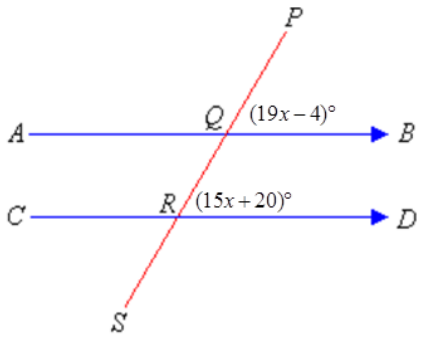
Geometry A
Parallel Lines Proofs Quiz Review

Name : _____
Date : _____ Period : _____

1) Given $4 - 2(3x - 1) = 30 - 10x$, prove that $x = 6$.

Statements	Reasons
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.

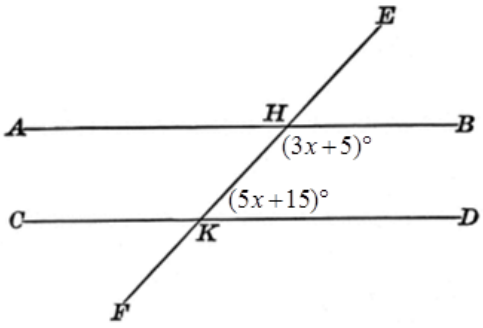
2) Using the diagram below and given that $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$, please prove $x = 6$.



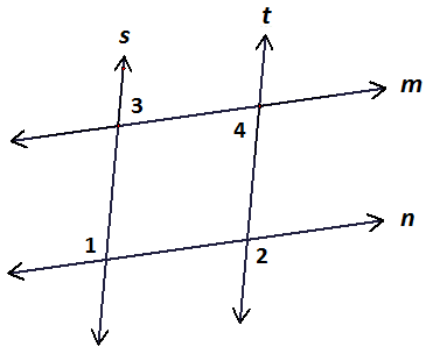
Statements	Reasons
1. $m\angle PQB = (19x - 4)°$, $m\angle QRD = (15x + 20)°$, $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$	1.
2.	2.
3.	3.
4.	4.
5. x = 6	5.

3) Using the diagram below and given that $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$, please prove $x = 20$.

Statements	Reasons
1. $m\angle BHK = (3x + 5)°$, $m\angle HKD = (5x + 15)°$, $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$	1.
2.	2.
3.	3.
4.	4.
5. x = 20	5.

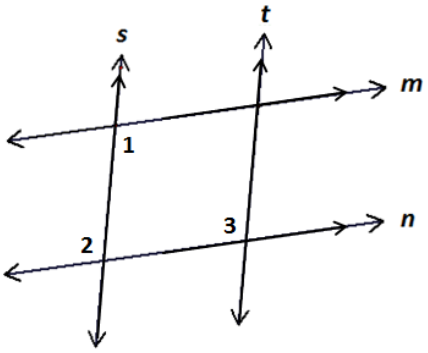


4) Given $\angle 1 \cong \angle 2$, please prove $\angle 3 \cong \angle 4$.



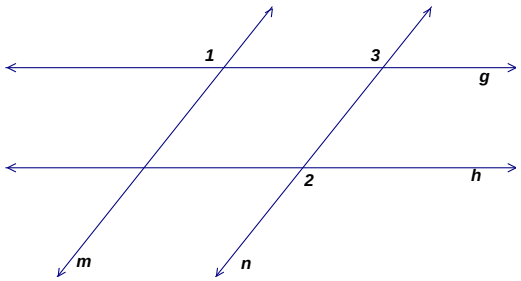
Statements	Reasons
1. $\angle 1 \cong \angle 2$	1.
2. s||t	2.
3. $\angle 3 \cong \angle 4$	3.

5) Given $s \parallel t$ and $m \parallel n$, please prove $\angle 1 \cong \angle 3$



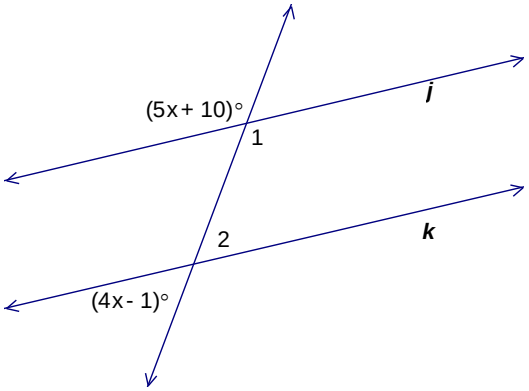
Statements	Reasons
1. s||t	1.
2. m||n	2.
3. $\angle 1 \cong \angle 2$	3.
4. $\angle 2 \cong \angle 3$	4.
5. $\angle 1 \cong \angle 3$	5.

6) Given $m \parallel n$ and $\angle 1 \cong \angle 2$, please prove $g \parallel h$.



