Solving Corresponding Parts of Congruent Triangles

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Sauyo High School

Reminder

To solve the corresponding parts of congruent triangles, remember:

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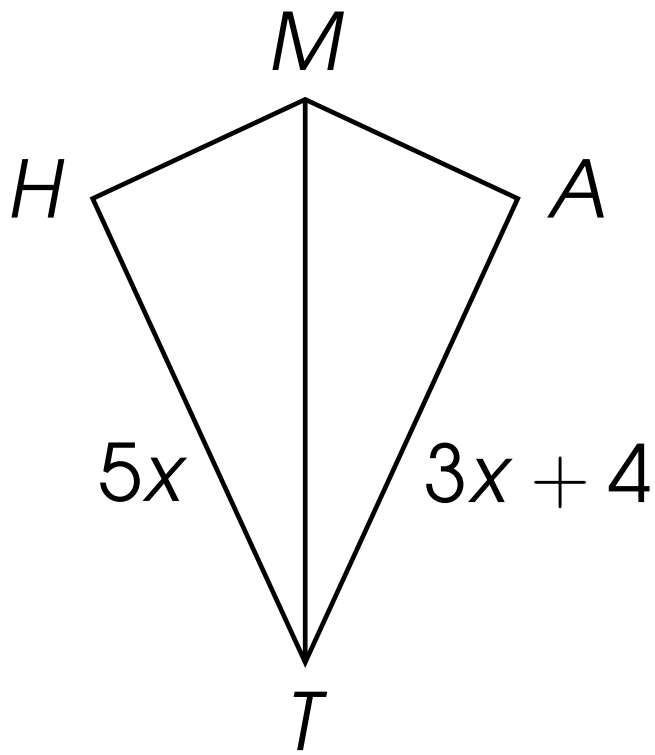
The Corresponding Parts of Congruent Triangles are Congruent (CPCTC).

Example 1

Given: $\triangle MHT \cong \triangle MAT$
Find: x



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Given: $\triangle MHT \cong \triangle MAT$
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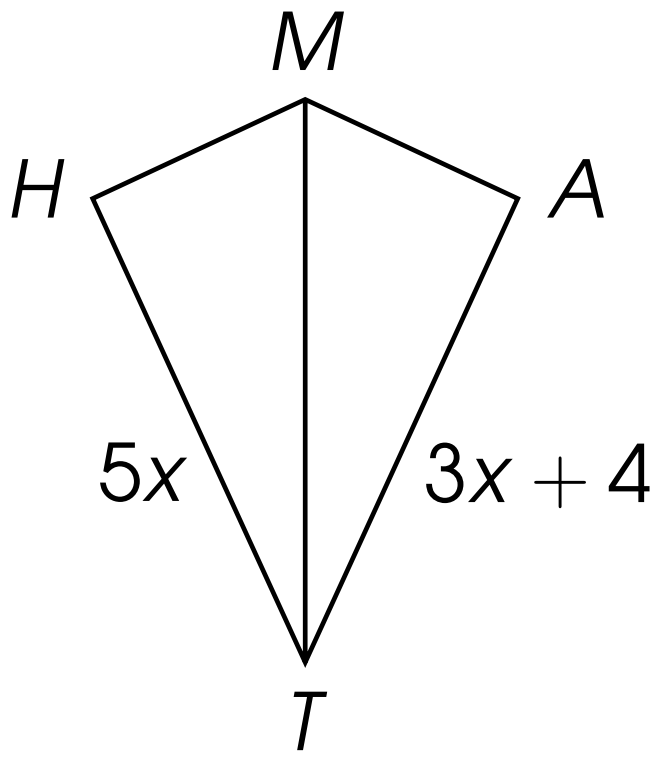
$\overline{HT} \cong$



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Given: $\triangle MHT \cong \triangle MAT$

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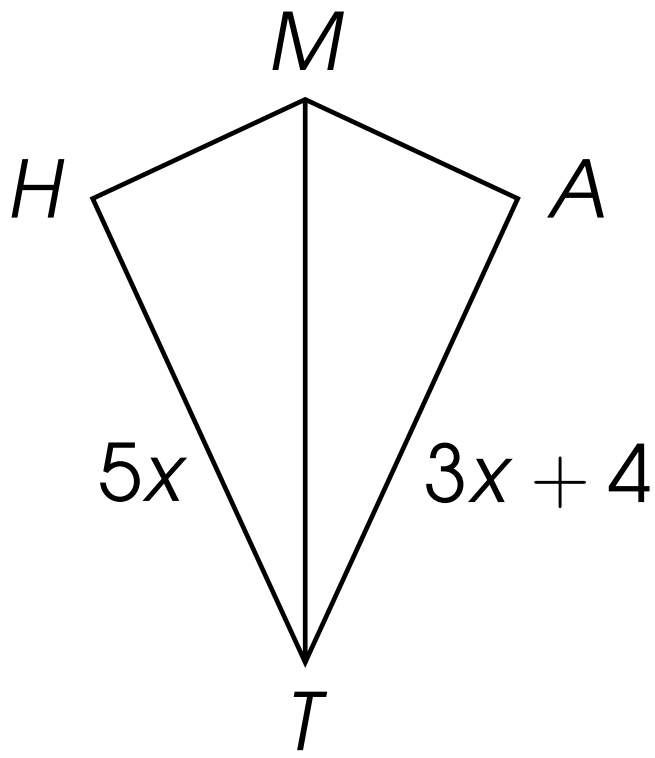
$\overline{HT} \cong \overline{AT}$



Example 1

Given: $\triangle MHT \cong \triangle MAT$
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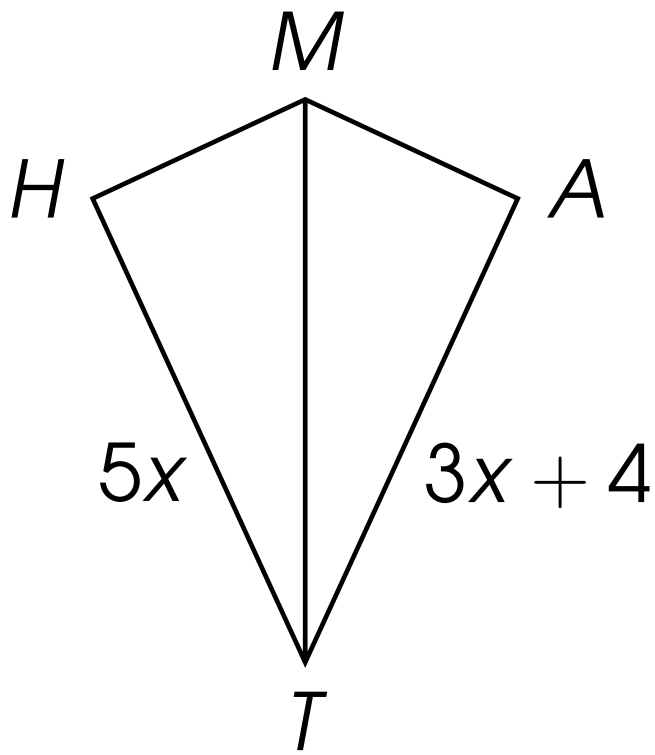
$\overline{HT} \cong \overline{AT}$
$m\overline{HT} = m\overline{AT}$



Example 1

Given: $\triangle MHT \cong \triangle MAT$
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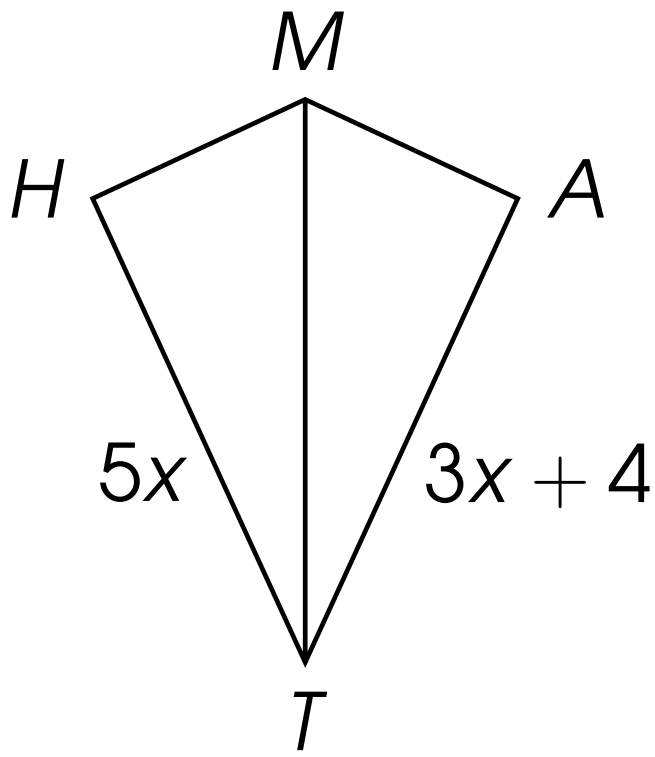
$\overline{HT} \cong \overline{AT}$
$m\overline{HT} = m\overline{AT}$
$5x = 3x + 4$



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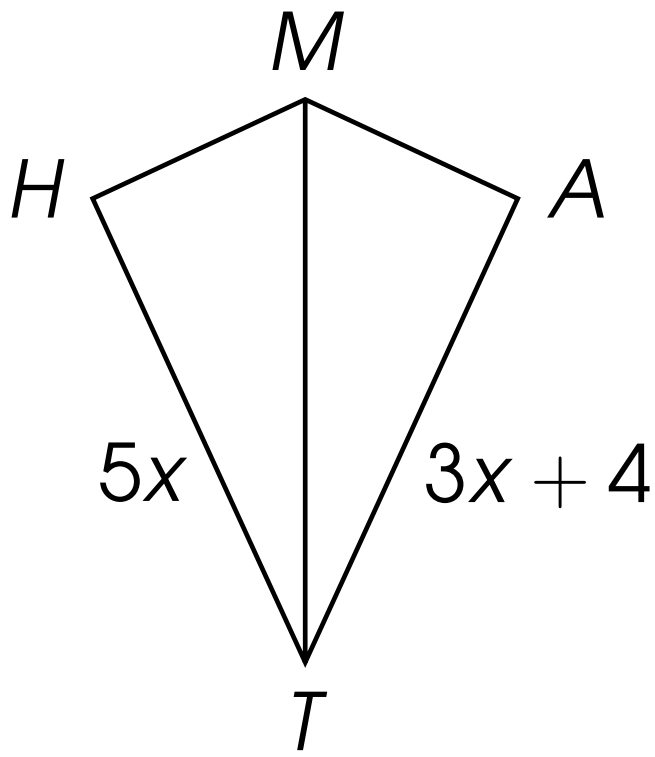

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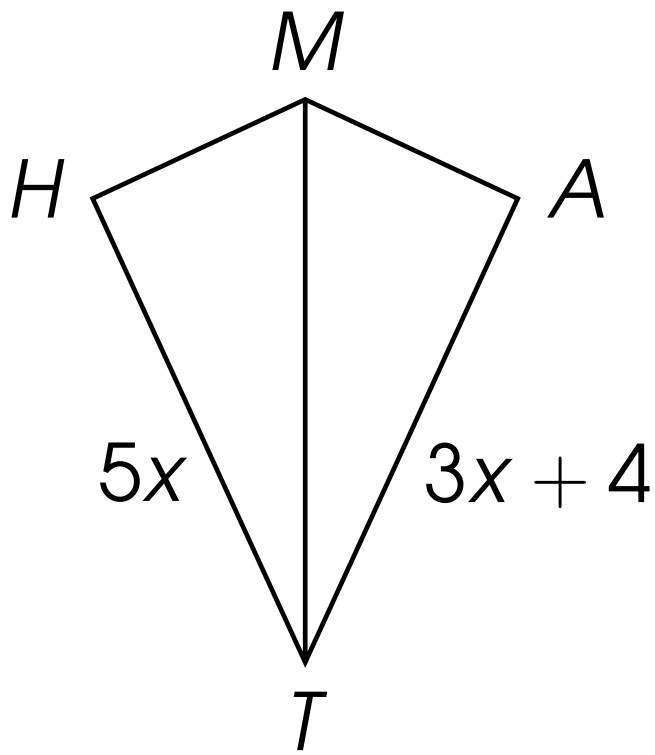
$2x = 4$



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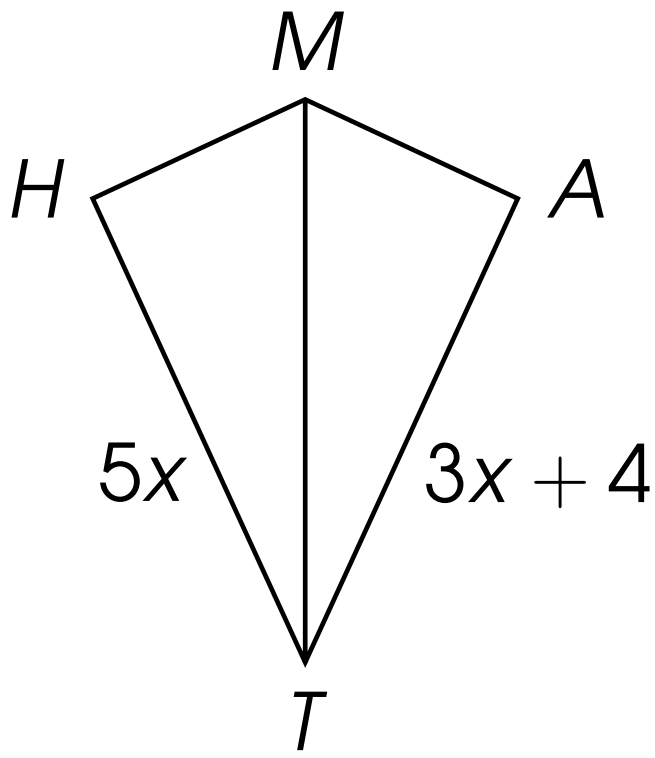

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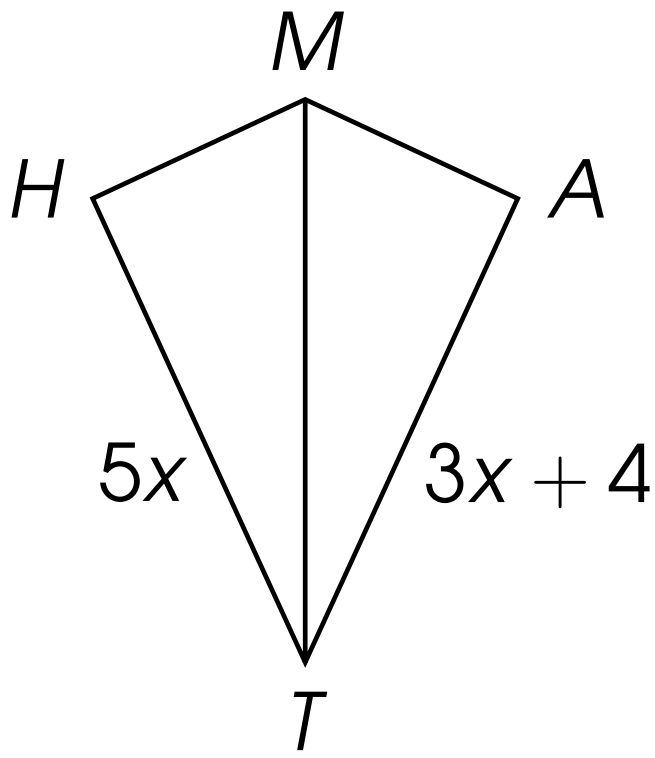
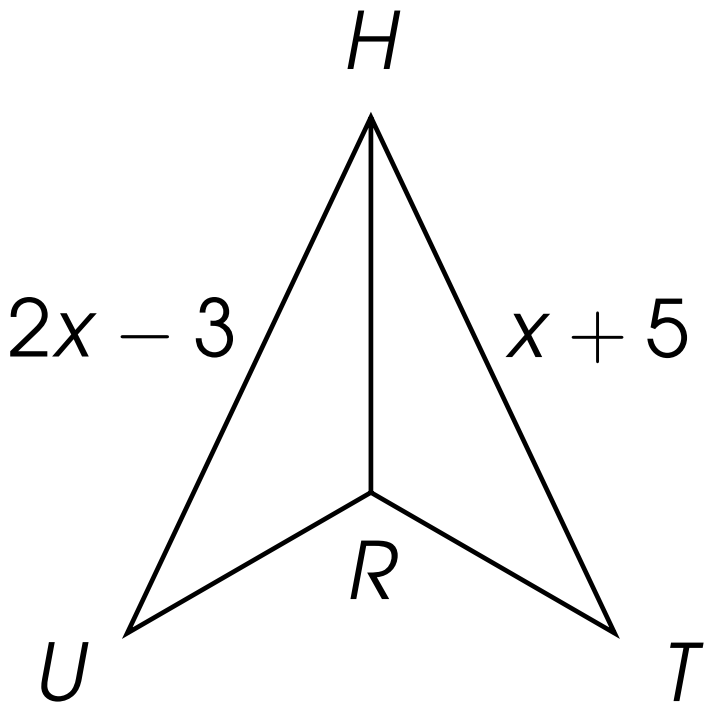
$x = 2$



Example 2

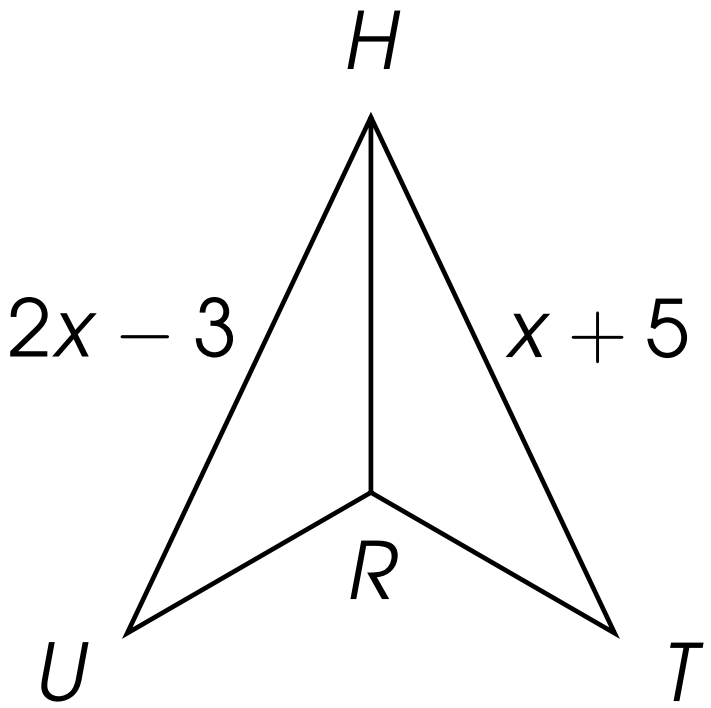
Given: $\triangle HRU \cong \triangle HRT$
Find: x



Example 2

Given: $\triangle HRU \cong \triangle HRT$
Find: x

$\overline{HU} \cong$



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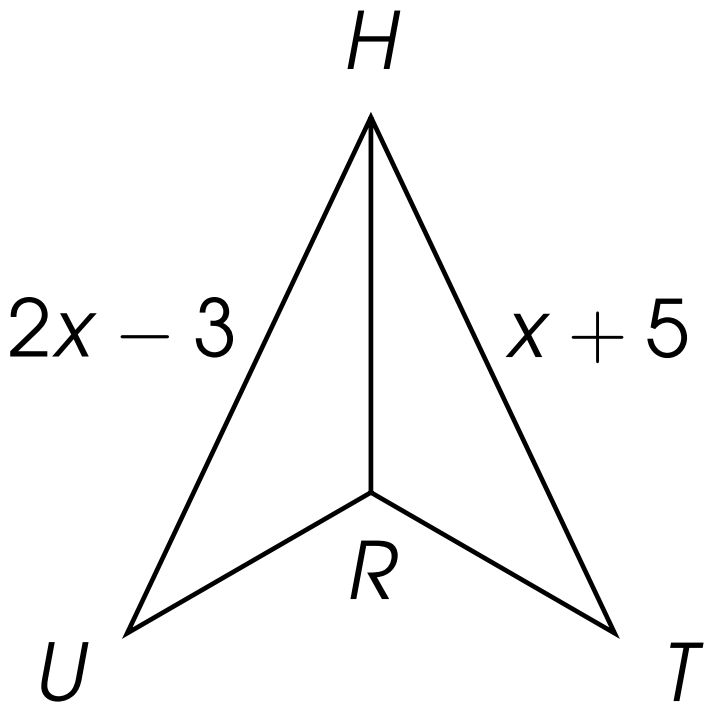
Given: $\triangle HRU \cong \triangle HRT$
Find: x

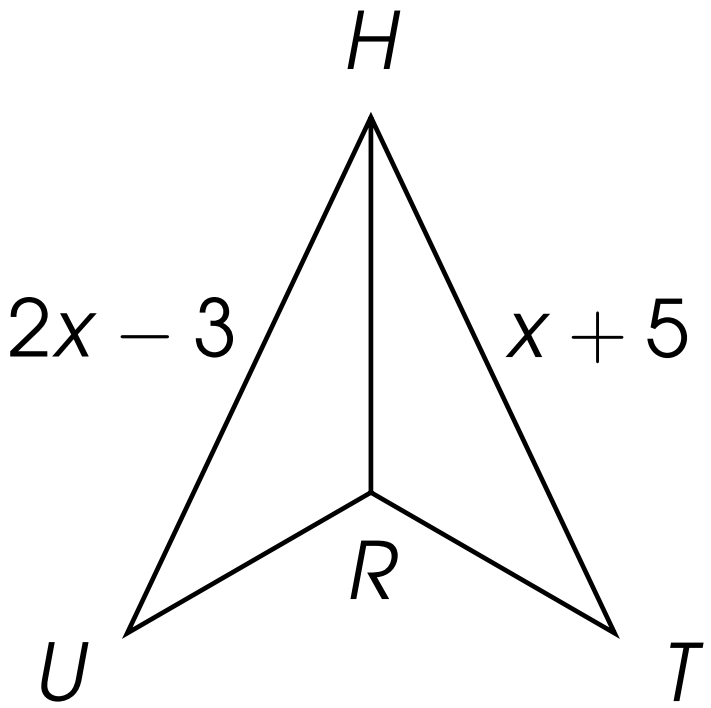
$\overline{HU} \cong \overline{HT}$



Example 2

Given: $\triangle HRU \cong \triangle HRT$
Find: x

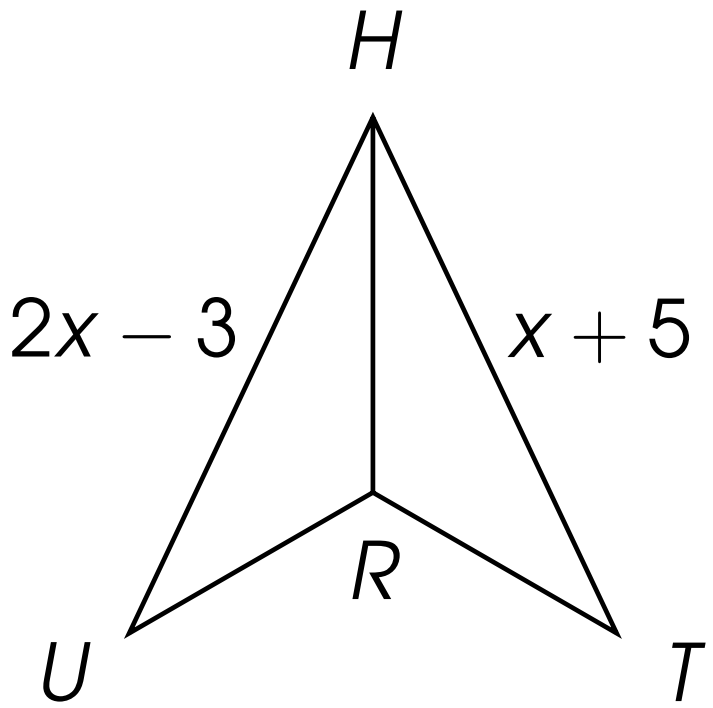
$\overline{HU} \cong \overline{HT}$
$m\overline{HU} = m\overline{HT}$



Example 2

Given: $\triangle HRU \cong \triangle HRT$
Find: x

$\overline{HU} \cong \overline{HT}$
$m\overline{HU} = m\overline{HT}$
$2x - 3 = x + 5$



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$\overline{HU} \cong \overline{HT}$
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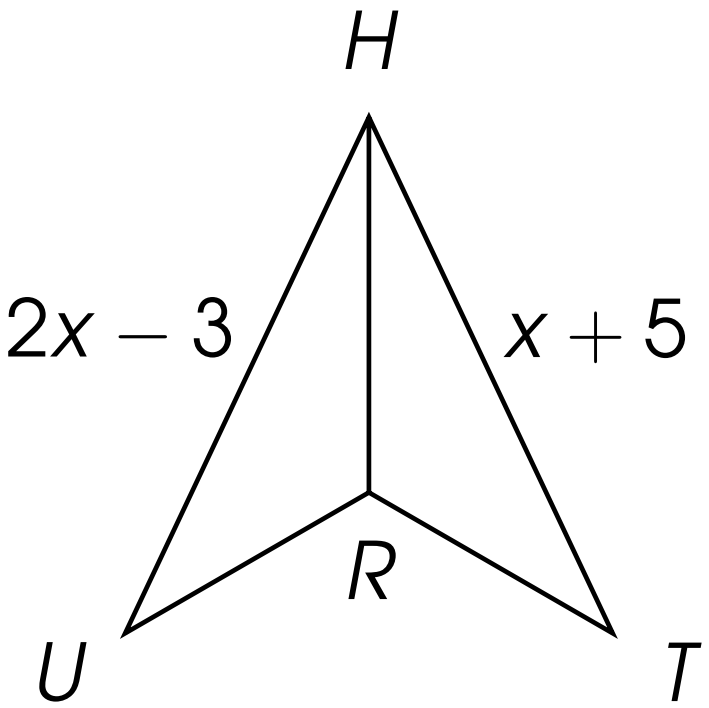

