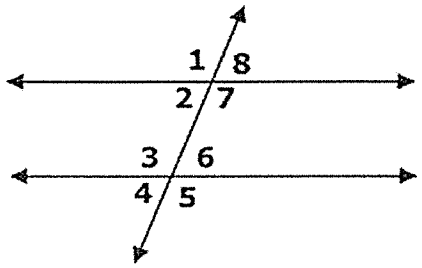
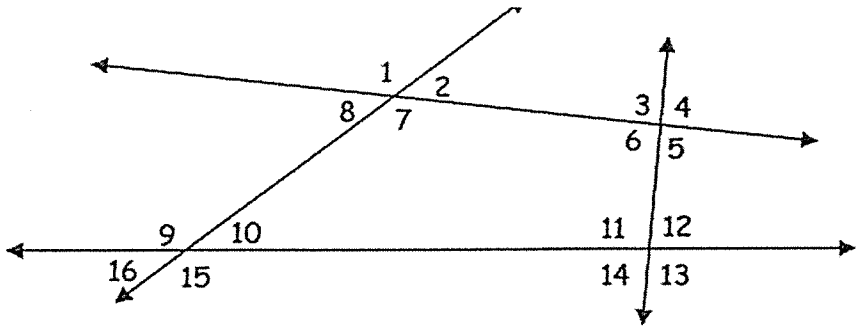
Name: Key

I) ıe figure, $l \parallel m$. Find the measure of each angle. Each problem is different.



1) If $m\angle 7 = 100°$, then $m\angle 3 =$ 100°
2) If $m\angle 7 = 175°$, then $m\angle 6 =$ 5°
3) If $m\angle 7 = 120°$, then $m\angle 5 =$ 120°
4) If $m\angle 4 = 20°$, then $m\angle 7 =$ 160°
5) If $m\angle 3 = 140°$, then $m\angle 8 =$ 40°
6) If $m\angle 4 = 30°$, then $m\angle 1 =$ 150°
7) If $m\angle 4 = 40°$, then $m\angle 2 =$ 40°
8) If $m\angle 7 = 125°$, then $m\angle 4 =$ 55°

II)



Use the picture above to identify the special name for the angle pairs.

1) ∠2 and ∠6 Alternate interior
2) ∠1 and ∠9 Corresponding
3) ∠9 and ∠6 ∠9 to ∠7 to ∠6 Consecutive
4) ∠9 and ∠13 Alternate exterior
5) ∠14 and ∠16 Corresponding
6) ∠10 and ∠16 Vertical angles
7) ∠2 and ∠1 Supplementary
8) ∠10 and ∠14 Alternate interior
9) ∠11 and ∠6 Consecutive interior
10) ∠15 and ∠11 Alternate interior
11) ∠4 and ∠13 Supplementary
12) ∠3 and ∠11 Corresponding

III)

1. Find the value of x.

$14x - 13 = 8x + 5$

$\frac{6x}{6} = \frac{18}{6}$

$x = 3$

Alternate interior

$(14x - 13)^\circ$

$(8x + 5)^\circ$

$14(3) - 13 = 29^\circ$

2. Find the value of x.

$9x + 1 = 11x - 23$

$\frac{24}{2} = \frac{2x}{2}$

$x = 12$

Corresponding

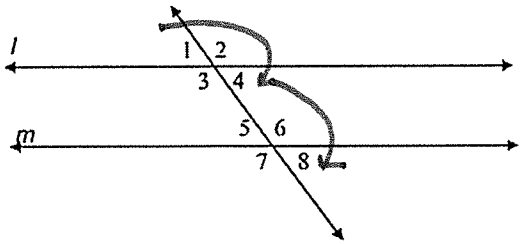
$(9x + 1)^\circ$

$(11x - 23)^\circ$

$9(12) + 1 = 109^\circ$

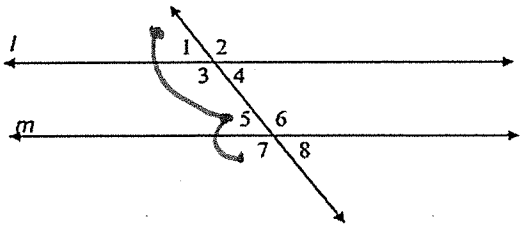
IV) Use properties, postulate, theorems, definitions to prove the below statements are true.

