

SECTION 3.1

Name the pairs of corresponding angles.

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

Name the pairs of alternate interior angles.

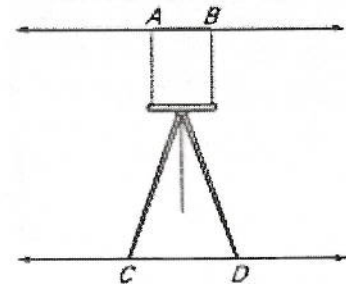
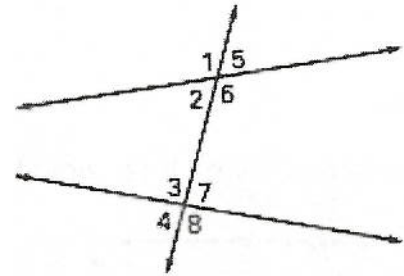
6,3 2,7

Name the pairs of consecutive interior angles.

2,3 6,7

The figure shows a painting easel. Does \overline{AB} appear to be parallel, perpendicular, or skew to \overline{CD} ?

appears to be parallel



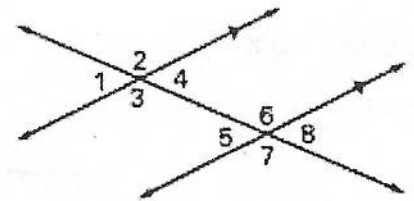
SECTION 3.2

What theorem justifies each statement?

$\angle 3 \cong \angle 6$ Alternate Interior angles

$\angle 4$ and $\angle 6$ are supplementary consecutive interior

If $m\angle 2 = 115^\circ$, find $m\angle 7$. $m\angle 7 = 115^\circ$ alternate exterior angles

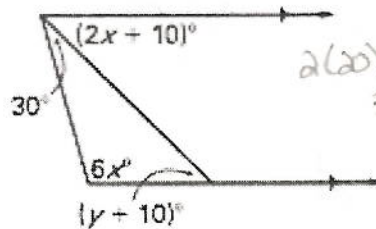


Name all angles that are congruent. 2,7 1,8 2,6 4,8 3,7 1,5 3,6 4,5

Name all angles that are supplementary. 4,6 3,5 2,4 6,8 5,7 1,3 1,2 3,4 5,6 7,8 1,7 2,8 3,8 4,7 2,5 1,6

Find values of x and y .

$30 + 2x + 10 + 6x = 180$
 $8x + 20 = 180$
 $8x = 160$
 $x = 20$



$2(20) + 10 = y + 10$
 $30 = y + 10$
 $y = 20$

$2x + 10 + 30 + 6x = 180$

$8x + 40 = 180$

$8x = 140$

$x = 17.5$

$2(17.5) + 10 = y + 10$

$45 = y + 10$

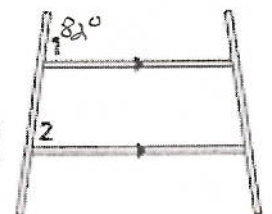
$y = 35$

The figure shows a plant trellis.

If $m\angle 1 = 82^\circ$, find $m\angle 2$.

$m\angle 2 = 82^\circ$

Corresponding angles // lines



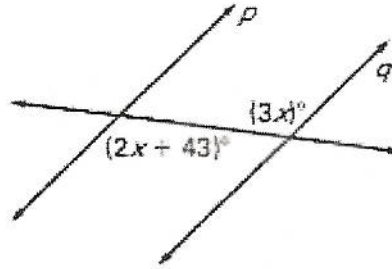
SECTION 3.3

AIA \cong

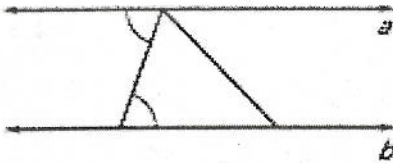
Find the value of x that makes $p \parallel q$.

$$2x + 43 = 3x$$

$$43 = x$$

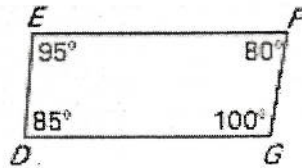


Can you prove $a \parallel b$? If so, what theorem would you use?



alternate interior angle converse

Which lines are parallel?

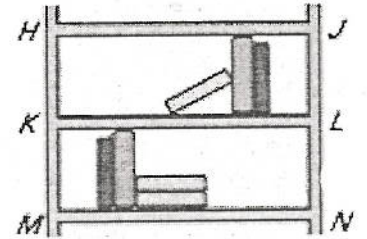


$$\overleftrightarrow{EF} \parallel \overleftrightarrow{DG}$$

consecutive interior angle converse

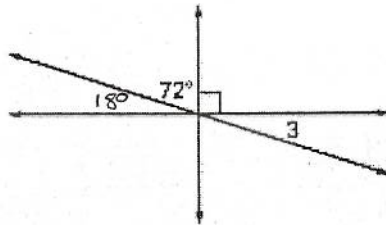
In the figure, if $\overline{HJ} \parallel \overline{KL}$ and $\overline{KL} \parallel \overline{MN}$, what can you conclude?
What theorem justifies your conclusion?

$\overline{HJ} \parallel \overline{MN}$ Transitive property of parallel lines



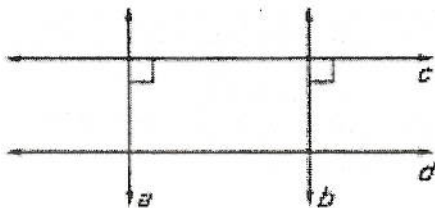
SECTION 3.6

Find $m\angle 3$.



