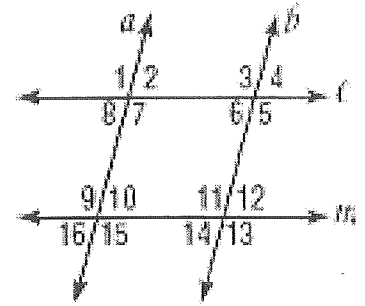


Proving Lines Parallel HW

Given the following information, determine which lines, if any, are parallel. State the postulate or theorem that justifies your answer.



1. $\angle 3 \cong \angle 7$

2. $\angle 9 \cong \angle 11$

3. $\angle 2 \cong \angle 16$

4. $m\angle 5 + m\angle 12 = 180$

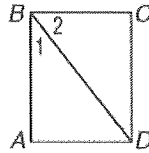
5. **PROOF** Provide a reason for each statement in the proof of Theorem 3.7.

Given: $\angle 1$ and $\angle 2$ are complementary.

$\overline{BC} \perp \overline{CD}$

Prove: $\overline{BA} \parallel \overline{CD}$

Proof:

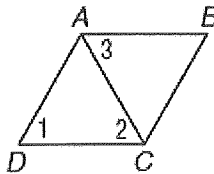


Statements	Reasons
1. $\overline{BC} \perp \overline{CD}$	1.
2. $m\angle ABC = m\angle 1 + m\angle 2$	2.
3. $\angle 1$ and $\angle 2$ are complementary.	3.
4. $m\angle 1 + m\angle 2 = 90$	4.
5. $m\angle ABC = 90$	5.
6. $\overline{BA} \perp \overline{BC}$	6.
7. $\overline{BA} \parallel \overline{CD}$	7.

6. **Given:** $\angle 1 \cong \angle 2, \angle 1 \cong \angle 3$

Prove: $\overline{AB} \parallel \overline{DC}$

(Hint: this is only 3 steps)

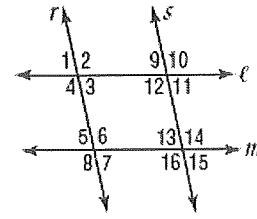


For Exercises 1-6, complete the proof.

7.

Given: $\angle 1 \cong \angle 5$, $\angle 15 \cong \angle 5$

Prove: $\ell \parallel m$, $r \parallel s$

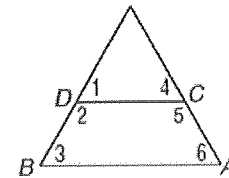


Statements	Reasons
1. $\angle 15 \cong \angle 5$	1. _____
2. $\angle 13 \cong \angle 15$	2. _____
3. $\angle 5 \cong \angle 13$	3. _____
4. $r \parallel s$	4. _____
5. _____	5. Given
6. _____	6. If corr \angle s are \cong , then lines \parallel .

8.

Given: $\angle 2$ and $\angle 3$ are supplementary.

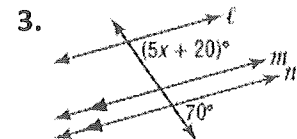
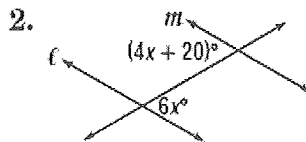
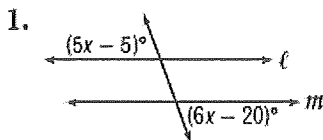
Prove: $\overline{AB} \parallel \overline{CD}$



1. _____	1. _____
2. _____	2. _____
3. $\angle 1 + \angle 2 = 180$	3. _____
4. _____	4. Substitution
5. _____	5. _____
6. _____	6. _____

Review from last unit: Justify THE SET UP!! Then solve for x.

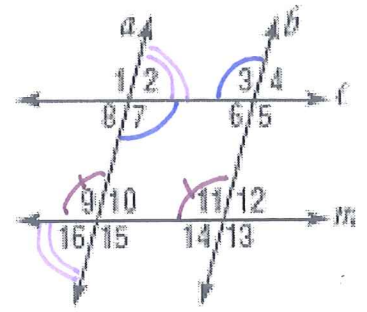
Find x so that $\ell \parallel m$.



Name: Key

Proving Lines Parallel HW

Given the following information, determine which lines, if any, are parallel. State the postulate or theorem that justifies your answer.



1. $\angle 3 \cong \angle 7$

\cong alt int \angle s
form // lines

2. $\angle 9 \cong \angle 11$

\cong corr. \angle s
form // lines

3. $\angle 2 \cong \angle 16$

\cong alt. ext \angle s
form // lines.

4. $m\angle 5 + m\angle 12 = 180$

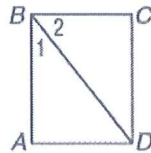
Suppl. con. int \angle s
form // lines.