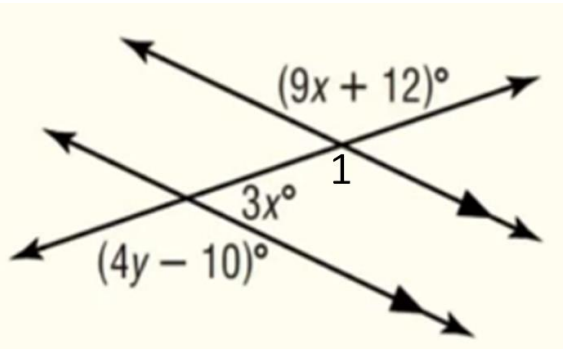
Statements	Reasons
1. m||n	1.
2. $\angle 1 \cong \angle 2$	2.
3. $\angle 1 \cong \angle 3$	3.
4. $\angle 2 \cong \angle 3$	4.
5. g||h	5.

7) Given $j \parallel k$ and the measures of the angles in the diagram, prove x = 19.



Statements	Reasons
1.	1. Given
2. m∠1 = (5x + 10)°	2.
3. m∠2 = (4x – 1)°	3.
4.	4. Consecutive Interior Angles Thm.
5. 9x + 9 = 180	5.
6.	6.
7. x = 19	7.

8) Given the lines are parallel and the measures of the angles in the diagram, prove x = 14 and y = 37.



Statements	Reasons
1. The lines are ||	1.
2. m∠1 = (9x + 12)°	2.
3. 3x° + (9x + 12)° = 180°	3.
4.	4. Combine Like Terms
5.	5.
6. x = 14	6.
7. m∠1 = (9(14)+12)°	7.
8. m∠1 = 138°	8.
9. 4y – 10 = 138	9.
10.	10.
11.	11.

Answer Key :

1)

Statements	Reasons
1. $4-2(3x-1)=30-10x$	1. Given
2. $4-6x+2=30-10x$	2. Distributive Property
3. $6-6x=30-10x$	3. Combine Like Terms
4. $-6x=24-10x$	4. Subtraction Property
5. $4x=24$	5. Addition Property
6. $x=6$	6. Division Property

2)

Statements	Reasons
$m\angle PQB=(19x-4)^\circ,$ 1. $m\angle QRD=(15x+20)^\circ,$ $\overleftrightarrow{AB}\parallel\overleftrightarrow{CD}$	1. Given
2. $19x-4=15x+20$	2. Corresponding Angles Post.
3. $4x-4=20$	3. Subtraction Property
4. $4x=24$	4. Addition Property
5. $x=6$	5. Division Property

3)

Statements	Reasons
$m\angle BHK=(3x+5)^\circ,$ 1. $m\angle HKD=(5x+15)^\circ,$ $\overleftrightarrow{AB}\parallel\overleftrightarrow{CD}$	1. Given
2. $(3x+5)^\circ+(5x+15)^\circ=180^\circ$	2. Consec. Int. Angles Postulate
3. $8x+20=180$	3. Combine Like Terms
4. $8x=160$	4. Subtraction Property
5. $x=20$	5. Division Property

4)

Statements	Reasons
1. $\angle 1\cong\angle 2$	1. Given
2. s||t	2. Alt. Exterior Angles Converse
3. $\angle 3\cong\angle 4$	3. Alt. Interior Angles Theorem

5)

Statements	Reasons
1. s||t	1. Given
2. m||n	2. Given
3. $\angle 1 \cong \angle 2$	3. Alt. Interior Angles Theorem
4. $\angle 2 \cong \angle 3$	4. Corresponding Angles Post.
5. $\angle 1 \cong \angle 3$	5. Transitive Property

6)

Statements	Reasons
1. m||n	1. Given
2. $\angle 1 \cong \angle 2$	2. Given
3. $\angle 1 \cong \angle 3$	3. Corresponding Angles Post.
4. $\angle 2 \cong \angle 3$	4. Transitive Property
5. g||h	5. Alt. Exterior Angles Converse

7)

Statements	Reasons
1. j||k	1. Given
2. $m\angle 1 = (5x + 10)^\circ$	2. Vertical Angles Theorem
3. $m\angle 2 = (4x - 1)^\circ$	3. Vertical Angles Theorem
4. $5x + 10 + 4x - 1 = 180$	4. Consecutive Interior Angles Thm.
5. $9x + 9 = 180$	5. Combine Like Terms
6. $9x = 171$	6. Subtraction Property
7. $x = 19$	7. Division Property

8)

Statements	Reasons
1. The lines are ||	1. Given
2. $m\angle 1 = (9x + 12)^\circ$	2. Vertical Angles Theorem
3. $3x^\circ + (9x + 12)^\circ = 180^\circ$	3. Consecutive Interior Angles Thm.
4. $12x + 12 = 180$	4. Combine Like Terms
5. $12x = 168$	5. Subtraction Property
6. $x = 14$	6. Division Property
7. $m\angle 1 = (9(14)+12)^\circ$	7. Substitution Property
8. $m\angle 1 = 138^\circ$	8. Simplification
9. $4y - 10 = 138$	9. Corresponding Angles Postulate
10. $4y = 148$	10. Addition Property
11. $y = 37$	11. Division Property