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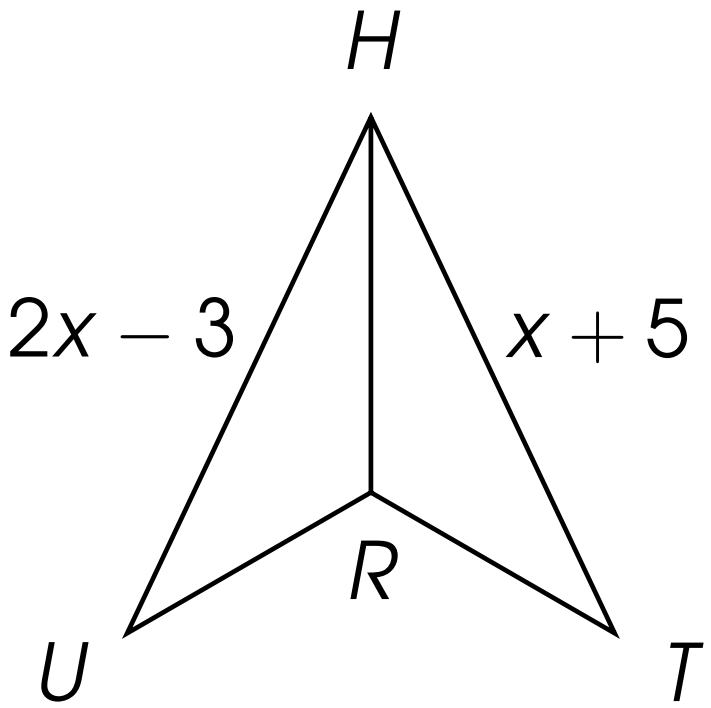
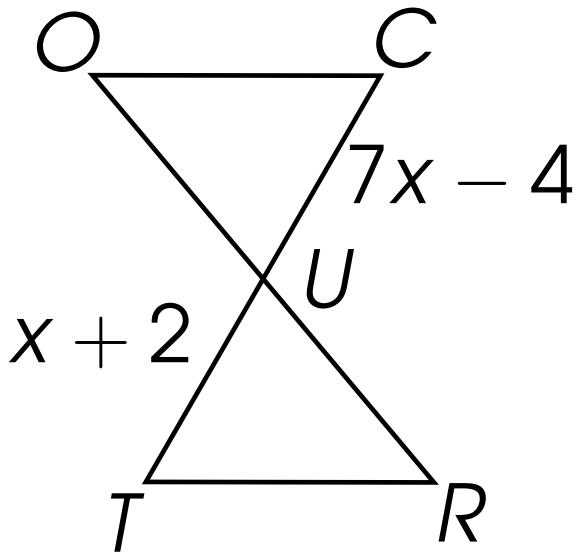
Given: $\triangle HRU \cong \triangle HRT$
Find: x

$\overline{HU} \cong \overline{HT}$
$m\overline{HU} = m\overline{HT}$
$2x - 3 = x + 5$
$2x - x - 3 + 3 = x - x + 5 + 3$
$x = 8$



Example 3

Given: $\triangle OCU \cong \triangle RTU$
Find: x



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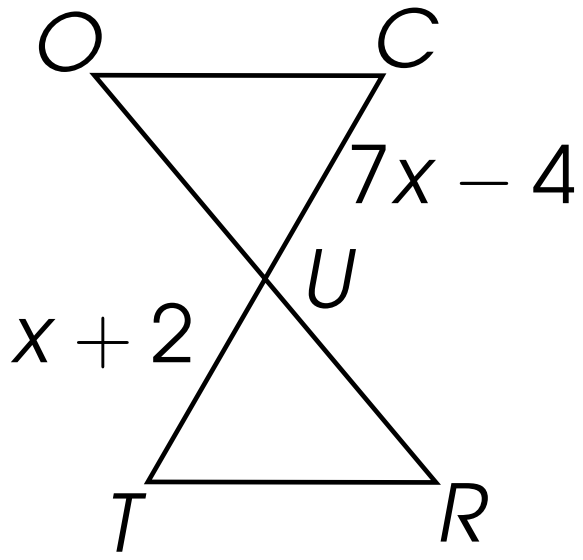
Find: x

$\overline{CU} \cong$

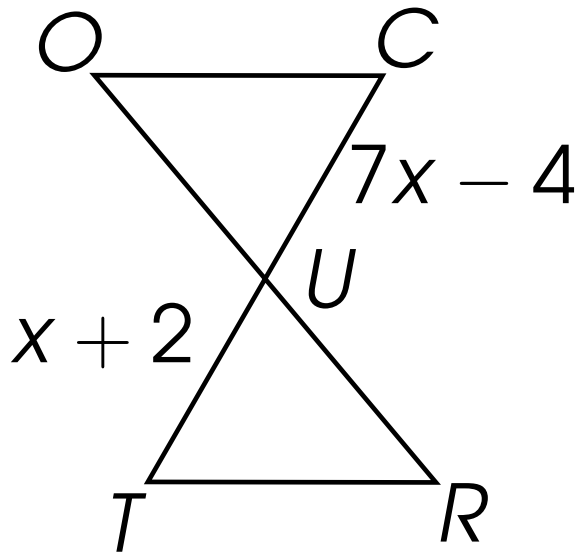


Example 3

Given: $\triangle OCU \cong \triangle RTU$

Find: x

$\overline{CU} \cong \overline{TU}$



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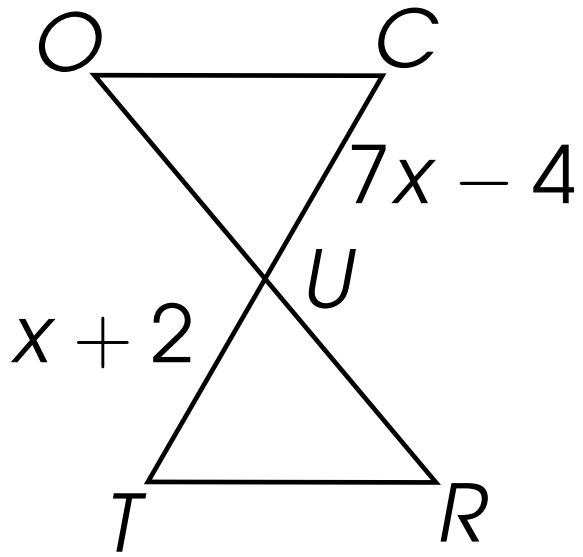
Given: $\triangle OCU \cong \triangle RTU$
Find: x

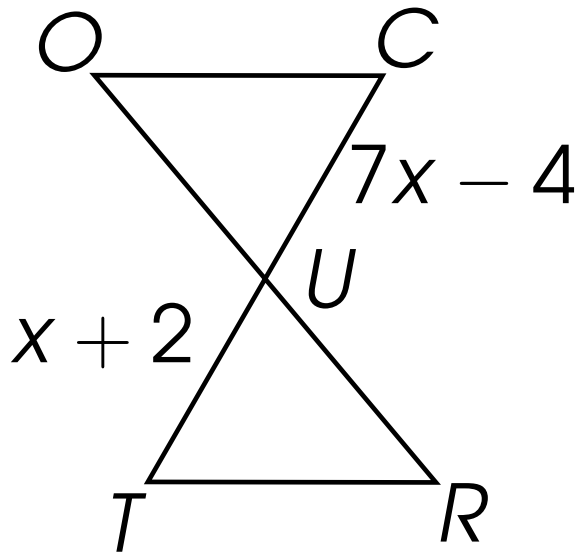
$\overline{CU} \cong \overline{TU}$
$m\overline{CU} = m\overline{TU}$



Example 3

Given: $\triangle OCU \cong \triangle RTU$
Find: x

$\overline{CU} \cong \overline{TU}$
$m\overline{CU} = m\overline{TU}$
$7x - 4 = x + 2$



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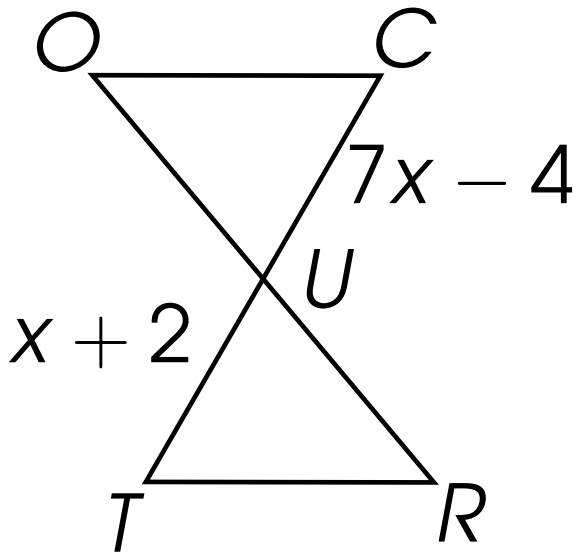
$\overline{CU} \cong \overline{TU}$

$m\overline{CU} = m\overline{TU}$

$7x - 4 = x + 2$

$7x - x - 4 + 4 = x - x + 2 + 4$



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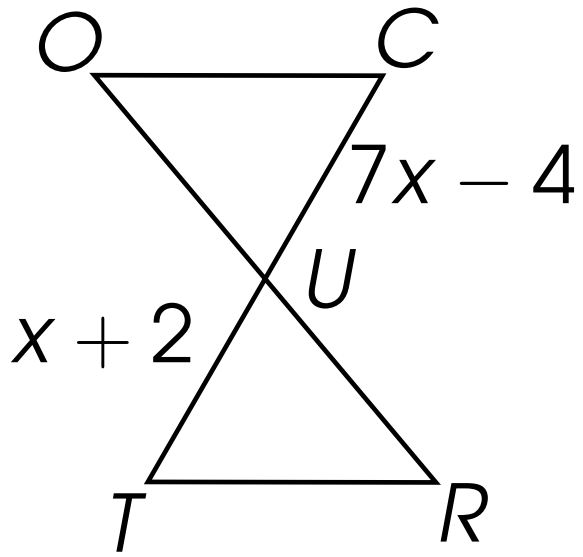
$m\overline{CU} = m\overline{TU}$

$7x - 4 = x + 2$

$7x - x - 4 + 4 = x - x + 2 + 4$

$6x = 6$



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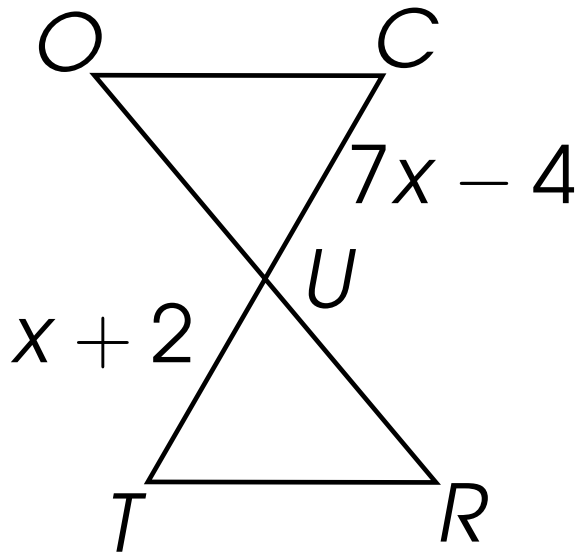

$\overline{CU} \cong \overline{TU}$

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$7x - 4 = x + 2$

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$6x = 6$

$\frac{6x}{6} = \frac{6}{6}$

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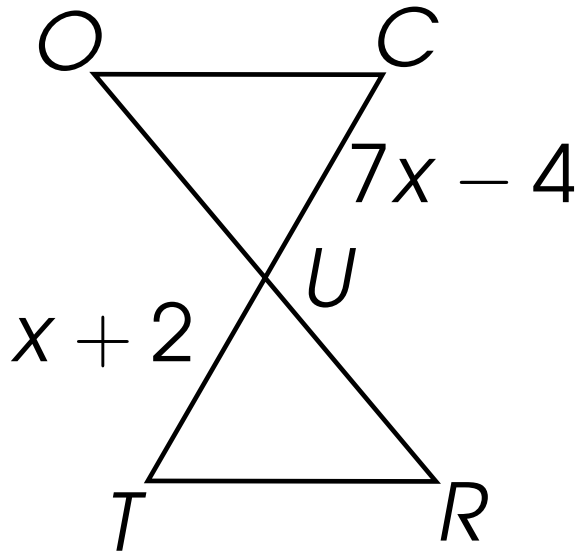


$\overline{CU} \cong \overline{TU}$

$m\overline{CU} = m\overline{TU}$

$7x - 4 = x + 2$

$7x - x - 4 + 4 = x - x + 2 + 4$

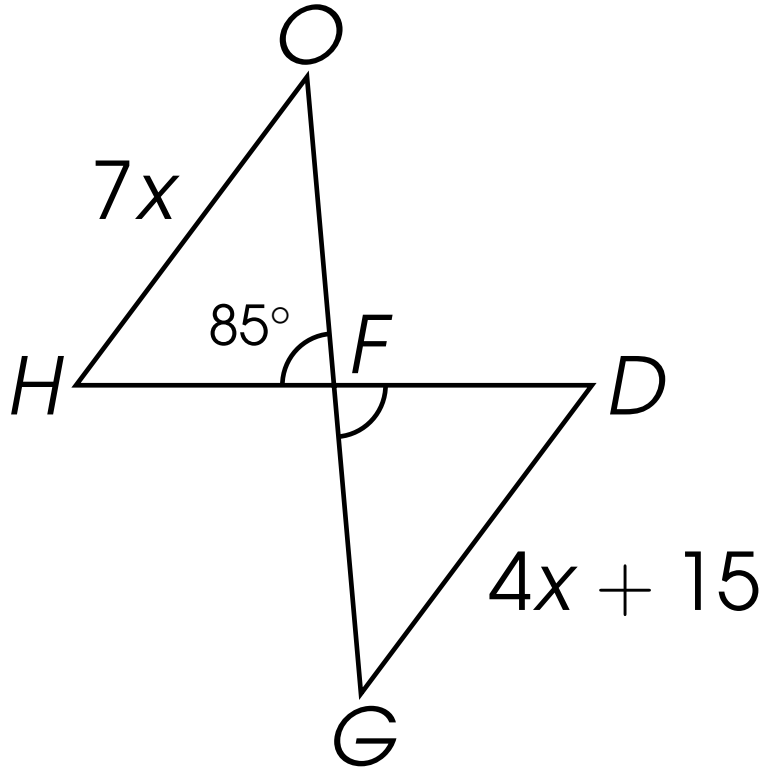
$6x = 6$

$\frac{6x}{6} = \frac{6}{6}$

$x = 1$

Example 4

Given: $\triangle OFH \cong \triangle GFD$
Find: $m\overline{OH}$ and $m\angle DFG$



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Given: $\triangle OFH \cong \triangle GFD$
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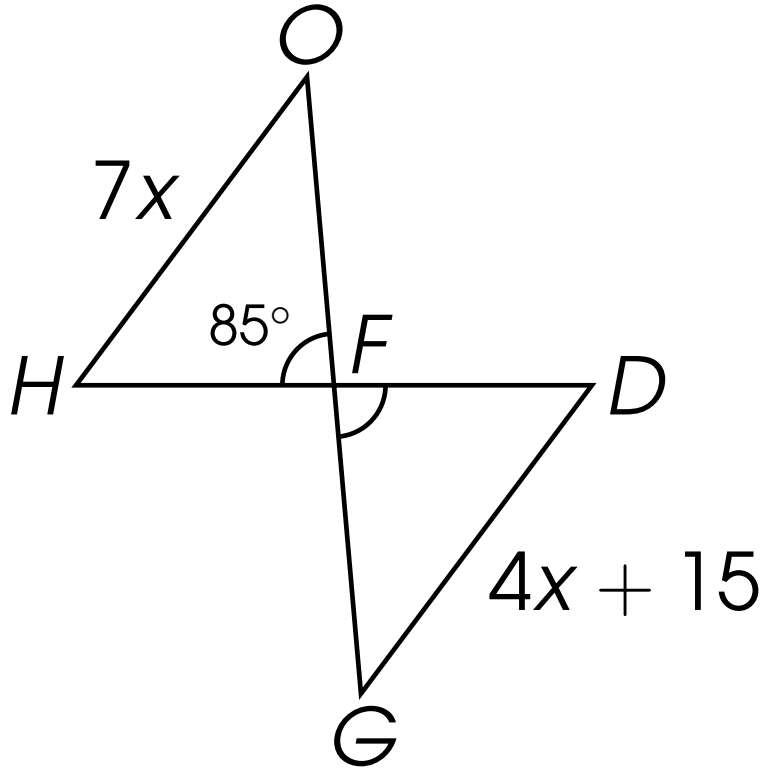
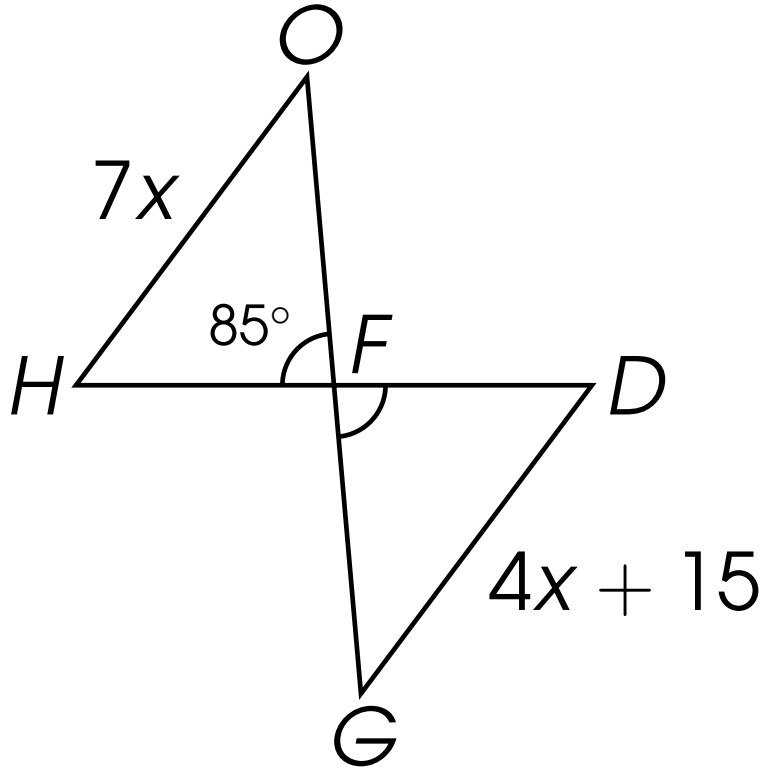
$\overline{OH} \cong$



Example 4

Given: $\triangle OFH \cong \triangle GFD$
Find: $m\overline{OH}$ and $m\angle DFG$

$\overline{OH} \cong \overline{GD}$



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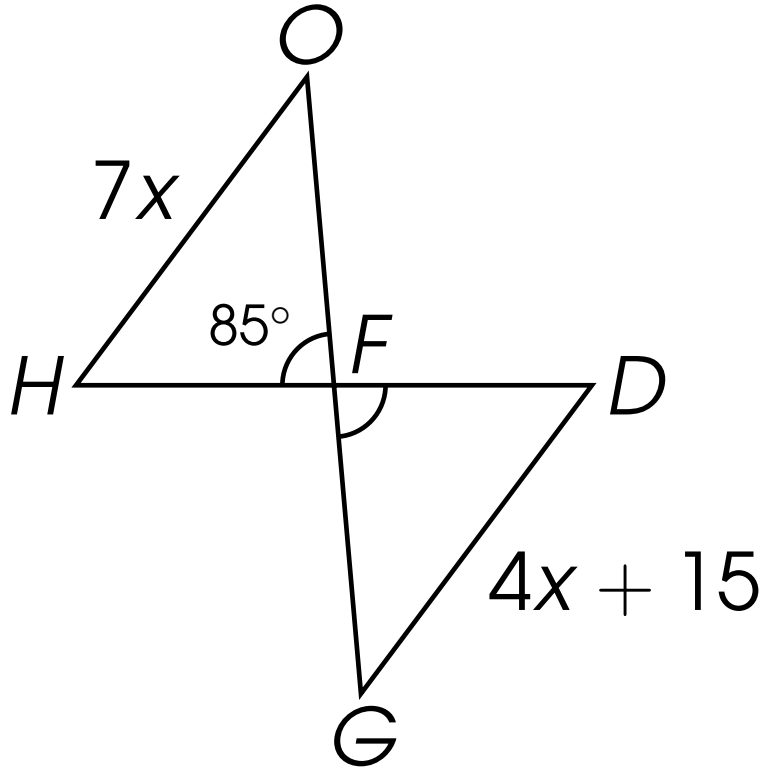
$\overline{OH} \cong \overline{GD}$
$m\overline{OH} = m\overline{GD}$



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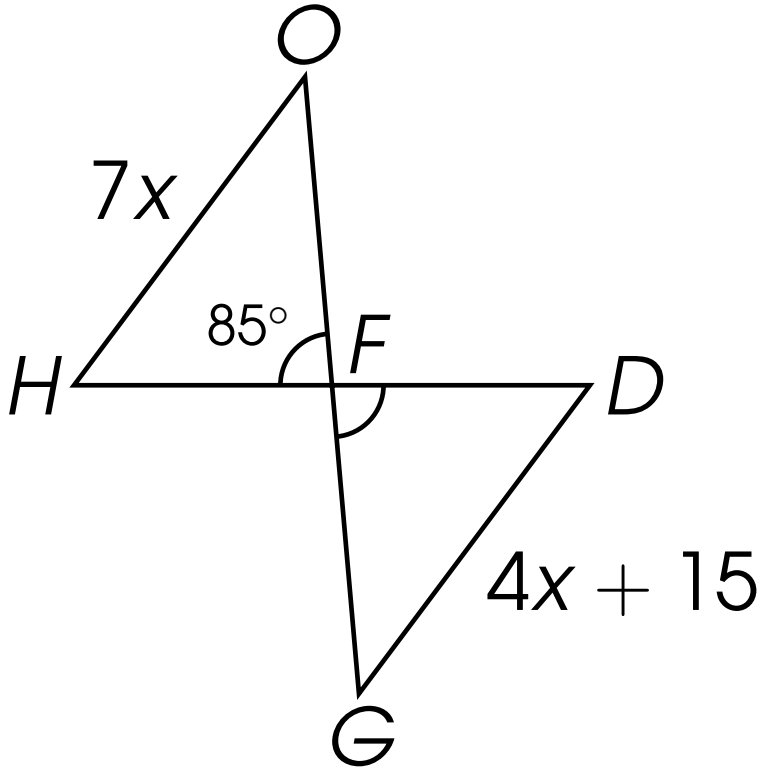
$\overline{OH} \cong \overline{GD}$
$m\overline{OH} = m\overline{GD}$
$7x = 4x + 15$



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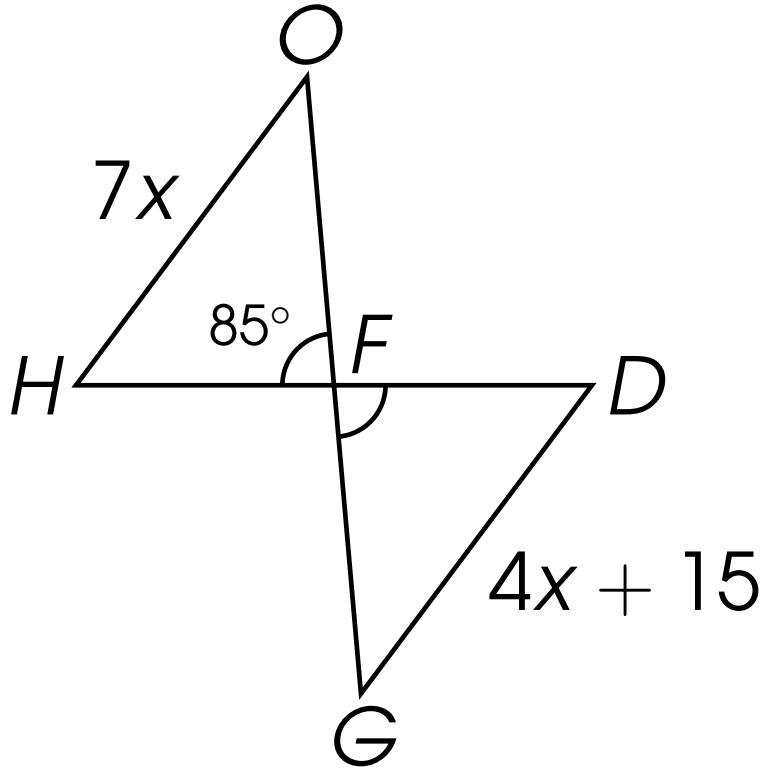

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$\overline{OH} \cong \overline{GD}$
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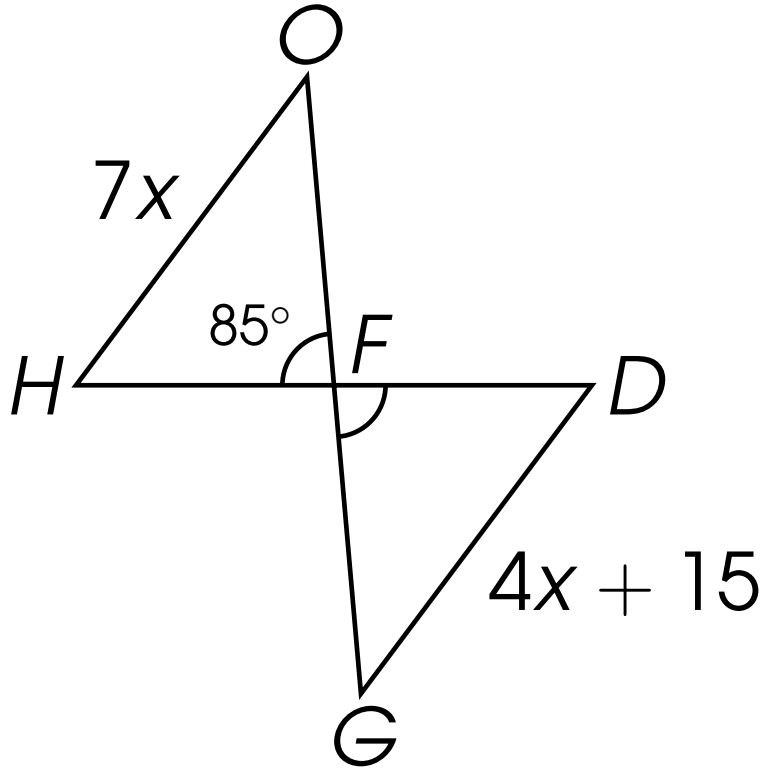
$7x = 4x + 15$
$7x - 4x = 4x - 4x + 15$
$3x = 15$



