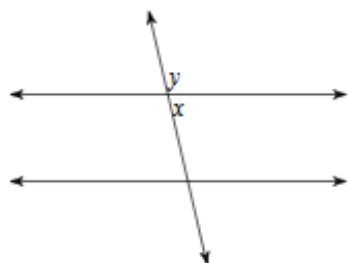


Name: _____ Hour: _____

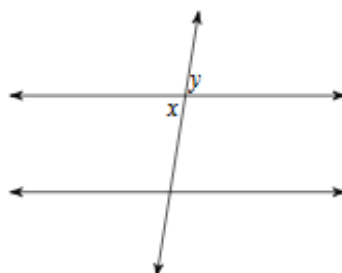
Parallel Lines and Transversals Proofs

Identify each pair of angles as corresponding, alternate interior, alternate exterior, consecutive interior, vertical, or linear pair.

1)

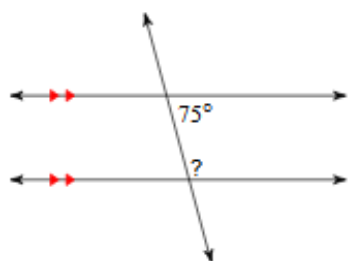


2)

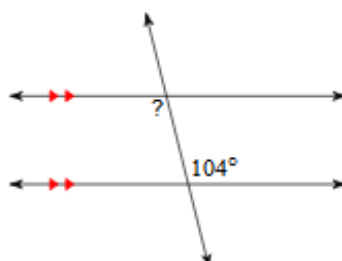


Find the measure of each angle indicated.

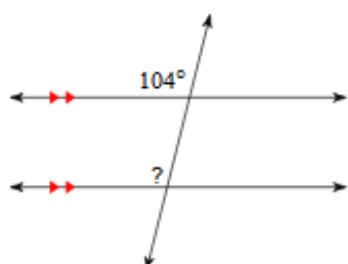
3)



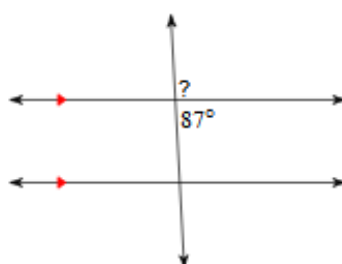
4)



5)

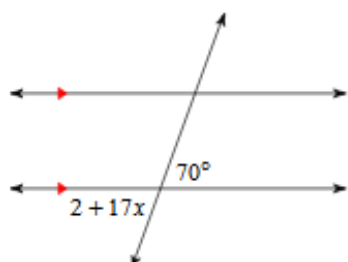


6)

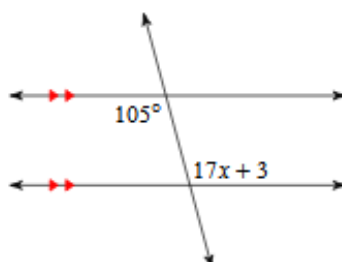


Solve for x .

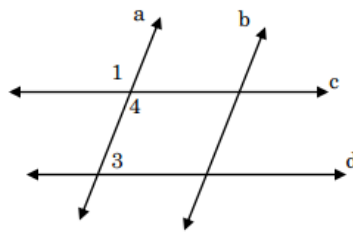
7)



8)

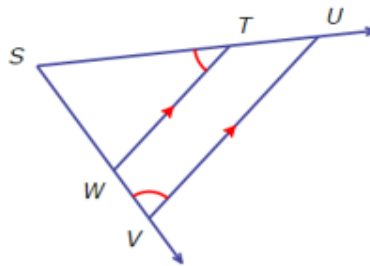


- 9) Given: $\angle 1$ and $\angle 3$ are supplementary
 Prove: $c \parallel d$



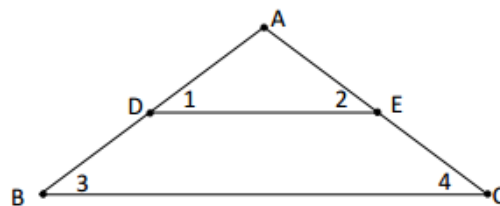
Statement	Reason
1. $\angle 1$ and $\angle 3$ are supplementary	1.
2. $\angle 1 \cong \angle 4$	2.
3. $\angle 4$ and $\angle 3$ are supplementary	3.
4. $c \parallel d$	4.

