

Reminder { Same side = simplify / combine like terms  
 Both sides = Prop. of Equality (+, -, x, ÷)  
Guided Practice:

Part A- Identify the property that justifies each statement.

- $AB = AB$
- If  $m\angle 1 = m\angle 2$  and  $m\angle 2 = m\angle 4$ , then  $m\angle 1 = m\angle 4$
- If  $x = y$ , then  $y = x$ .
- If  $ST = YZ$ , and  $YZ = PR$ , then  $ST = PR$
- If  $KL = PR$ , then  $KL - AB = PR - AB$
- $412 = 412$
- If  $b = a$  and  $b = 0$ , then  $a = 0$
- Figure A = Figure A
- If  $m\angle DEF = m\angle ABC$ , then  $m\angle DEF + m\angle GHI = m\angle ABC + m\angle GHI$
- If  $x = y$ , then  $\frac{x}{3} = \frac{y}{3}$
- If  $AB = CD$ , then  $CD = AB$
- If  $\frac{x}{2} = 7$ , then  $x = 14$
- If  $x = 5$  and  $b = 5$ , then  $x = b$
- If  $XY - AB = WZ - AB$ , then  $XY = WZ$
- If  $m\angle A = m\angle B$ , and  $m\angle B = m\angle C$ , then  $m\angle A = m\angle C$

Reflexive  
Transitive  
Symmetric  
Transitive  
Subtraction Prop.  
Reflexive  
Transitive  
Reflexive  
Addition Prop.  
Division Prop.  
Symmetric  
Multiplication  
Transitive  
Subtraction Prop.  
Transitive

Part B- Use the property to complete the statement.

- Reflexive Property: SE = SE
- Symmetric Property: If  $m\angle JKL = m\angle RST$ , then  $m\angle RST = m\angle JKL$
- Transitive Property:  $m\angle F = m\angle J$  and  $m\angle J = m\angle L$ , then  $m\angle F = m\angle L$
- Addition Property: If  $RS = TU$ , then  $RS + 20 =$   $TU + 20$
- Multiplication Property: If  $m\angle 1 = m\angle 2$  then  $3(m\angle 1) =$   $3(m\angle 2)$
- Substitution Property: If  $a = 20$ , then  $5a =$   $5(20)$

Part C- Complete the two-column proofs below using the appropriate properties.

22. Given:  $x = \frac{1}{7}y - 9$

Prove:  $y = 7x + 63$

	Statement	Reason
1.	$x = \frac{1}{7}y - 9$	1. given
2.	$x + 9 = \frac{1}{7}y$	2. Addition Prop.
3.	$7(x + 9) = y$	3. Mult. Prop.
4.	$7x + 63 = y$	4. Distributive Prop.
5.	$y = 7x + 63$	5. Symmetric

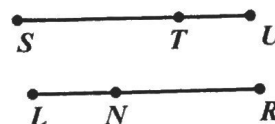
23. Given:  $5(x - 3) = 4(x + 2)$

Prove:  $x = 23$

	Statement	Reason
1.	$5(x - 3) = 4(x + 2)$	1. Given
2.	$5x - 15 = 4x + 8$	2. Distribute Prop.
3.	$x - 15 = 8$	3. Subtraction Prop.
4.	$x = 23$	4. Add. Prop.

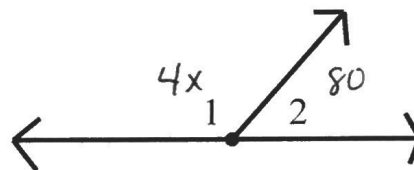
24. Given:  $\overline{SU} \cong \overline{LR}$ ,  $\overline{TU} \cong \overline{LN}$

Prove:  $\overline{ST} \cong \overline{NR}$



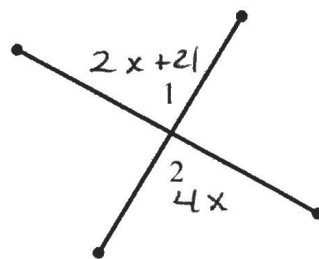
Statements	Reasons
1. $\overline{SU} \cong \overline{LR}$ , $\overline{TU} \cong \overline{LN}$	1. Given
2. $SU = LR$ , $TU = LN$	2. Definition of Congruent Segments
3. $ST + TU = SU$ ; $LN + NR = LR$	3. Segment Addition Postulate
4. $ST + TU = LR$ , $TU + NR = LR$	4. Substitution Property
5. $ST + TU = TU + NR$	5. Substitution Property
6. $ST = NR$	6. Subtraction Prop. of Equality
7. $\overline{ST} \cong \overline{NR}$	7. Def. of Congruence

25. Given:  $\angle 1$  and  $\angle 2$  are supplementary,  $m\angle 1 = 4x$ ,  $m\angle 2 = 80^\circ$   
 Prove:  $m\angle 1 = 100^\circ$



Statements	Reasons
1. $\angle 1$ and $\angle 2$ are supplementary $m\angle 1 = 4x$ and $m\angle 2 = 80$	1. Given
2. $m\angle 1 + m\angle 2 = 180$	2. Def. of Supplementary
3. $4x + 80 = 180$	3. Substitution
4. $4x = 100$	4. Subtraction Prop.
5. $x = 25$	5. Division Prop.
6. $m\angle 1 = 4(25)$	6. Substitution
7. $m\angle 1 = 100^\circ$	7. Simplify

26. Given:  $\angle 1$  and  $\angle 2$  are vertical angles,  $m\angle 1 = 2x + 21$ ,  $m\angle 2 = 4x$   
 Prove:  $x = 10.5$



	Statements	Reasons
1.	$\angle 1$ and $\angle 2$ are vertical $\angle$ 's $m\angle 1 = 2x + 21$ , $m\angle 2 = 4x$	1. Given
2.	$\angle 1 \cong \angle 2$	2. Def. of Vertical $\angle$ 's
3.	$m\angle 1 = m\angle 2$	3. Def. of Congruence
4.	$2x + 21 = 4x$	4. Substitution
5.	$21 = 2x$	5. Subtraction Prop.
6.	$10.5 = x$	6. Division Prop.
7.	$x = 10.5$	7. Symmetric Prop.