

Geometry Homework
4.1 Apply Triangle Sum Properties

Complete the sentence with always, sometimes, or never.

1. An isosceles triangle is **sometimes** a right triangle.
2. An obtuse triangle is **never** a right triangle.
3. A right triangle is **never** an equilateral triangle.
4. A right triangle is **sometimes** an isosceles triangle.

Classify the triangle by its sides and/or by its angles.

5. 

   ![Obtuse Triangle](image)

   **Obtuse**

6. 

   ![Right Triangle](image)

7. 

   ![Isosceles Triangle](image)

A triangle has the given vertices. Graph the triangle and classify it by its sides. Then determine if it is a right triangle.

8. \(A(1, 1), B(4, 9), C(8, 5)\)

\[
AB = \sqrt{1^2 + 3^2} = \sqrt{10}
\]

\[
BC = \sqrt{5^2 + 4^2} = \sqrt{41}
\]

\[
AC = \sqrt{4^2 + 7^2} = \sqrt{65}
\]

Scalene
Not a right triangle

Find the value of \(x\). Then classify the triangle by its angles.

9.

\[3x = 90\]
\[x = 30\]

\[\angle A = 30^\circ\]

10.

\[5x + 55 = 180\]
\[x = 25\]

\[\triangle ABC\]

11.

\[x = 120\]

Acute
Find the measure of the exterior angle shown.

12. \(4x + 8\)° \(2x + 3\)°
\[
\angle 1 = 100°
\]
\[
2x + 3 + 57 = 4x + 8
\]
\[
54 = 2x + 8
\]
\[
46 = 2x
\]
\[
x = 23
\]

13. \(125°\)
\[
2x + (103 - x) = 6x - 7
\]
\[
x + 103 = 6x - 7
\]
\[
110 = 5x
\]
\[
x = 22
\]

Find the measure of the numbered angles.

14. \(\angle 1 = 36°\)
15. \(\angle 2 = 122°\)
16. \(\angle 3 = 122°\)
17. \(\angle 4 = 36°\)

Find the values of \(x\) and \(y\).

18. \(y = 30°\)
\(x = 60°\)

19. \(y = 51°\)
\(x = 45°\)

20. \(y = 66°\)
\(x = 24°\)

21. In \(\triangle ABC\), \(m\angle A = 2(m\angle B)\) and \(m\angle C = 3(m\angle B)\). Find the measure of each angle.
\[
2(m\angle B) + 3(m\angle B) + m\angle B = 180
\]
\[
l(m\angle B) = 180
\]
\[
m\angle B = 30°
\]
\[
m\angle C = 90°
\]
\[
m\angle A = 60°
\]