

2.6 – Geometric Proofs

Name the property that justifies each statement.

1.

Statements	Reasons
$5x = 300$	<i>Given</i>
$x = 60$	

2.

Statement	Reason
If $MN = 3$ , then $3 = MN$ .	

3.

Statements	Reasons
$m\angle 2 + 40^\circ = 80^\circ$	<i>Given</i>
$m\angle 2 = 40^\circ$	

4.

Statements	Reasons
$AB = 10$ ; $CD = 10$	<i>Given</i>
$AB = CD$	

5.

Statements	Reasons
$m\angle A = m\angle B$ and $m\angle B = m\angle C$	<i>Given</i>
$m\angle A = m\angle C$	

6.

Statement	Reason
If $5(x - 2) = 20$ , then $5x - 10 = 20$ .	

7.

Statement	Reason
$RG = RG$	

8.

Statements	Reasons
$4x - 8 = 12$	<i>Given</i>
$4x = 20$	
$x = 5$	

9. If  $AB = 6$ , then  $2AB = 12$ .

Statements	Reasons
$2AB = 12$	

10.

Statements	Reasons
$3x - 2 = x - 8$	<i>Given</i>
$2x - 2 = -8$	
$2x = -6$	
$x = -3$	

11.

Statements	Reasons
$\frac{x}{3} + 4 = 1$	<i>Given</i>
$\frac{x}{3} = -3$	
$x = -9$	

12. If  $KN + NT = KT$  and  $NT = 2$ , then  $KN + 2 = KT$ .

Statements	Reasons
$KN + NT = KT$	

13. Given:  $A$  is the midpoint of  $\overline{KN}$   
 Prove:  $\overline{KA} \cong \overline{AN}$

Statements	Reasons

14. Given:  $\angle A$  is a right angle  
 Prove:  $m\angle A = 90^\circ$

Statements	Reasons

15. Given:  $AB = CD$  and  $CD = EF$   
 Prove: \_\_\_\_\_

Statements	Reasons
$AB = EF$	

16. Given:  $m\angle 1 = m\angle 2$   
 Prove:  $m\angle 1 + m\angle 3 = m\angle 2 + m\angle 3$

Statements	Reasons
$m\angle 3 = m\angle 3$	

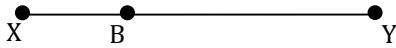
17. Given:  $AB = BC$   
 Prove:  $BC = AB$

Statements	Reasons

18. Given:  $AB = CD$  and  $EF = GH$   
 Prove:  $AB + EF = CD + GH$

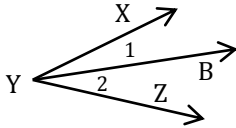
Statements	Reasons

19. Given: B is between X and Y  
 Prove:  $XB + BY = XY$



Statements	Reasons

20. Given: B is in the interior of  $\angle XYZ$   
 Prove:  $m\angle 1 + m\angle 2 = m\angle XYZ$

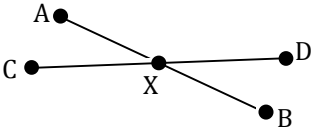


Statements	Reasons

21. Given:  $m\angle GHI = 115^\circ$   
 Prove:  $\angle GHI$  is an obtuse  $\angle$

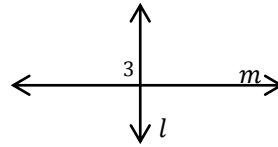
Statements	Reasons

22. Given:  $\overline{AB}$  bisects  $\overline{CD}$  at X  
 Prove:  $\overline{CX} \cong \overline{XD}$



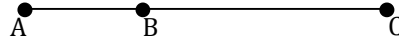
Statements	Reasons
X is the midpoint of $\overline{CD}$	

23.



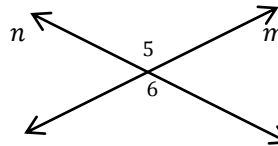
Statements	Reasons
$l \perp m$	Given
$\angle 3$ is a right $\angle$	

24.



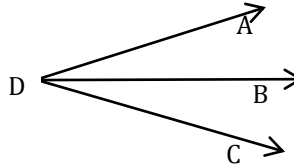
Statements	Reasons
B lies between A and C	Given
$AB + BC = AC$	

25.



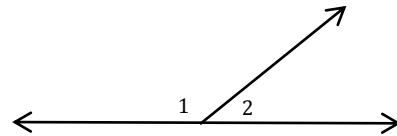
Statements	Reasons
Lines m and n intersect	Given
$\angle 5 \cong \angle 6$	

26.



Statements	Reasons
$\overline{DB}$ bisects $\angle ADC$	Given
$\angle ADB \cong \angle BDC$	

27.



Statements	Reasons
$\angle 1$ and $\angle 2$ are supplementary	Given
$m\angle 1 + m\angle 2 = 180^\circ$	