

G.G.33: Triangle Inequality Theorem: Investigate, justify, and apply the triangle inequality theorem

- 1 Which numbers could represent the lengths of the sides of a triangle?
 - 1) 5, 9, 14
 - 2) 7, 7, 15
 - 3) 1, 2, 4
 - 4) 3, 6, 8
- 2 Which set of numbers represents the lengths of the sides of a triangle?
 - 1) {5, 18, 13}
 - 2) {6, 17, 22}
 - 3) {16, 24, 7}
 - 4) {26, 8, 15}
- 3 Phil is cutting a triangular piece of tile. If the triangle is scalene, which set of numbers could represent the lengths of the sides?
 - 1) {2, 4, 7}
 - 2) {4, 5, 6}
 - 3) {3, 5, 8}
 - 4) {5, 5, 8}
- 4 Which set can *not* represent the lengths of the sides of a triangle?
 - 1) {4, 5, 6}
 - 2) {5, 5, 11}
 - 3) {7, 7, 12}
 - 4) {8, 8, 8}
- 5 Which set could *not* represent the lengths of the sides of a triangle?
 - 1) {3, 4, 5}
 - 2) {2, 5, 9}
 - 3) {5, 10, 12}
 - 4) {7, 9, 11}
- 6 In $\triangle ABC$, $AB = 5$ feet and $BC = 3$ feet. Which inequality represents all possible values for the length of AC , in feet?
 - 1) $2 \leq AC \leq 8$
 - 2) $2 < AC < 8$
 - 3) $3 \leq AC \leq 7$
 - 4) $3 < AC < 7$
- 7 The lengths of two sides of a triangle are 7 and 11. Which inequality represents all possible values for x , the length of the third side of the triangle?
 - 1) $4 \leq x \leq 18$
 - 2) $4 < x \leq 18$
 - 3) $4 \leq x < 18$
 - 4) $4 < x < 18$
- 8 If two sides of a triangle are 1 and 3, the third side may be
 - 1) 5
 - 2) 2
 - 3) 3
 - 4) 4
- 9 If two sides of a triangle have lengths of 4 and 10, the third side could be
 - 1) 8
 - 2) 2
 - 3) 16
 - 4) 4
- 10 Which set of numbers could be the lengths of the sides of an isosceles triangle?
 - 1) {1, 1, 2}
 - 2) {3, 3, 5}
 - 3) {3, 4, 5}
 - 4) {4, 4, 9}
- 11 Sara is building a triangular pen for her pet rabbit. If two of the sides measure 8 feet and 15 feet, the length of the third side could be
 - 1) 13 ft
 - 2) 7 ft
 - 3) 3 ft
 - 4) 23 ft
- 12 The direct distance between city A and city B is 200 miles. The direct distance between city B and city C is 300 miles. Which could be the direct distance between city C and city A ?
 - 1) 50 miles
 - 2) 350 miles
 - 3) 550 miles
 - 4) 650 miles

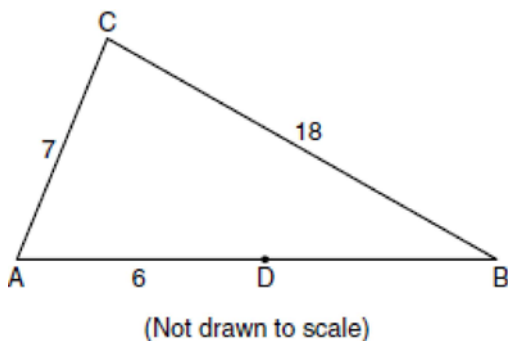
- 13 A box contains one 2-inch rod, one 3-inch rod, one 4-inch rod, and one 5-inch rod. What is the maximum number of different triangles that can be made using these rods as sides?

1) 1
2) 2
3) 3
4) 4

- 14 How many integer values of x are there so that x , 5, and 8 could be the lengths of the sides of a triangle?

1) 6
2) 9
3) 3
4) 13

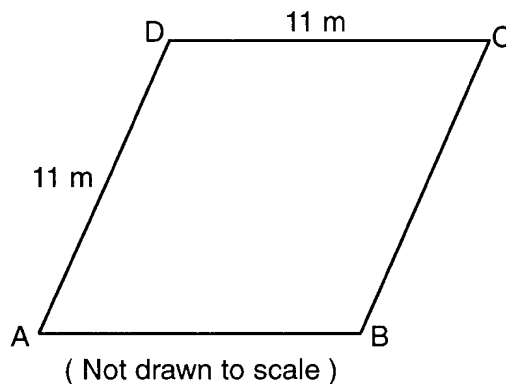
- 15 In the diagram below of $\triangle ABC$, D is a point on \overline{AB} , $AC = 7$, $AD = 6$, and $BC = 18$.



The length of \overline{DB} could be

1) 5
2) 12
3) 19
4) 25

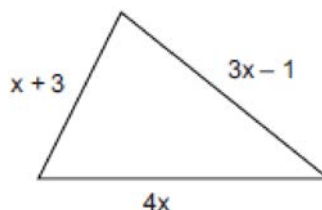
- 16 A plot of land is in the shape of rhombus $ABCD$ as shown below.



Which can *not* be the length of diagonal AC ?

1) 24 m
2) 18 m
3) 11 m
4) 4 m

- 17 The plot of land illustrated in the accompanying diagram has a perimeter of 34 yards. Find the length, in yards, of *each* side of the figure. Could these measures actually represent the measures of the sides of a triangle? Explain your answer.



- 18 José wants to build a triangular pen for his pet rabbit. He has three lengths of boards already cut that measure 7 feet, 8 feet, and 16 feet. Explain why José cannot construct a pen in the shape of a triangle with sides of 7 feet, 8 feet, and 16 feet.

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Answer Section

1 ANS: 4
 $3 + 6 > 8$

REF: 061416ge

2 ANS: 2 REF: 080916ge

3 ANS: 2 REF: 080830a

4 ANS: 2 REF: 080425a

5 ANS: 2 REF: 060515a

6 ANS: 2
 $5 - 3 = 2, 5 + 3 = 8$

REF: 011228ge

7 ANS: 4
 $11 - 7 = 4, 11 + 7 = 18$

REF: 061525ge

8 ANS: 3 REF: 080018a

9 ANS: 1
 $10 - 4 < s < 10 + 4$
 $6 < s < 14$

REF: 011519ge

10 ANS: 2 REF: 081527ge

11 ANS: 1 REF: 080520a

12 ANS: 2 REF: 069905a

13 ANS: 3 REF: 080120b

14 ANS: 2
 $5 + 8 = 13$ and $8 - 5 = 3$. There are 9 integers between 3 and 13.

REF: spring9809a

15 ANS: 2 REF: fall0819ge

16 ANS: 1 REF: 010010a

17 ANS:
 7, 11, 16 and yes because $7 + 11 > 16$

REF: 060227a

18 ANS:
 The sum of any two sides of a triangle must be greater than the third side.

REF: 010534a