

Essential Question How can you prove a mathematical statement?



A proof is a logical argument that uses deductive reasoning to show that a statement is true. You are required to use _____ that are justified with _____ for each step. All proofs start with some _____ information and are complete when the last line is the _____ statement. Many students find proofs _____. You may need to get extra help during _____, the after school help center on _____ and _____ in room _____, or other times to be arranged with your _____ or _____.

1) **Given:** $3b + d = f$ **Prove:** $g = 5b$
 $d = 2b$
 $f = g$



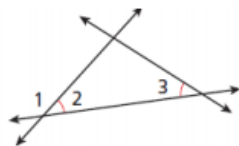
	Statements	Reasons
1		
2		
3		
4		
5		
6		
7		

2) **Given:** $g = 2h$ **Prove:** $m = 3h$
 $g + h = k$
 $k = m$



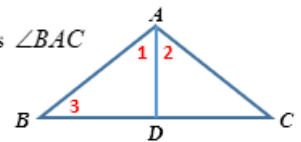
	Statements	Reasons
1		
2		
3		
4		
5		
6		
7		

3) **Given:** $\angle 2 \cong \angle 3$
Prove: $\angle 1$ and $\angle 3$
are supplementary.



	Statements	Reasons
1		
2		
3		
4		
5		
6		

4) **Given:** \overline{AD} bisects $\angle BAC$
 $\angle 1 \cong \angle 3$
Prove: $\angle 2 \cong \angle 3$



	Statements	Reasons
1		
2		
3		
4		
5		
6		

HW #5

The following problems show the first line of a proof. Fill in the second line with a statement and reason that follows logically from the given information. **Draw and label a diagram for each problem in your notebook.** Choose from these statements/reasons to help with 1-10.

$AB = BC$, $\angle ABC \cong \angle CBD$, $m\angle A = 90^\circ$ $\angle A \cong \angle B$, $m\angle 1 + m\angle 2 = 90^\circ$, $BA + AC = BC$ $m\angle ABD + m\angle DBC = m\angle ABC$, $\overline{AD} \cong \overline{DC}$ $\angle A$ and $\angle B$ are supplementary, $\angle 1 \cong \angle 2$		Definition of Congruence, Vertical Angle Theorem, Definition of Bisector, Segment Addition Postulate, Definition of Midpoint, Definition of Supplementary, Definition of Complementary, Definition of Congruence, Definition of Right Angle, Angle Addition Postulate
1.		2.
	Statements	Reasons
1	$\angle 1$ and $\angle 2$ are complementary	given
2		
3.		4.
	Statements	Reasons
1	D is the midpoint of \overline{AC}	given
2		
5.		6.
	Statements	Reasons
1	$m\angle A = m\angle B$	given
2		
7.		8.
	Statements	Reasons
1	$m\angle A + m\angle B = 180^\circ$	given
2		
9.		10.
	Statements	Reasons
1	D is in the interior of $\angle ABC$	given
2		
	Statements	Reasons
1	A is between B and C on \overline{BC}	given
2		

Complete the following proofs in your notebook. Be sure to copy the "Given" and "Prove" statements and show all steps in the two-column format with "Statements" and "Reasons." Neatness counts!!!!

11. Given: $ab = 8a$ $b + d = 20$	Prove: $d = 12$	12. Given: $m + n = p$ $p = 9r$, $m = 5n$	Prove: $3r = 2n$
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Geometric Markings: Add geometric markings to the figure for each statement.

Use the indicated color for marking the diagram:

- | | |
|--|---|
| a) $\angle BEA$ is a right angle (red) | d) $\overline{AE} \cong \overline{EF} \cong \overline{EC}$ (orange) |
| b) $\angle BEG \cong \angle HED$ (blue) | e) $\overline{BE} \cong \overline{ED}$ (pink) |
| c) $\angle AEF \cong \angle FEC$ (green) | |

