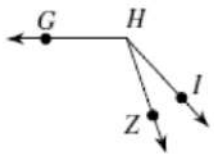
19) $m\angle ZHG = 11x - 1$, $m\angle IHZ = 24°$, and $m\angle IHG = 12x + 13$. Find $m\angle IHG$.



$m\angle GHI = m\angle GHZ + m\angle ZHI$

$12x+13 = 11x-1 + 24$

$12x+13 = 11x+23$

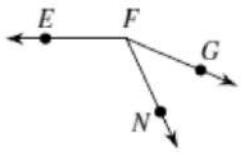
$x+13 = 23$

$x = 10$

$m\angle IHG = 12(10)+13$

$= 133$

20) $m\angle GFN = 4x + 10$, $m\angle NFE = 14x + 3$, and $m\angle GFE = 157°$. Find $m\angle NFE$.



$m\angle EFG = m\angle EFN + m\angle NFG$

$157 \quad 14x+3 + 4x+10$

$157 = 18x + 13$

$144 = 18x$

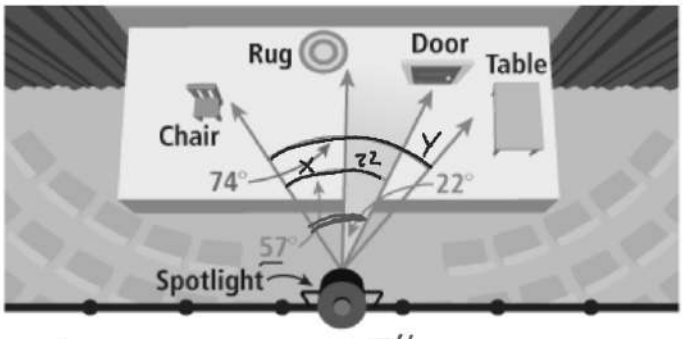
$x = 8$

$m\angle NFE = 14x+3$

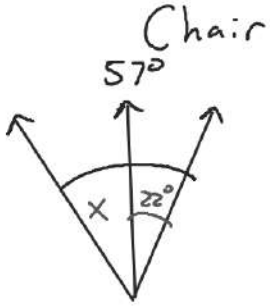
$= 14(8)+3$

$= 115$

A lighting designer is finalizing the lighting plan for an upcoming production. The spotlight can rotate 25° to the left or right from the center. The beam of light from the spotlight forms a 22° angle. Can the designer use the spotlight to light each of the objects on the stage?



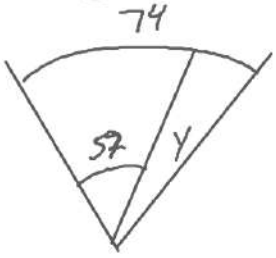
Chair



$x + 22 = 57$

$x = 35$

Table

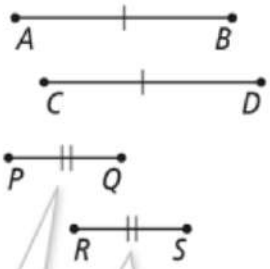


$y + 57 = 74$

$y = 17$

Congruent Segments and Congruent Angles

Segments that have the same length are congruent segments.



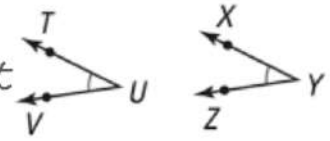
$\overline{AB} \cong \overline{CD}$

congruent

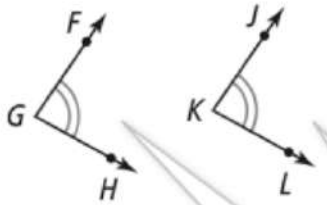
$\overline{PQ} \cong \overline{RS}$

The same number of *tick marks* shows congruent segments.

Angles that have the same measure are congruent angles.



$\angle TUV \cong \angle XYZ$

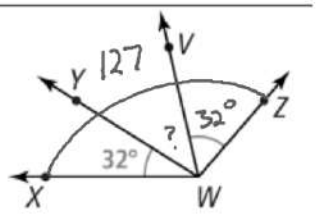


$\angle FGH \cong \angle JKL$

The same number of *arc marks* shows congruent angles.

A. If $m\angle XWZ = 127$, what is $m\angle YWV$?

SOLUTION



$m\angle XWY + m\angle YWV + m\angle VWZ = m\angle XWZ$

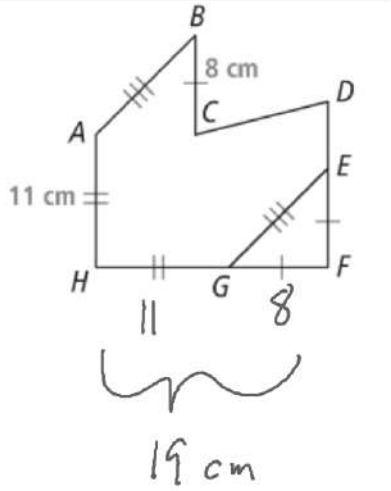
$32 + ? + 32 = 127$

$64 + x = 127$

$x = 63$

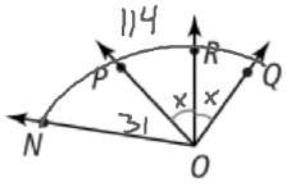
B. What is *HF*?

SOLUTION



6. a. If $m\angle NOP = 31$ and $m\angle NOQ = 114$, what is $m\angle ROQ$?

Enter your answer.



$x + x + 31 = 114$

$2x + 31 = 114$