Name: _____ Hour: _____

6.1 A Algebraic Proofs

Give the reason for each statement in the following two-column proof.

1. Given: $3x+6=7x-2$
   Prove: $x=2$

Statements	Reasons
1. $3x+6=7x-2$	1. _____
2. $6=4x-2$	2. _____
3. $8=4x$	3. _____
4. $2=x$	4. _____
5. $x=2$	5. _____

2. Given: $2-6x+4=3x-14+x$
   Prove: $x=2$

Statements	Reasons
1. $2-6x+4=3x-14+x$	1. _____
2. $6-6x=3x-14+x$	2. _____
3. $6-6x=4x-14$	3. _____
4. $6=10x-14$	4. _____
5. $20=10x$	5. _____
6. $2=x$	6. _____
7. $x=2$	7. _____

3. Given: $\frac{1}{4}x+7y=10-y$

Prove: $x=40-32y$

Statements	Reasons
1. $\frac{1}{4}x+7y=10-y$	1. _____
2. $\frac{1}{4}x+7y-7y=10-y-7y$	2. _____
3. $\frac{1}{4}x=10-8y$	3. _____
4. $4\left(\frac{1}{4}x\right)=4(10-8y)$	4. _____
5. $x=4(10-8y)$	5. _____
6. $x=40-32y$	6. _____

4. Given: $\begin{cases} a=2 \\ -(-2a+3b)=6 \end{cases}$

Prove: $b=-\frac{2}{3}$

Statements	Reasons
1. $-(-2a+3b)=6$	1. _____
2. $-2a+3b=-6$	2. _____
3. $3b=2a-6$	3. _____
4. $b=\frac{2}{3}a-2$	4. _____
5. $a=2$	5. _____
6. $b=\frac{4}{3}-2$	6. _____
7. $b=-\frac{2}{3}$	7. _____

5. Given: $5(n-3)=4(2n-7)-14$

Prove: $n=9$

Statements	Reasons
1. $5(n-3)=4(2n-7)-14$	1. _____
2. $5n-15=8n-28-14$	2. _____
3. $5n-15=8n-42$	3. _____
4. $5n-15+15=8n-42+15$	4. _____
5. $5n=8n-27$	5. _____
6. $5n-8n=8n-27-8n$	6. _____
7. $-3n=-27$	7. _____
8. $\frac{-3n}{-3}=\frac{-27}{-3}$	8. _____
9. n=9	9. _____

6. Given: $4-7x=2x-23$

Prove: $x=3$

Statements	Reasons

7. Given: $\frac{1}{2}x+6y=8-3y$

Prove: $x=16-18y$

Statements	Reasons

8. Given: $3-2x+12=4x-7-2x$

Prove: $\frac{11}{2}=x$

Statements	Reasons

9. Given: $\begin{cases} a = -3 \\ 2b + a + 1 = 5 \end{cases}$

Prove: $b = \frac{7}{2}$

Statements	Reasons

10. Given: $-(n-5) = 2(3n-8) - 7$

Prove: $n = 4$

Statements	Reasons