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Geometry

Triangle Inequality Theorem

1. Which of the following cannot make up the three sides of a triangle?

1) {3,5,4} 3+4>5 ✓ 3) {9,7,5} 5+7>9 ✓
2) {2,2,3} 2+2>3 ✓ 4) {6,1,4} 1+4>6 ✗

2. Which of the following can make up the three sides of a triangle?

1) {2,4,2} 2+2>4 ✗ 3) {8,1,6} 1+6>8 ✗
2) {1,7,4} 1+4>7 ✗ 4) {5,5,7} 5+5>7 ✓

3. Which numbers could represent the lengths of the sides of a triangle?

1) 5,9,14 5+9>14 ✗
2) 7,7,15 7+7>15 ✗
3) 1,2,4 1+2>4 ✗
4) 3,6,8 3+6>8 ✓

4. Which of the following cannot make up the three sides of a triangle?

1) {5,1,6} 1+5>6 ✗ 3) {3,5,6} 3+5>6 ✓
2) {9,14,8} 8+9>14 ✓ 4) {7,10,4} 4+7>10 ✓

5. Which set of numbers represents the lengths of the sides of a triangle?

1) {5, 18, 13} 5+13>18 ✗
2) {6, 17, 22} 6+17>22 ✓
3) {16, 24, 7} 7+16>24 ✗
4) {26, 8, 15} 8+15>26 ✗

6. Which of the following cannot make up the three sides of a triangle?

1) {3,9,7} 3+7>9 ✓ 3) {8,12,15} 8+12>15 ✓
2) {2,7,5} 2+5>7 ✗ 4) {9,3,7} 3+7>9 ✓

7. In ΔBLA, $\overline{BL} = 12$ and $\overline{AL} = 8$. What is the range of possible values of $\overline{BA}$?

$12 + 8 = 20$ $\quad 12 - 8 = 4$ $\quad 4 < x < 20$

8. In ΔCAM, $\overline{CM} = 10$ and $\overline{CA} = 4$. What is the range of possible values of $\overline{MA}$?

$10 + 4 = 14$ $\quad 10 - 4 = 6$ $\quad 6 < x < 14$

9. In $\triangle ABC$, $AB = 5$ feet and $BC = 3$ feet. Which inequality represents all possible values for the length of $\overline{AC}$, in feet?

1) $2 \leq AC \leq 8$
2) $2 < AC < 8$
3) $3 \leq AC \leq 7$
4) $3 < AC < 7$

$5 + 3 = 8$ $\quad 5 - 3 = 2$ $\quad 2 < x < 8$

10. Two sides of a triangle are 7 and 11. The third side of the triangle can measure:

1) 4 ✗
2) 18 ✗
3) 8 ✓
4) 21 ✗

$7 + 11 = 18$ $\quad 11 - 7 = 4$ $\quad 4 < x < 18$

11. Jacquie is building a triangular fence for her tomato garden. She has an eight foot piece of fence and a four foot piece of fence. Which can be the length of the third piece of fence?

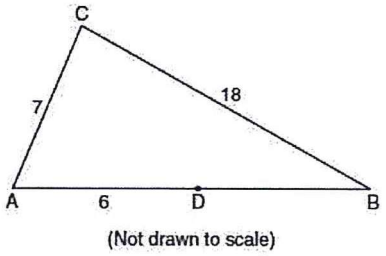
1) 2 feet ✗ 4
2) 5 feet ✓
3) 4 feet ✗
4) 12 feet ✗

$8 + 4 = 12$ $\quad 8 - 4 = 4$ $\quad 4 < x < 12$

12. In the diagram below of $\triangle ABC$, D is a point on $\overline{AB}$, $AC = 7$, $AD = 6$, and $BC = 18$. The length of $\overline{DB}$ could be

1) $5 + 6 = 11$
2) $12 + 6 = 18$
3) $19 + 6 = 25$
4) $25 + 6 = 31$

$18 + 7 = 25$ $\quad 18 - 7 = 11$ $\quad 11 < x < 25$



(Not drawn to scale)