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$m\overline{OH} = m\overline{GD}$

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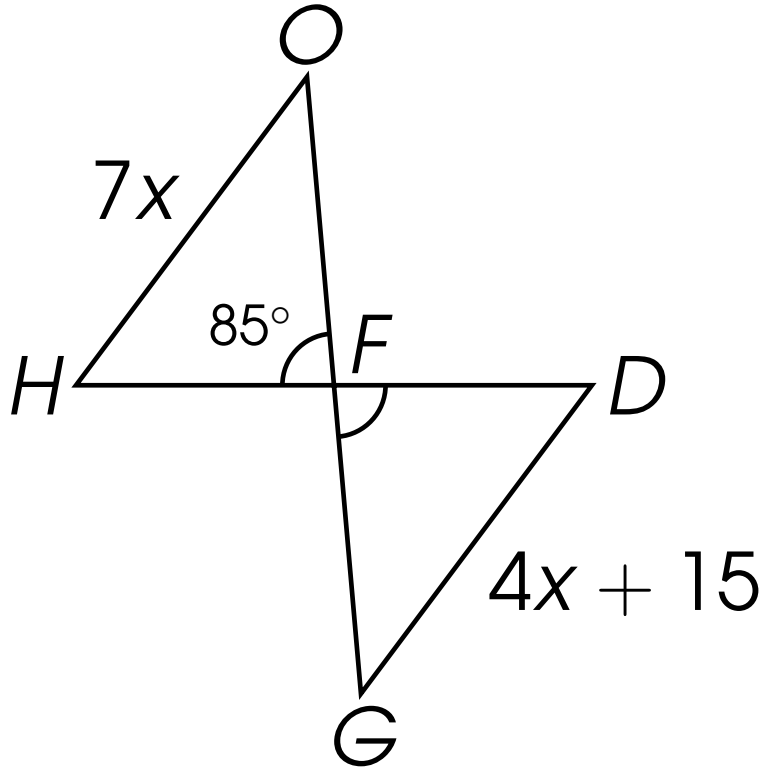
$3x = 15$

$\frac{3x}{3} = \frac{15}{3}$



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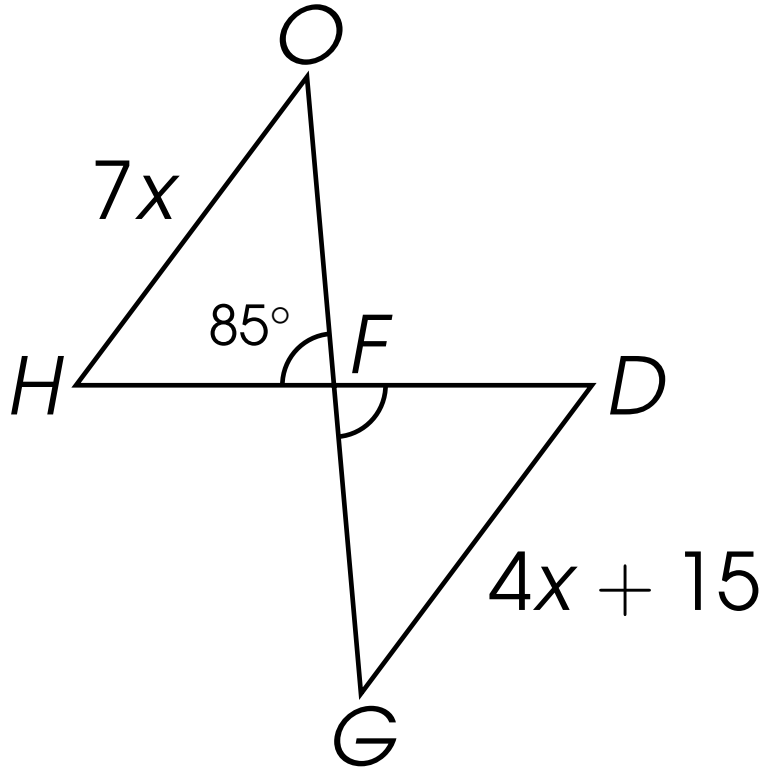
$m\overline{OH} = m\overline{GD}$
$7x = 4x + 15$
$7x - 4x = 4x - 4x + 15$
$3x = 15$
$\frac{3x}{3} = \frac{15}{3}$
$x = 5$



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$\overline{OH} \cong \overline{GD}$
$m\overline{OH} = m\overline{GD}$
$7x = 4x + 15$
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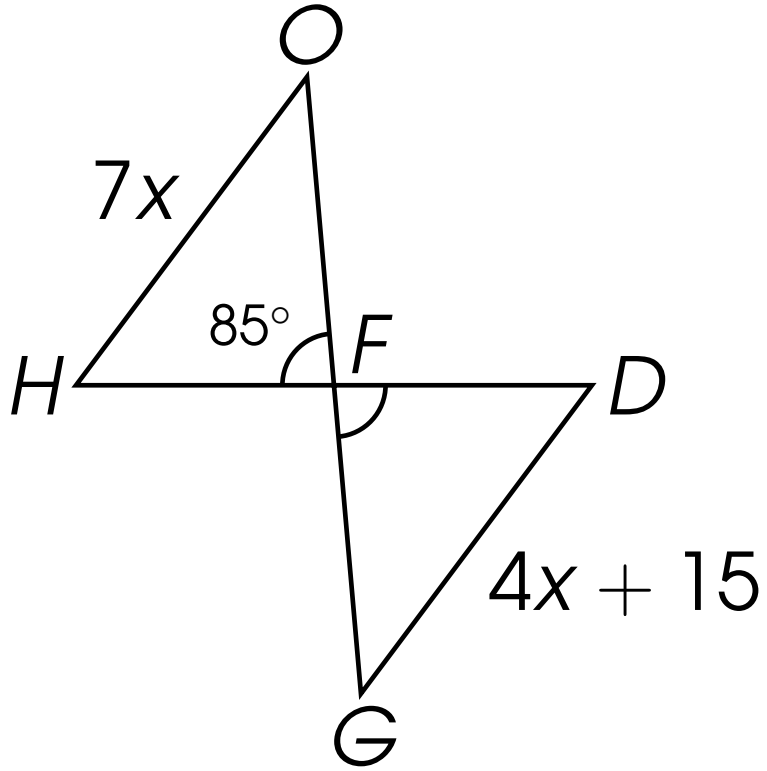
$3x = 15$
$\frac{3x}{3} = \frac{15}{3}$
$x = 5$

$m\overline{OH} = 7x$



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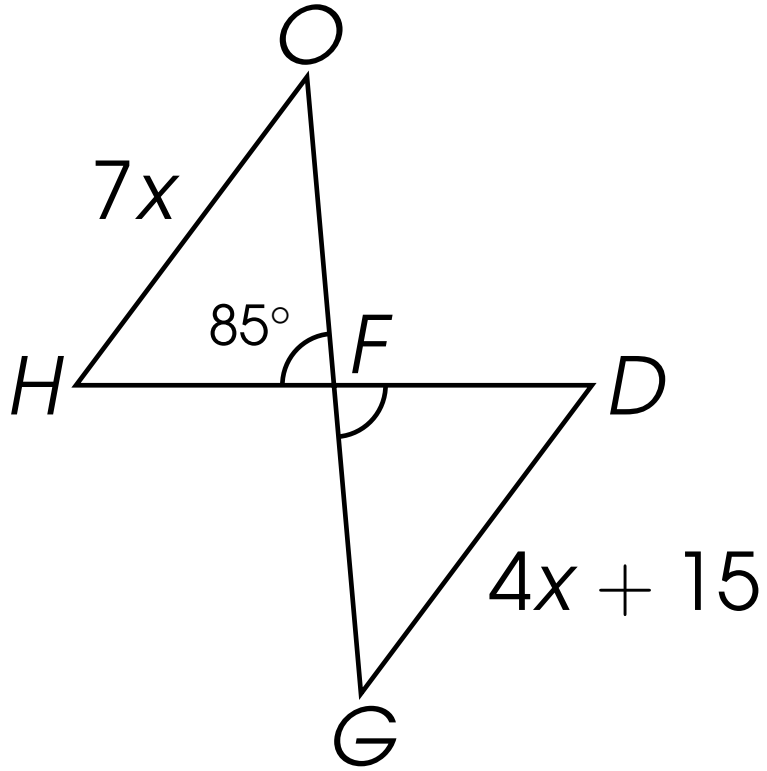
Find: $m\overline{OH}$ and $m\angle DFG$

$\overline{OH} \cong \overline{GD}$
$m\overline{OH} = m\overline{GD}$
$7x = 4x + 15$
$7x - 4x = 4x - 4x + 15$
$3x = 15$
$\frac{3x}{3} = \frac{15}{3}$
$x = 5$

$m\overline{OH} = 7x$
$m\overline{OH} = 7(5)$



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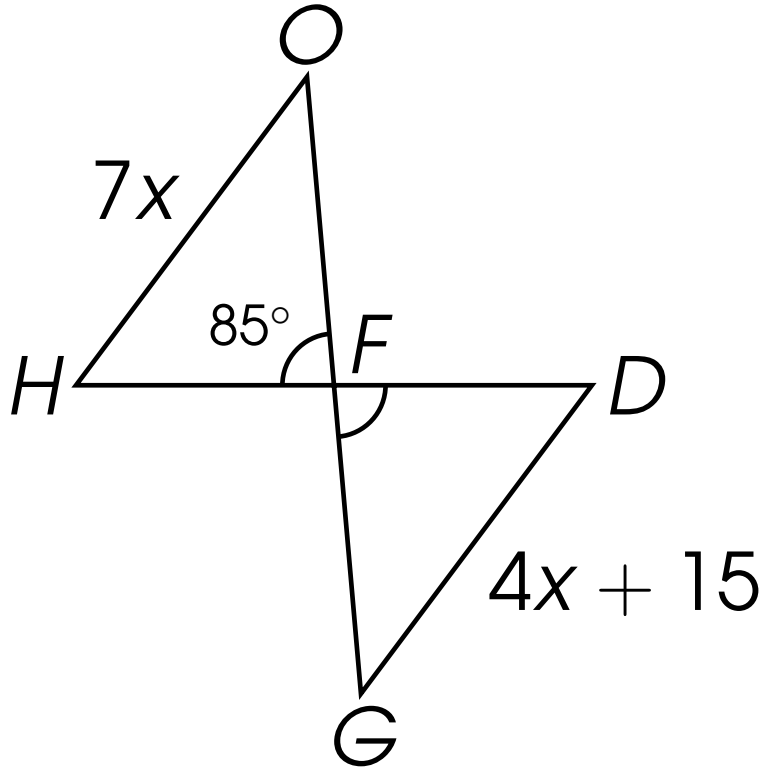
Find: $m\overline{OH}$ and $m\angle DFG$

$\overline{OH} \cong \overline{GD}$
$m\overline{OH} = m\overline{GD}$
$7x = 4x + 15$
$7x - 4x = 4x - 4x + 15$
$3x = 15$
$\frac{3x}{3} = \frac{15}{3}$
$x = 5$

$m\overline{OH} = 7x$
$m\overline{OH} = 7(5)$
$m\overline{OH} = 35$ units



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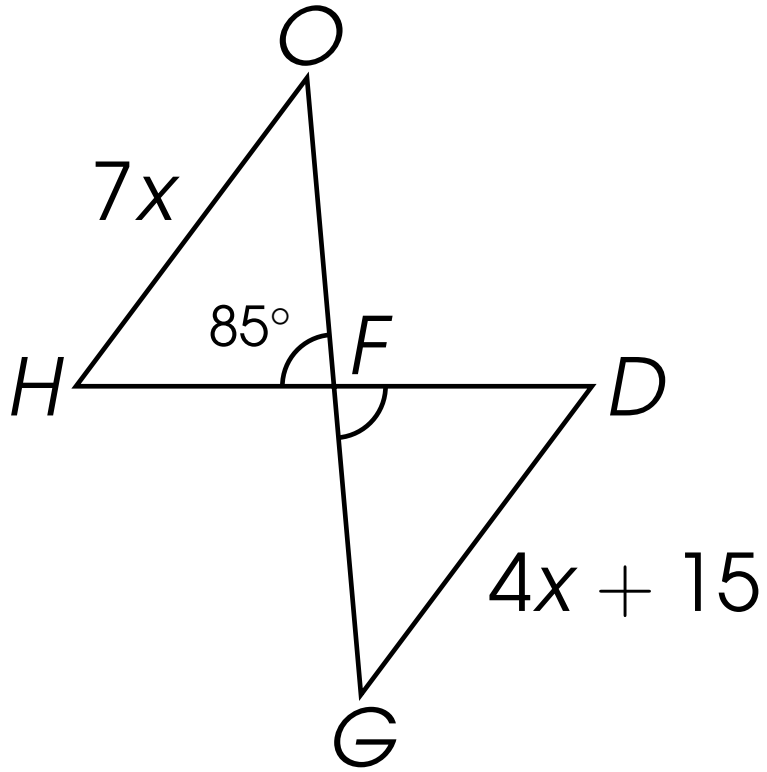

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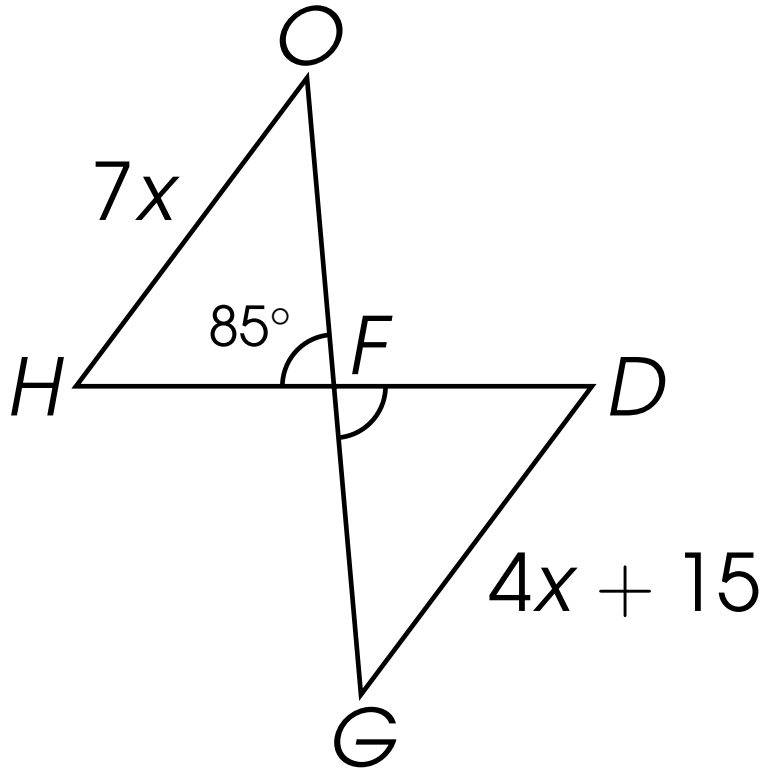
Given: $\triangle OFH \cong \triangle GFD$
Find: $m\overline{OH}$ and $m\angle DFG$

$\angle DFG \cong$



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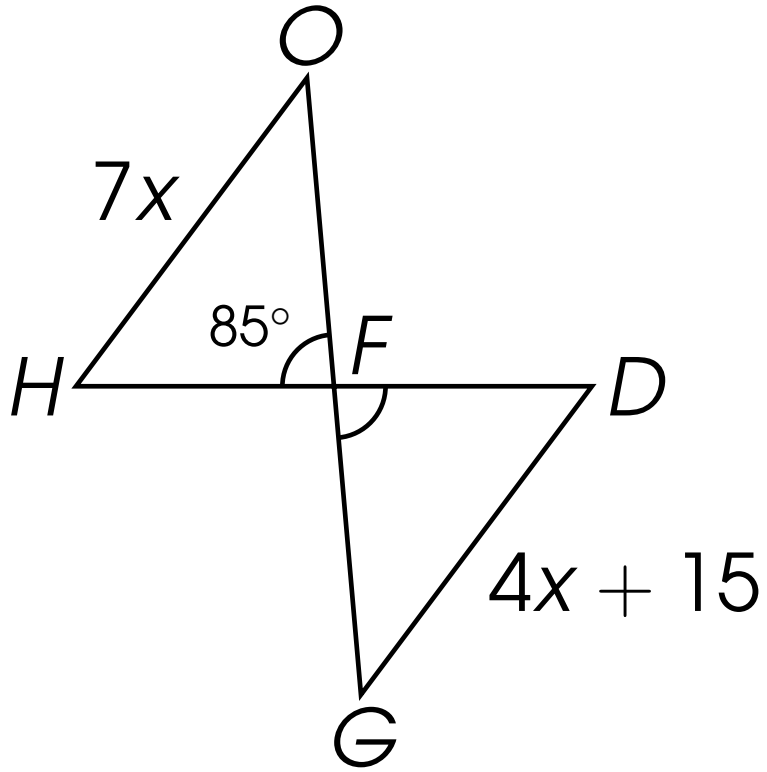
Given: $\triangle OFH \cong \triangle GFD$
Find: $m\overline{OH}$ and $m\angle DFG$

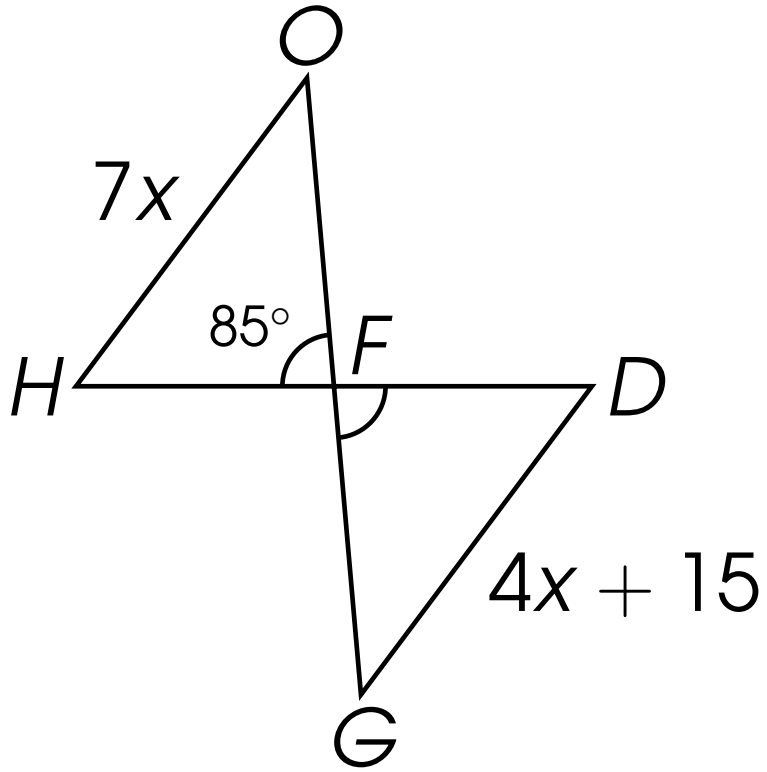
$\angle DFG \cong \angle HFO$



Example 4

Given: $\triangle OFH \cong \triangle GFD$
Find: $m\overline{OH}$ and $m\angle DFG$

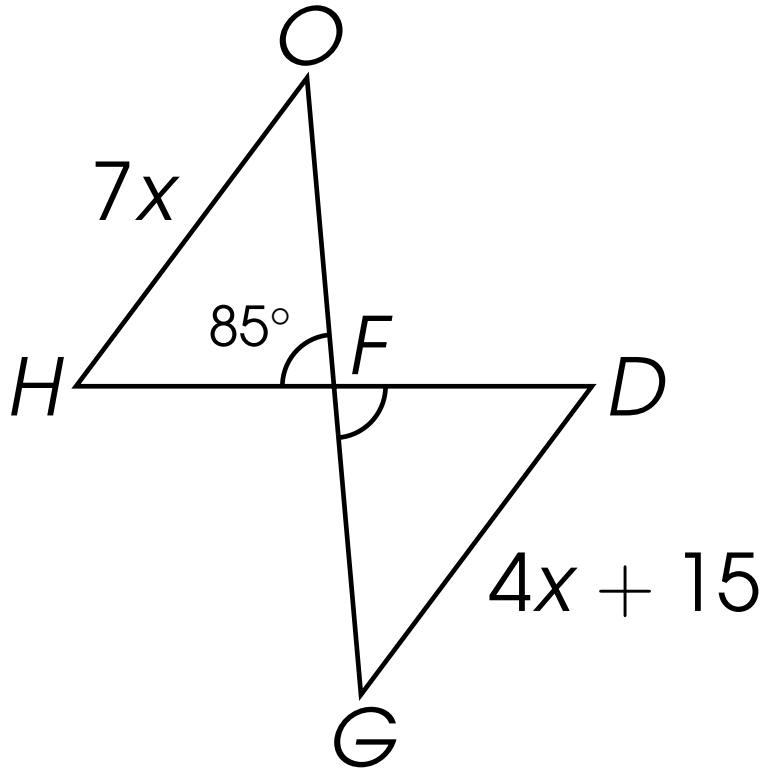
$\angle DFG \cong \angle HFO$
$m\angle DFG = m\angle HFO$



Example 4

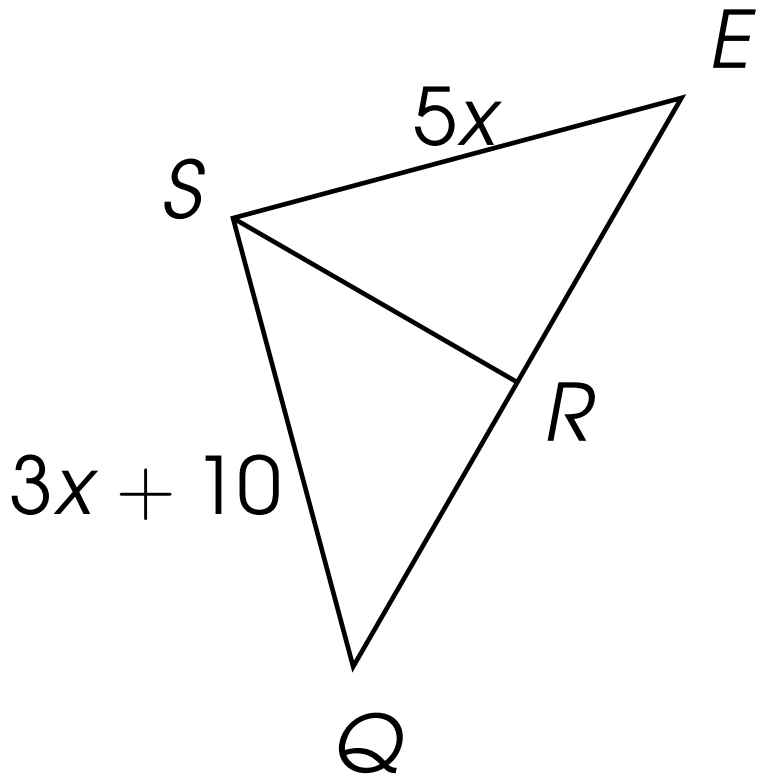
Given: $\triangle OFH \cong \triangle GFD$
Find: $m\overline{OH}$ and $m\angle DFG$

$\angle DFG \cong \angle HFO$
$m\angle DFG = m\angle HFO$
$m\angle DFG = 85°$



Example 5

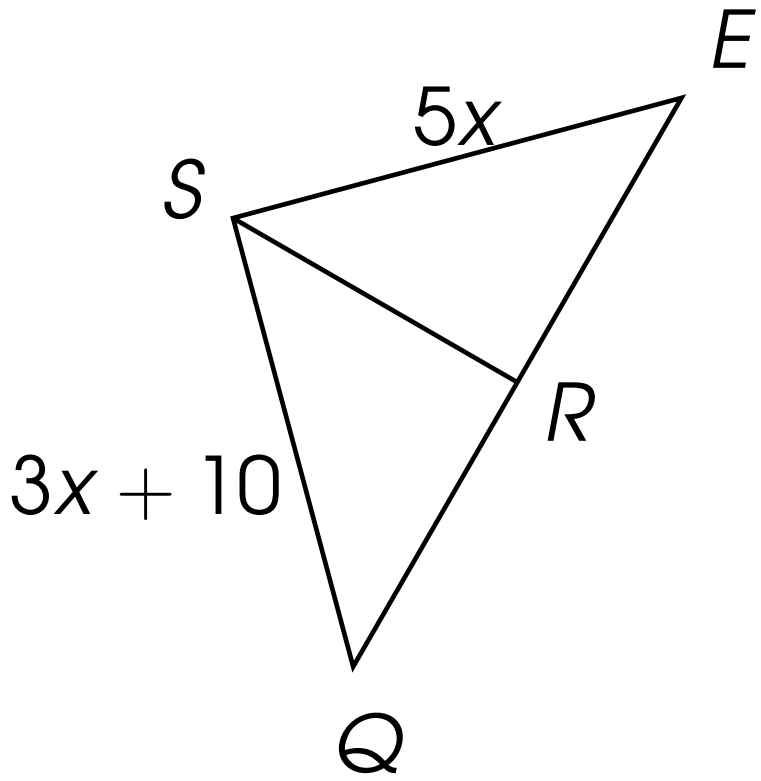
Given: $\triangle ESR \cong \triangle QSR$
Find: $m\overline{SQ}$