$m\angle 3 = 18^\circ$
• since it's vertical \angle is 18°
 \perp lines all 4 \angle 's are 90°

How do you know that a and b are parallel? lines \perp to transversal theorem



• if 2 lines \perp to the same transversal then they are parallel

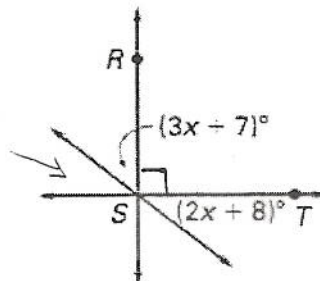
$\angle RST$ is a right angle. Find the value of x .

$$2x + 8 = 90 - (3x + 7)$$

$$2x + 8 = 90 - 3x - 7$$

$$2x + 8 = 83 - 3x$$

$$5x = 75 \quad \boxed{x = 15}$$



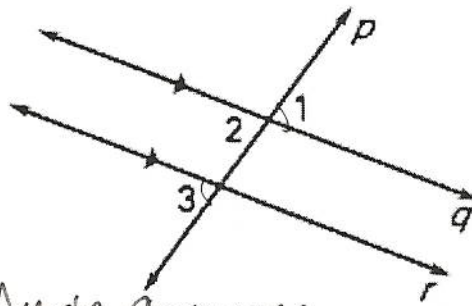
EXPLANATION:

Given: $q \parallel r$

Conclude: $\angle 1 \cong \angle 3$

Reason: Given $q \parallel r$, then $\angle 1 \cong \angle 3$

because of the Exterior Angle Converse theorem



Given: $q \parallel r, p \parallel t$

Conclude: $\angle 1 \cong \angle 3$

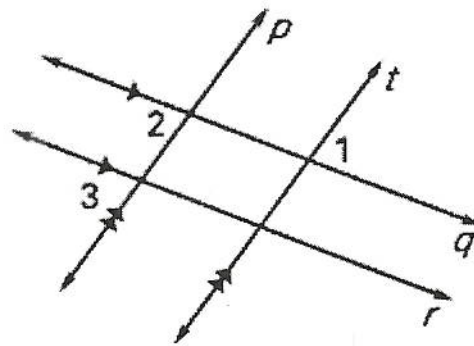
Reason:

Given that $q \parallel r$ and $p \parallel t$, then $\angle 1 \cong \angle 2$ because of the AEA postulate,

Also we can say that $\angle 2 \cong \angle 3$ because of the corresponding angle postulate.

If $\angle 1 \cong \angle 2$ and $\angle 2 \cong \angle 3$, then by substitution

$$\angle 1 \cong \angle 3$$

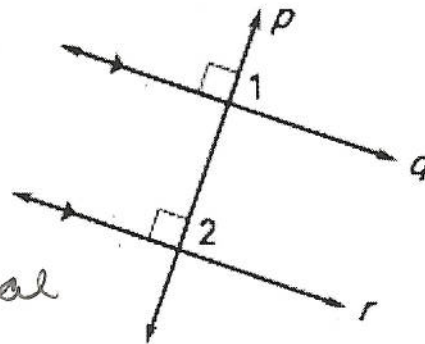


Given: $p \perp q, q \parallel r$

Conclude: $p \perp r$

Reason:

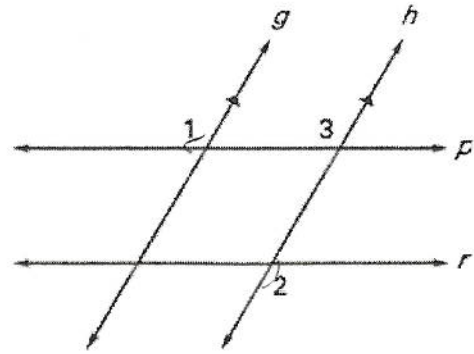
Given $p \perp q$ and $q \parallel r$ then by the perpendicular transversal theorem $p \perp r$.



Given: $g \parallel h, \angle 1 \cong \angle 2$

Conclude: $p \parallel r$

Reason:



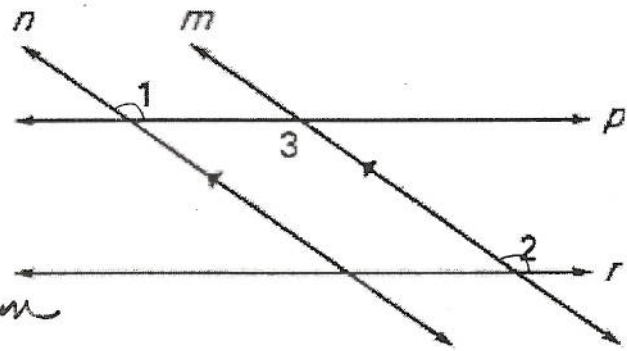
Given that $g \parallel h$ and $\angle 1 \cong \angle 2$,
I can start by saying
 $\angle 1 \cong \angle 3$ because of corresponding angles theorem.

Since $\angle 1 \cong \angle 2$ and $\angle 1 \cong \angle 3$ then $\angle 2 \cong \angle 3$ by substitution.
The alternate exterior angle converse states that if
 $\angle 2$ and $\angle 3$ are congruent then $p \parallel r$.

Given: $n \parallel m, \angle 1 \cong \angle 2$

Conclude: $p \parallel r$

Reason:



Given $n \parallel m$ then
 $\angle 1 \cong \angle 3$ by AIA theorem

Given that $\angle 1 \cong \angle 2$ and $\angle 1 \cong \angle 3$ then $\angle 2 \cong \angle 3$ by substitution.
Since $\angle 2 \cong \angle 3$ then $p \parallel r$ by the AIA converse.