1. Given: l//m
   Prove: m∠1 = m∠8



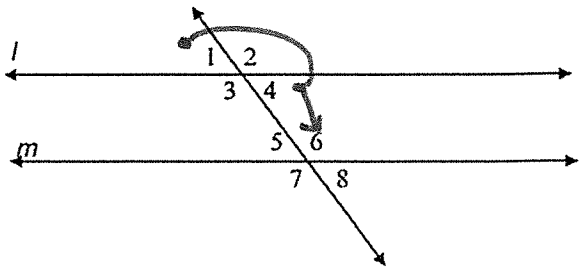
Statements	Reasons
$l \parallel m$	Given
$\angle 1 \cong \angle 4$	Vertical angles
$\angle 4 \cong \angle 8$	Corresponding angles
$\angle 1 \cong \angle 8$	Transitive property
$m\angle 1 = m\angle 8$	Def of Congruence.

2. Given: l//m
   Prove: m∠1 + m∠7 = 180°



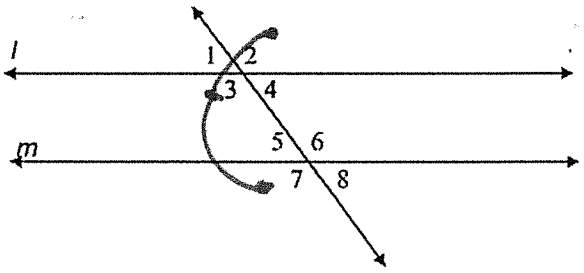
Statements	Reasons
$l \parallel m$	Given
$\angle 1 \cong \angle 5$	Corresponding angles
$m\angle 1 = m\angle 5$	Def of Congruence
$m\angle 5 + m\angle 7 = 180^\circ$	Supplementary angle
$m\angle 1 + m\angle 7 = 180^\circ$	Substitution property

3. Given: l//m
Prove: ∠1 and ∠6 are supplementary.



Statements	Reasons
l // m	Given
∠1 ≅ ∠4 / m∠1 = m∠4	Corresponding angles / Def of ≅'s
m∠4 + m∠6 = 180°	Consecutive interior angles
m∠1 + m∠6 = 180°	Substitution property.
∠1 and ∠6 are Supplementary	Def of Supplementary

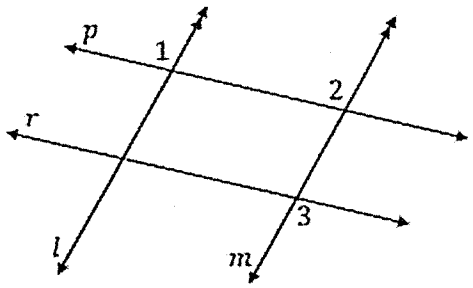
4. Given: l//m
Prove: ∠2 ≅ ∠7



Statements	Reasons
l // m	Given
∠2 ≅ ∠3	Vertical angles
∠3 ≅ ∠7	Corresponding angles
∠2 ≅ ∠7	Transitive property.

5) Given: $l \parallel m$ and $\angle 1 \cong \angle 3$

Prove: $r \parallel p$



2-Column Proof:

Statements	Reasons

$\angle 1 \cong \angle 2$ | $\angle 2 \cong \angle 3$ | $r \parallel p$ | $l \parallel m$ | Given

Converse of Alternate Exterior Angles Theorem | $\angle 1 \cong \angle 3$ | Given

Corresponding Angles Postulate | Transitive Property of Congruence