Example 5

Given: $\triangle ESR \cong \triangle QSR$
Find: $m\overline{SQ}$

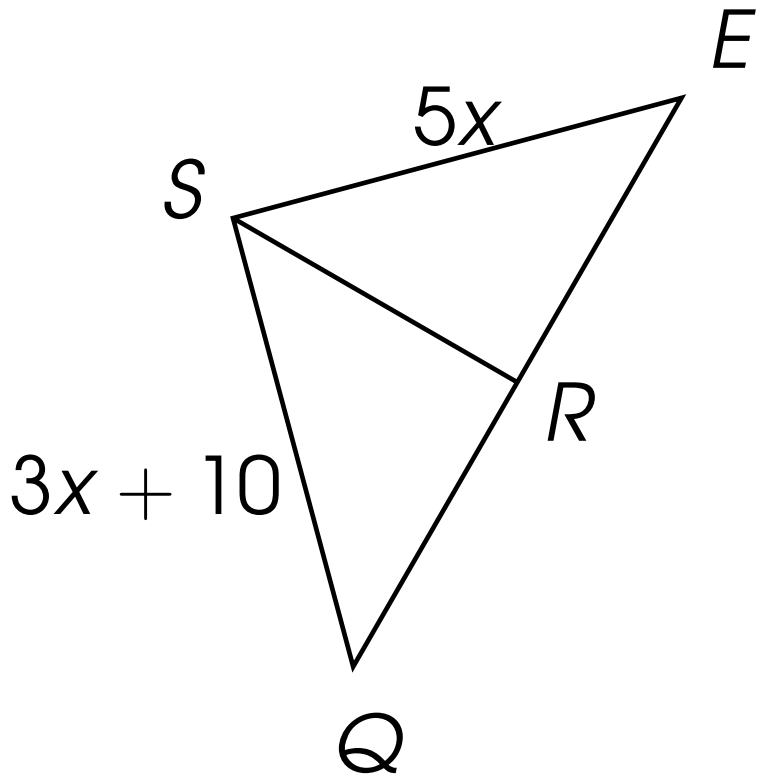
$\overline{SQ} \cong$



Example 5

Given: $\triangle ESR \cong \triangle QSR$
Find: $m\overline{SQ}$

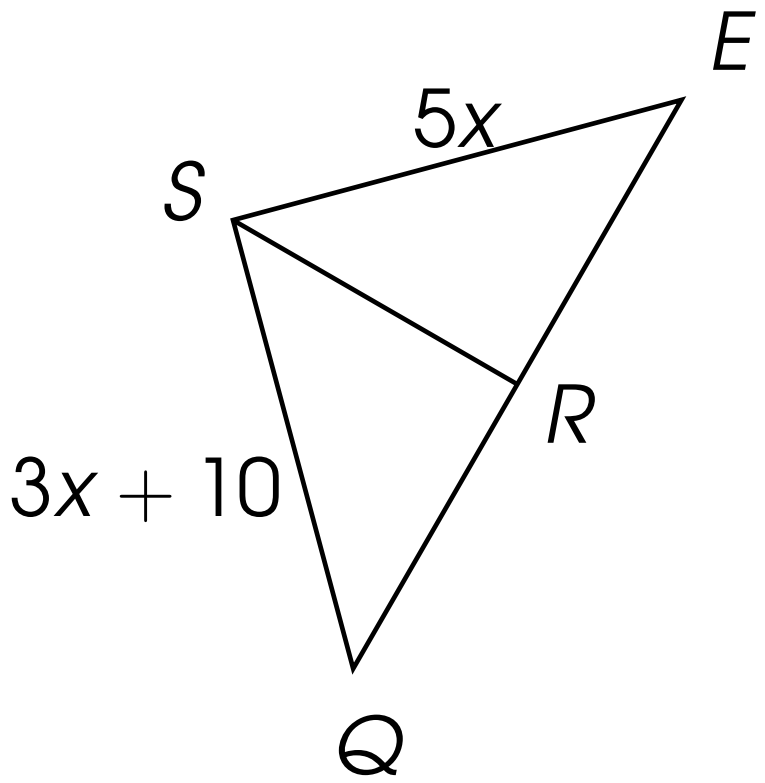
$\overline{SQ} \cong \overline{SE}$



Example 5

Given: $\triangle ESR \cong \triangle QSR$
Find: $m\overline{SQ}$

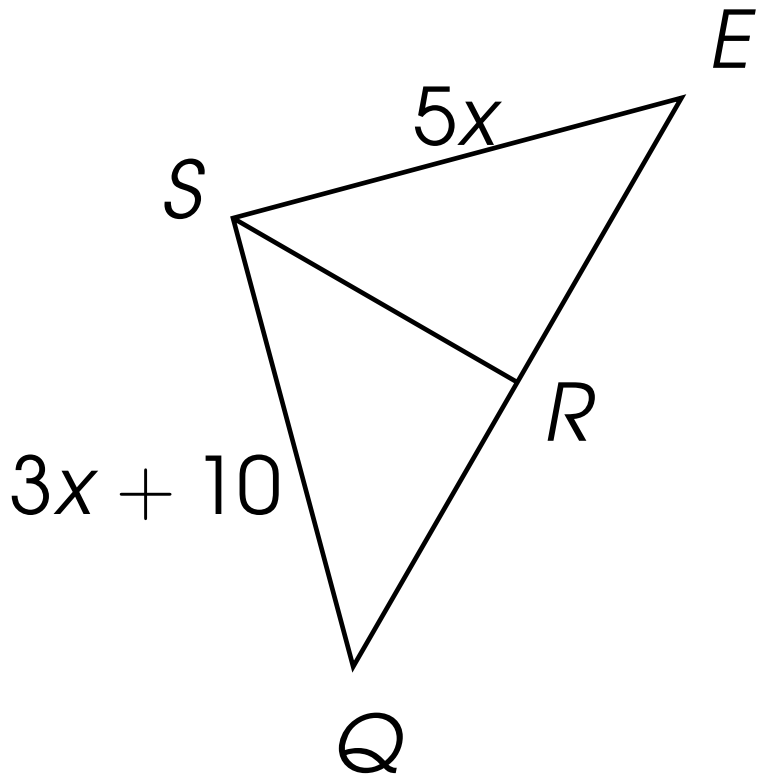
$\overline{SQ} \cong \overline{SE}$
$m\overline{SQ} = m\overline{SE}$



Example 5

Given: $\triangle ESR \cong \triangle QSR$
Find: $m\overline{SQ}$

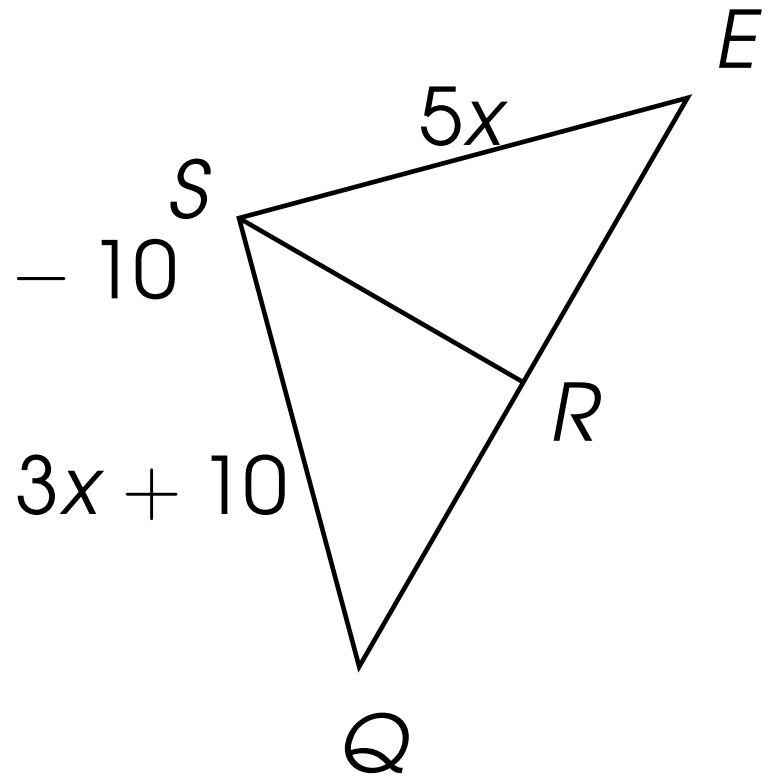
$\overline{SQ} \cong \overline{SE}$
$m\overline{SQ} = m\overline{SE}$
$3x + 10 = 5x$



Example 5

Given: $\triangle ESR \cong \triangle QSR$
Find: $m\overline{SQ}$

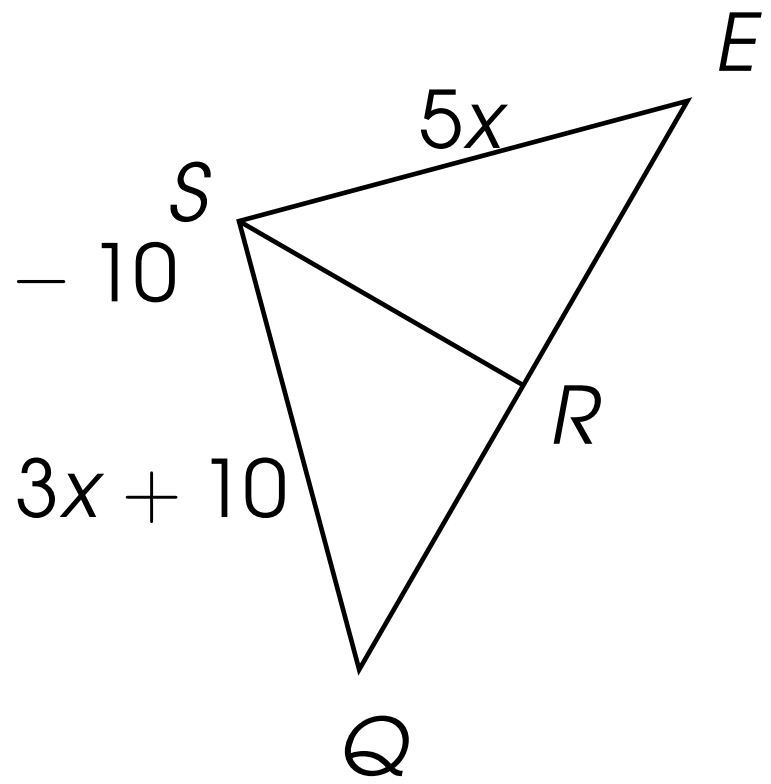
$\overline{SQ} \cong \overline{SE}$
$m\overline{SQ} = m\overline{SE}$
$3x + 10 = 5x$
$3x - 5x + 10 - 10 = 5x - 5x - 10$



Example 5

Given: $\triangle ESR \cong \triangle QSR$
Find: $m\overline{SQ}$

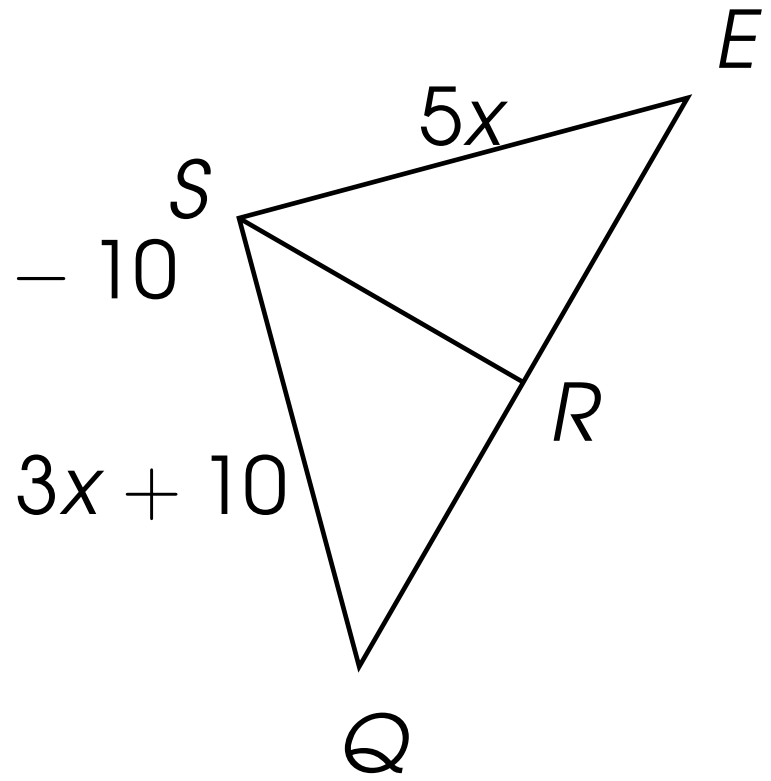
$\overline{SQ} \cong \overline{SE}$
$m\overline{SQ} = m\overline{SE}$
$3x + 10 = 5x$
$3x - 5x + 10 - 10 = 5x - 5x - 10$
$-2x = -10$



Example 5

Given: $\triangle ESR \cong \triangle QSR$
Find: $m\overline{SQ}$

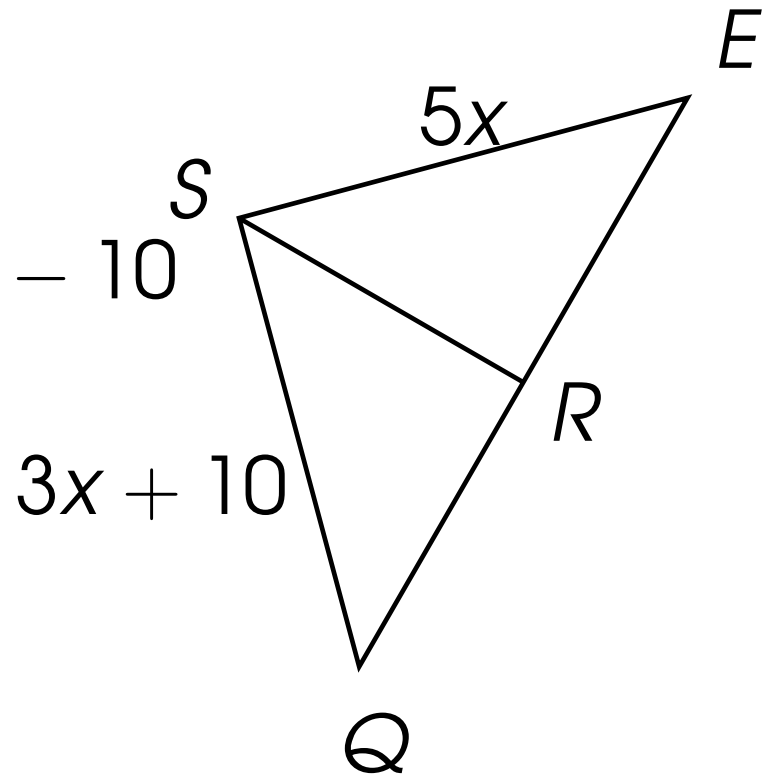
$\overline{SQ} \cong \overline{SE}$
$m\overline{SQ} = m\overline{SE}$
$3x + 10 = 5x$
$3x - 5x + 10 - 10 = 5x - 5x - 10$
$-2x = -10$
$\frac{-2x}{-2} = \frac{-10}{-2}$



Example 5

Given: $\triangle ESR \cong \triangle QSR$
Find: $m\overline{SQ}$

$\overline{SQ} \cong \overline{SE}$
$m\overline{SQ} = m\overline{SE}$
$3x + 10 = 5x$
$3x - 5x + 10 - 10 = 5x - 5x - 10$
$-2x = -10$
$\frac{-2x}{-2} = \frac{-10}{-2}$
$x = 5$

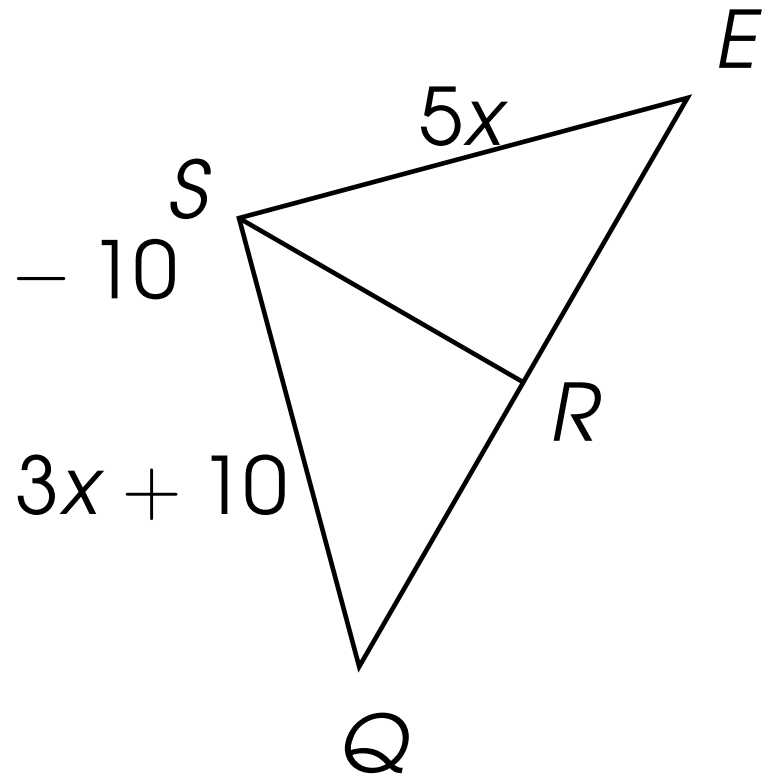


Example 5

Given: $\triangle ESR \cong \triangle QSR$
Find: $m\overline{SQ}$

$\overline{SQ} \cong \overline{SE}$
$m\overline{SQ} = m\overline{SE}$
$3x + 10 = 5x$
$3x - 5x + 10 - 10 = 5x - 5x - 10$
$-2x = -10$
$\frac{-2x}{-2} = \frac{-10}{-2}$
$x = 5$

$m\overline{SQ} = 3x + 10$

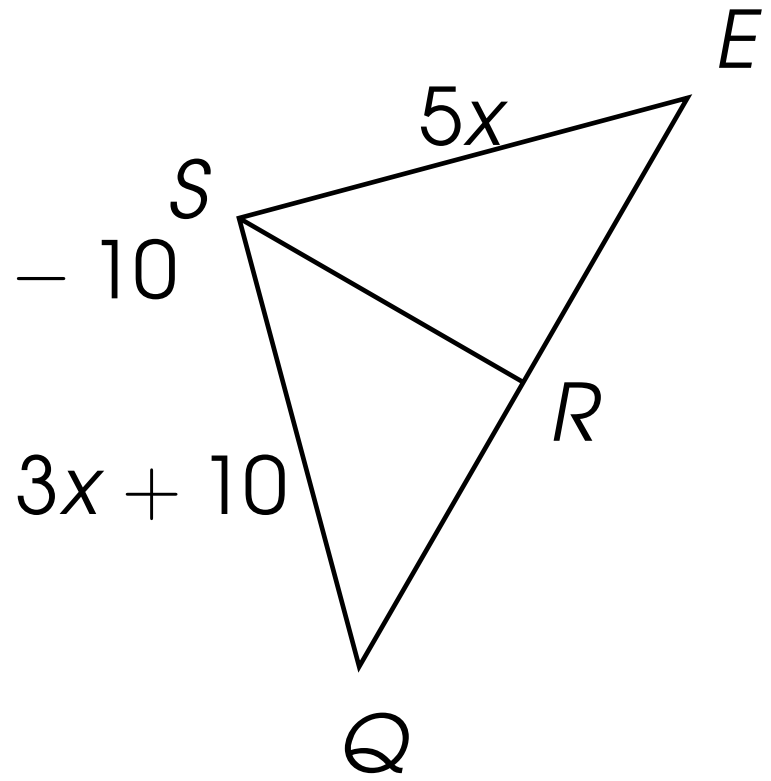


Example 5

Given: $\triangle ESR \cong \triangle QSR$
Find: $m\overline{SQ}$

$\overline{SQ} \cong \overline{SE}$
$m\overline{SQ} = m\overline{SE}$
$3x + 10 = 5x$
$3x - 5x + 10 - 10 = 5x - 5x - 10$
$-2x = -10$
$\frac{-2x}{-2} = \frac{-10}{-2}$
$x = 5$

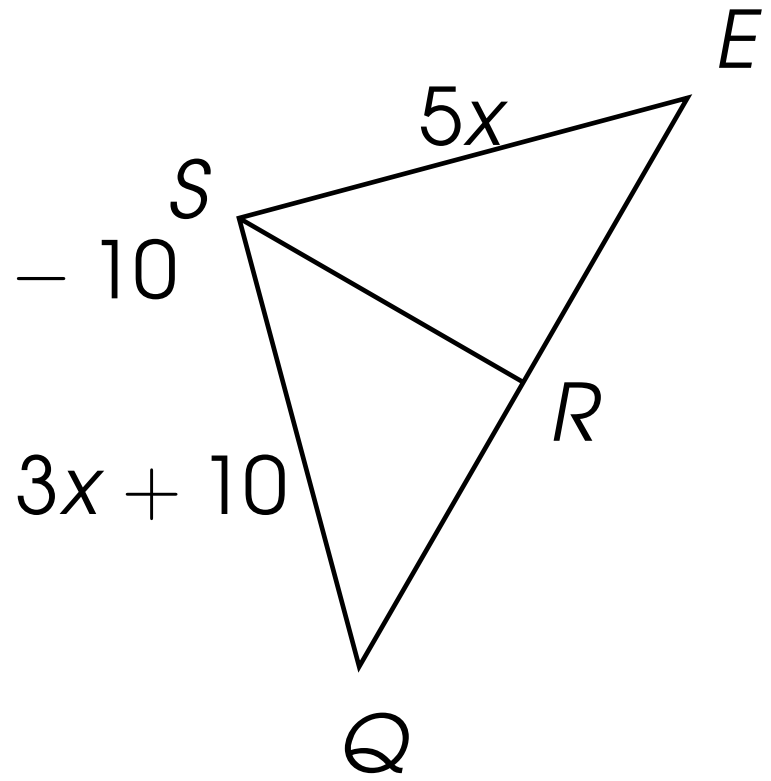
$m\overline{SQ} = 3x + 10$
$m\overline{SQ} = 3(5) + 10$



Example 5

Given: $\triangle ESR \cong \triangle QSR$
Find: $m\overline{SQ}$

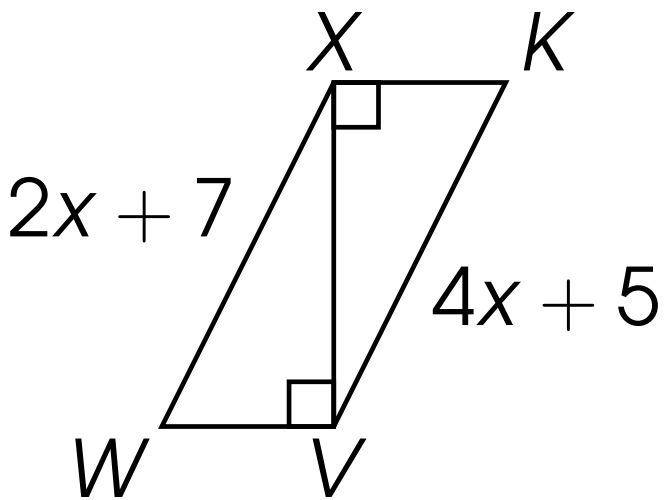
$\overline{SQ} \cong \overline{SE}$
$m\overline{SQ} = m\overline{SE}$
$3x + 10 = 5x$
$3x - 5x + 10 - 10 = 5x - 5x - 10$
$-2x = -10$
$\frac{-2x}{-2} = \frac{-10}{-2}$
$x = 5$



$m\overline{SQ} = 3x + 10$
$m\overline{SQ} = 3(5) + 10$
$m\overline{SQ} = 25$ units

Example 6

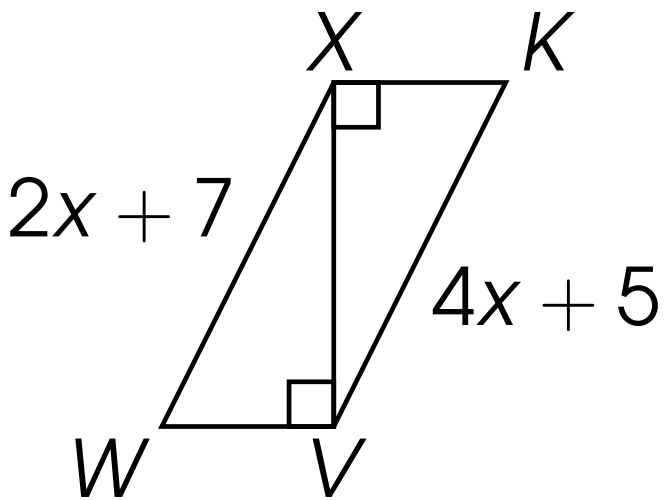
Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70°$
Find: $m\overline{XW}$ and $m\angle K$



Example 6

Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70°$
Find: $m\overline{XW}$ and $m\angle K$

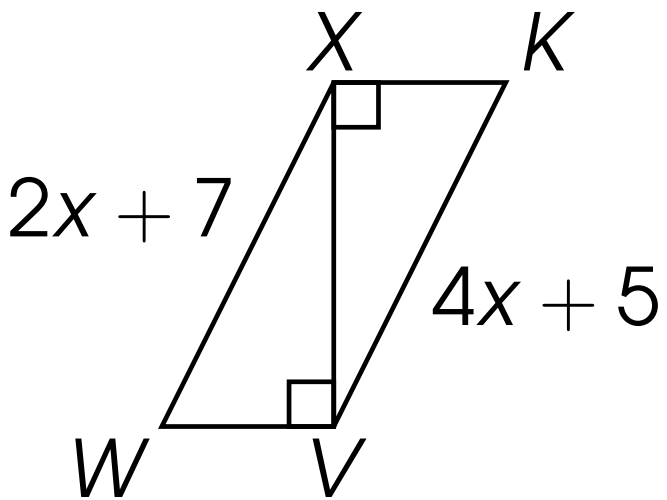
$\overline{XW} \cong$



Example 6

Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70°$
Find: $m\overline{XW}$ and $m\angle K$

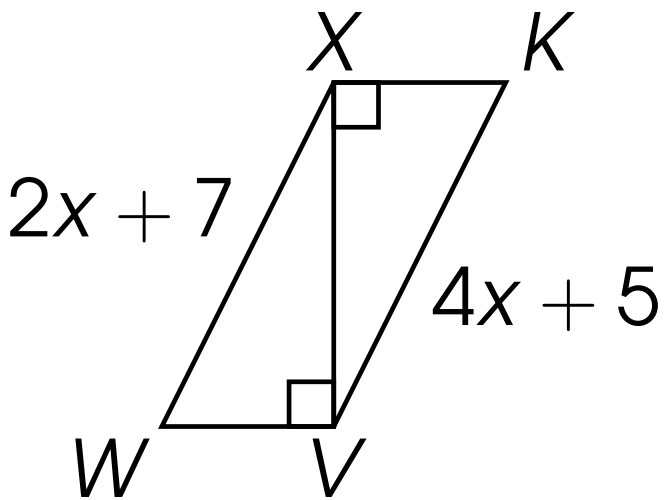
$\overline{XW} \cong \overline{VK}$



Example 6

Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70°$
Find: $m\overline{XW}$ and $m\angle K$

