

Total points = 70

1. Yes ✓
2. No ✓
3. Yes ✓
4. Yes ✓
5. Yes ✓
6. No ✓
7. Yes ✓
8. No ✓
9. No ✓
10. Yes ✓

$a+b > c$ ✓	$b+c > a$ ✓	$a+c > b$ ✓
$5+9 > c$ ✓	$9+c > 5$ ✓	$5+c > 9$ ✓
$14 > c$ ✓	$9-9+c > 5-9$ ✓	$5-5+c > 9-5$ ✓
	$c > -4$ ✓	$c > 4$ ✓

$a+b > c$ ✓	$b+c > a$ ✓	$a+c > b$ ✓
$6+b > 10$ ✓	$b+10 > 6$ ✓	$6+10 > b$ ✓
$6-6+b > 10-6$ ✓	$b+10-10 > 6-10$ ✓	$16 > b$ ✓
$b > 4$ ✓	$b > -4$ ✓	

$a+b > c$ ✓	$b+c > a$ ✓	$a+c > b$ ✓
$a+11 > 8$ ✓	$11+8 > a$ ✓	$a+8 > 11$ ✓
$a+11-11 > 8-11$ ✓	$19 > a$ ✓	$a+8-8 > 11-8$ ✓
$a > -3$ ✓		$a > 3$ ✓

4. $a=3, b=13$

$a+b > c$ ✓	$b+c > a$ ✓	$a+c > b$ ✓
$3+13 > c$ ✓	$13+c > 3$ ✓	$3+c > 13$ ✓
$16 > c$ ✓	$13-13+c > 3-13$ ✓	$3-3+c > 13-3$ ✓
	$c > -10$ ✓	$c > 10$ ✓

5. $a=7, c=11$

$a+b > c$ ✓	$b+c > a$ ✓	$a+c > b$ ✓
$7+b > 11$ ✓	$b+11 > 7$ ✓	$7+11 > b$ ✓
$7-7+b > 11-7$ ✓	$b+11-11 > 7-11$ ✓	$18 > b$ ✓
$b > 4$ ✓	$b > -4$ ✓	

$$\therefore 4 < b < 18 \checkmark$$

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10. Yes ✓

$a+b > c$ ✓	$b+c > a$ ✓	$a+c > b$ ✓
$5+9 > c$ ✓	$9+c > 5$ ✓	$5+c > 9$ ✓
$14 > c$ ✓	$9-9+c > 5-9$ ✓	$5-5+c > 9-5$ ✓
	$c > -4$ ✓	$c > 4$ ✓

$$\begin{array}{lll} a+b>c \checkmark & b+c>a \checkmark & a+c>b \checkmark \\ 6+b>10 \checkmark & b+10>6 \checkmark & 6+10>b \checkmark \\ 6-6+b>10-6 \checkmark & b+10-10>6-10 \checkmark & 16>b \checkmark \\ b>4 \checkmark & b>-4 \checkmark & \end{array}$$

3. $b=11, c=8$

$a+b > c$ ✓	$b+c > a$ ✓	$a+c > b$ ✓
$a+11 > 8$ ✓	$11+8 > a$ ✓	$a+8 > 11$ ✓
$a+11, 11 > 8$	$11 < 10 > a$ ✓	$a+8, 8 > 11, 8 > a$

$$\therefore 3 < a < 19 \quad \checkmark$$

$$4. a=3, b=13$$

$$a+b > c \quad \checkmark \quad b+c > a \quad \checkmark \quad a+c > b \quad \checkmark$$

$$\begin{array}{lll} 16 > c \checkmark & 13 - 13 + c > 3 - 13 \checkmark & 3 - 3 + c > 13 - 3 \checkmark \\ & c > -10 \checkmark & c > 10 \checkmark \\ \therefore 10 < c < 16 \checkmark \\ 5. a = 7, c = 11 & & \\ a + b > c \checkmark & b + c > a \checkmark & a + c > b \end{array}$$

$$\begin{aligned} 7-7+b &> 11-7 \quad \checkmark & b+11-11 &> 7-11 \quad \checkmark & 18 &> b \quad \checkmark \\ b &> 4 \quad \checkmark & b &> -4 \quad \checkmark & & \\ \therefore 4 &< b < 18 \quad \checkmark \end{aligned}$$

