7.5

① False ② TRUE ③ No ④ ∠BOA ⑤ ∠BOA ⑥ ∠DOC

⑦ $4x-1+2x+15=8x+8$

$6x+14=8x+8$
$-6x \qquad -6x$

$14=2x+8$
$-8 \qquad -8$

$\frac{6}{2}=\frac{2x}{2}$

$3=x$

$4(3)-1$
$12-1$
$11°$

$2(3)+15$
$6+15$
$21°$

$8(3)+8$
$24+8$
$32°$

⑧ $8x+13+3x-10=12x-6$

$11x+3=12x-6$
$-11x \qquad -11x$

$3=x-6$
$+6 \qquad +6$

$9=x$

$8(9)+13$
$72+13$
$85°$

$3(9)-10$
$27-10$
$17°$

$12(9)-6$
$108-6$
$102°$

⑨ $3x+8=2x+48$
$-2x \qquad -2x$

$x+8=48$
$-8 \qquad -8$

$x=40$

$3(40)+8$
$120+8$
$128°$

⑩ ~~2x+3~~

$2x-3+5x+2=90°$

$7x-1=90°$
$+1 \qquad +1$

$\frac{7x}{7}=\frac{91}{7}$

$x=13$

$2(13)-3$
$26-3$
$23°$

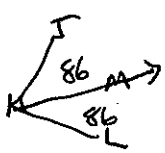
$5(13)+2$
$65+2$
$67°$

⑪ NO

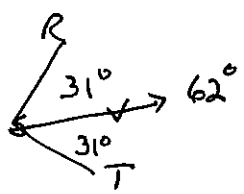
⑫ Yes

⑬ Yes

⑭ NO

⑮ 

$86+86=172°$

⑯ 

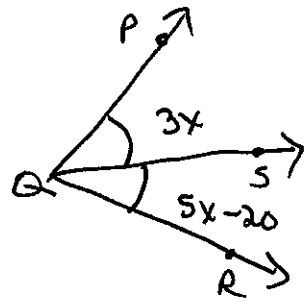
$31°$

(17)

$$3x = 5x - 20$$
$$-5x \qquad -5x$$
$$-2x = -20$$
$$\frac{-2x}{-2} = \frac{-20}{-2}$$
$$x = 10$$

$3(10) = 30$ $\angle PQS$

$\angle PQR = 2(\angle PQS)$
$= 2(30)$
$= 60°$

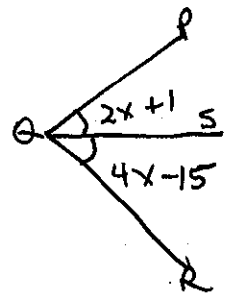


(18)

$$2x + 1 = 4x - 15$$
$$-2x \qquad -2x$$
$$1 = 2x - 15$$
$$+15 \qquad +15$$
$$\frac{16}{2} = \frac{2x}{2}$$
$$8 = x$$

$2(8) + 1 = 17°$

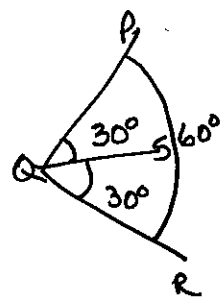
$2(17) = 34°$ $\angle PQR$



(19)

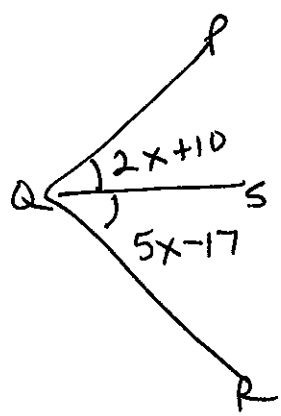
$$3x - 12 = 2(30)$$
$$3x - 12 = 60$$
$$+12 \qquad +12$$
$$\frac{3x}{3} = \frac{72}{3}$$
$$x = 24$$

$3(24) - 12 =$
$72 - 12 =$
$60°$
$\angle PQR$



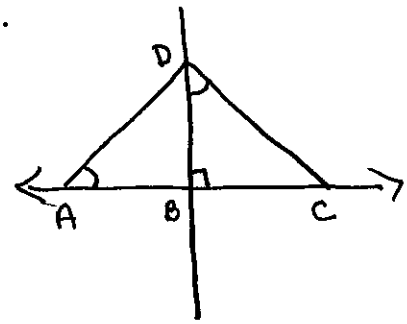
(20)

$$2x + 10 = 5x - 17$$
$$-2x \qquad -2x$$
$$10 = 3x - 17$$
$$+17 \qquad +17$$
$$\frac{27}{3} = \frac{3x}{3}$$
$$9 = x$$



(21) Yes. They have the same markings.

(22) Yes.

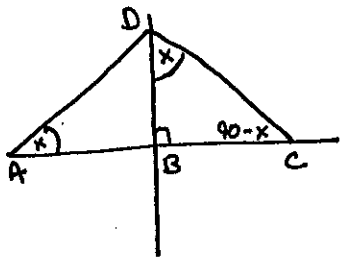


$\angle DBC = 90°$

ΔDBC contains $180°$, so if $\angle DBC = 90°$, the other 2 angles share the other $90°$.

Let $x = m\angle BDC$

Then $90 - x = m\angle DCB$



So, if $m\angle BDC = x$

the $m\angle BAD = x$ because they are congruent

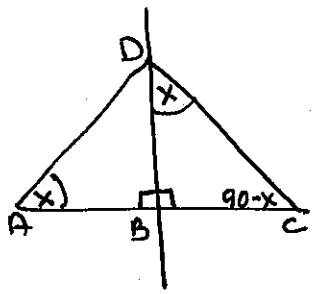
$m\angle DBA = 90°$ because ~~AC is a~~ $\overleftrightarrow{AC}$ $\angle ABC$ is a straight angle which is $180°$.

$m\angle ABC = m\angle ABD + m\angle CBD$

$180 = m\angle ABD + 90°$

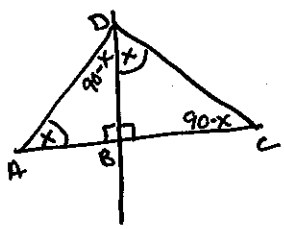
$-90 \qquad -90$

$90 = m\angle ABD$ or $m\angle DBA$



ΔABD contains $180°$, so if $\angle DBA = 90°$, the other two angles share $90°$.

Since $m\angle DAB = x$, $m\angle ADB = 90 - x$



To be complementary, $m\angle ABD + m\angle CDB = 90°$

so, $90 - x + x = 90$ must be true.

$90 - 0 = 90$

$90 = 90$ ✓

(23) No, there are no markings.

(24) Yes. See explanation for #22.

Also, if two pairs angles of two triangles are congruent, the third pair will be congruent also.