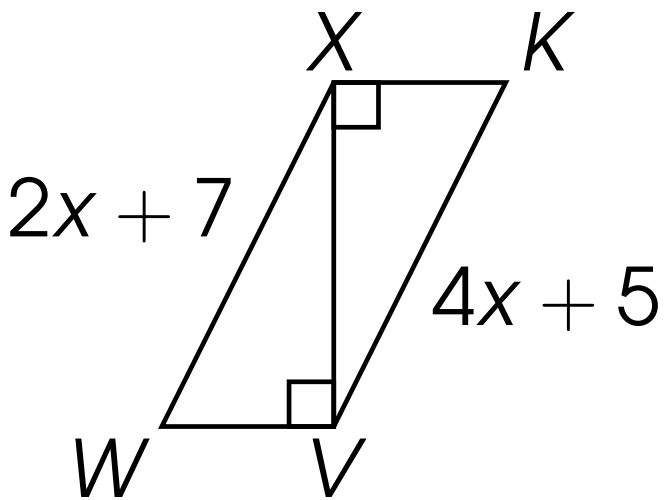
$\overline{XW} \cong \overline{VK}$
$m\overline{XW} = m\overline{VK}$



Example 6

Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70°$
Find: $m\overline{XW}$ and $m\angle K$

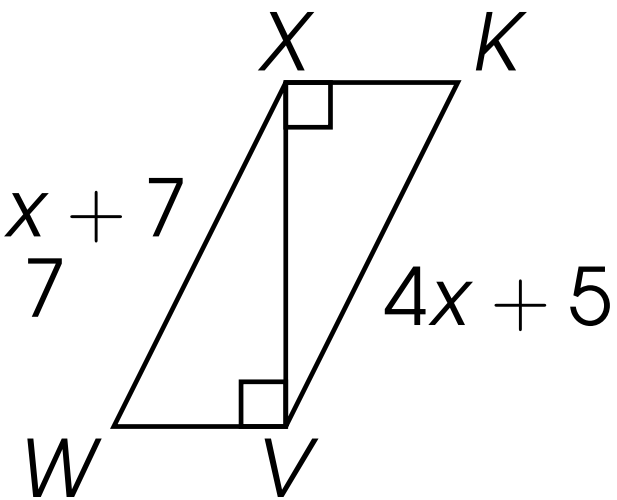
$\overline{XW} \cong \overline{VK}$
$m\overline{XW} = m\overline{VK}$
$2x + 7 = 4x + 5$



Example 6

Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70^\circ$
Find: $m\overline{XW}$ and $m\angle K$

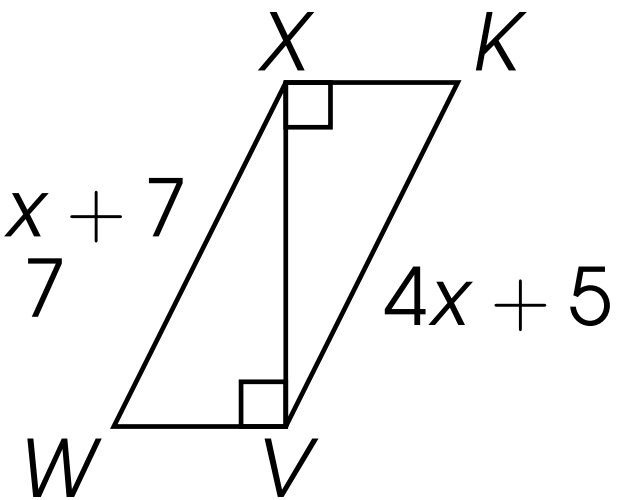
$\overline{XW} \cong \overline{VK}$
$m\overline{XW} = m\overline{VK}$
$2x + 7 = 4x + 5$
$2x - 4x + 7 - 7 = 4x - 4x + 5 - 7$



Example 6

Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70^\circ$
Find: $m\overline{XW}$ and $m\angle K$

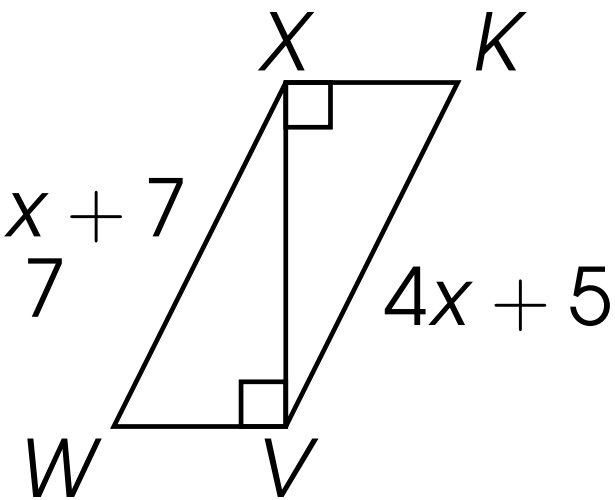
$\overline{XW} \cong \overline{VK}$
$m\overline{XW} = m\overline{VK}$
$2x + 7 = 4x + 5$
$2x - 4x + 7 - 7 = 4x - 4x + 5 - 7$
$-2x = -2$



Example 6

Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70^\circ$
Find: $m\overline{XW}$ and $m\angle K$

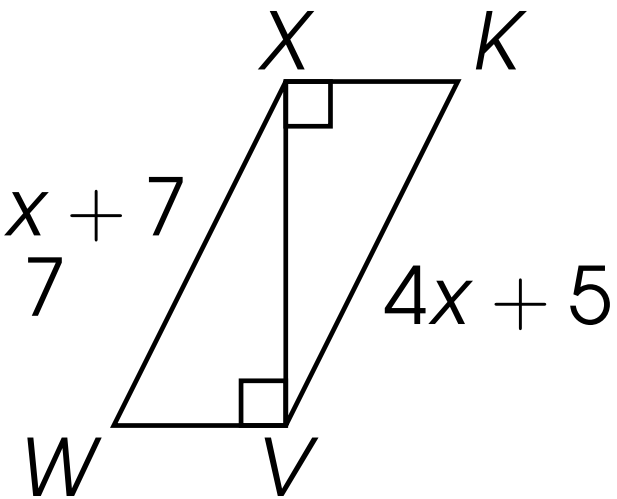
$\overline{XW} \cong \overline{VK}$
$m\overline{XW} = m\overline{VK}$
$2x + 7 = 4x + 5$
$2x - 4x + 7 - 7 = 4x - 4x + 5 - 7$
$-2x = -2$
$\frac{-2x}{-2} = \frac{-2}{-2}$



Example 6

Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70^\circ$
Find: $m\overline{XW}$ and $m\angle K$

$\overline{XW} \cong \overline{VK}$
$m\overline{XW} = m\overline{VK}$
$2x + 7 = 4x + 5$
$2x - 4x + 7 - 7 = 4x - 4x + 5 - 7$
$-2x = -2$
$\frac{-2x}{-2} = \frac{-2}{-2}$
$x = 1$

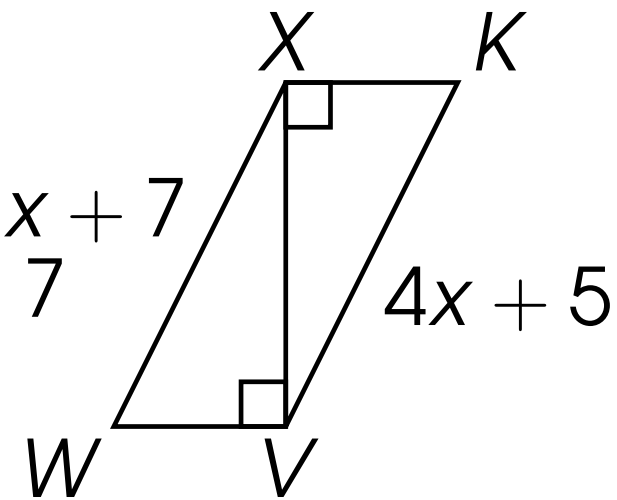


Example 6

Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70^\circ$
Find: $m\overline{XW}$ and $m\angle K$

$\overline{XW} \cong \overline{VK}$
$m\overline{XW} = m\overline{VK}$
$2x + 7 = 4x + 5$
$2x - 4x + 7 - 7 = 4x - 4x + 5 - 7$
$-2x = -2$
$\frac{-2x}{-2} = \frac{-2}{-2}$
$x = 1$

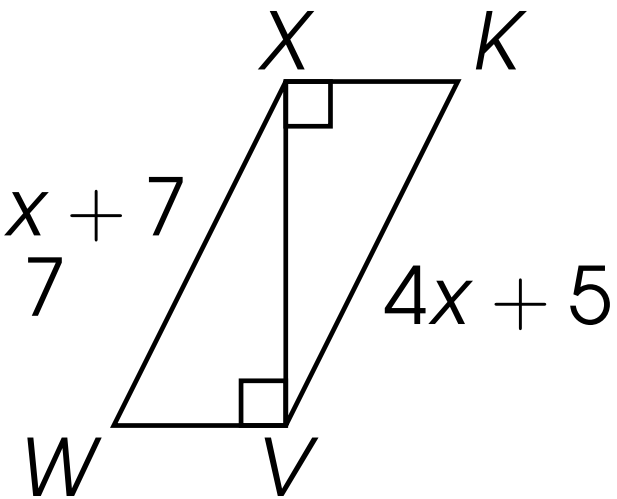
$m\overline{XW} = 2x + 7$



Example 6

Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70°$
Find: $m\overline{XW}$ and $m\angle K$

$\overline{XW} \cong \overline{VK}$
$m\overline{XW} = m\overline{VK}$
$2x + 7 = 4x + 5$
$2x - 4x + 7 - 7 = 4x - 4x + 5 - 7$
$-2x = -2$
$\frac{-2x}{-2} = \frac{-2}{-2}$
$x = 1$

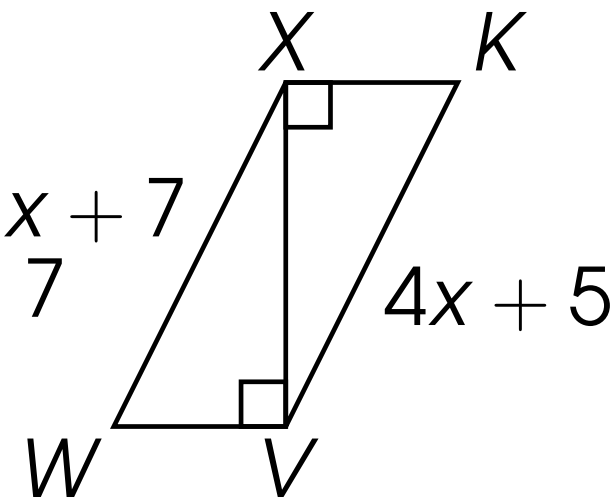


$m\overline{XW} = 2x + 7$
$m\overline{XW} = 2(1) + 7$

Example 6

Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70°$
Find: $m\overline{XW}$ and $m\angle K$

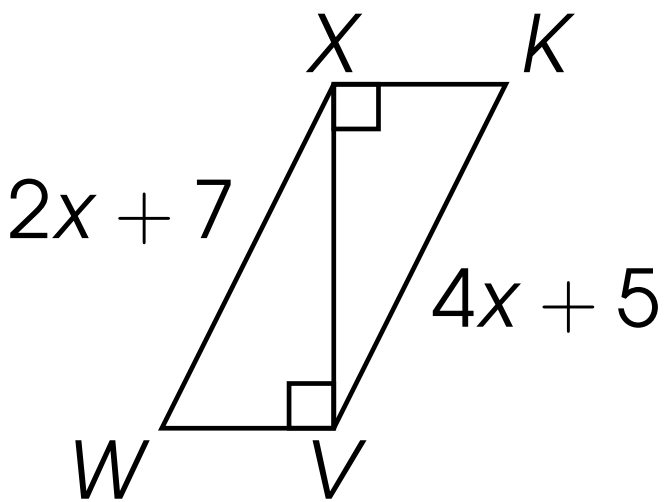
$\overline{XW} \cong \overline{VK}$
$m\overline{XW} = m\overline{VK}$
$2x + 7 = 4x + 5$
$2x - 4x + 7 - 7 = 4x - 4x + 5 - 7$
$-2x = -2$
$\frac{-2x}{-2} = \frac{-2}{-2}$
$x = 1$



$m\overline{XW} = 2x + 7$
$m\overline{XW} = 2(1) + 7$
$m\overline{XW} = 9$ units

Example 6

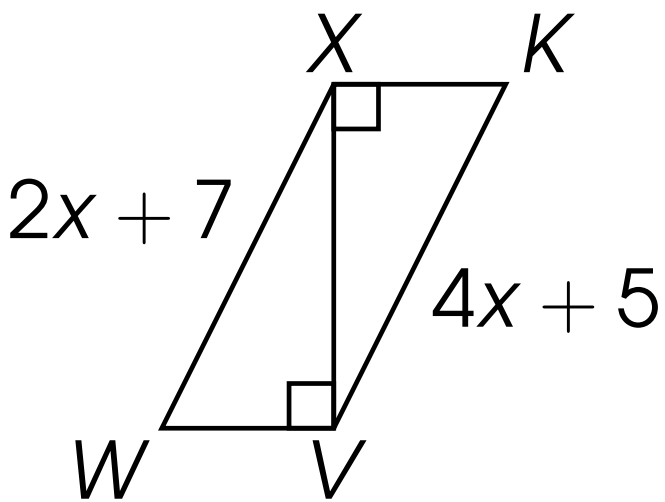
Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70°$
Find: $m\overline{XW}$ and $m\angle K$



Example 6

Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70°$
Find: $m\overline{XW}$ and $m\angle K$

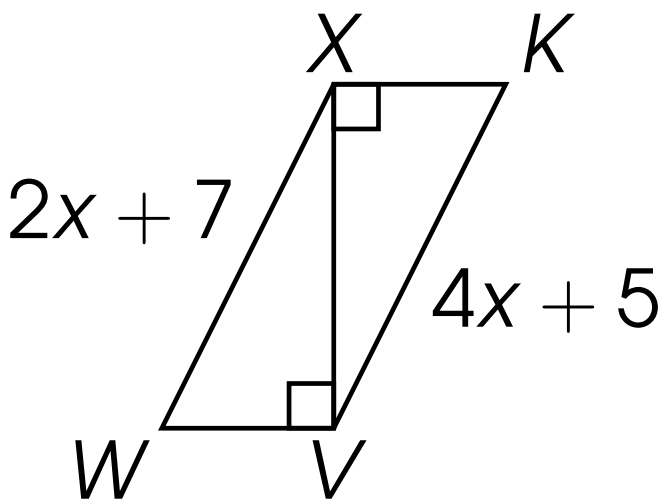
$\angle K \cong$



Example 6

Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70°$
Find: $m\overline{XW}$ and $m\angle K$

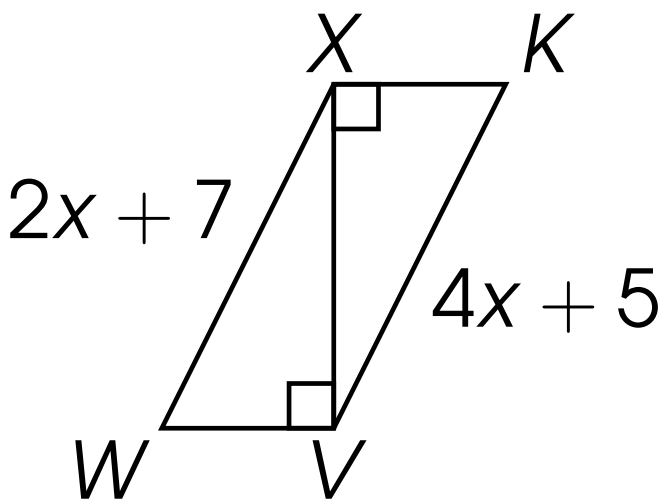
$\angle K \cong \angle W$



Example 6

Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70°$
Find: $m\overline{XW}$ and $m\angle K$

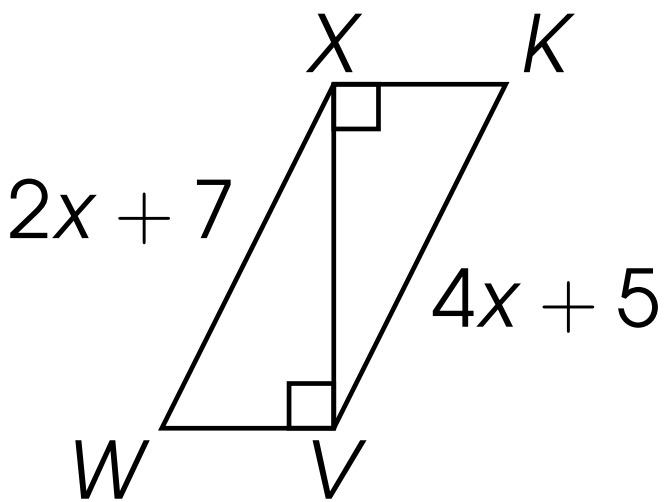
$\angle K \cong \angle W$
$m\angle K = m\angle W$



Example 6

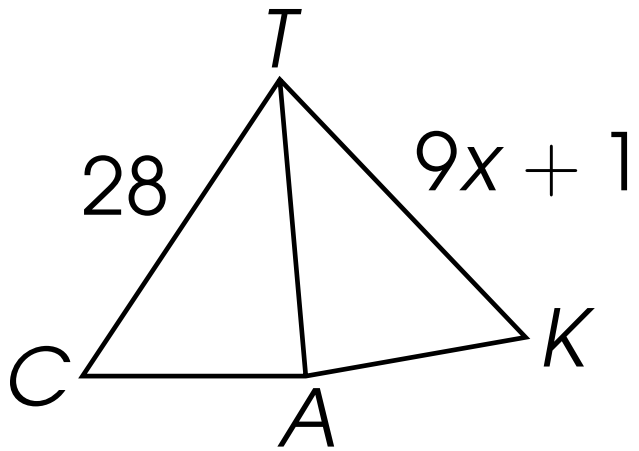
Given: $\triangle XVW \cong \triangle VXK, m\angle W = 70^\circ$
Find: $m\overline{XW}$ and $m\angle K$

$\angle K \cong \angle W$
$m\angle K = m\angle W$
$m\angle K = 70^\circ$



Example 7

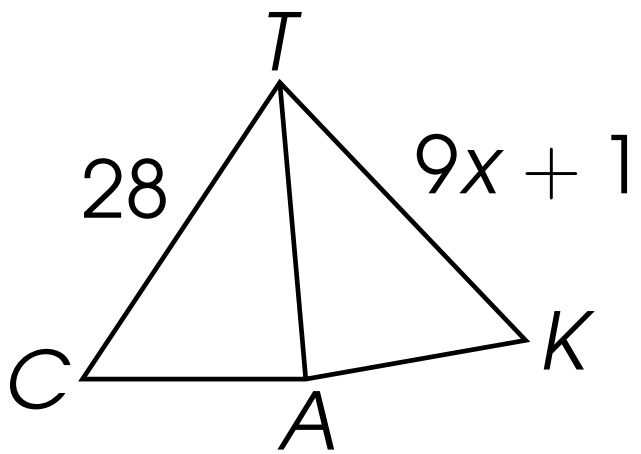
Given: $\triangle TAC \cong \triangle TAK$
Find: x



Example 7

Given: $\triangle TAC \cong \triangle TAK$
Find: x

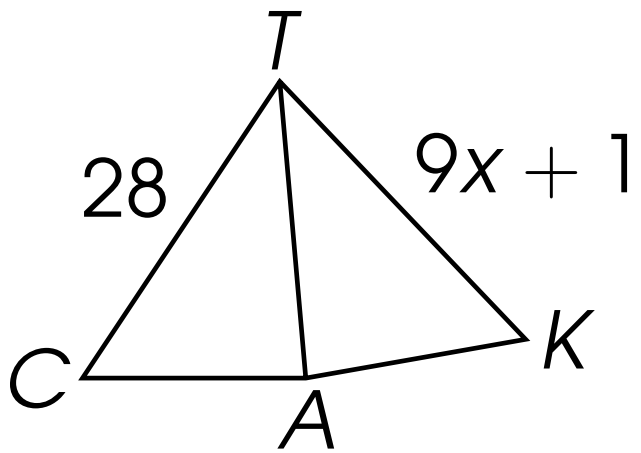
$\overline{TC} \cong$



Example 7

Given: $\triangle TAC \cong \triangle TAK$
Find: x

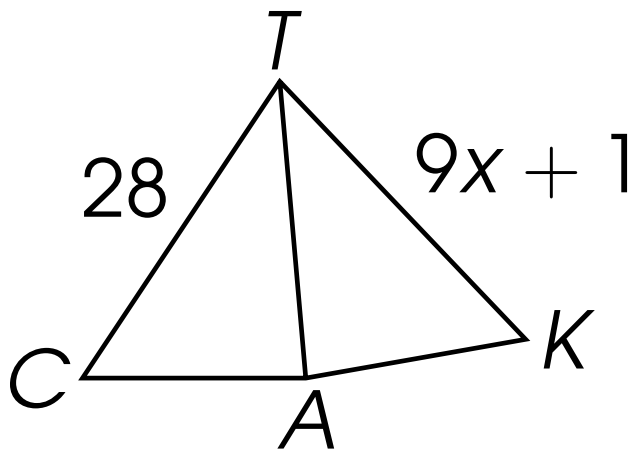
$\overline{TC} \cong \overline{TK}$



Example 7

Given: $\triangle TAC \cong \triangle TAK$
Find: x

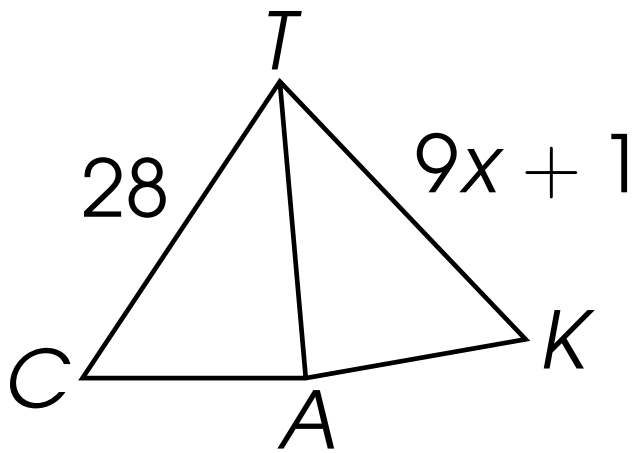
$\overline{TC} \cong \overline{TK}$
$m\overline{TC} = m\overline{TK}$



Example 7

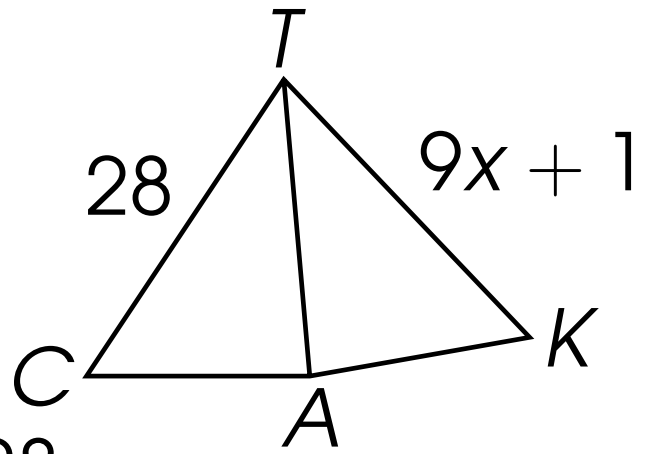
Given: $\triangle TAC \cong \triangle TAK$
Find: x

$\overline{TC} \cong \overline{TK}$
$m\overline{TC} = m\overline{TK}$
$28 = 9x + 1$



Example 7

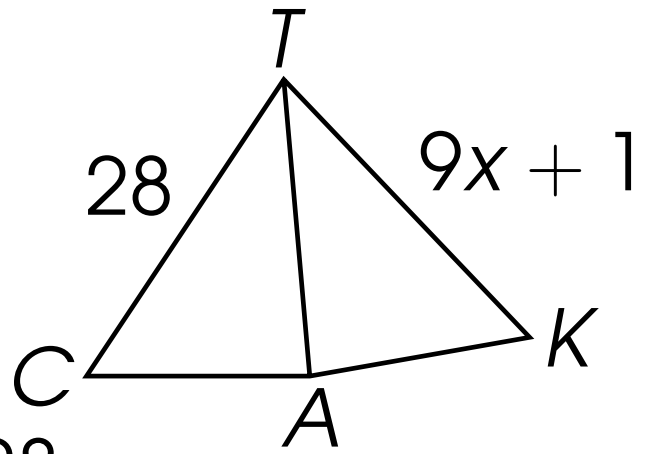
Given: $\triangle TAC \cong \triangle TAK$
Find: x



$\overline{TC} \cong \overline{TK}$
$m\overline{TC} = m\overline{TK}$
$28 = 9x + 1$
$28 - 28 - 9x = 9x - 9x + 1 - 28$

Example 7

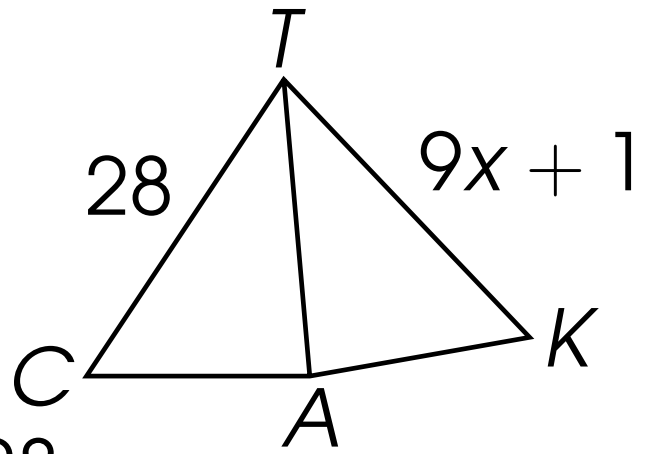
Given: $\triangle TAC \cong \triangle TAK$
Find: x



