Notes Algebraic Proofs

Name: _____ Date: _____ Period: _____

Learning Target: _____

A proof is an explanation. It is arranged in two columns: statements and reasons. Every statement (step) must have a valid reason (why). The properties of equations that are used in algebra 1 are the reasons used in the proofs

- ◉ reflexive: _____

- ◉ symmetric: _____

- ◉ transitive: _____

- ◉ substitution: _____

- ◉ distributive: _____

- ◉ addition/subtraction: _____

- ◉ multiplication/division: _____

Select which property is represents below

1. $8(x + 3) = 8x + 24$ _____

2. If $y = 7$ then $4y = 28$ _____

3. If $z = 3$ then $3 = z$ _____

4. If $x = 2$ and $y = 2$, then $x = y$_____

5. If $a = 8$ then $a - 5 = 3$ _____

6. If $b = 10$ then $2b = 2 \cdot 10$ _____

7. $AB = AB$ _____

Example 1: If $3x+5=11$ then $x=2$

Example 2: $5x-7=3x+11$ then $x=9$

Statements	Reasons

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Example 3: 5x-7=3(x+1)+8 then x=9

Statements	Reasons

Example 4: 5(x-2)+3=3(x+1)+10-2 then x=9

Statements	Reasons

Example 5: If $56 = 8\left(\dfrac{x}{5}+4\right)$ then x=15.

Statements	Reasons

Example 6: If $16 - x = \dfrac{5x}{2} - 3 + 5$ then x=4.

Statements	Reasons

Example 7: If $24 = 3\left(\dfrac{x}{5}+4\right)$ then x=20.

Statements	Reasons

Show me you know it!

1. What are the two columns we use for proofs?

   _____

2. Do all statements have to be justified? _____

3. What two things can you automatically fill in?

   _____

4. Can you use the same reason more than once in the same proof?