

Practice with Examples

For use with pages 96–101

GOAL

Use properties from algebra and use properties of length and measure to justify segment and angle relationships

VOCABULARY**Algebraic Properties of Equality**Let a , b , and c be real numbers.**Addition Property** If $a = b$, then $a + c = b + c$.**Subtraction Property** If $a = b$, then $a - c = b - c$.**Multiplication Property** If $a = b$, then $ac = bc$.**Division Property** If $a = b$ and $c \neq 0$, then $a \div c = b \div c$.**Reflexive Property** For any real number a , $a = a$.**Symmetric Property** If $a = b$, then $b = a$.**Transitive Property** If $a = b$ and $b = c$, then $a = c$.**Substitution Property** If $a = b$, then a can be substituted for b in any equation or expression.**EXAMPLE 1****Writing Reasons**Solve $10 - 2x = 3(x - 2) + 4$ and write a reason for each step.**SOLUTION**

$10 - 2x = 3(x - 2) + 4$	Given
$10 - 2x = 3x - 6 + 4$	Distributive property
$10 - 2x = 3x - 2$	Simplify.
$12 - 2x = 3x$	Addition property of equality
$12 = 5x$	Addition property of equality
$\frac{12}{5} = x$	Division property of equality

Practice with Examples

For use with pages 96–101

Exercises for Example 1

Solve the equation and write a reason for each step.

1. $2x + 3 = 7x$

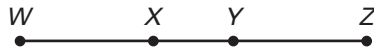
2. $4 + 2(3x + 5) = 11 - x$

3. $6x - 2 = -4(x - 1)$

4. $\frac{1}{5}x + 4 = 2x + \frac{3}{5}$

EXAMPLE 2 Using Properties of Length and Measure

In the diagram, $WY = XZ$,
show that $WX = YZ$.



SOLUTION

$WY = XZ$	Given
$WY = WX + XY$	Segment Addition Postulate
$XZ = XY + YZ$	Segment Addition Postulate
$WX + XY = XY + YZ$	Substitution property of equality
$WX = YZ$	Subtraction property of equality

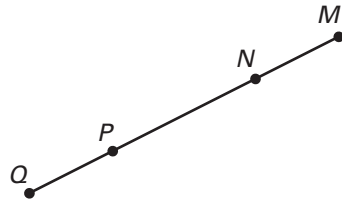
Practice with Examples

For use with pages 96–101

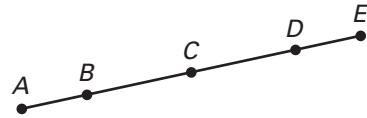
Exercises for Example 2

Use the given information to show the desired statement.

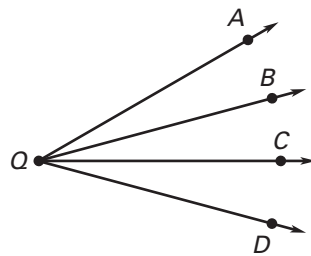
5. Given that $MN = PQ$,
show that $MP = NQ$.



6. Given that $AB = DE$ and $BC = CD$,
show that $AD = BE$.



7. Given that $m\angle AQB = m\angle CQD$,
show that $m\angle AQC = m\angle BQD$.



8. Given that $m\angle RPS = m\angle TPV$ and
 $m\angle TPV = m\angle SPT$, show that
 $m\angle RPV = 3(m\angle RPS)$

