Learning Target 12 Guided Notes Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_

Algebraic Proof

algebraic proof -

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| **Properties of Real Numbers** |
| The following properties are true for any real numbers *a*, *b*, and *c*. |
| Addition Property of Equality | If *a* = *b*, then *a* + *c* = *b* + *c*. |
| Subtraction Property of Equality | If *a* = *b*, then *a* – *c* = *b* – *c*.  |
| Multiplication Property of Equality | If *a* = *b*, then *a* ∙ *c* = *b* ∙ *c*. |
| Division Property of Equality | If *a* = *b* and *c* ≠ 0, then $\frac{a}{c} = \frac{b}{c}$. |
| Reflexive Property of Equality | *a* = *a* |
| Symmetric Property of Equality | If *a* = *b*, then *b* = *a*. |
| Transitive Property of Equality | If *a* = *b* and *b* = *c*, then *a* = *c*. |
| Substitution Property of Equality | If *a* = *b*, then *a* may be replaced by *b* in any equation or expression. |
| Distributive Property | *a*(*b* + *c*) = *ab* + *ac*. |

Example 1

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| Statements | Reasons |
| $$-5\left(x+4\right)=70$$ |  |
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Example 2

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| Statements | Reasons |
| $$4x-8=16$$ |  |
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Example 3

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| Statements | Reasons |
| $$6x-2=4x+8$$ |  |
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Example 4

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| Statements | Reasons |
| $$8x-11=2x+1$$ |  |
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