- 10) Given: $\angle STW \cong \angle UVW$
 $\overline{TW} \parallel \overline{UV}$
 Prove: $\angle TUV \cong \angle UVW$



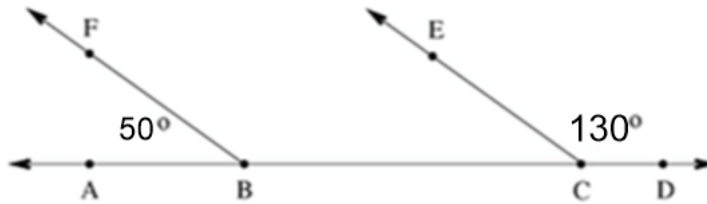
Statement	Reason
1. $\angle STW \cong \angle UVW$	1.
2. $\overline{TW} \parallel \overline{UV}$	2.
3. $\angle TUV \cong \angle STW$	3.
4. $\angle TUV \cong \angle UVW$	4.

- 11) Given: $m\angle 1 = m\angle 3$
 $m\angle 1 = m\angle 2$
 Prove: $m\angle 3 = m\angle 4$



Statement	Reason
1. $m\angle 1 = m\angle 3$	1.
2. $m\angle 1 = m\angle 2$	2.
3. $m\angle 2 = m\angle 3$	3.
4. $m\angle 1 = m\angle 3$ are corresponding angles	4.
5. $DE \parallel BC$	5.
6. $m\angle 2 = m\angle 4$	6.
7. $m\angle 3 = m\angle 4$	

- 12) Given: Line ABCD
 $m\angle ECD = 130^\circ$
 $m\angle ABF = 50^\circ$
 Prove: $BF \parallel CE$
 p



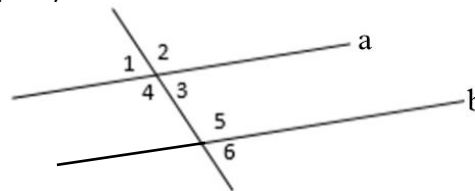
Statement	Reason
Line ABCD, $m\angle ECD = 130^\circ$, $m\angle ABF = 50^\circ$	1.
$\angle ECD$ and $\angle ECB$ are supplementary	2.
3.	Definition of supplementary
4.	Substitution property of equality
$m\angle ECB = 50^\circ$	5.
$m\angle ECB = m\angle ABF$	6.
$BF \parallel CE$	7.

Statements:

Reasons:

- | | | |
|--|---|--|
| a. $m\angle ECD + m\angle ABF = 180^\circ$ | a. Definition of supplementary | b. Definition of Linear Pair |
| b. $m\angle ECD + m\angle ECB = 180^\circ$ | c. Converse of corresponding angles theorem | d. Addition property of equality |
| c. $50^\circ + m\angle ECB = 180^\circ$ | e. Given | f. If \parallel lines, Same side interior angles are congruent |
| d. $130^\circ + m\angle ECB = 180^\circ$ | g. Subtraction property of equality | h. Converse of same side int. angles theorem |
| e. $\angle ECD$ & $\angle ECB$ are supplementary | i. Substitution property of equality | |

- 13) Given: $m\angle 3 = 60^\circ$, $m\angle 5 = 2x - 8$, $a \parallel b$
 Prove: $x = 64$



