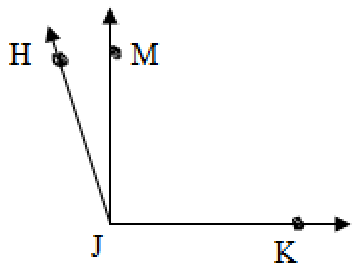
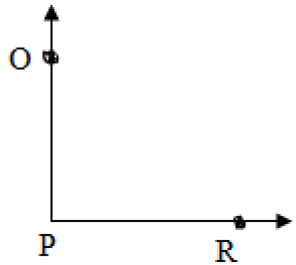
Given: $\angle HJM = 20°$

$\angle HJK = 110°$

$\angle OPR$ is rt.

Prove: $\angle MJK \cong \angle OPR$

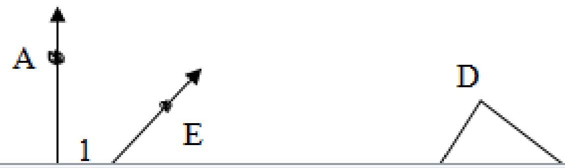




statement	Reason
(1) $\angle HJM = 20°$	(1) Given
(2) $\angle HJK = 110°$	(2) Given
(3) $\angle MJK = 90°$	(3) Subtraction property of $\angle$s. [step 1, 2] ($\angle HJK - \angle HJM = 110° - 20° = 90°$)
(4) $\angle OPR$ is rt. $\angle$	(4) Given
(5) $\angle MJK$ is rt. $\angle$	(5) If the measure of an $\angle$ is $90°$, then it is rt. $\angle$.
(6) $\angle MJK \cong \angle OPR$	(6) If two $\angle$s are rt. $\angle$s, then they are $\cong$. (this is thm 1)

Given: $m\angle 1 = (x+7)$

$m\angle 2 = (2x-3)$



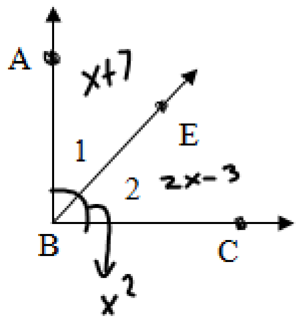
Given: $m\angle 1=(x+7)$

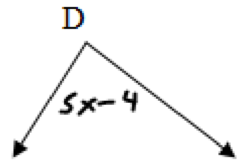
$m\angle 2=(2x-3)$

$m\angle ABC=(x^2)$

$m\angle D=(5x-4)$

Is $\angle ABC \cong \angle D$?





$\angle ABC = \angle 1 + \angle 2$

$x^2 = x+7 + 2x-3$

$x^2 = 3x+4$

$-3x-4 \quad -3x-4$

$x^2 - 3x - 4 = 0$

$(x+1)(x-4)=0$

$x+1=0$ or $x-4=0$

$-1 \ -1 \qquad +4 \ +4$

$x=-1$ or $x=4$

$+1 \quad -4 \quad -4 \quad -3$

-4

$+1\cdot -4$

$-2\cdot 2$

$+1\cdot -4 = -4$ ✓

$1-4=-3$ ✓

A quadratic eq. has two solutions

x^2

$x \cdot x$

So is $\angle ABC \cong \angle D$?

For $x=-1$:

$\angle ABC = x^2 = (-1)^2 = 1$

$\angle D = 5x-4 = 5(-1)-4 = -9$

$\angle ABC \not\cong \angle D$ for $x=-1$.

For $x=4$:

$\angle ABC = x^2 = (4)^2 = 16$ ✓

$\angle D = 5x-4 = 5(4)-4 = 16$

But $\angle ABC \cong \angle D$ for $x=4$.