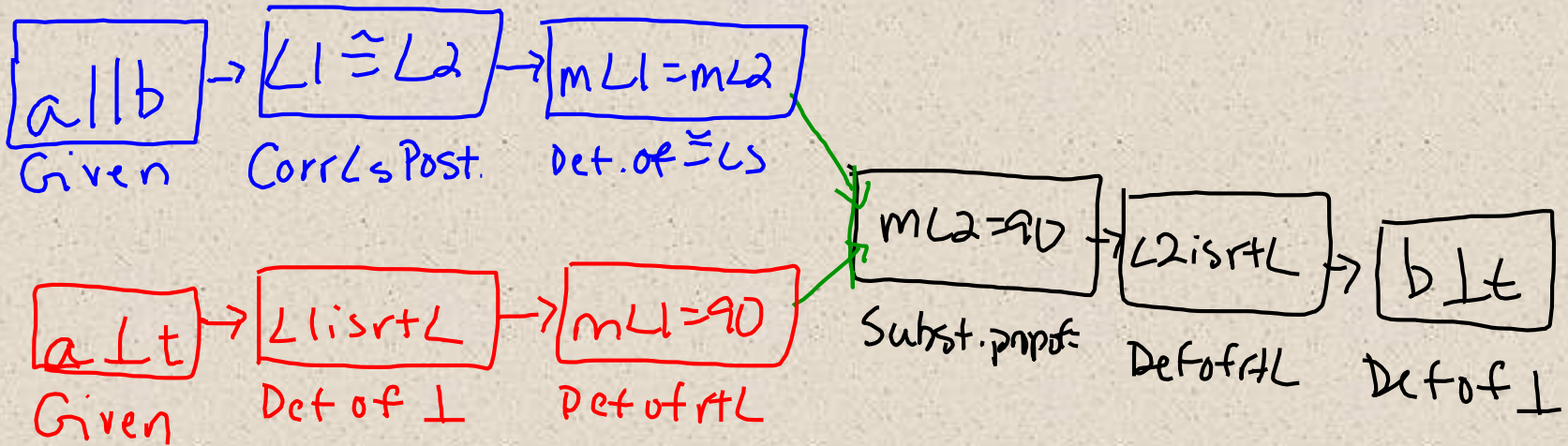
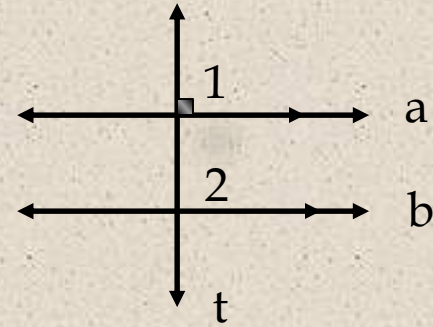
Prove: $b \perp t$



**Proof of Perpendicular
Transversal Theorem**

Given: $a \parallel b, a \perp t$

Prove: $b \perp t$



Proof of Perpendicular Transversal Theorem

HOMework

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24, 32, 34