Answer Key · Lesson 5.6: The Triangle Inequality and the Hinge Theorem

School Launch · Geometry · Unit 5 · Worksheet A · for the parent

Key

1. yes

Can 10, 10 and 18 be the side lengths of a triangle?

2. no

Can 4, 3 and 1 be the side lengths of a triangle?

3. no

Can 7, 6 and 24 be the side lengths of a triangle?

4. $1 < x < 15$

1. Third side exceeds the difference: $x > 8 - 7 = 1$
2. and is less than the sum: $x < 8 + 7 = 15$

Two sides of a triangle are 8 and 7. Write the range of possible lengths for the third side.

5. $5 < x < 35$

1. Third side exceeds the difference: $x > 20 - 15$
2. and is less than the sum: $x < 20 + 15 = 35$

Two sides of a triangle are 20 and 15. Write the range of possible lengths for the third side.

6. $5 < x < 15$

1. Third side exceeds the difference: $x > 10 - 5$
2. and is less than the sum: $x < 5 + 10 = 15$

Two sides of a triangle are 5 and 10. Write the range of possible lengths for the third side.

7. $7 < x < 33$

1. Third side exceeds the difference: $x > 20 - 13 = 7$
2. and is less than the sum: $x < 13 + 20 = 33$

Two sides of a triangle are 13 and 20. Write the range of possible lengths for the third side.

8. BC, AC, AB

1. $m\angle C = 180^\circ - 44^\circ - 54^\circ = 82^\circ$
2. Opposite sides: $BC \leftrightarrow 44^\circ$, $AC \leftrightarrow 54^\circ$, $AB \leftrightarrow 82^\circ$; order by angle size

In $\triangle ABC$, $m\angle A = 44^\circ$ and $m\angle B = 54^\circ$. List the sides from shortest to longest.

9. AC, AB, BC

1. $m\angle C = 180^\circ - 93^\circ - 39^\circ = 48^\circ$
2. Opposite sides: $BC \leftrightarrow 93^\circ$, $AC \leftrightarrow 39^\circ$, $AB \leftrightarrow 48^\circ$; order by angle size

In $\triangle ABC$, $m\angle A = 93^\circ$ and $m\angle B = 39^\circ$. List the sides from shortest to longest.

10. BC, AC, AB

1. $m\angle C = 180^\circ - 41^\circ - 66^\circ = 73^\circ$
2. Opposite sides: $BC \leftrightarrow 41^\circ$, $AC \leftrightarrow 66^\circ$, $AB \leftrightarrow 73^\circ$; order by angle size

In $\triangle ABC$, $m\angle A = 41^\circ$ and $m\angle B = 66^\circ$. List the sides from shortest to longest.