5. **PROOF** Provide a reason for each statement in the proof of Theorem 3.7.

Given: $\angle 1$ and $\angle 2$ are complementary.

$\overline{BC} \perp \overline{CD}$

Prove: $\overline{BA} \parallel \overline{CD}$



Proof:

Statements

Reasons

1. $\overline{BC} \perp \overline{CD}$

1. Given

2. $m\angle ABC = m\angle 1 + m\angle 2$

2. \angle Addition

3. $\angle 1$ and $\angle 2$ are complementary.

3. Given

4. $m\angle 1 + m\angle 2 = 90$

4. def of compl.

5. $m\angle ABC = 90$

5. Substitution

6. $\overline{BA} \perp \overline{BC}$

6. def of \perp

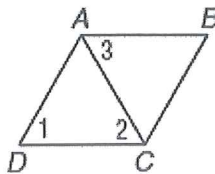
7. $\overline{BA} \parallel \overline{CD}$

7. lines \perp to the same line are //

6. Given: $\angle 1 \cong \angle 2, \angle 1 \cong \angle 3$

Prove: $\overline{AB} \parallel \overline{DC}$

(Hint: this is only 3 steps)



1. $\angle 1 \cong \angle 2, \angle 1 \cong \angle 3$

1. Given

2. $\angle 2 \cong \angle 3$

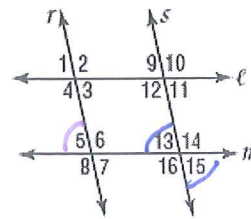
2. Substitution

3. $\overline{AB} \parallel \overline{DC}$

3. \cong alt int. \angle s form // lines

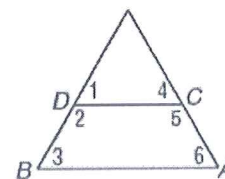
For Exercises 1-6, complete the proof.

7. Given: $\angle 1 \cong \angle 5$, $\angle 15 \cong \angle 5$
 Prove: $\ell \parallel m$, $r \parallel s$



Statements	Reasons
1. $\angle 15 \cong \angle 5$	1. <u>Given</u>
2. $\angle 13 \cong \angle 15$	2. <u>Vertical \angles are \cong</u>
3. $\angle 5 \cong \angle 13$	3. _____
4. $r \parallel s$	4. <u>\cong corr \angles form \parallel lines.</u>
5. $\angle 1 \cong \angle 5$	5. Given
6. $\ell \parallel m$	6. If corr \angle s are \cong , then lines \parallel .

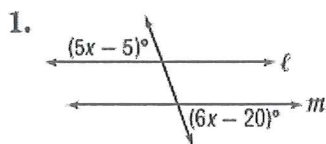
8. Given: $\angle 2$ and $\angle 3$ are supplementary.
 Prove: $\overline{AB} \parallel \overline{CD}$



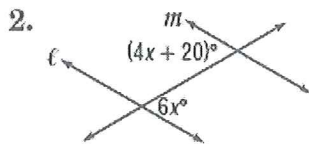
1. <u>$\angle 2$ and $\angle 3$ are ^{Suppl.} supplementary</u>	1. <u>Given</u>
2. <u>$\angle 2 + \angle 3 = 180^\circ$</u>	2. <u>def of Suppl.</u>
3. <u>$\angle 1 + \angle 2 = 180^\circ$</u>	3. <u>linear pairs are suppl.</u>
4. <u>$\angle 2 + \angle 3 = \angle 1 + \angle 2$</u>	4. Substitution
5. <u>$\angle 3 \cong \angle 1$</u>	5. <u>subtraction</u>
6. <u>$AB \parallel CD$</u>	6. <u>\cong corr. \angles form \parallel lines.</u>

Review from last unit: Justify THE SET UP!! Then solve for x.

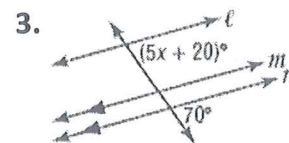
Find x so that $\ell \parallel m$.



$$\begin{aligned}
 5x - 5 &= 6x - 20 && \cong \text{ alt ext. } \\
 -5 &= 1x - 20 && \angle \text{s form } \parallel \\
 +20 &+20 && \text{ lines.} \\
 \boxed{15} &= x
 \end{aligned}$$



$$\begin{aligned}
 4x + 20 &= 6x \\
 20 &= 2x \\
 \boxed{10} &= x
 \end{aligned}$$



\cong alt int \angle s form \parallel lines.

$$\begin{aligned}
 5x + 20 &= 70 \\
 -20 &-20 \\
 5x &= 50 \\
 \boxed{x} &= 10
 \end{aligned}$$