$\overline{TC} \cong \overline{TK}$
$m\overline{TC} = m\overline{TK}$
$28 = 9x + 1$
$28 - 28 - 9x = 9x - 9x + 1 - 28$
$-9x = -27$

Example 7

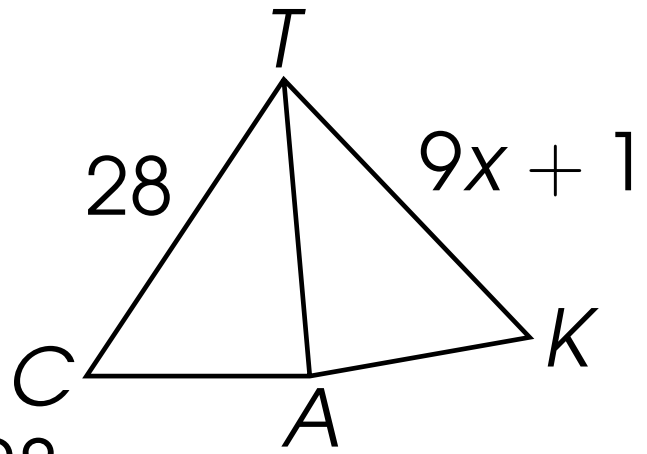
Given: $\triangle TAC \cong \triangle TAK$
Find: x



$\overline{TC} \cong \overline{TK}$
$m\overline{TC} = m\overline{TK}$
$28 = 9x + 1$
$28 - 28 - 9x = 9x - 9x + 1 - 28$
$-9x = -27$
$\frac{-9x}{-9} = \frac{-27}{-9}$

Example 7

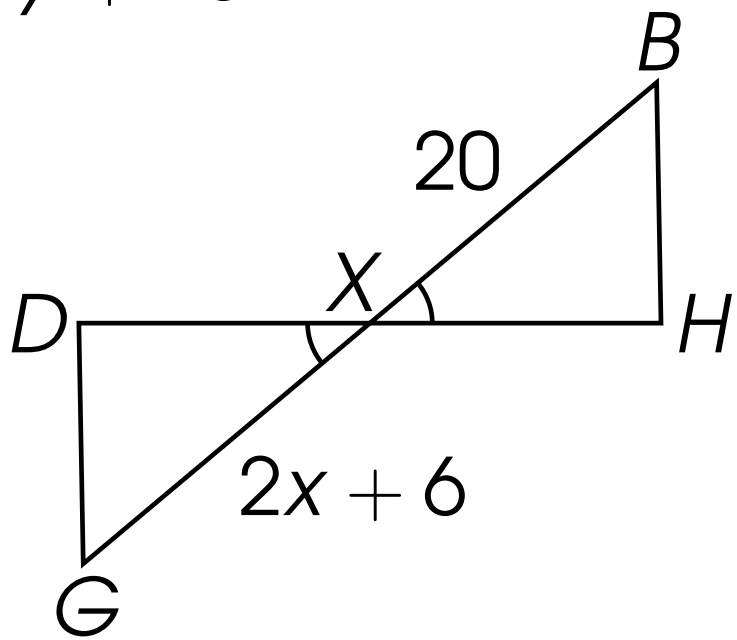
Given: $\triangle TAC \cong \triangle TAK$
Find: x



$\overline{TC} \cong \overline{TK}$
$m\overline{TC} = m\overline{TK}$
$28 = 9x + 1$
$28 - 28 - 9x = 9x - 9x + 1 - 28$
$-9x = -27$
$\frac{-9x}{-9} = \frac{-27}{-9}$
$x = 3$

Example 8

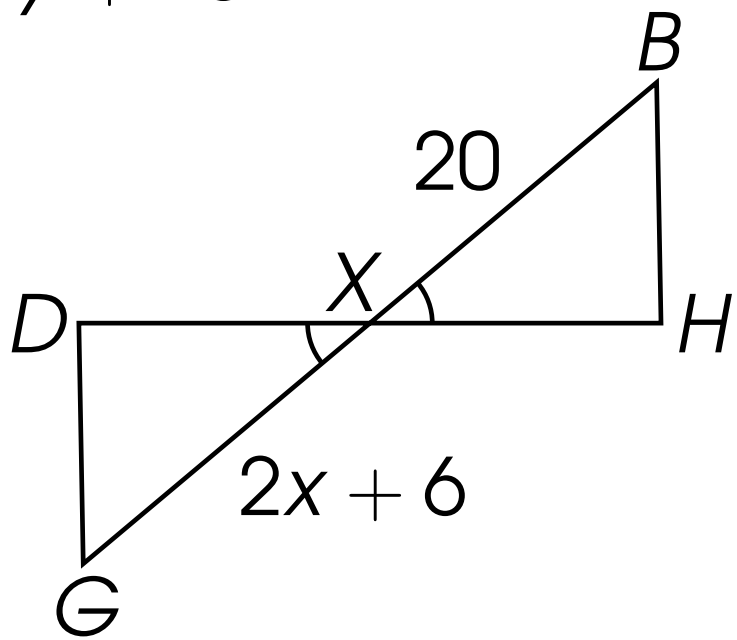
Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y



Example 8

Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y

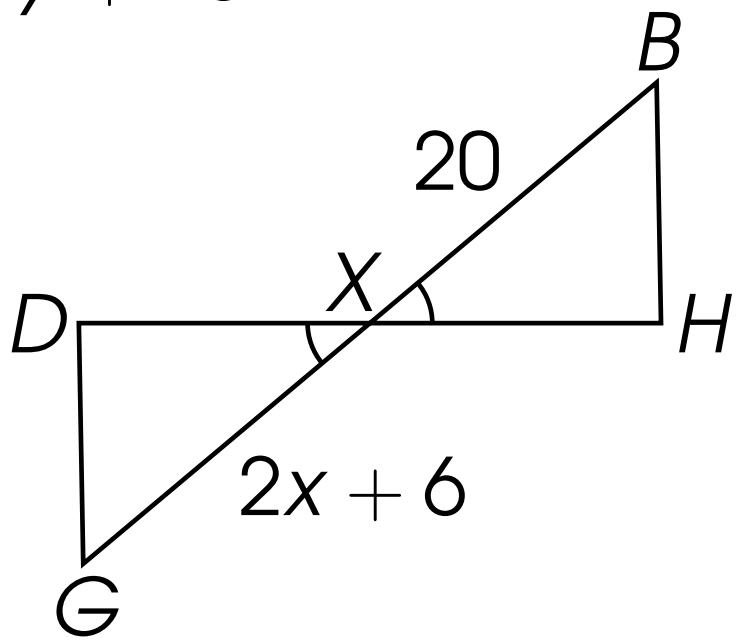
$\overline{XG} \cong$



Example 8

Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y

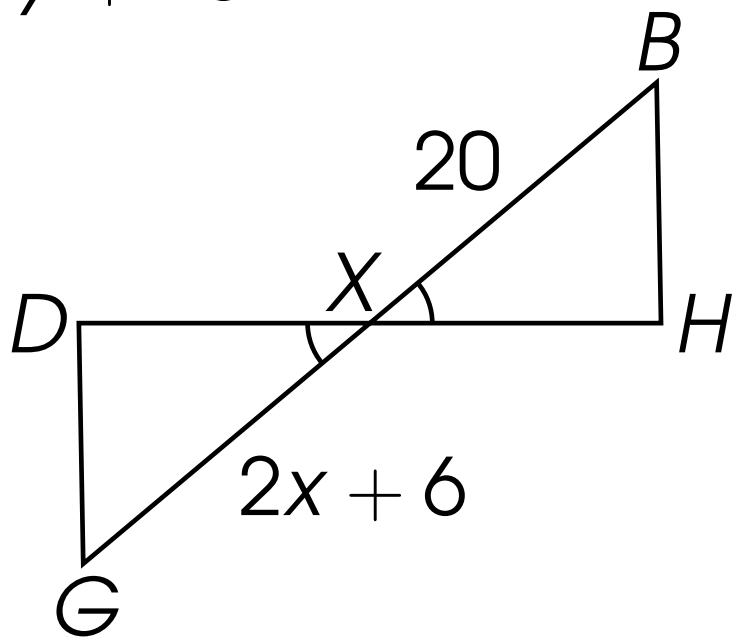
$\overline{XG} \cong \overline{XB}$



Example 8

Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y

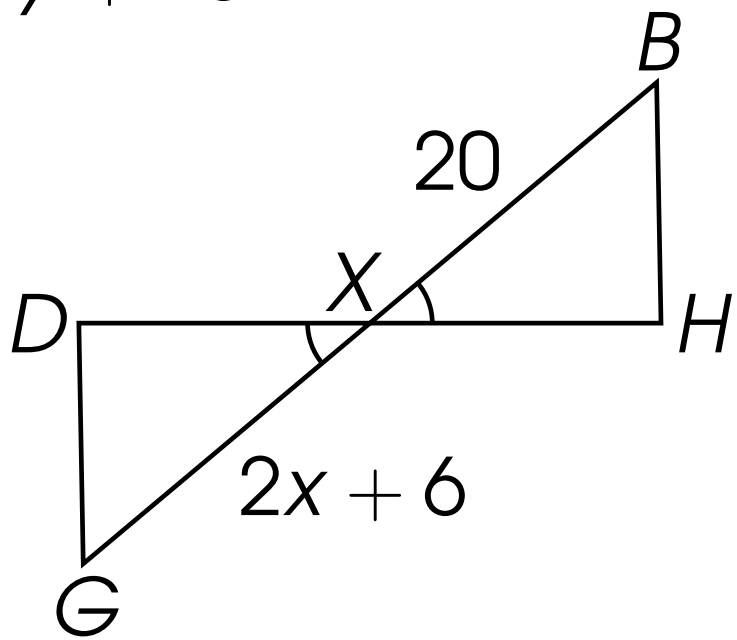
$\overline{XG} \cong \overline{XB}$
$m\overline{XG} = m\overline{XB}$



Example 8

Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y

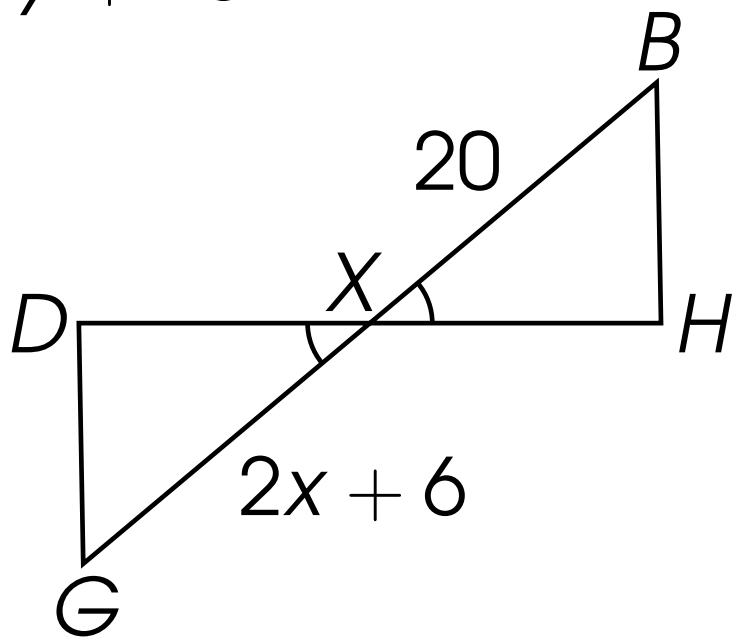
$\overline{XG} \cong \overline{XB}$
$m\overline{XG} = m\overline{XB}$
$2x + 6 = 20$



Example 8

Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y

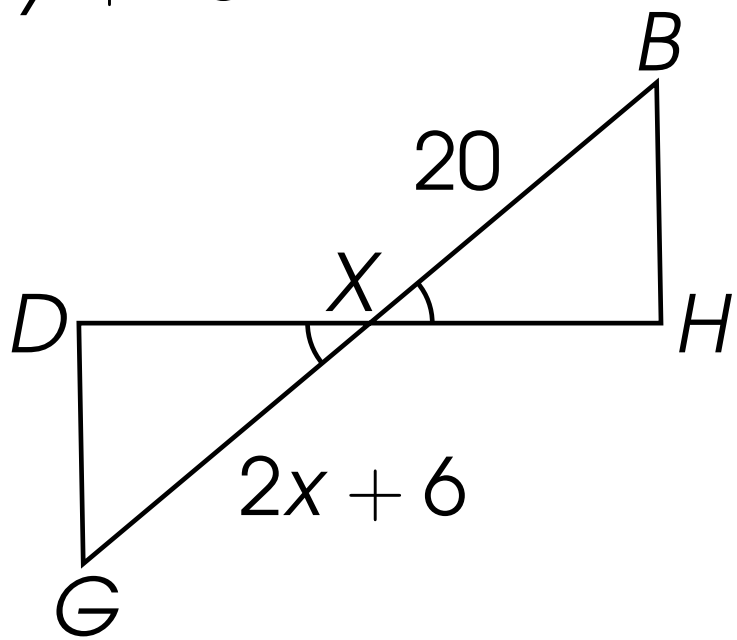
$\overline{XG} \cong \overline{XB}$
$m\overline{XG} = m\overline{XB}$
$2x + 6 = 20$
$2x + 6 - 6 = 20 - 6$



Example 8

Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y

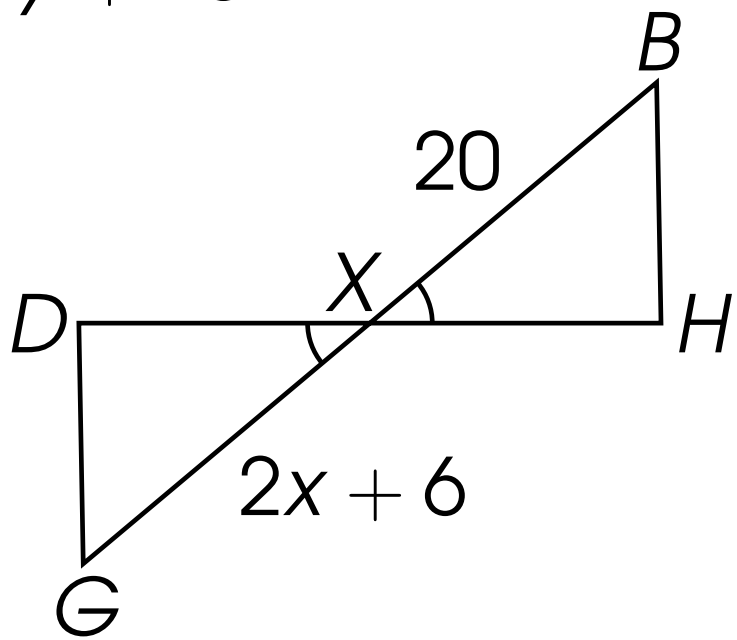
$\overline{XG} \cong \overline{XB}$
$m\overline{XG} = m\overline{XB}$
$2x + 6 = 20$
$2x + 6 - 6 = 20 - 6$
$2x = 14$



Example 8

Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y

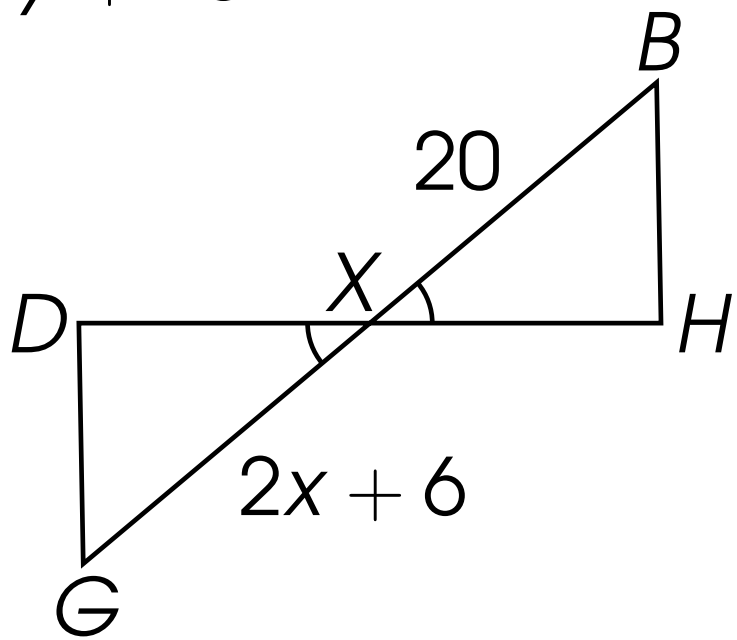
$\overline{XG} \cong \overline{XB}$
$m\overline{XG} = m\overline{XB}$
$2x + 6 = 20$
$2x + 6 - 6 = 20 - 6$
$2x = 14$
$\frac{2x}{2} = \frac{14}{2}$



Example 8

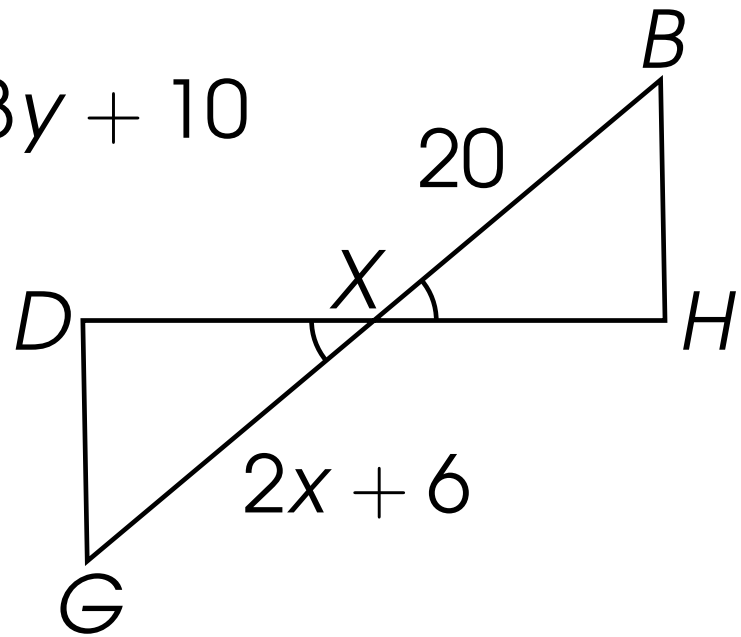
Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y

$\overline{XG} \cong \overline{XB}$
$m\overline{XG} = m\overline{XB}$
$2x + 6 = 20$
$2x + 6 - 6 = 20 - 6$
$2x = 14$
$\frac{2x}{2} = \frac{14}{2}$
$x = 7$



Example 8

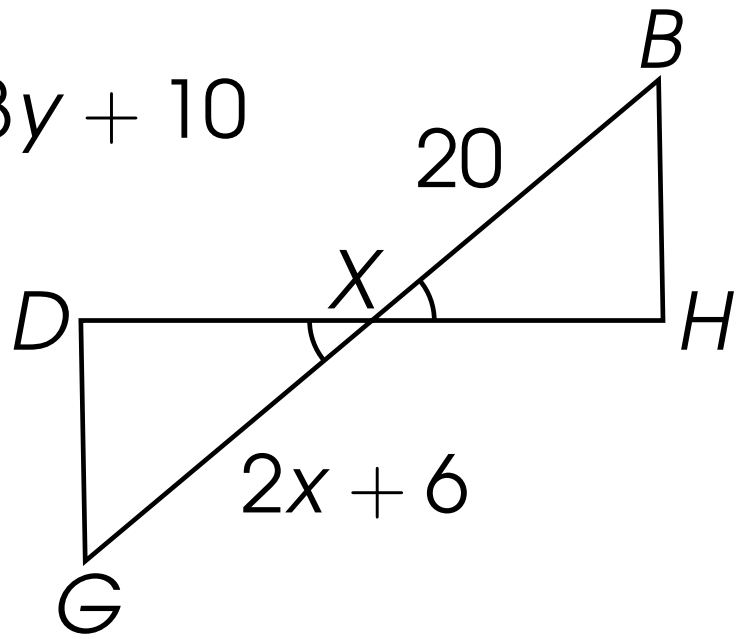
Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y



Example 8

Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y

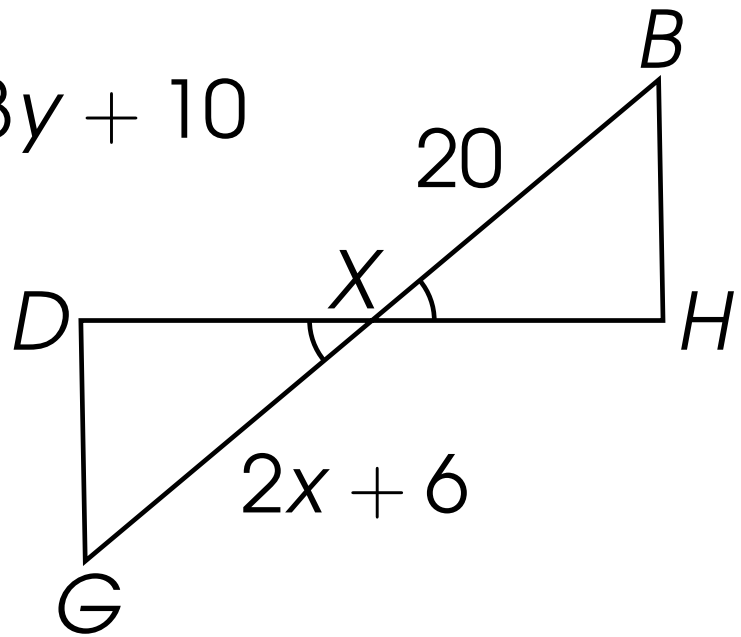
$\angle DXG \cong$



Example 8

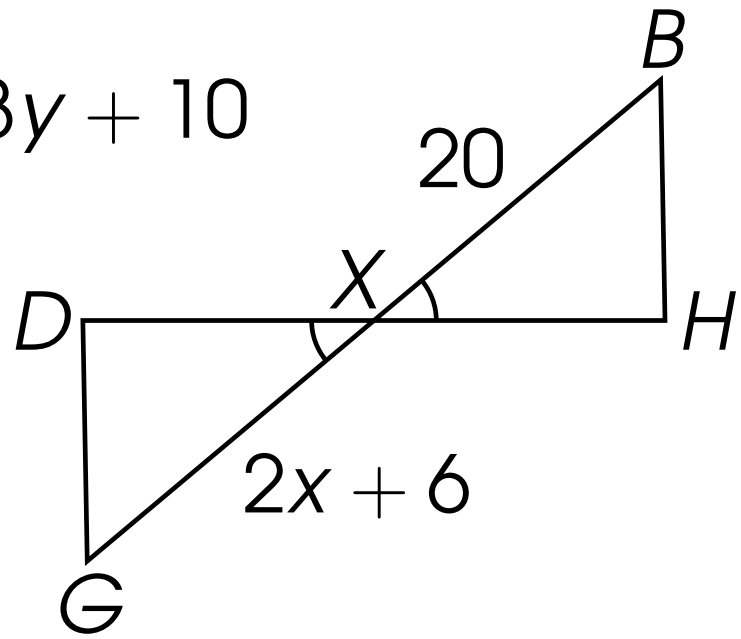
Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y

$\angle DXG \cong \angle BXH$



Example 8

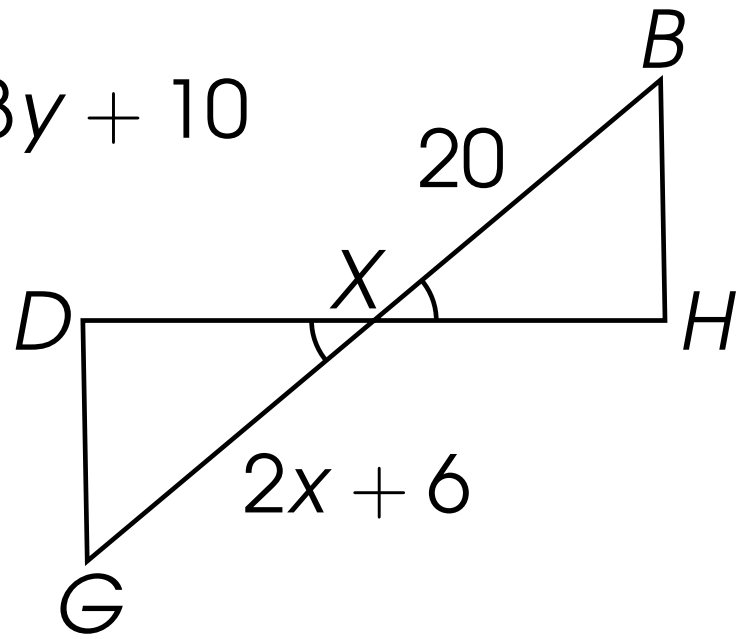
Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y



$\angle DXG \cong \angle BXH$
$m\angle DXG = m\angle BXH$

Example 8

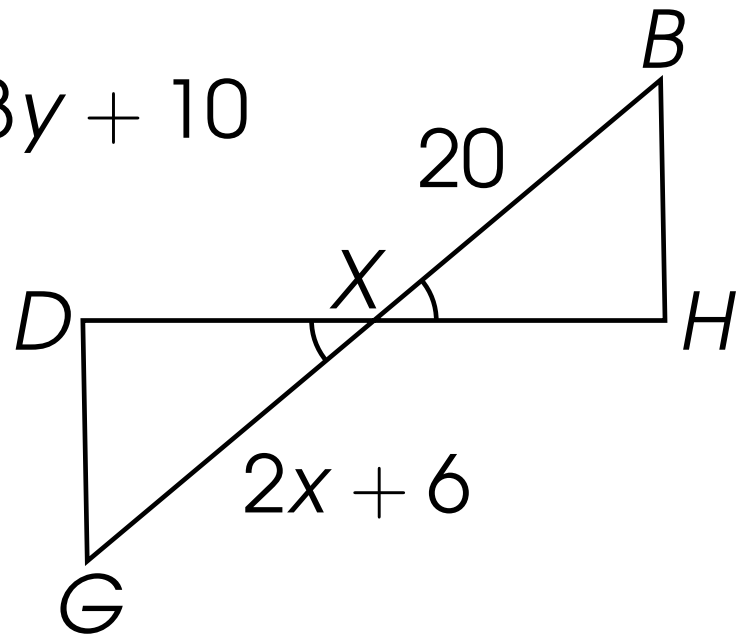
Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y



