Section 3.3 – Prove Lines are Parallel. Name:_____

For each diagram below, find the value of *x* that makes the lines parallel. You must state the postulates and/or theorems used. Your options are listed below.

Vertical Angles Congruence Theorem

Linear Pair Postulate

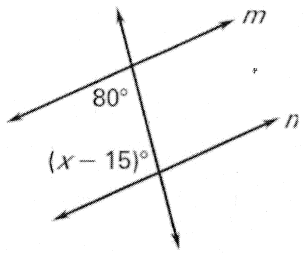
Alternate Interior Angles Theorem
Consecutive Interior Angles Theorem

Alternate Exterior Angles Theorem
Corresponding Angles Postulate

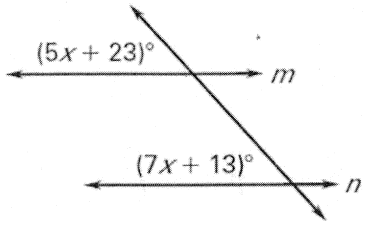
Alternate Interior Angles **Converse** Theorem
Consecutive Interior Angles **Converse** Theorem

Alternate Exterior Angles **Converse** Theorem
Corresponding Angles **Converse** Postulate

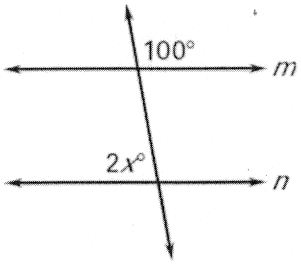
Postulate/Theorem Used

1) 

x = _____ _____

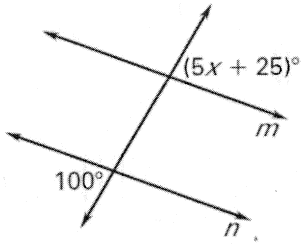
2) 

x = _____ _____

3) 

x = _____ _____

_____

4) 

x = _____ _____

Using the 6 postulates and theorems about angle relationships, the transitive property, AND the 4 converse theorems/postulates we are going to prove lines are parallel

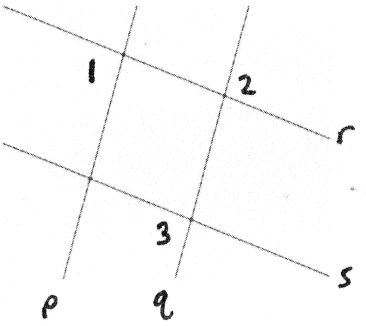
Vertical Angles Congruence Theorem
Alternate Interior Angles Theorem
Consecutive Interior Angles Theorem
Linear Pair Postulate
Alternate Exterior Angles Theorem
Corresponding Angles Postulate

Transitive Property of Congruence

Alternate Interior Angles Converse Theorem
Corresponding Angles Converse Theorem
Alternate Exterior Angles Converse Theorem
Consecutive Interior Angles Converse Theorem

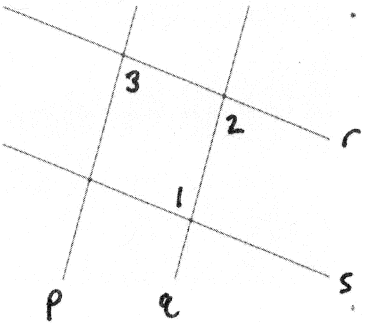
CLASS EXAMPLES:

1) **GIVEN: p||q and $\angle 1 \cong \angle 3$**
PROVE: r||s



Statements	Reasons

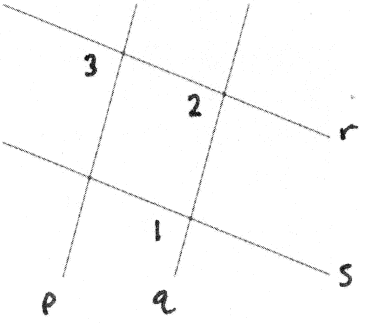
2) **GIVEN: r||s and $\angle 1 \cong \angle 3$**
PROVE: p||q



Statements	Reasons

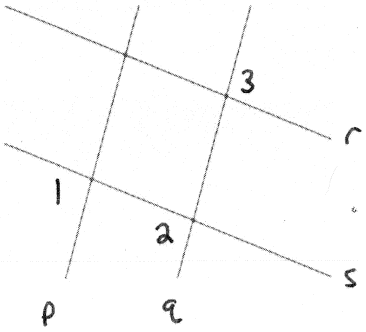
On Your Own:

3) **GIVEN: p||q and $\angle 1 \cong \angle 3$**
PROVE: r||s



Statements	Reasons

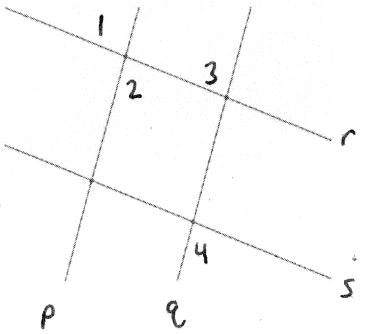
4) **GIVEN: r||s and $\angle 1 \cong \angle 3$**
PROVE: p ||q



Statements	Reasons

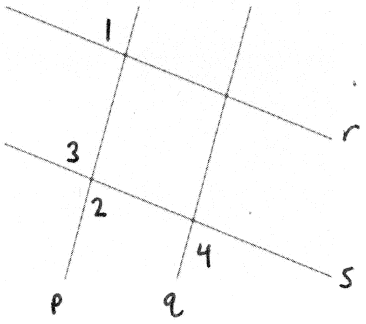
Now I'm going to start adding extra angles – you pick your way to prove!

5) **GIVEN: p||q and $\angle 1 \cong \angle 4$**
PROVE: r ||s



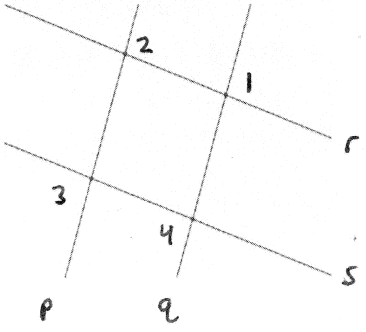
Statements	Reasons

6) **GIVEN: r||s and $\angle 1 \cong \angle 4$**
PROVE: p ||q



Statements	Reasons

7) **GIVEN: r||s and $\angle 1 \cong \angle 3$**
PROVE: p||q



Statements	Reasons