

NAME _____

DATE _____

PER. _____

ALGEBRAIC PROOFS

Write a two-column proof for each of the following.

| 1. If $CD = AB$ and $AB = 8$, then $CD = 8$. | <table border="1"> <thead> <tr> <th>Statements</th> <th>Reasons</th> </tr> </thead> <tbody> <tr> <td>1. $CD = AB$</td> <td>1.</td> </tr> <tr> <td>2.</td> <td>2. Given</td> </tr> <tr> <td>3. $CD = 8$</td> <td>3.</td> </tr> </tbody> </table> | Statements | Reasons | 1. $CD = AB$ | 1. | 2. | 2. Given | 3. $CD = 8$ | 3. | | |
|---|--|------------|---------|--------------------|----------|----------------------------------|--------------------------|------------------|----|------------|----|
| Statements | Reasons | | | | | | | | | | |
| 1. $CD = AB$ | 1. | | | | | | | | | | |
| 2. | 2. Given | | | | | | | | | | |
| 3. $CD = 8$ | 3. | | | | | | | | | | |
| 2. If $\angle ABC$, then $\angle ABC \cong \angle ABC$. | <table border="1"> <thead> <tr> <th>Statements</th> <th>Reasons</th> </tr> </thead> <tbody> <tr> <td>1. $\angle ABC$</td> <td>1.</td> </tr> <tr> <td>2. $\angle ABC \cong \angle ABC$</td> <td>2.</td> </tr> </tbody> </table> | Statements | Reasons | 1. $\angle ABC$ | 1. | 2. $\angle ABC \cong \angle ABC$ | 2. | | | | |
| Statements | Reasons | | | | | | | | | | |
| 1. $\angle ABC$ | 1. | | | | | | | | | | |
| 2. $\angle ABC \cong \angle ABC$ | 2. | | | | | | | | | | |
| 3. If $2x + y = 13$ and $y = 7$, then $2x + 7 = 13$. | <table border="1"> <thead> <tr> <th>Statements</th> <th>Reasons</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>1. Given</td> </tr> <tr> <td>2. $y = 7$</td> <td>2.</td> </tr> <tr> <td>3. $2x + 7 = 13$</td> <td>3.</td> </tr> </tbody> </table> | Statements | Reasons | 1. | 1. Given | 2. $y = 7$ | 2. | 3. $2x + 7 = 13$ | 3. | | |
| Statements | Reasons | | | | | | | | | | |
| 1. | 1. Given | | | | | | | | | | |
| 2. $y = 7$ | 2. | | | | | | | | | | |
| 3. $2x + 7 = 13$ | 3. | | | | | | | | | | |
| 4. If $AB = CD$, then $CD = AB$. | <table border="1"> <thead> <tr> <th>Statements</th> <th>Reasons</th> </tr> </thead> <tbody> <tr> <td>1. $AB = CD$</td> <td>1.</td> </tr> <tr> <td>2. $CD = AB$</td> <td>2.</td> </tr> </tbody> </table> | Statements | Reasons | 1. $AB = CD$ | 1. | 2. $CD = AB$ | 2. | | | | |
| Statements | Reasons | | | | | | | | | | |
| 1. $AB = CD$ | 1. | | | | | | | | | | |
| 2. $CD = AB$ | 2. | | | | | | | | | | |
| 5. GIVEN: $3(x + 5) = 36$ PROVE: $x = 7$ | <table border="1"> <thead> <tr> <th>Statements</th> <th>Reasons</th> </tr> </thead> <tbody> <tr> <td>1. $3(x + 5) = 36$</td> <td>1.</td> </tr> <tr> <td>2.</td> <td>2. Distributive Property</td> </tr> <tr> <td>3. $3x = 21$</td> <td>3.</td> </tr> <tr> <td>4. $x = 7$</td> <td>4.</td> </tr> </tbody> </table> | Statements | Reasons | 1. $3(x + 5) = 36$ | 1. | 2. | 2. Distributive Property | 3. $3x = 21$ | 3. | 4. $x = 7$ | 4. |
| Statements | Reasons | | | | | | | | | | |
| 1. $3(x + 5) = 36$ | 1. | | | | | | | | | | |
| 2. | 2. Distributive Property | | | | | | | | | | |
| 3. $3x = 21$ | 3. | | | | | | | | | | |
| 4. $x = 7$ | 4. | | | | | | | | | | |

