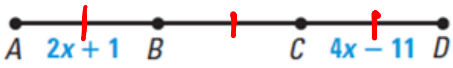
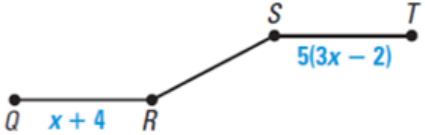
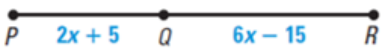


Learning Card # _____	Name: _____
<b>ALGEBRAIC PROPERTIES OF EQUALITY</b>	
<b>ADDITION PROPERTY OF EQUALITY</b>	If $a = b$ , then $a + c = b + c$
<b>SUBTRACTION PROPERTY OF EQUALITY</b>	If $a = b$ , then $a - c = b - c$
<b>MULTIPLICATION PROPERTY OF EQUALITY</b>	If $a = b$ , then $a \cdot c = b \cdot c$
<b>DIVISION PROPERTY OF EQUALITY</b>	If $a = b$ , then $\frac{a}{c} = \frac{b}{c}$
<b>DISTRIBUTIVE PROPERTY OF MULTIPLICATION OVER ADDITION or OVER SUBTRACTION</b>	$a(b + c) = ab + ac$ $a(b - c) = ab - ac$
<b>SUBSTITUTION PROPERTY OF EQUALITY</b>	If $a = b$ , then $b$ can be substituted for $a$ in any equation or expression
<b>REFLEXIVE PROPERTY OF EQUALITY</b>	For any real number $a$ , $a = a$
<b>SYMMETRIC PROPERTY OF EQUALITY</b>	If $a = b$ , then $b = a$
<b>TRANSITIVE PROPERTY OF EQUALITY</b>	If $a = b$ and $b = c$ , then $a = c$
Common Proof Reasons	

$$\begin{array}{l}
 x = 10 \\
 y = 10
 \end{array}
 \quad
 x = y$$

Learning Card # _____	Name: _____						
<p>When writing a <u>proof</u>, it is important to <u>explain</u> each logical step with a <u>reason</u>.</p>	<p><b>Practice #1:</b>  <b>GIVEN</b> <math>\overline{AB} \cong \overline{BC}, \overline{CD} \cong \overline{BC}</math></p>  <p>Prove: <math>x = 6</math></p>						
<p style="text-align: center; color: red;">2-column proof</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding: 5px;"> <p style="text-align: center; color: blue;">Math Statements</p> </td> <td style="width: 50%; padding: 5px;"> <p style="text-align: center; color: blue;">Properties Reasons</p> </td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"> <p style="color: red; font-size: 1.2em;">last step</p> <p style="color: red; font-size: 2em;">↓</p> <p style="color: black; font-size: 1.5em;">Prove _____</p> </td> <td style="padding: 5px;"> <p style="color: green; font-size: 1.2em;">always put "givens" 1st</p> </td> </tr> </table>	<p style="text-align: center; color: blue;">Math Statements</p>	<p style="text-align: center; color: blue;">Properties Reasons</p>	<p style="color: red; font-size: 1.2em;">last step</p> <p style="color: red; font-size: 2em;">↓</p> <p style="color: black; font-size: 1.5em;">Prove _____</p>	<p style="color: green; font-size: 1.2em;">always put "givens" 1st</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding: 5px;"> <p style="text-align: center; color: red;">Statements</p> <p style="color: blue; font-size: 1.2em;"><math>\overline{AB} \cong \overline{BC}</math></p> <p style="color: blue; font-size: 1.2em;"><math>\overline{CD} \cong \overline{BC}</math></p> <p style="color: red; font-size: 1.2em;"><math>\overline{AB} \cong \overline{CD}</math></p> <p style="color: green; font-size: 1.2em;"><math>2x+1 = 4x-11</math></p> <p style="color: blue; font-size: 1.2em;"><math>2x+12 = 4x</math></p> <p style="color: red; font-size: 1.2em;"><math>12 = 2x</math></p> <p style="color: green; font-size: 1.2em;"><math>6 = x</math></p> <p style="color: blue; font-size: 1.2em;"><math>x = 6</math></p> </td> <td style="width: 50%; padding: 5px;"> <p style="text-align: center; color: red;">Reasons</p> <p style="color: green; font-size: 1.2em;">Given</p> <p style="color: green; font-size: 1.2em;">Given</p> <p style="color: green; font-size: 1.2em;">Transitive</p> <p style="color: green; font-size: 1.2em;">Substitution</p> <p style="color: blue; font-size: 1.2em;">Addition</p> <p style="color: red; font-size: 1.2em;">Subtraction</p> <p style="color: green; font-size: 1.2em;">Division</p> <p style="color: blue; font-size: 1.2em;">Symmetric</p> </td> </tr> </table>	<p style="text-align: center; color: red;">Statements</p> <p style="color: blue; font-size: 1.2em;"><math>\overline{AB} \cong \overline{BC}</math></p> <p style="color: blue; font-size: 1.2em;"><math>\overline{CD} \cong \overline{BC}</math></p> <p style="color: red; font-size: 1.2em;"><math>\overline{AB} \cong \overline{CD}</math></p> <p style="color: green; font-size: 1.2em;"><math>2x+1 = 4x-11</math></p> <p style="color: blue; font-size: 1.2em;"><math>2x+12 = 4x</math></p> <p style="color: red; font-size: 1.2em;"><math>12 = 2x</math></p> <p style="color: green; font-size: 1.2em;"><math>6 = x</math></p> <p style="color: blue; font-size: 1.2em;"><math>x = 6</math></p>	<p style="text-align: center; color: red;">Reasons</p> <p style="color: green; font-size: 1.2em;">Given</p> <p style="color: green; font-size: 1.2em;">Given</p> <p style="color: green; font-size: 1.2em;">Transitive</p> <p style="color: green; font-size: 1.2em;">Substitution</p> <p style="color: blue; font-size: 1.2em;">Addition</p> <p style="color: red; font-size: 1.2em;">Subtraction</p> <p style="color: green; font-size: 1.2em;">Division</p> <p style="color: blue; font-size: 1.2em;">Symmetric</p>
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Algebraic Proofs							