$\angle DXG \cong \angle BXH$
$m\angle DXG = m\angle BXH$
$3y + 10 = y + 30$

Example 8

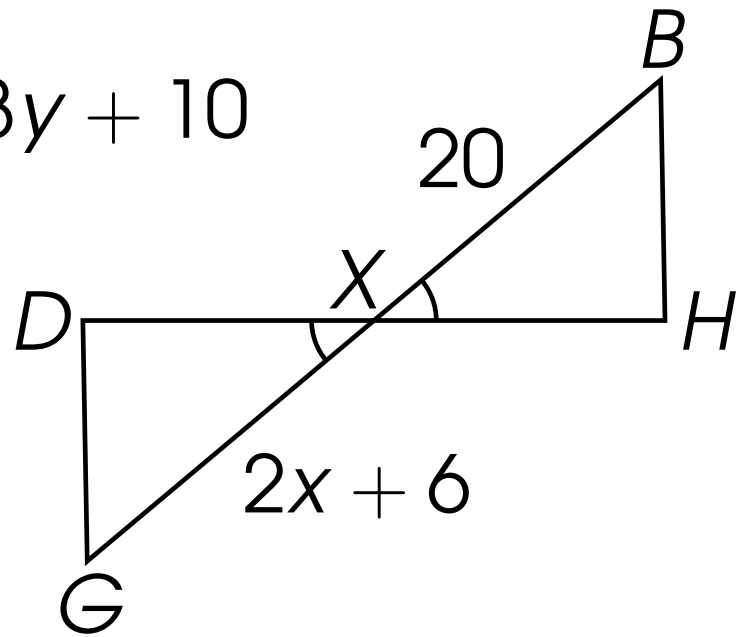
Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y



$\angle DXG \cong \angle BXH$
$m\angle DXG = m\angle BXH$
$3y + 10 = y + 30$
$3y - y + 10 - 10 = y - y + 30 - 10$

Example 8

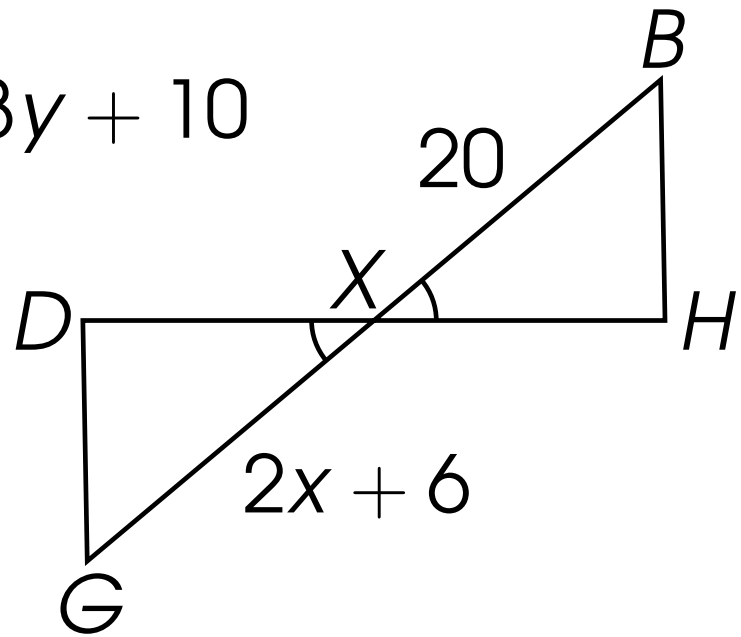
Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y



$\angle DXG \cong \angle BXH$
$m\angle DXG = m\angle BXH$
$3y + 10 = y + 30$
$3y - y + 10 - 10 = y - y + 30 - 10$
$2y = 20$

Example 8

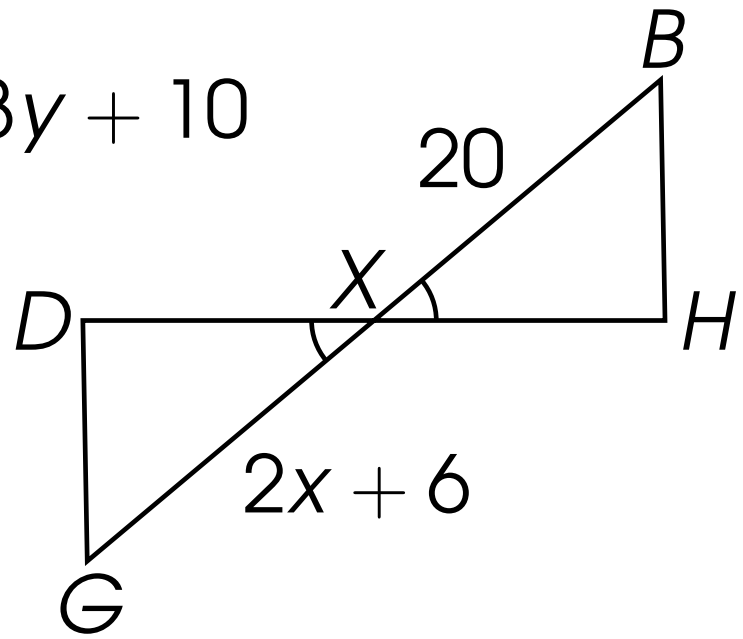
Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y



$\angle DXG \cong \angle BXH$
$m\angle DXG = m\angle BXH$
$3y + 10 = y + 30$
$3y - y + 10 - 10 = y - y + 30 - 10$
$2y = 20$
$\frac{2y}{2} = \frac{20}{2}$

Example 8

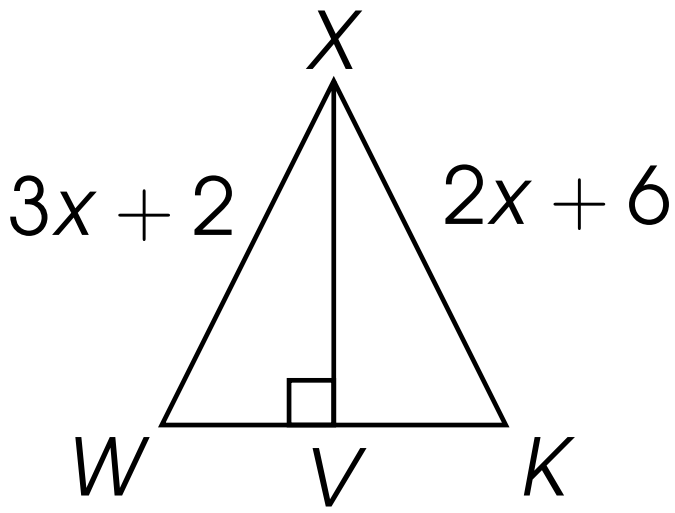
Given: $\triangle BXH \cong \triangle GXD$,
$m\angle BXH = y + 30, m\angle DXG = 3y + 10$
Find: x and y



$\angle DXG \cong \angle BXH$
$m\angle DXG = m\angle BXH$
$3y + 10 = y + 30$
$3y - y + 10 - 10 = y - y + 30 - 10$
$2y = 20$
$\frac{2y}{2} = \frac{20}{2}$
$y = 10$

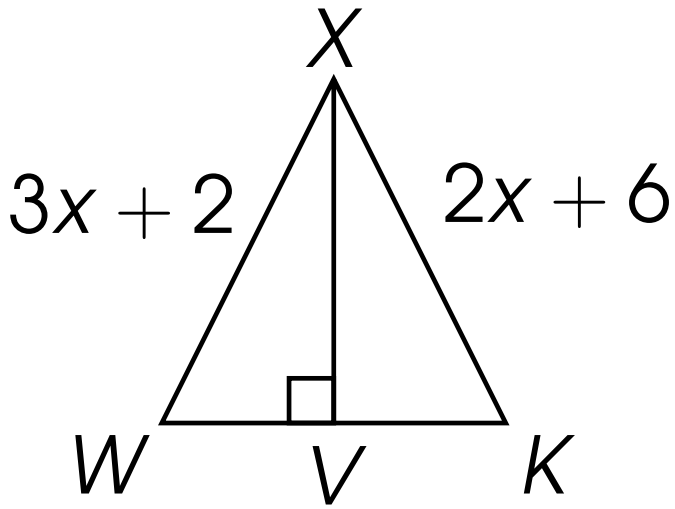
Example 9

Given: $\triangle XWK$ is an equilateral triangle,
V is the midpoint of $\overline{WK}$
Find: $m\overline{WV}$



Example 9

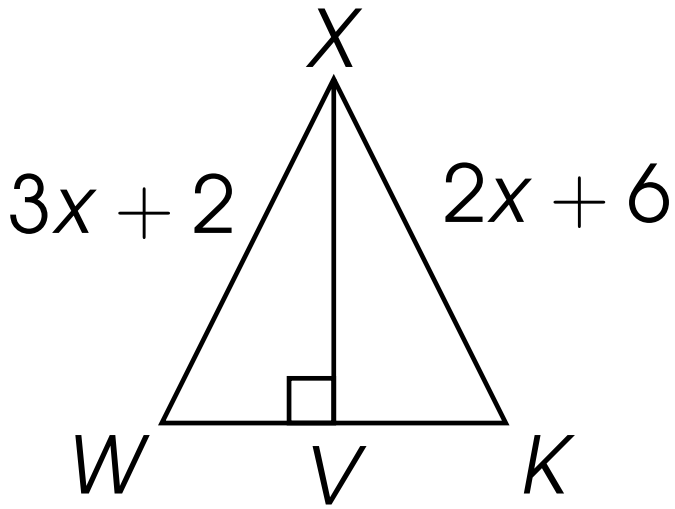
Given: $\triangle XWK$ is an equilateral triangle,
V is the midpoint of $\overline{WK}$
Find: $m\overline{WV}$



$\overline{XW} \cong$

Example 9

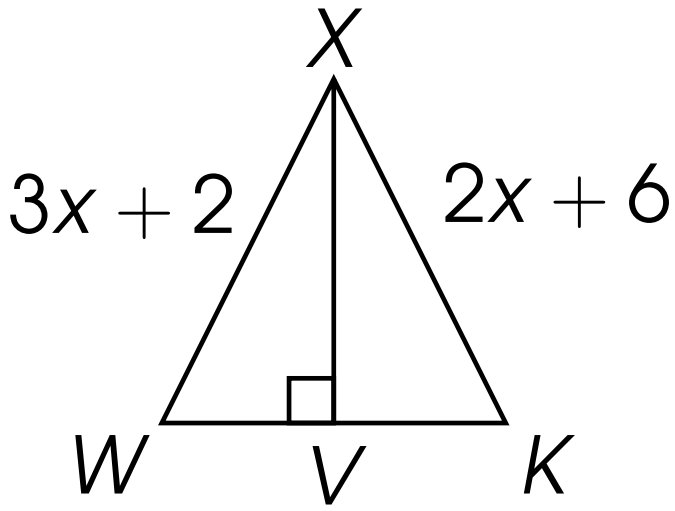
Given: $\triangle XWK$ is an equilateral triangle,
V is the midpoint of $\overline{WK}$
Find: $m\overline{WV}$



$\overline{XW} \cong \overline{XK}$

Example 9

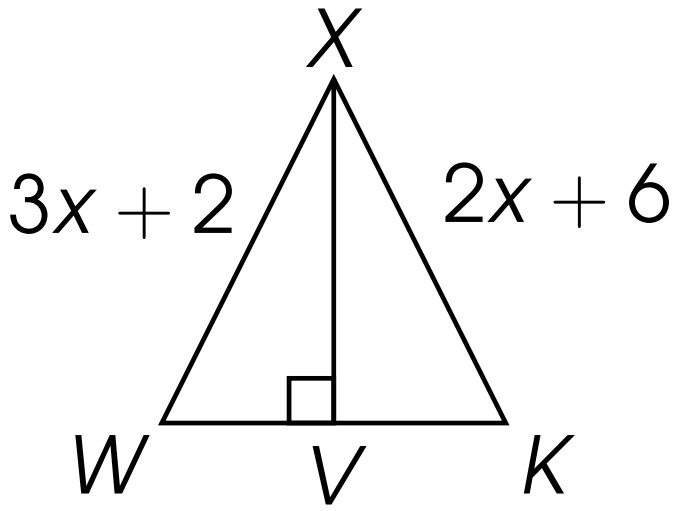
Given: $\triangle XWK$ is an equilateral triangle,
V is the midpoint of $\overline{WK}$
Find: $m\overline{WV}$



$\overline{XW} \cong \overline{XK}$
$m\overline{XW} = m\overline{XK}$

Example 9

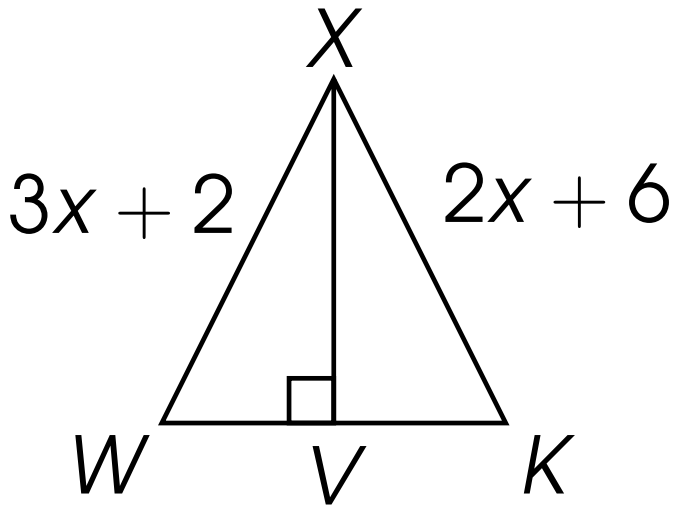
Given: $\triangle XWK$ is an equilateral triangle,
V is the midpoint of $\overline{WK}$
Find: $m\overline{WV}$



$\overline{XW} \cong \overline{XK}$
$m\overline{XW} = m\overline{XK}$
$3x + 2 = 2x + 6$

Example 9

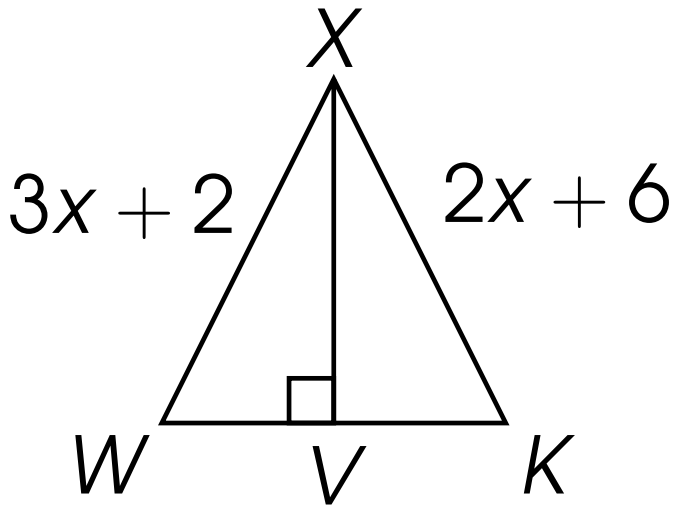
Given: $\triangle XWK$ is an equilateral triangle,
V is the midpoint of $\overline{WK}$
Find: $m\overline{WV}$



$\overline{XW} \cong \overline{XK}$
$m\overline{XW} = m\overline{XK}$
$3x + 2 = 2x + 6$
$3x - 2x + 2 - 2 = 2x - 2x + 6 - 2$

Example 9

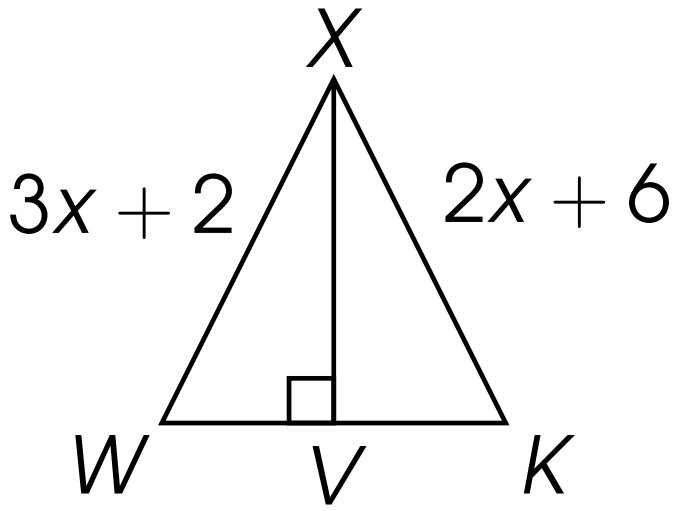
Given: $\triangle XWK$ is an equilateral triangle,
V is the midpoint of $\overline{WK}$
Find: $m\overline{WV}$



$\overline{XW} \cong \overline{XK}$
$m\overline{XW} = m\overline{XK}$
$3x + 2 = 2x + 6$
$3x - 2x + 2 - 2 = 2x - 2x + 6 - 2$
$x = 4$

Example 9

Given: $\triangle XWK$ is an equilateral triangle,
V is the midpoint of $\overline{WK}$
Find: $m\overline{WV}$

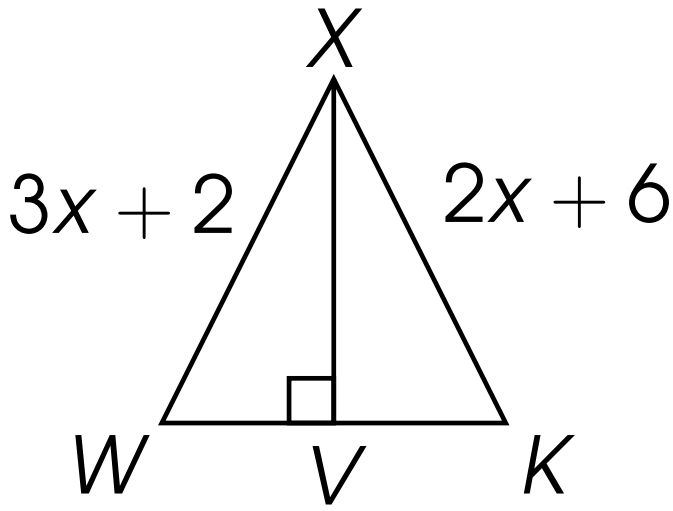


$\overline{XW} \cong \overline{XK}$
$m\overline{XW} = m\overline{XK}$
$3x + 2 = 2x + 6$
$3x - 2x + 2 - 2 = 2x - 2x + 6 - 2$
$x = 4$

$$m\overline{WV} = \frac{1}{2} m\overline{WK}$$

Example 9

Given: $\triangle XWK$ is an equilateral triangle,
V is the midpoint of $\overline{WK}$
Find: $m\overline{WV}$

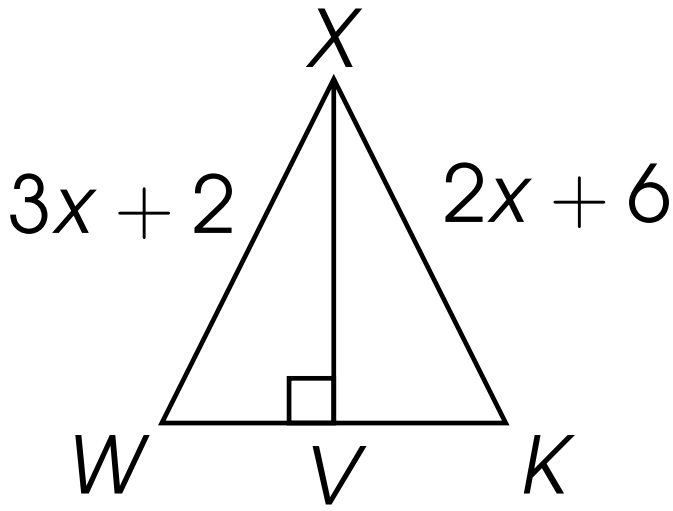


$\overline{XW} \cong \overline{XK}$
$m\overline{XW} = m\overline{XK}$
$3x + 2 = 2x + 6$
$3x - 2x + 2 - 2 = 2x - 2x + 6 - 2$
$x = 4$

$$m\overline{WV} = \frac{1}{2} m\overline{WK} = \frac{1}{2}(2x + 6)$$

Example 9

Given: $\triangle XWK$ is an equilateral triangle,
V is the midpoint of $\overline{WK}$
Find: $m\overline{WV}$

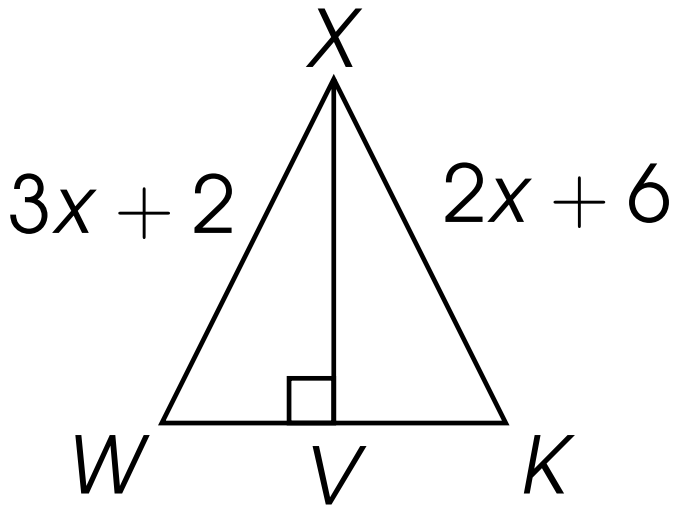


$\overline{XW} \cong \overline{XK}$
$m\overline{XW} = m\overline{XK}$
$3x + 2 = 2x + 6$
$3x - 2x + 2 - 2 = 2x - 2x + 6 - 2$
$x = 4$

$$m\overline{WV} = \frac{1}{2}m\overline{WK} = \frac{1}{2}(2x + 6) = \frac{1}{2}(2(4) + 6)$$

Example 9

Given: $\triangle XWK$ is an equilateral triangle,
V is the midpoint of $\overline{WK}$
Find: $m\overline{WV}$



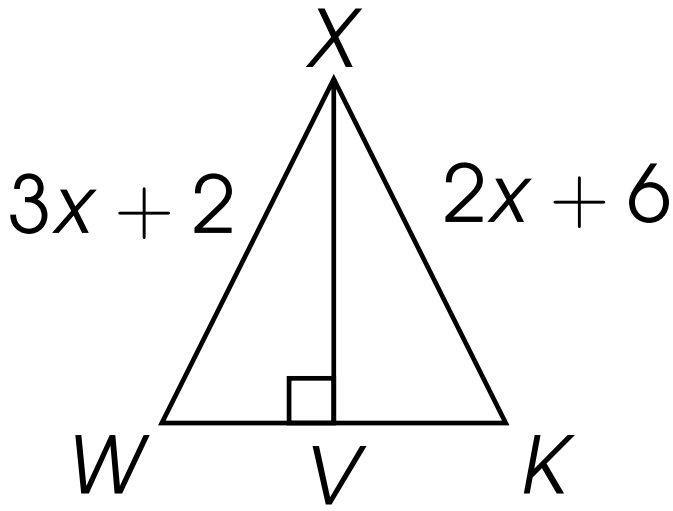
$\overline{XW} \cong \overline{XK}$
$m\overline{XW} = m\overline{XK}$
$3x + 2 = 2x + 6$
$3x - 2x + 2 - 2 = 2x - 2x + 6 - 2$
$x = 4$

$$m\overline{WV} = \frac{1}{2}m\overline{WK} = \frac{1}{2}(2x + 6) = \frac{1}{2}(2(4) + 6)$$

$$m\overline{WV} = \frac{1}{2}(14)$$

Example 9

Given: $\triangle XWK$ is an equilateral triangle,
V is the midpoint of $\overline{WK}$
Find: $m\overline{WV}$



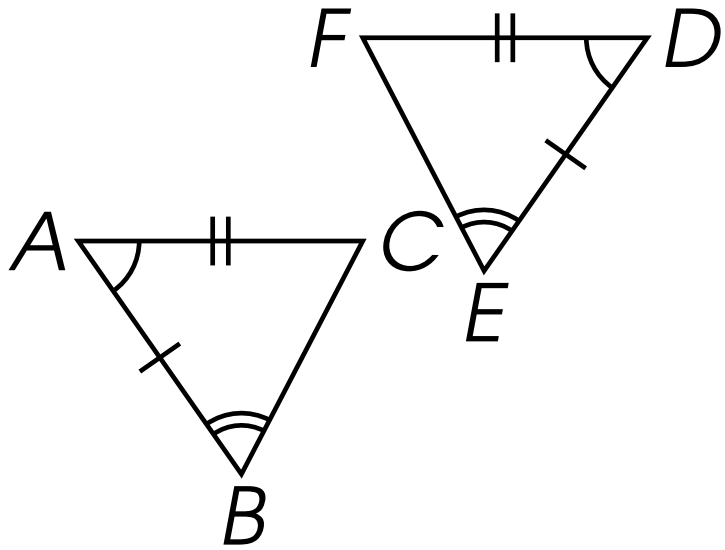
$\overline{XW} \cong \overline{XK}$
$m\overline{XW} = m\overline{XK}$
$3x + 2 = 2x + 6$
$3x - 2x + 2 - 2 = 2x - 2x + 6 - 2$
$x = 4$

$$m\overline{WV} = \frac{1}{2}m\overline{WK} = \frac{1}{2}(2x + 6) = \frac{1}{2}(2(4) + 6)$$

$$m\overline{WV} = \frac{1}{2}(14) = 7 \text{ units}$$

Example 10

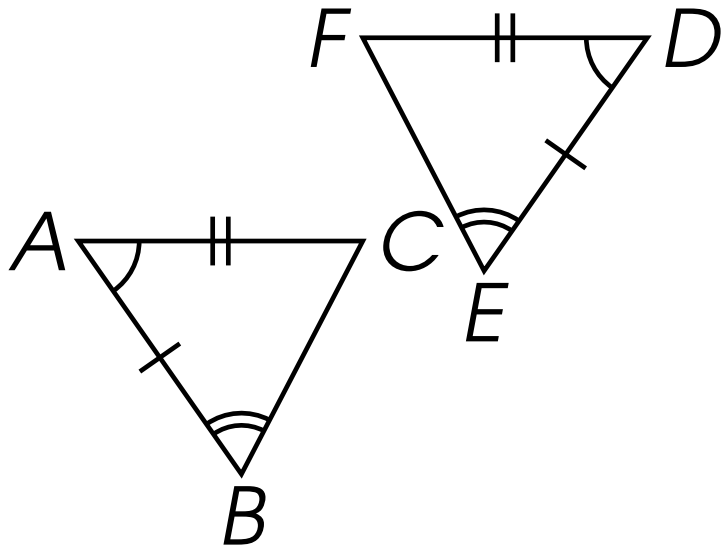
Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$



