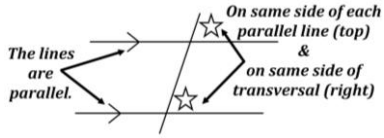
Name: _____

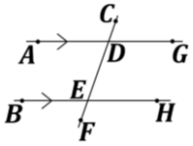
Corresponding and Same Side Angles Theorems

Corresponding Angles Postulate:
If two angles are corresponding (in the same place on two separate lines cut by a transversal) **and** the lines are parallel, then the angles will be congruent.



Example:

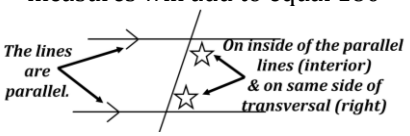
Given:



Prove: $\angle CDG \cong \angle DEH$

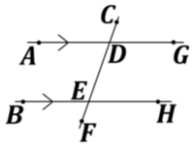
$\angle CDG$ & $\angle DEH$ are corresponding angles	**Given**
$\overline{AG} \parallel \overline{BH}$	**Given**
$\angle CDG \cong \angle DEH$	**Corr. ∠s Post.**

Same Side Interior Angles Theorem:
If two angles are same side interior angles (between two lines and on the same side of the transversal) **and** the lines are parallel, then their measures will add to equal 180°



Example:

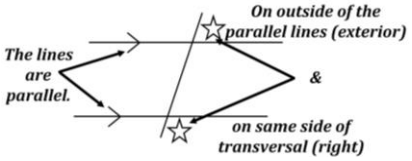
Given:



Prove: $m\angle GDE + m\angle DEH = 180°$

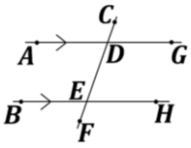
$\angle GDE$ & $\angle DEH$ are same side interior angles	**Given**
$\overline{AG} \parallel \overline{BH}$	**Given**
$m\angle GDE + m\angle DEH = 180°$	**S.S. Int. ∠s Thm**

Same Side Exterior Angles Theorem:
If two angles are same side exterior angles (*not* between two lines but *are* on the same side of the transversal) **and** the lines are parallel, then their measures will add to equal 180°



Example:

Given:

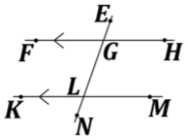


Prove: $m\angle GDE + m\angle DEH = 180°$

$\angle CDG$ & $\angle FEH$ are same side exterior angles	**Given**
$\overline{AG} \parallel \overline{BH}$	**Given**
$m\angle CDG + m\angle FEH = 180°$	**S.S. Ext. ∠s Thm**

Complete each proof.

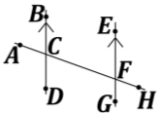
1. Given:



Prove: $m\angle EGF + m\angle NLK = 180°$

∠____ & ∠____ are _____ _____ angles	Given
____ ∥ ____	Given

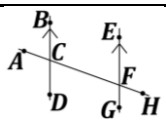
2. Given:



Prove: $\angle ACB \cong \angle CFE$

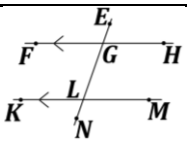
∠____ & ∠____ are _____ _____ angles	Given
____ ∥ ____	Given

3. Given:



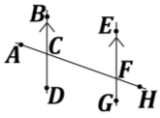
Prove: $m\angle BCF + m\angle CFE = 180°$

4. Given:



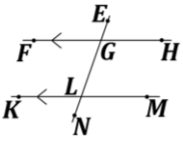
Prove: $m\angle FGL + m\angle GLK = 180°$

5. Given:



Prove: $m\angle ACD + m\angle HFG = 180°$

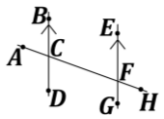
6. Given:



Prove: $\angle NLK \cong \angle LGF$

Name: _____

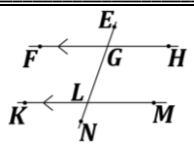
7. Given: $m\angle ACD = 157°$



Prove: $m\angle CFG = 157°$

∠____ & ∠____ are	Given
____ ∥ ____ & $m\angle ACD =$	Given
	Def. ≅
	Subst.

