

Practice 2.2: Introduction To Proofs

Support each conclusion with a valid reason.

1. Given: $x - 42 = 12$

Conclusion: $x = 54$

Addition Property

2. Given: $23(2 + x) = 230$

Conclusion: $2 + x = 10$

Division Property

3. Given: $3x - 7x = 20$

Conclusion: $-4x = 20^\circ$

Combine Like terms

4. Given: $-x = 34$

Conclusion: $x = -34$

Multiplication/Division Property

5. If $12 = d$ and $d = x$,

then $12 = x$.

Transitive/Substitution Property

6. $\overline{GH} \cong \overline{GH}$

Reflexive Property

Fill in the missing statements or reasons for the following two-column proof.

Given: $4x - 20 = 100$ Prove: $x = 30$

Statement	Reason
1. $4x - 20 = 100$	1. Given
2. $4x = 120$	2. Addition Property
3. $x = 30$	3. Division Property

Given: $12 - x = 10$ Prove: $x = 2$

Statement	Reason
1. $12 - x = 10$	1. Given
2. $-x = -2$	2. Subtraction Property
3. $x = 2$	3. Division Property

Given: $5x + 20 = 20 - 2x$ Prove: $x = 0$

Statement	Reason
1. $5x + 20 = 20 - 2x$	1. Given
2. $5x = -2x$	2. Subtraction Property
3. $7x = 0$	3. Addition Property
4. $x = 0$	4. Division Property

Given: $12 - x = 10$ Prove: $x = 2$

Statement	Reason
1. $12 - x = 10$	1. Given
2. $12 = 10 + x$	2. Addition Property
3. $2 = x$	3. Subtraction Property
4. $x = 2$	4. Symmetric Property

Given: $10 - 3(4x - 2) + 1 = 77$ Prove: $x = -5$

Statement	Reason
1. $10 - 3(4x - 2) + 1 = 77$	1. Given
2. $-3(4x - 2) + 1 = 67$	2. Subtraction Property
3. $-3(4x - 2) = 66$	3. Subtraction Property
4. $-12x + 6 = 66$	4. Distributive Property
5. $-12x = 60$	5. Subtraction Property
6.	6. Division Property