

1. Which of the following *cannot* be used a reason in a proof?
 A. Postulates **B. Conjectures** C. Definitions D. Properties

2. What is typically the first statement in a proof?

the "given" statement

3. What is always the last statement in a proof?

the "prove" statement

4. Solve the equation and give an appropriate reason to justify each step. (You may not need all the lines provided.)

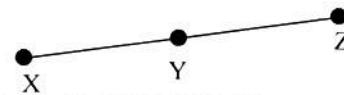
$7x + \frac{1}{3}(2x + 7) = 102$	Given
$7x + \frac{2}{3}x + \frac{7}{3} = 102$	Distribute
$21x + 2x + 7 = 306$	Mult.
$23x + 7 = 306$	Simplify
$23x = 299$	Subtr.
$x = 13$	Div

5. Explain why the reason in line two is incorrect. What would be a better reason?

1. $3x + 2 + 2x = 7$	1. Given
2. $5x + 2 = 7$	2. Addition Property of Equality
3. $5x = 5$	3. Subtraction Property of Equality
4. $x = 1$	4. Division Property of Equality

- Add. Prop. add to BOTH sides of the equation
- 2. Simplify

6. Explain why the reason in line two is incorrect. What would be a better reason?



1. $XY = YZ$	1. Given
2. $XZ = XY + YZ$	2. Addition Property of Equality
3. $XZ = XY + XY$	3. Substitution
4. $XZ = 2(XY)$	4. Simplify

- step 2 shows "the sum of the parts equals the whole."
- 2. Segment Add. Postulate

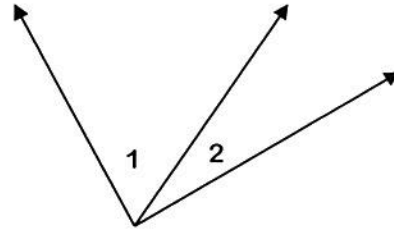
Supply the missing statements and reasons in the following proofs.

7. **Given:** $MN+NO=27$
 $NO=18$
Prove: $MN=9$



Statements	Reasons
1. $MN+NO=27$	1. Given
2. $NO=18$	2. Given
3. $MN+18=27$	3. Substitution (of steps 1 and 2)
4. $MN=9$	4. Subtraction

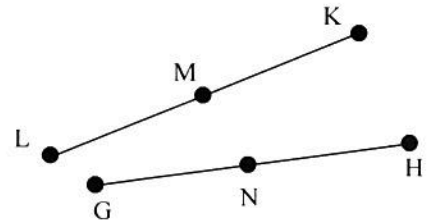
8. **Given:** $m\angle 1+m\angle 2=85^\circ$
 $m\angle 1=4\cdot m\angle 2$
Prove: $m\angle 2=17^\circ$



Statements	Reasons
1. $m\angle 1+m\angle 2=85^\circ$	1. Given
2. $m\angle 1=4\cdot m\angle 2$	2. Given
3. $4\cdot m\angle 2 + m\angle 2 = 85^\circ$	3. Substitution (of steps 1 and 2)
4. $5\cdot m\angle 2 = 85^\circ$	4. Simplify (combine like terms)
5. $m\angle 2 = 17^\circ$	5. Division

9. a. Using the diagram to the right, suppose that M and N are the midpoints of \overline{LK} and \overline{GH} , respectively. Which segments are congruent?

$$\overline{LM} \cong \overline{MK} \quad \overline{GN} \cong \overline{NH}$$



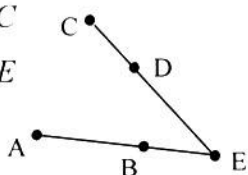
- b. What additional information about the figure would enable you to deduce that $LM = NH$?

You must know $\overline{LK} \cong \overline{GH}$

11. Read the two proofs written below. Both are valid methods for proving the statement.
Which method do you prefer and why?

Given: $AB = ED$
 $BE = DC$

Prove: $AE = CE$



Method #1

1. $AB = ED$ $BE = DC$	1. Given
2. $AB + BE = ED + DC$	2. Add.
3. $AE = AB + BE$ $EC = ED + DC$	3. Seg. Add. Post.
4. $AE = CE$	4. Subst.

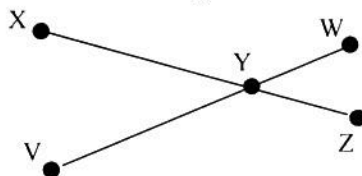
Method #2

1. $AB = ED$ $BE = DC$	1. Given
2. $AE = AB + BE$	2. Seg. Add. Post.
3. $AE = ED + DC$	3. Subst.
4. $EC = ED + DC$	4. Seg. Add. Post.
5. $AE = CE$	5. Subst.

12. Use #11 as a model to write a proof based on the information given below.

Given: $VY = XY$
 $YW = YZ$

Prove: $VW = XZ$



Statements	Reasons
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

Name the postulate or property of equality illustrated by each of the following:

13. Mult. $\frac{1}{3}(x+2)=10$, so $x+2=30$.
14. Reflexive $XY=XY$.
15. Symmetric If $m\angle A=m\angle C$, then $m\angle C=m\angle A$.
16. Add. $x-8=20$, so $x=28$.
17. Div. If $25x=100$, then $x=4$.
18. Transitive $EG=FG$ and $FG=HG$, so $EG=HG$.
19. Subst. If $x=2y$ and $x+3y=20$, then $2y+3y=20$.
20. Reflexive $m\angle 1=m\angle 1$.
21. Ang. Add. Post. $m\angle \overset{ACB}{ABC} + m\angle BCD = m\angle ACD$. (Hint: Draw a diagram)
22. Transitive If $m=23$ and $n=23$, then $m=n$.
23. Symmetric $x=3$, so $3=x$.
24. Reflexive Every number equals itself.
25. Seg/Ang Add. Post. The sum of the parts must equal the whole.
26. Subst. The act of replacing a variable with an equivalent variable
27. Transitive Two variables that are equal to the same number must equal each other.