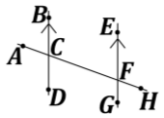
8. Given: $m\angle EGH = 73°$



Prove: $m\angle MLN = 107°$

∠____ & ∠____ are	Given
____ ∥ ____ & $m\angle EGH =$	Given
	Subst.
	Subtr. Prop. =

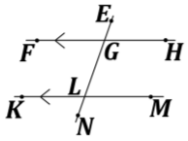
9. Given: $m\angle BCF = 157°$



Prove: $m\angle EFC = 23°$

∠____ & ∠____ are	Given
____ ∥ ____ & $m\angle BCF =$	Given
	Subst.
	Subtr. Prop. =

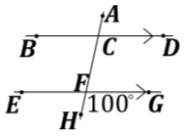
10. Given: $m\angle EGH = 73°$



Prove: $m\angle GLM = 73°$

	Given
	Given

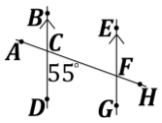
11. Given:



Prove: $m\angle ACD = 80°$

	Given
	Given

12. Given:



Prove: $m\angle GFH = 55°$

Name: _____

Corresponding & Same Side Theorems Answers

1.

$\angle EGF$ & $\angle NLK$ are **same side exterior angles**	Given
$\overline{FH} \parallel \overline{KM}$	Given
$m\angle EGF + m\angle NLK = 180°$	**S.S. Ext $\angle s$ Thm**

2.

$\angle ACB$ & $\angle CFE$ are **corresponding angles**	Given
$\overline{BD} \parallel \overline{EG}$	Given
$\angle ACB \cong \angle CFE$	**Corr. $\angle s$ Post.**

3.

$\angle BCF$ & $\angle CFE$ are **same side interior angles**	Given
$\overline{BD} \parallel \overline{EG}$	Given
$m\angle BCF + m\angle CFE = 180°$	**S.S. Int $\angle s$ Thm**

4.

$\angle FGL$ & $\angle GLK$ are **same side interior angles**	Given
$\overline{FH} \parallel \overline{KM}$	Given
$m\angle FGL + m\angle GLK = 180°$	**S.S. Int $\angle s$ Thm**

5.

$\angle ACD$ & $\angle HFG$ are **same side exterior angles**	Given
$\overline{BD} \parallel \overline{EG}$	Given
$m\angle ACD + m\angle HFG = 180°$	**S.S. Ext $\angle s$ Thm**

6.

$\angle NLK$ & $\angle LGF$ are **corresponding angles**	Given
$\overline{FH} \parallel \overline{KM}$	Given
$\angle NLK \cong \angle LGF$	**Corr. $\angle s$ Post.**

7.

$\angle CFG$ & $\angle ACD$ are corresponding angles	Given
$\overline{BD} \parallel \overline{EG}$ & $m\angle ACD = 157°$	Given
$\angle CFG \cong \angle ACD$	Corr. $\angle s$ Post.
$m\angle CFG = m\angle ACD$	Def. $\cong$
$m\angle CFG = 157°$	Subst.

8.

$\angle EGH$ & $\angle MLN$ are same side exterior angles	Given
$\overline{FH} \parallel \overline{KM}$ & $m\angle EGH = 73°$	Given
$m\angle EGH + m\angle MLN = 180$	S.S. Ext $\angle s$ Thm
$73 + m\angle MLN = 180$	Subst.
$m\angle MLN = 107°$	Subtr. Prop. =

9.

$\angle BCF$ & $\angle EFC$ are same side interior angles	Given
$\overline{BD} \parallel \overline{EG}$ & $m\angle BCF = 157°$	Given
$m\angle BCF + m\angle EFC = 180$	S.S. Int $\angle s$ Thm
$157 + m\angle EFC = 180$	Subst.
$m\angle EFC = 23°$	Subtr. Prop. =

10.

$\angle GLM$ & $\angle EGH$ are corresponding angles	Given
$\overline{FH} \parallel \overline{KM}$ & $m\angle EGH = 73°$	Given
$\angle GLM \cong \angle EGH$	Corr. $\angle s$ Post.
$m\angle GLM = m\angle EGH$	Def. $\cong$
$m\angle GLM = 73°$	Subst.

11.

$\angle HFG$ & $\angle ACD$ are same side exterior angles	Given
$\overline{BD} \parallel \overline{EG}$ & $m\angle HFG = 100°$	Given
$m\angle HFG + m\angle ACD = 180$	S.S. Ext $\angle s$ Thm
$100 + m\angle ACD = 180$	Subst.
$m\angle ACD = 80°$	Subtr. Prop. =

12.

$\angle GFH$ & $\angle DCF$ are corresponding angles	Given
$\overline{BD} \parallel \overline{EG}$ & $m\angle DCF = 55°$	Given
$\angle GFH \cong \angle DCF$	Corr. $\angle s$ Post.
$m\angle GFH = m\angle DCF$	Def. $\cong$
$m\angle GFH = 55°$	Subst.