Learning Card # _____	Name: _____																												
<p><b>Practice #2:</b></p> <p><b>GIVEN</b> <math>\overline{ST} \cong \overline{SR}, \overline{QR} \cong \overline{SR}</math></p>  <p>Prove: <math>x = 1</math></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding: 5px;"><math>\overline{ST} \cong \overline{SR}</math></td> <td style="padding: 5px;">Given</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><math>\overline{QR} \cong \overline{SR}</math></td> <td style="padding: 5px;">Given</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><math>\overline{ST} \cong \overline{QR}</math></td> <td style="padding: 5px;">Transitive</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><math>5(3x-2) = x+4</math></td> <td style="padding: 5px;">Substitution</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><math>15x-10 = x+4</math></td> <td style="padding: 5px;">Distributive</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><math>14x-10 = 4</math></td> <td style="padding: 5px;">Subtraction</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><math>14x = 14</math></td> <td style="padding: 5px;">Addition</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><math>x = 1</math></td> <td style="padding: 5px;">Division</td> </tr> </table>	$\overline{ST} \cong \overline{SR}$	Given	$\overline{QR} \cong \overline{SR}$	Given	$\overline{ST} \cong \overline{QR}$	Transitive	$5(3x-2) = x+4$	Substitution	$15x-10 = x+4$	Distributive	$14x-10 = 4$	Subtraction	$14x = 14$	Addition	$x = 1$	Division	<p><b>Practice: #3</b></p> <p><b>GIVEN</b> <math>PR = 46</math></p>  <p>Prove: <math>x = 7</math></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding: 5px;"><math>\overline{PR} = 46</math></td> <td style="padding: 5px;">Given</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><math>\overline{PQ} + \overline{QR} = \overline{PR}</math></td> <td style="padding: 5px;">Segment Addition</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><math>2x+5 + 6x-15 = 46</math></td> <td style="padding: 5px;">Substitution</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><math>8x - 10 = 46</math></td> <td style="padding: 5px;">Combine like terms</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><math>8x = 56</math></td> <td style="padding: 5px;">Addition</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><math>x = 7</math></td> <td style="padding: 5px;">Division</td> </tr> </table>	$\overline{PR} = 46$	Given	$\overline{PQ} + \overline{QR} = \overline{PR}$	Segment Addition	$2x+5 + 6x-15 = 46$	Substitution	$8x - 10 = 46$	Combine like terms	$8x = 56$	Addition	$x = 7$	Division
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