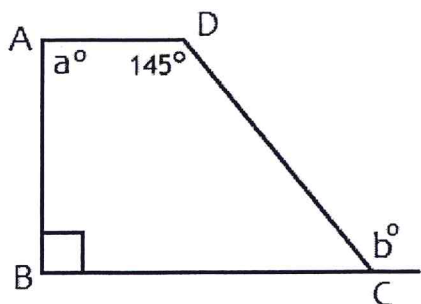1. ABCD is a trapezoid (one pair of parallel sides). Determine a and b and justify each relation.

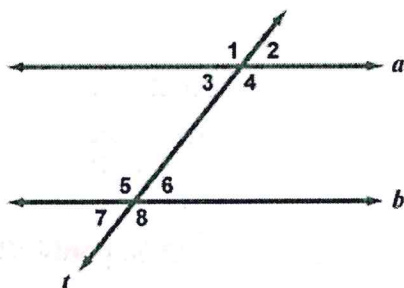$a° = 90°$, Consecutive Interior Angles

$b° = 145°$, Alternate Interior Angles

2.

Draw a pair of parallel lines with a transversal passing through the lines (and not perpendicular to the lines). Number the angles formed in your figure as they are numbered in the image shown. Think about line b as a translation of line a. Then $\angle 6$ would be the image of $\angle 2$ under the translation and therefore be congruent. What other angles are congruent due to the translation?

A.
$\angle 5$ and $\angle 1$
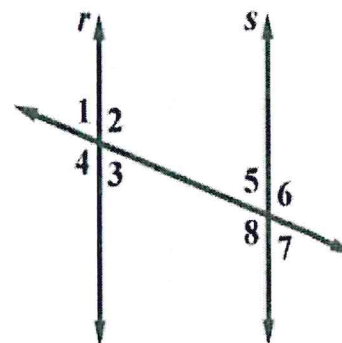$\angle 6$ and $\angle 4$
$\angle 8$ and $\angle 2$

B.
$\angle 5$ and $\angle 3$
$\angle 7$ and $\angle 1$
$\angle 8$ and $\angle 4$

C.
$\angle 5$ and $\angle 1$
$\angle 7$ and $\angle 3$
$\angle 8$ and $\angle 4$

D.
$\angle 5$ and $\angle 1$
$\angle 7$ and $\angle 4$
$\angle 8$ and $\angle 3$

3.

If line r and line s are parallel. If possible, justify each of the following relations.

A. $\angle 3 \cong \angle 6$ _Not possible_

B. $\angle 1 \cong \angle 5$ _Corresponding Angles_
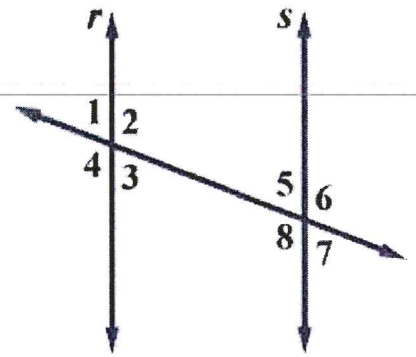
C. $\angle 1 \cong \angle 7$ _Alternate Exterior Angles_

D. $\angle 3 \cong \angle 7$ _Corresponding Angles_

4. From the picture below, Joe thinks that line r might be parallel to line s.

Which strategy could he use to test his conjecture?

   A. Measure angles $\angle 2$ and $\angle 4$ to see if they are congruent.

   B. Measure angles $\angle 2$ and $\angle 5$ to see if they are congruent.

   C. Measure angles $\angle 2$ and $\angle 6$ to see if they are congruent.

   D. Measure angles $\angle 2$ and $\angle 7$ to see if they are congruent.
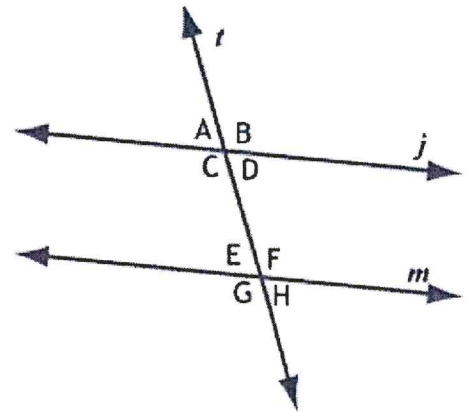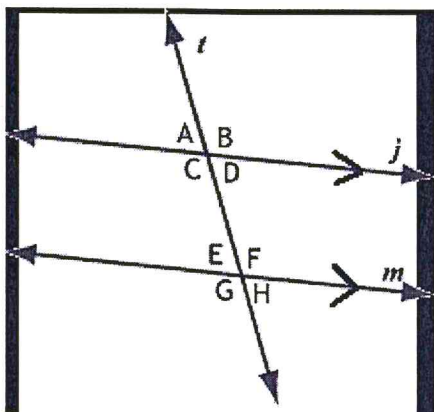