| <p>6. GIVEN: $2(x + 3) = 3x + 1$ PROVE: $x = 5$</p> | <table border="1"> <thead> <tr> <th>Statements</th> <th>Reasons</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>1. Given</td> </tr> <tr> <td>2. $2x + 6 = 3x + 1$</td> <td>2.</td> </tr> <tr> <td>3. $6 = x + 1$</td> <td>3.</td> </tr> <tr> <td>4. $5 = x$</td> <td>4.</td> </tr> <tr> <td>5.</td> <td>5. Symmetric Property</td> </tr> </tbody> </table> | Statements | Reasons | 1. | 1. Given | 2. $2x + 6 = 3x + 1$ | 2. | 3. $6 = x + 1$ | 3. | 4. $5 = x$ | 4. | 5. | 5. Symmetric Property | | |
|---|--|------------|---------|-------------------|----------|----------------------|----------|-------------------|--------------------------|-------------------|----|--------------|-----------------------|------------|----------------------|
| Statements | Reasons | | | | | | | | | | | | | | |
| 1. | 1. Given | | | | | | | | | | | | | | |
| 2. $2x + 6 = 3x + 1$ | 2. | | | | | | | | | | | | | | |
| 3. $6 = x + 1$ | 3. | | | | | | | | | | | | | | |
| 4. $5 = x$ | 4. | | | | | | | | | | | | | | |
| 5. | 5. Symmetric Property | | | | | | | | | | | | | | |
| <p>7. GIVEN: $a(b - 3) = 4$; $a = 4$ PROVE: $b = 4$</p> | <table border="1"> <thead> <tr> <th>Statements</th> <th>Reasons</th> </tr> </thead> <tbody> <tr> <td>1. $a(b - 3) = 4$</td> <td>1.</td> </tr> <tr> <td>2.</td> <td>2. Given</td> </tr> <tr> <td>3. $4(b - 3) = 4$</td> <td>3.</td> </tr> <tr> <td>4. $4b - 12 = 4$</td> <td>4.</td> </tr> <tr> <td>5.</td> <td>5. Addition Property</td> </tr> <tr> <td>6. $b = 4$</td> <td>6.</td> </tr> </tbody> </table> | Statements | Reasons | 1. $a(b - 3) = 4$ | 1. | 2. | 2. Given | 3. $4(b - 3) = 4$ | 3. | 4. $4b - 12 = 4$ | 4. | 5. | 5. Addition Property | 6. $b = 4$ | 6. |
| Statements | Reasons | | | | | | | | | | | | | | |
| 1. $a(b - 3) = 4$ | 1. | | | | | | | | | | | | | | |
| 2. | 2. Given | | | | | | | | | | | | | | |
| 3. $4(b - 3) = 4$ | 3. | | | | | | | | | | | | | | |
| 4. $4b - 12 = 4$ | 4. | | | | | | | | | | | | | | |
| 5. | 5. Addition Property | | | | | | | | | | | | | | |
| 6. $b = 4$ | 6. | | | | | | | | | | | | | | |
| <p>8. GIVEN: $7(a + x) = 49$; $a = 3$ PROVE: $x = 4$</p> | <table border="1"> <thead> <tr> <th>Statements</th> <th>Reasons</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>1. Given</td> </tr> <tr> <td>2. $a = 3$</td> <td>2.</td> </tr> <tr> <td>3.</td> <td>3. Substitution Property</td> </tr> <tr> <td>4. $21 + 7x = 49$</td> <td>4.</td> </tr> <tr> <td>5. $7x = 28$</td> <td>5.</td> </tr> <tr> <td>6.</td> <td>6. Division Property</td> </tr> </tbody> </table> | Statements | Reasons | 1. | 1. Given | 2. $a = 3$ | 2. | 3. | 3. Substitution Property | 4. $21 + 7x = 49$ | 4. | 5. $7x = 28$ | 5. | 6. | 6. Division Property |
| Statements | Reasons | | | | | | | | | | | | | | |
| 1. | 1. Given | | | | | | | | | | | | | | |
| 2. $a = 3$ | 2. | | | | | | | | | | | | | | |
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