$$\therefore 4 < b < 18 \quad \checkmark$$

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9. No ✓
10. Yes ✓

$$\begin{array}{lll} a+b>c & \checkmark & b+c>a & \checkmark & a+c>b & \checkmark \\ 5+9>c & \checkmark & 9+c>5 & \checkmark & 5+c>9 & \checkmark \\ 14>c & \checkmark & 9-9+c>5-9 & \checkmark & 5-5+c>9-5 & \checkmark \\ c>-4 & \checkmark & c>4 & \checkmark & & \end{array}$$

$$\begin{array}{lll} a+b > c & \checkmark & b+c > a & \checkmark & a+c > b & \checkmark \\ 6+b > 10 & \checkmark & b+10 > 6 & \checkmark & 6+10 > b & \checkmark \\ 6-6+b > 10-6 & \checkmark & b+10-10 > 6-10 & \checkmark & 16 > b & \checkmark \\ b > 4 & \checkmark & b > -4 & \checkmark & & \end{array}$$

$a+b > c$ ✓	$b+c > a$ ✓	$a+c > b$ ✓
$a+11 > 8$ ✓	$11+8 > a$ ✓	$a+8 > 11$ ✓
$a+11-11 > 8-11$ ✓	$19 > a$ ✓	$a+8-8 > 11-8$ ✓
$a > -3$ ✓		$a > 3$ ✓

4. $a=3, b=13$

$a+b > c$ ✓	$b+c > a$ ✓	$a+c > b$ ✓
$3+13 > c$ ✓	$13+c > 3$ ✓	$3+c > 13$ ✓
$16 > c$ ✓	$13-13+c > 3-13$ ✓	$3-3+c > 13-3$ ✓
	$c > -10$ ✓	$c > 10$ ✓

5. $a=7, c=11$

$a+b > c$ ✓	$b+c > a$ ✓	$a+c > b$ ✓
$7+b > 11$ ✓	$b+11 > 7$ ✓	$7+11 > b$ ✓
$7-7+b > 11-7$ ✓	$b+11-11 > 7-11$ ✓	$18 > b$ ✓
$b > 4$ ✓	$b > -4$ ✓	

$$\therefore 4 < b < 18 \quad \checkmark$$

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$a+b > c$ ✓	$b+c > a$ ✓	$a+c > b$ ✓
$5+9 > c$ ✓	$9+c > 5$ ✓	$5+c > 9$ ✓
$14 > c$ ✓	$9-9+c > 5-9$ ✓	$5-5+c > 9-5$ ✓
	$c > -4$ ✓	$c > 4$ ✓

$$\begin{array}{lll} a+b > c & \checkmark & b+c > a & \checkmark & a+c > b & \checkmark \\ 6+b > 10 & \checkmark & b+10 > 6 & \checkmark & 6+10 > b & \checkmark \\ 6-6+b > 10-6 & \checkmark & b+10-10 > 6-10 & \checkmark & 16 > b & \checkmark \\ b > 4 & \checkmark & b > -4 & \checkmark & & \end{array}$$

3. $b=11, c=8$

$a+b > c$ ✓	$b+c > a$ ✓	$a+c > b$ ✓
$a+11 > 8$ ✓	$11+8 > a$ ✓	$a+8 > 11$ ✓
$a+11, 11 > 8, 11$ ✓	$10 > a$ ✓	$a+8, 8 > 11, 8$ ✓

$a > -5$ ✓ $a > 5$ ✓
 $\therefore 3 < a < 19$ ✓
 4. $a = 3, b = 13$
 $a + b > c$ ✓ $b + c > a$ ✓ $a + c > b$ ✓

$16 > c$ ✓ $13 - |3 + c| > 3 - |3|$ ✓ $3 - 3 + c > |3 - 3|$ ✓
 $c > -10$ ✓ $c > 10$ ✓
 $\therefore 10 < c < 16$ ✓
 5. $a = 7, c = 11$
 $a + b > c$ ✓ $b + c > a$ ✓ $a + c > b$ ✓

$$\begin{array}{lll} 7-7+b > 11-7 & \checkmark & b+11-11 > 7-11 & \checkmark & 18 > b & \checkmark \\ b > 4 & \checkmark & b > -4 & \checkmark & & \\ \therefore 4 < b < 18 & \checkmark & & & & \end{array}$$

$$\therefore 4 < b < 18 \quad \checkmark$$