5. Line j is parallel to line m, and line t is not perpendicular to either line.

Indicate the type of angles and the relationship for the following pairs of angles

   A. $\angle A$ and $\angle D$ ___ $\cong$ ___ Vertical

   B. $\angle A$ and $\angle H$ ___ $\cong$ ___ Alternate Exterior

   C. $\angle A$ and $\angle E$ ___ $\cong$ ___ Corresponding

   D. $\angle A$ and $\angle G$ ___ Supplementary ___ No Direct Relationship
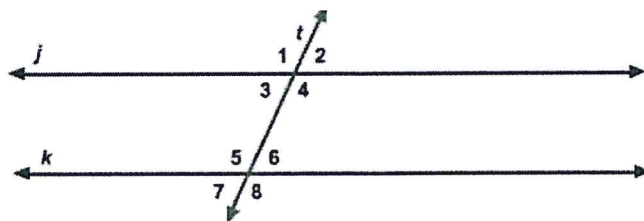

6.


If m<A = x^2+ 1, and m<H = 2x+4, determine m<F. Justify each equation

$m\angle F = 178°$ or $170°$

7.

Angles 6 and 4 are supplementary. Drag the tiles into the appropriate slots to prove that lines j and k are parallel.

Statements	Reasons
1. ∠6 and ∠4 are supplementary.	1. Given
2. [A] $m\angle 6 + m\angle 4 = 180°$	2. Def. of supplementary
3. [B] ∠2 and ∠4 are supplementary	3. Linear Pair Theorem
4. $m\angle 2 + m\angle 4 = 180°$	4. Def. of supplementary
5. $m\angle 6 + m\angle 4 = m\angle 2 + m\angle 4$	5. [C] Substitution
6. [D] $m\angle 6 = m\angle 2$	6. [E] Subtraction
7. $j \parallel k$	7. [F] Corresponding ∠s ≅ . lines ∥
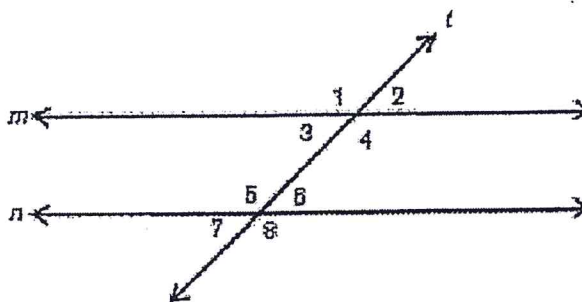
8. **Given:** $m \parallel n$

   Prove: $\angle 6 \cong \angle 3$

Statements	Reasons
1) $m \parallel n$	1) GIVEN
2)	2)
3) Answers Vary	3)
4) $\angle 6 \cong \angle 3$	4) SUBSTITUTION

9. Create a proof for the following:

Given: $a \parallel b$

Prove: $m\angle 9 + m\angle 14 = 180°$
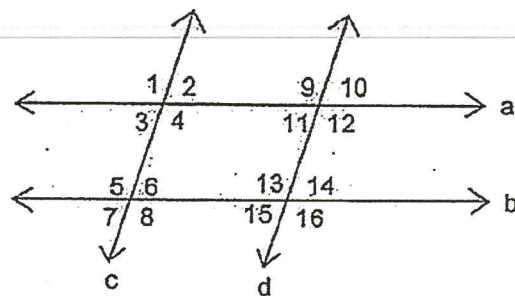
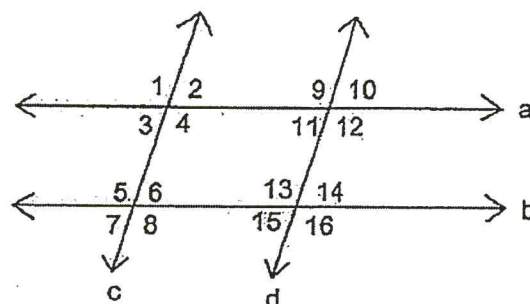Answers Vary

10. Prove the following:

Given: $a \parallel b$; $c \parallel d$

Prove: $\angle 1 \cong \angle 13$

Answers Vary