
Supplementary and Complementary Angle Problems

Remember the rules:

Supplement1 + Supplement2 = 180°

Complement1 + Complement2 = 90°

Each Step of Math	What I did/knew to get to that step of Math
<p>Problem #1: Explaining the Math $\angle 1$ & $\angle 7$ are supplementary angles. $m\angle 1 = (3x + 13)^\circ$ & $m\angle 7 = (6x + 23)^\circ$ $m\angle 1 = ?$</p>	
1. $\angle 1$ & $\angle 7$ are supplementary angles. $m\angle 1 = (3x + 13)^\circ$ & $m\angle 7 = 6x + 23^\circ$	1. _____
2. $m\angle 1 + m\angle 7 = 180$	2. _____
3. $3x + 13 + 6x + 23 = 180$	3. _____
4. $9x + 36 = 180$	4. _____
5. $9x = 144$	5. _____
6. $x = 16$	6. _____
7. $m\angle 1 = 3(16) + 13$	7. _____
8. $m\angle 1 = 61^\circ$	8. _____
<p>Problem #2: Following instructions to write the Math $\angle 5$ & $\angle 9$ are complementary angles. $m\angle 5 = (7x + 3)^\circ$ & $m\angle 9 = (4x + 10)^\circ$ $m\angle 9 = ?$</p>	
1.	1. Copied <u>all</u> of the information from the problem
2.	2. They're complementary. comp1 + comp2 = 90°
3.	3. Plugged in the measures for $m\angle$'s
4.	4. Combined like terms on one side
5.	5. Subtracted 13 from both sides
6.	6. Divided both sides by 11
7.	7. Plugged $x = 7$ into $m\angle 9$
8.	8. Solved that side to see what it equals

Justifying Work Part 2

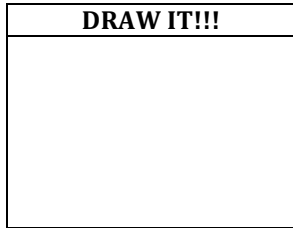
Segment and Angle Addition Problems

Remember the rule:

part1 + part2 = whole

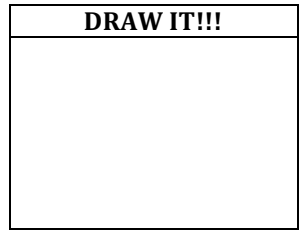
Problem #3: Explaining the Math

\overline{BC} goes through $\angle ABD$. $m\angle ABC = (5x + 7)^\circ$,
 $m\angle ABD = (11x + 20)^\circ$ & $m\angle CBD = (8x - 5)^\circ$
 $m\angle ABC = ?$



Problem #4: Following instructions to write the Math

L is between K and M . $KM = 16x + 4$, $KL = 5x + 9$
 & $LM = 6x$
 $KM = ?$



Each Step of Math

What I did/knew to get to that step of Math

1. \overline{BC} goes through $\angle ABD$. $m\angle ABC = (5x + 7)^\circ$, $m\angle ABD = (11x + 20)^\circ$ & $m\angle CBD = (8x - 5)^\circ$	1. _____
2. $m\angle ABC + m\angle CBD = m\angle ABD$	2. _____
3. $5x + 7 + 8x - 5 = 11x + 20$	3. _____
4. $13x + 2 = 11x + 20$	4. _____
5. $2x + 2 = 20$	5. _____
6. $2x = 18$	6. _____
7. $x = 9$	7. _____
8. $m\angle ABC = 5(9) + 7$	8. _____
9. $m\angle ABC = 52^\circ$	9. _____

Each Step of Math

What I did/knew to get to that step of Math

1. _____	1. Copied <u>all</u> of the information from the problem
2. _____	2. It's Segment Addition. part1 + part2 = whole
3. _____	3. Plugged in KL , LM , & KM
4. _____	4. Combined like terms on one side
5. _____	5. Subtracted $11x$ from both sides
6. _____	6. Subtracted 4 from both sides
7. _____	7. Divided both sides by 5
8. _____	8. Switched the sides of the equation
9. _____	9. Plugged x into KM
10. _____	10. Solved one side to get KM

Justifying Work Part 2

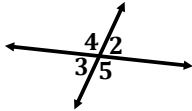
Angle Pair Problems

Remember the rules:

Linear Angle1 + Linear Angle2 = 180°

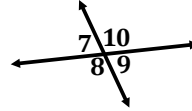
Vertical Angle 1 ≅ Vertical Angle 2

Problem #5: Explaining the Math



$m\angle 3 = (9x + 16)^\circ$ & $m\angle 5 = (11x + 24)^\circ$
 $m\angle 5 = ?$

Problem #6: Following instructions to write the Math



$m\angle 7 = (8x - 15)^\circ$ & $m\angle 9 = (7x - 3)^\circ$
 $m\angle 7 = ?$

Each Step of Math	What I did/knew to get to that step of Math	Each Step of Math	What I did/knew to get to that step of Math
1. $\angle 3$ & $\angle 5$ are a linear pair. $m\angle 3 = (9x + 16)^\circ$ & $m\angle 5 = (11x + 24)^\circ$	1. _____	1.	1. Copied <u>all</u> of the information from the problem (angle type and measures)
2. $m\angle 3 + m\angle 5 = 180$	2. _____	2.	2. Vertical angles are \cong (numerical order)
3. $9x + 16 + 11x + 24 = 180$	3. _____	3.	3. Congruent angles are equal angles
4. $20x + 40 = 180$	4. _____	4.	4. Plugged in $m\angle 7$ & $m\angle 9$
5. $20x = 140$	5. _____	5.	5. Subtracted $7x$ from both sides
6. $x = 7$	6. _____	6.	6. Added 15 to both sides
7. $m\angle 5 = 11(7) + 24$	7. _____	7.	7. Plugged x into $m\angle 7$
8. $m\angle 3 = 101^\circ$	8. _____	8.	8. Solved one side for $m\angle 7$

Justifying Work Part 2

Midpoint and Bisector Problems

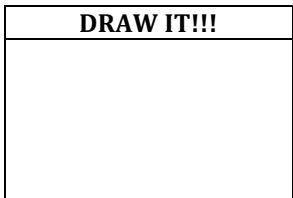
Remember the rules:

$\text{part1} \cong \text{part2}$

$2(\text{part}) = \text{whole}$

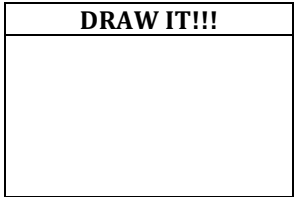
Problem #7: Explaining the Math

\overline{FG} bisects $\angle EFH$. $m\angle EFG = (6x + 12)^\circ$,
 $\& m\angle EFH = (15x + 18)^\circ$
 $m\angle GFH = ?$



Problem #8: Following instructions to write the Math

S is the midpoint of \overline{RT} . $RS = 7x + 10$, $\& ST = 5x + 18$
 $RT = ?$



Each Step of Math	What I did/knew to get to that step of Math
1. \overline{FG} bisects $\angle EFH$. $m\angle EFG = (6x + 12)^\circ$, & $m\angle EFH = (15x + 18)^\circ$	1. _____
2. $2(m\angle EFG) = m\angle EFH$	2. _____
3. $2(6x + 12) = 15x + 18$	3. _____
4. $12x + 24 = 15x + 18$	4. _____
5. $24 = 3x + 18$	5. _____
6. $6 = 3x$	6. _____
7. $2 = x$	7. _____
8. $x = 2$	8. _____
9. $\angle GFH \cong \angle EFG$	9. _____
10. $m\angle GFH = m\angle EFG$	10. _____
11. $m\angle GFH = 6x + 12$	11. _____
12. $m\angle GFH = 6(2) + 12$	12. _____
13. $m\angle GFH = 24^\circ$	13. _____

Each Step of Math	What I did/knew to get to that step of Math
1. _____	1. Copied <u>all</u> of the information from the problem
2. _____	2. Midpoint means part1 \cong part2 (ABC order)
3. _____	3. Congruent segments are equal segments
4. _____	4. Plugged in RS and ST
5. _____	5. Subtract $5x$ from both sides
6. _____	6. Subtract 10 from both sides
7. _____	7. Divide both sides by 2
8. _____	8. Midpoint means $2(\text{part}) = \text{whole}$ (use RS)
9. _____	9. Plugged in $RS = 7x + 10$
10. _____	10. Distribute the 2
11. _____	11. Plug in x
12. _____	12. Solve that side of the equation
13. _____	13. Switch the sides of the equation, so RT is on the left

Justifying Work Part 2

Name: _____ Per: _____