NOV 28

Properties of Inequality

Addition Property If $a > b$, and $c = d$, then $a + c > b + d$.
$10 > 8 \quad 7 = 7 \quad 10+7 > 8+7$

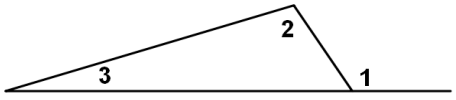
Subtraction Property If $a > b$, and $c = d$, then $a - c > b - d$.
$5 > 3 \quad 6 = 6 \quad 5-6 > 3-6 \quad -1 > -3$

Multiplication Property If $a > b$ and $c > 0$, then $ac > bc$. (pos.)
If $a > b$ and $c < 0$, then $ac < bc$. (neg.)
$10 > 5 \quad c = -3 \quad 10 \cdot -3 < 5 \cdot -3 \quad -30 < -15$

Division Property If $a > b$ and $c > 0$, then $\frac{a}{c} > \frac{b}{c}$. (pos)
If $a > b$ and $c < 0$, then $\frac{a}{c} < \frac{b}{c}$. (neg)
$\frac{9}{-1} \not> \frac{5}{-1} \quad -9 < -5$

Transitive Property If $a > b$ and $b > c$, then $a > c$.
$10 > 7$ & $7 > 3 \quad 10 > 3$ T

Definition of Inequality If $a = b + c$ and $c > 0$, then $a > b$.
$5 = 3 + 2 \quad 5 > 3 \ (\not< 5 > 2)$



$m\angle 1 = m\angle 2 + m\angle 3$
$m\angle 1 > m\angle 2$ and $m\angle 1 > m\angle 3$

Exterior Angle Inequality Theorem: ext. ∠ of a △ is greater than either remote int. ∠

Examples:

1. True or False?

a. If $n = x + 1$, then $n > x$. $8 = 7 + 1 \quad 8 > 7$ T

b. If $3x > 48$, then $3x + 4 > 50$. $48.1 \quad 48.1 \quad 52.1 > 50$ T

c. If $a > b$ and $c > d$, then $a + c > b + d$. $10 > 7 \quad 5 > 3 \quad 15 > 10$
$2 > -1 \quad -3 > -4 \quad 2 + -3 = -1 > -5$

d. If $k < n$, then $10 - k < 10 - n$. $2 < 6 \quad 10-2 \quad 10-6 \quad 8 > 4$ (F)

2. Which statements can be deduced from the given information?

Given: $\triangle WYZ$; $\triangle WXZ$ (concluded)

a. $WY > WX$ $WX + XY = WY$ T **b.** $WZ = WX$ NO

c. $WX = XY$ NO **d.** $m\angle WZY = m\angle 3 + m\angle 4$ Yes (angle add.)

e. $m\angle 2 > m\angle 3$ Yes $m\angle 2 > m\angle 3 + m\angle W$ **f.** $m\angle 3 > m\angle 4$ NO