

Geometry Unit 3: Proofs

TEST STUDY GUIDE/BREAKDOWN

Identify the Property, Postulate, Theorem...With a diagram - 2 Problems

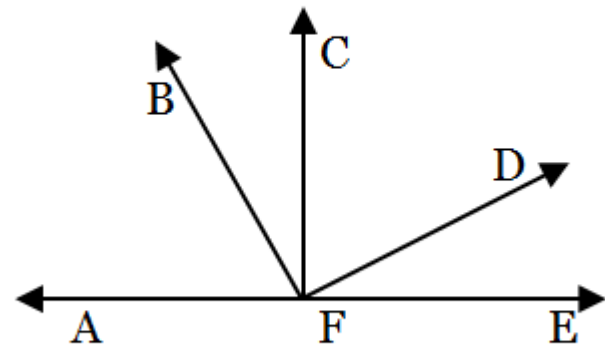
- You will be given a statements, along with a diagram. You must Identify which postulate, property, definition, or theorem is being demonstrated in the statement.
- Examples:

1.) $AF + FE = AE$

Segment Addition Postulate

4.) If F is the midpoint of \overline{AE} , then $AF = \frac{1}{2}AE$

Midpoint Theorem



Identify the Property, Postulate, Theorem... - 10 Problems

- You will be given a statements. You must Identify which postulate, property, definition, or theorem is being demonstrated in the statement.
- Examples:

7.) If $m < A + m < B = 180^\circ$ and $m < C + m < D = 180^\circ$, then $m < A + m < B = m < C + m < D$

Substitution Property

10.) If $MQ = MP + PQ$ and $MP + PQ = RS$, then $MQ = RS$.

Substitution/Transitive Property

Using Theorems – 4 problems

- You will be given an incomplete statement of a theorem. You will need to complete the statement.
- Example:

14.) Angle Bisector Theorem: If \overrightarrow{BD} bisects $\angle ABC$, then...

$$m\angle ABD = \frac{1}{2} \angle ABC \text{ and } m\angle DBC = \frac{1}{2} \angle ABC$$

17.) Theorem 2-5: If two lines form congruent adjacent angles, then...

The lines are perpendicular

Using Definitions – 4 problems

- You will be given an incomplete definition. You will need to complete the definition.

- Examples:

11.) Definition of midpoint: If M is the midpoint of \overline{AB} , then...

$$AM = MB$$

18.) Definition of Perpendicular Lines: Two perpendicular lines intersect...

To form right angles (90°)

Proofs – 5 Total

- You will be given 2 proofs with all of the statements filled in, and you must give the reasons. 2 more proofs will have the reasons filled in, and you must give the statements. And 1 final proof where you must fill in the blank, with a mix of blank statements and reasons.

Proofs – Example 1

Proof 1:

Given: $6x + 5 = 23$

Prove: $x = 3$

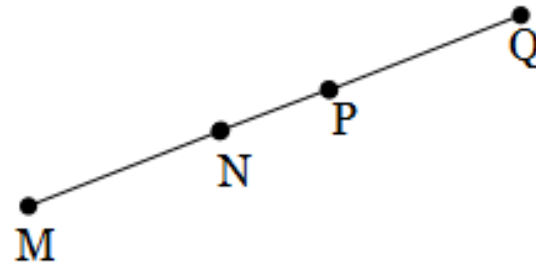
Statement	Reason
1.) $6x + 5 = 23$	1.) Given
2.) $6x = 18$	2.) Subtraction Property
3.) $x = 3$	3.) Division Property

Proofs – Example 2

Proof 3:

Given: $MP = NQ$

Prove: $MN = PQ$



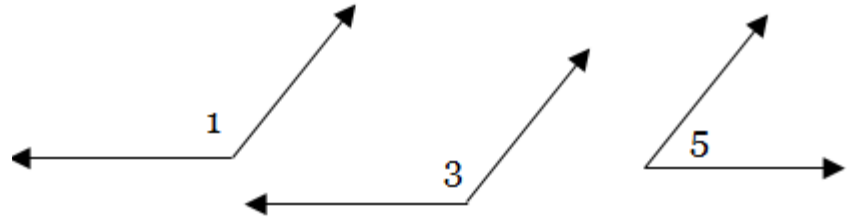
Statement	Reason
1. $MP = NQ$	1. Given
2. $NP = NP$	2. Reflexive
3. $MP = MN + NP$ $NQ = NP + PQ$	3. Segment Addition Postulate
4. $MN + NP = NP + PQ$	4. Substitution Property
5. $MN = PQ$	5. Subtraction Property

Proofs – Example 3

Proof 4:

Given: $\angle 1$ and $\angle 5$ are supplementary;
 $\angle 3$ and $\angle 5$ are supplementary;

Prove: $m\angle 1 = m\angle 3$



Statement	Reason
1. $\angle 1$ and $\angle 5$ are supplementary; $\angle 3$ and $\angle 5$ are supplementary	1. Given
2. $m\angle 1 + m\angle 5 = 180^\circ$ $m\angle 3 + m\angle 5 = 180^\circ$	2. Def. of Supplementary \angle 's
3. $m\angle 1 + m\angle 5 = m\angle 3 + m\angle 5$	3. Substitution Property
4. $m\angle 5 = m\angle 5$	4. Reflexive Property
5. $m\angle 1 = m\angle 3$	5. Subtraction Property