Statement	Reason
$m\angle 3 = 60^\circ$, $m\angle 5 = 2x - 8$, $a \parallel b$	1.
$180 = m\angle 3 + \angle 5$	2.
3.	Substitution property of equality
$180 = 52 + 2x$	4.
5.	Subtraction property of equality
6.	Division property of equality
7.	Symmetric property of equality

Statements:

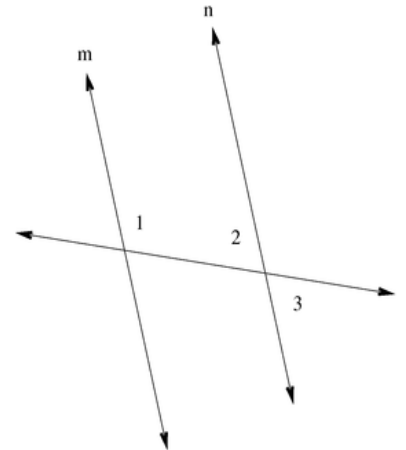
Reasons:

- | | |
|------------------------------|--|
| a. $64 = x$ | a. Vertical angles are congruent |
| b. $180^\circ = 60 + 2x - 8$ | b. Substitution property of equality |
| c. $64 = x$ | c. Given |
| d. $x = 64$ | d. Addition property of equality |
| e. $128 = 2x$ | e. If \parallel lines, Same Side Interior Angles are Supplementary |
| | f. Subtraction property of equality |

14) Given: $\angle 1 = 115^\circ$, $\angle 1$ and $\angle 3$ are supplementary

Prove: $m \parallel n$

Statement	Reason
1.	Given
2.	Definition of Supplementary
$115 + \angle 3 = 180^\circ$	3.
4.	Subtraction Property of Equality
$\angle 2 = \angle 3$	5.
6.	Substitution Property of Equality
$\angle 1$ and $\angle 2$ are supplementary	7.
$m \parallel n$	8.



Statements:

- $\angle 2 = 65^\circ$
- $\angle 1 = 115^\circ$, $\angle 1$ and $\angle 3$ are supplementary
- $m\angle 1 + m\angle 3 = 180^\circ$
- $\angle 1 + \angle 2 = 180^\circ$
- $\angle 2 + \angle 3 = 180^\circ$
- $\angle 2 = \angle 1$
- $\angle 3 = 65^\circ$

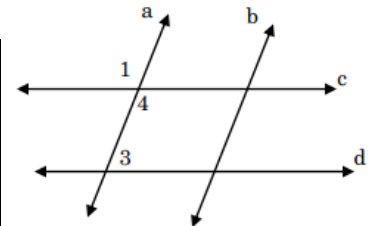
Reasons:

- Definition of supplementary
- Vertical angles are equal in measure
- Converse of corresponding angles
- Addition property of equality
- Converse of same side interior angles
- Same side interior angles are congruent
- Substitution property of equality

15) Given: $\angle 1$ and $\angle 3$ are supplementary, $m\angle 3 = 120^\circ$

Prove: $c \parallel d$

Statement	Reason
$\angle 1$ and $\angle 3$ are supplementary	1.
$m\angle 3 + m\angle 1 = 180^\circ$	2.
3.	Given
$120^\circ + m\angle 1 = 180^\circ$	4.
5.	Subtraction property of equality
6.	Vertical Angles are equal in measure
$\angle 4 = 60^\circ$	7.
8.	Definition of supplementary
$c \parallel d$	9.



Statements:

- $\angle 1 = \angle 4$
- $\angle 3 + 140^\circ = 180^\circ$
- $60^\circ + \angle 4 = 180^\circ$
- $m\angle 3 = 120^\circ$
- $\angle 1$ and $\angle 4$ are supplementary
- $\angle 3$ and $\angle 4$ are supplementary
- $m\angle 1 = 60^\circ$

Reasons:

- Definition of supplementary
- Converse of same side interior angles
- Converse of corresponding angles
- Addition property of equality
- Substitution property of equality
- Given
- Subtraction property of equality