Example 10

Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$

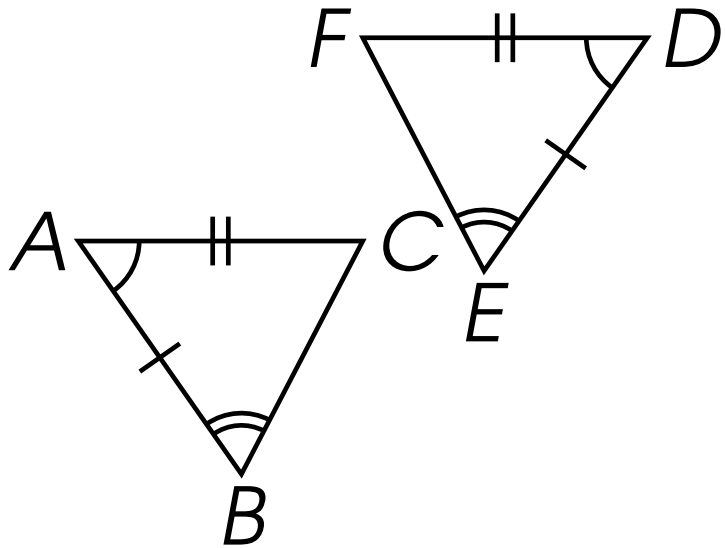
$\angle C \cong$



Example 10

Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$

$\angle C \cong \angle F$



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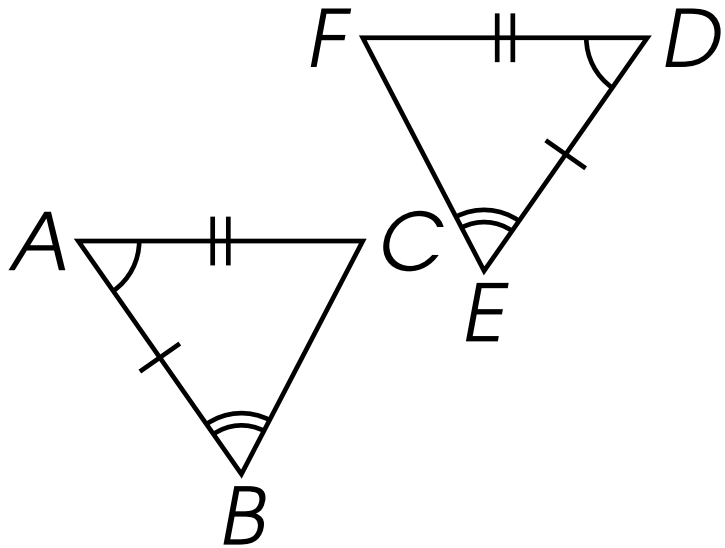
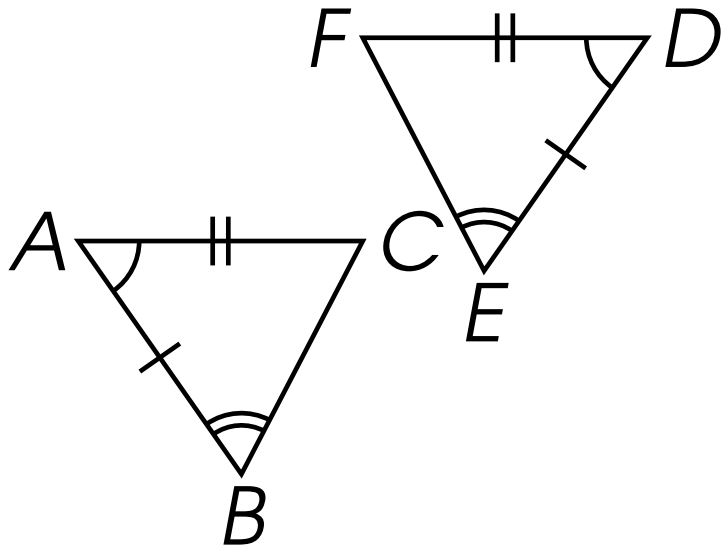
Find: $m\angle C, m\angle B, x$



$\angle C \cong \angle F$
$m\angle C = m\angle F$

Example 10

Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$



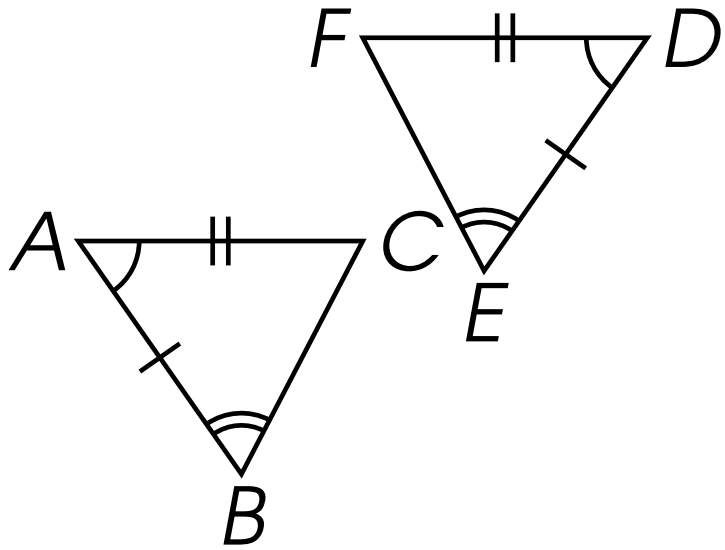
$\angle C \cong \angle F$
$m\angle C = m\angle F$
$m\angle C = 60°$

Angle Sum Theorem

The angle measures in any triangle add up to 180°.

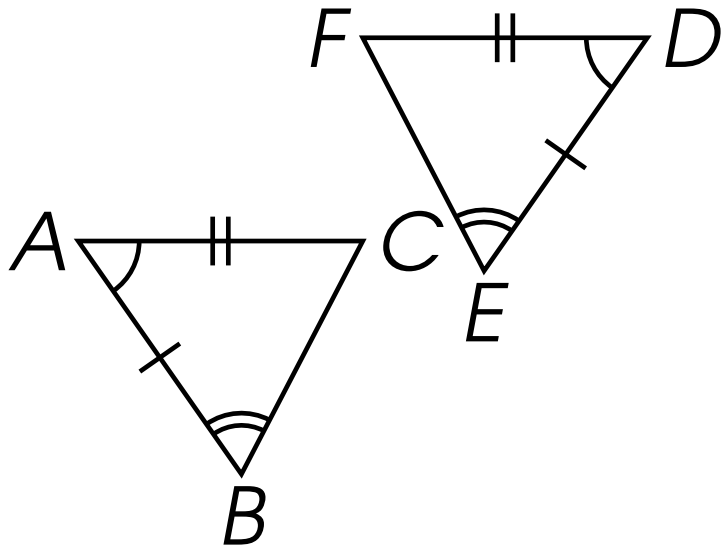
Example 10

Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$



Example 10

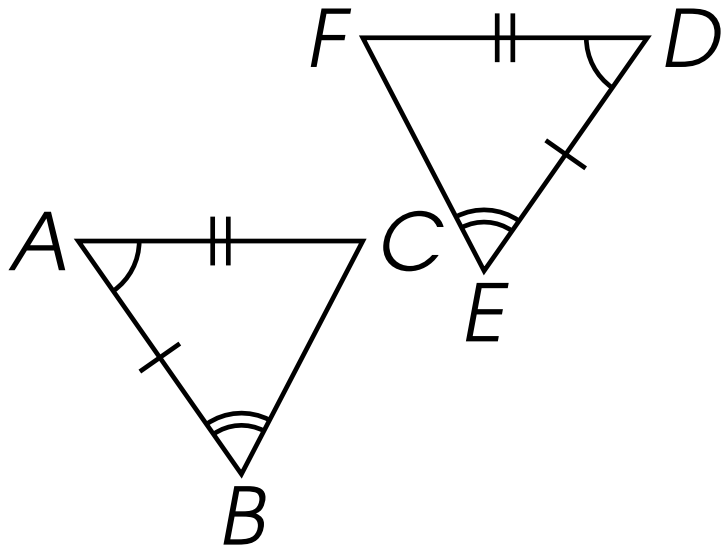
Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$



$m\angle A + m\angle B + m\angle C = 180°$

Example 10

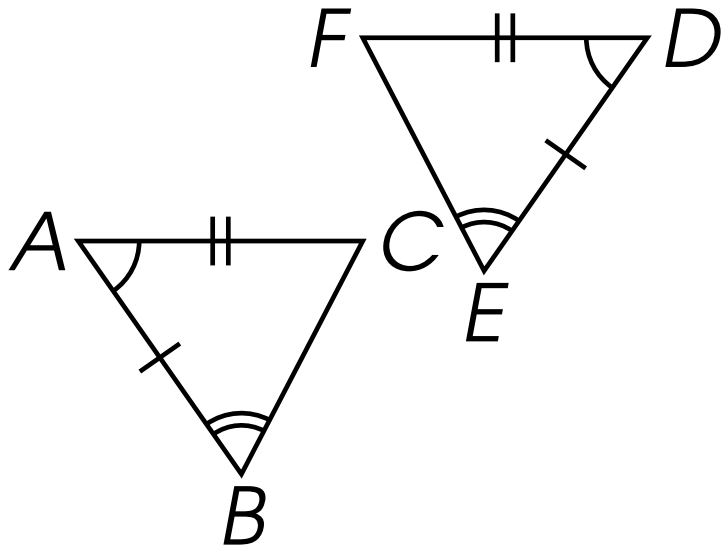
Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$



$m\angle A + m\angle B + m\angle C = 180°$
$50° + m\angle B + 60° = 180°$

Example 10

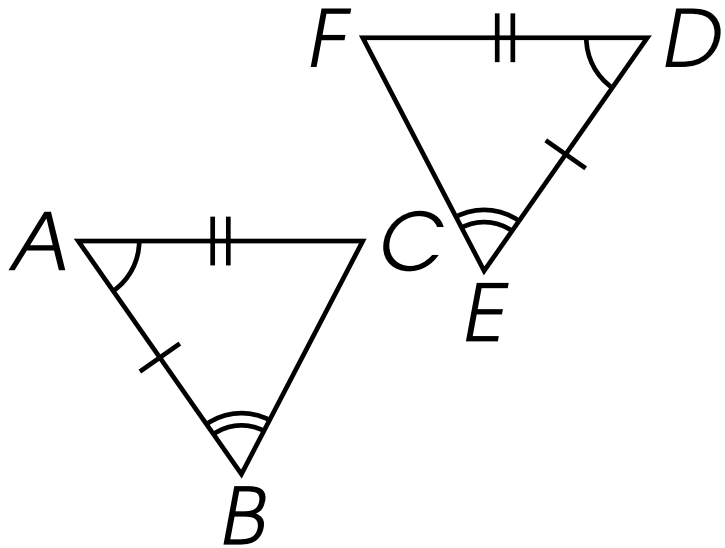
Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$



$m\angle A + m\angle B + m\angle C = 180°$
$50° + m\angle B + 60° = 180°$
$110° + m\angle B = 180°$

Example 10

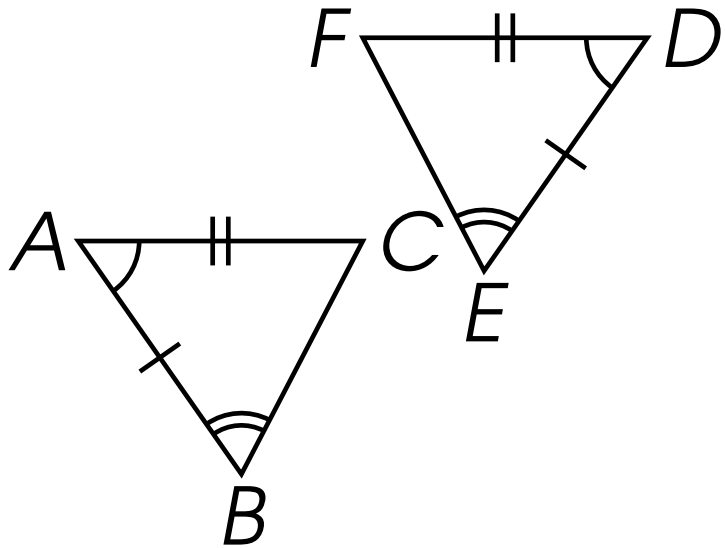
Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$



$m\angle A + m\angle B + m\angle C = 180°$
$50° + m\angle B + 60° = 180°$
$110° + m\angle B = 180°$
$110° - 110° + m\angle B = 180° - 110°$

Example 10

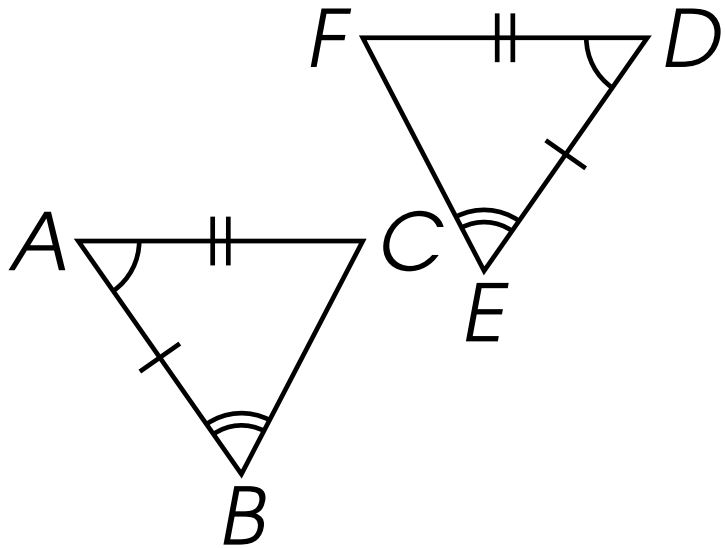
Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$



$m\angle A + m\angle B + m\angle C = 180°$
$50° + m\angle B + 60° = 180°$
$110° + m\angle B = 180°$
$110° - 110° + m\angle B = 180° - 110°$
$m\angle B = 70°$

Example 10

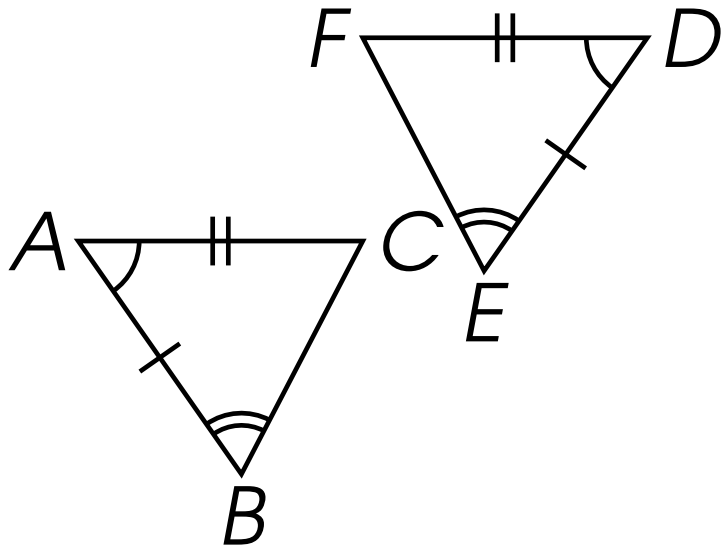
Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$



Example 10

Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$

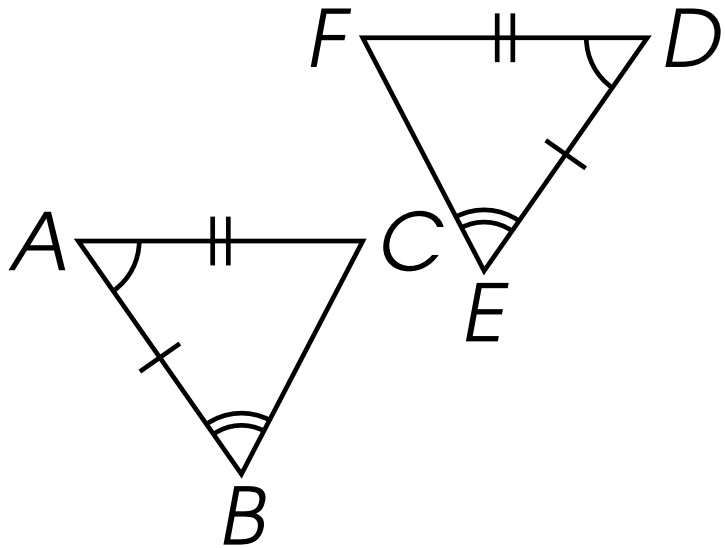
$\angle E \cong$



Example 10

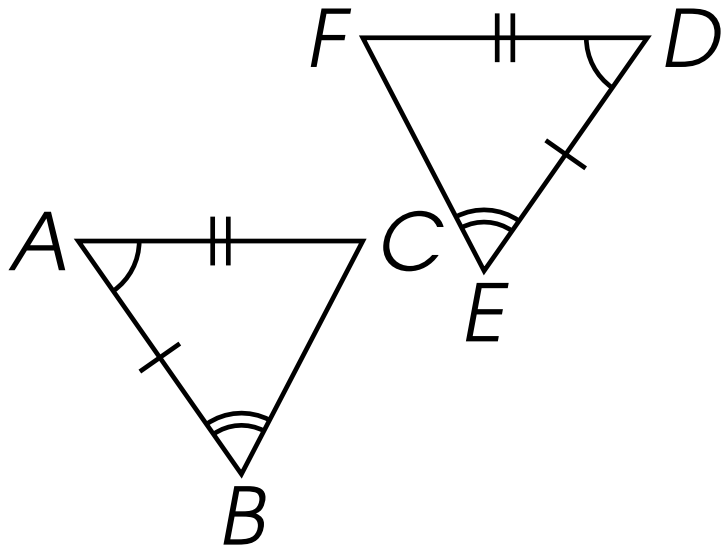
Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$

$\angle E \cong \angle B$



Example 10

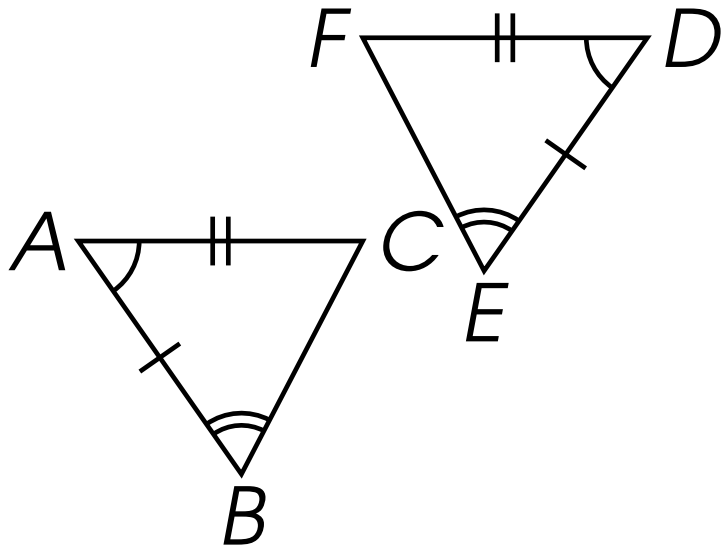
Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$



$\angle E \cong \angle B$
$m\angle E = m\angle B$

Example 10

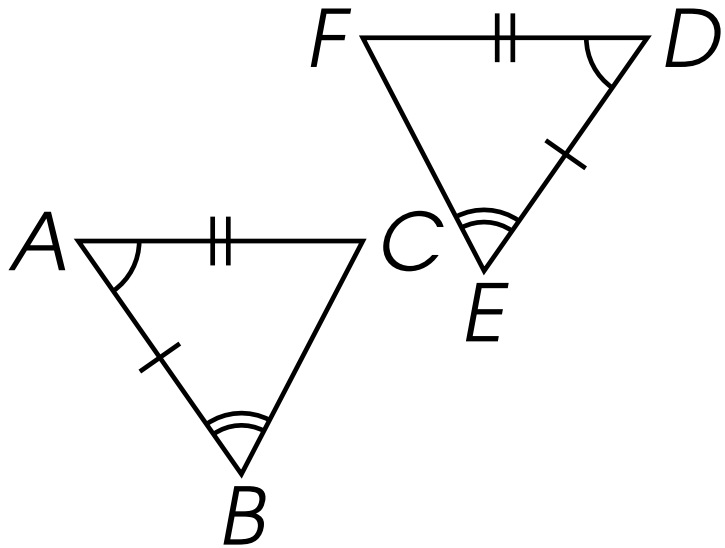
Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$



$\angle E \cong \angle B$
$m\angle E = m\angle B$
$3x - 5 = 70$

Example 10

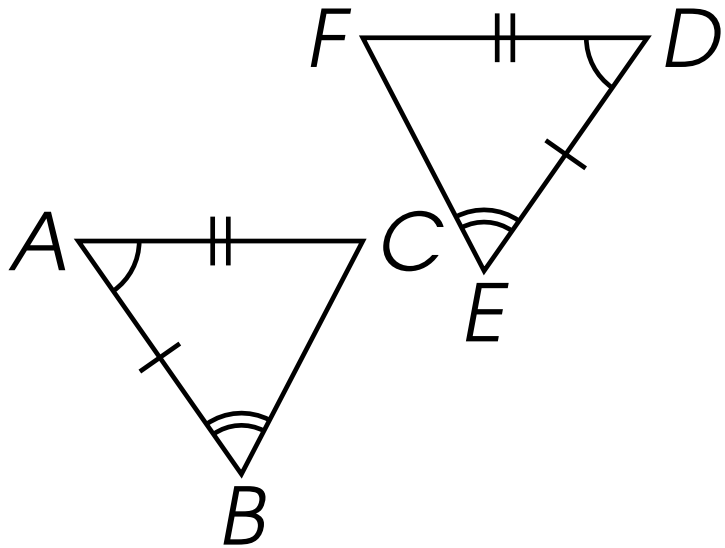
Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$



$\angle E \cong \angle B$
$m\angle E = m\angle B$
$3x - 5 = 70$
$3x - 5 + 5 = 70 + 5$

Example 10

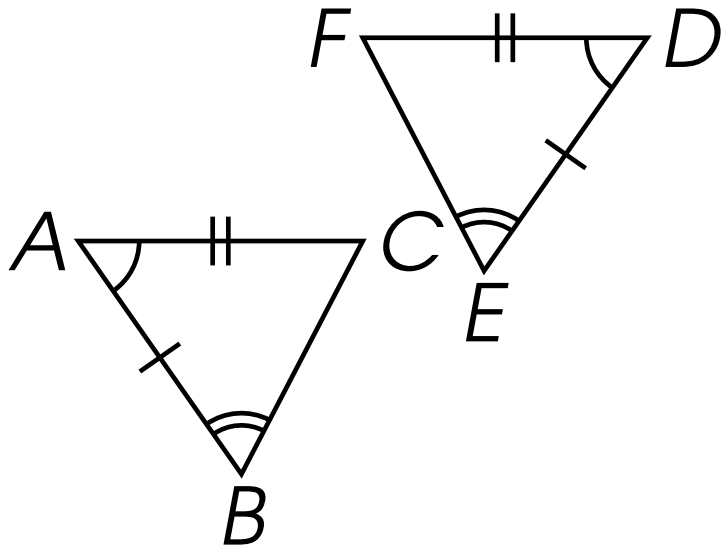
Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$



$\angle E \cong \angle B$
$m\angle E = m\angle B$
$3x - 5 = 70$
$3x - 5 + 5 = 70 + 5$
$3x = 75$

Example 10

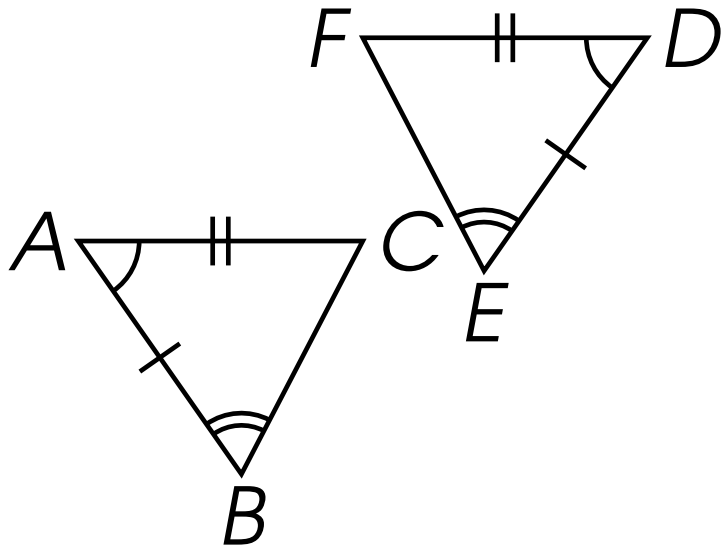
Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$



$\angle E \cong \angle B$
$m\angle E = m\angle B$
$3x - 5 = 70$
$3x - 5 + 5 = 70 + 5$
$3x = 75$
$\frac{3x}{3} = \frac{75}{3}$

Example 10

Given: $\triangle ABC \cong \triangle DEF$,
$m\angle A = 50°, m\angle F = 60°$
$m\angle E = 3x - 5$
Find: $m\angle C, m\angle B, x$



$\angle E \cong \angle B$
$m\angle E = m\angle B$
$3x - 5 = 70$
$3x - 5 + 5 = 70 + 5$
$3x = 75$
$\frac{3x}{3} = \frac{75}{3}$
$x = 25$

Thank you for watching.