Practice 1   Classifying Triangles

Which of these triangles are equilateral, isosceles, or scalene? Use a centimeter ruler to find out.

1. Triangle $ABC$ is a/an _______ triangle.
2. Triangle $DEF$ is a/an _______ triangle.
3. Triangle $LMN$ is a/an _______ triangle.
4. Triangle $PQR$ is a/an _______ triangle.
Which of these triangles are right, obtuse, or acute? Use a protractor to find out.

5. Triangle $ABC$ is a/an _____ triangle.

6. Triangle $DEF$ is a/an _____ triangle.

7. Triangle $LMN$ is a/an _____ triangle.

8. Triangle $PQR$ is a/an _____ triangle.
Practice 2  Measures of Angles of a Triangle

Complete.

1. \[ \begin{align*}
\angle A + \angle B + \angle C &= \underline{________} \\
\end{align*} \]

2. \[ \begin{align*}
80^\circ + 70^\circ + \angle F &= \underline{________} \\
\angle F &= \underline{________} \\
\end{align*} \]

Measure the angles of the triangle. Then fill in the blanks.

3. \[ \begin{align*}
\angle A &= \underline{________} \\
\angle B &= \underline{________} \\
\angle C &= \underline{________} \\
\angle A + \angle B + \angle C &= \underline{________} + \underline{________} + \underline{________} \\
&= \underline{________} \\
The sum of the angle measures in the triangle is \underline{________}. \]
These triangles are not drawn to scale. Find the unknown angle measures.

4. Find the measure of \( \angle B \).

5. Find the measure of \( \angle D \).

6. Find the measure of \( \angle H \).

7. Find the measure of \( \angle QPS \).
Practice 3  Right, Isosceles, and Equilateral Triangles

Complete. \( \triangle ABC \) and \( \triangle EFG \) are right triangles.

1. \( \angle B = \) ________  
   \( \angle A + \angle C = \) ________  
   ________  

2. \( \angle E = \) ________  
   \( \angle F + \angle G = \) ________  

Measure the angles of the triangle. Then fill in the blanks.

3. \( \angle A = \) ________  
   \( \angle B = \) ________  
   \( \angle C = \) ________  
   \( \angle A + \angle C = \) ________  

These triangles are not drawn to scale. Identify and shade the right triangles.

4. 

\( 19^\circ \)  
\( 70^\circ \)  
\( 65^\circ \)  
\( 59^\circ \)  
\( 78^\circ \)  
\( 25^\circ \)  
\( 90^\circ \)  
\( 72^\circ \)
These triangles are not drawn to scale. Find the unknown angle measures.

5. Find the sum of the measures of $\angle A$ and $\angle B$.

6. Find the measure of $\angle C$.

7. Find the measures of $\angle ADC$ and $\angle ABC$.

8. Find the measures of $\angle EGF$ and $\angle DGE$. 
Complete. \(XYZ\) and \(PQR\) are isosceles triangles.

9. Which two sides are of equal length? 

\[ \underline{\text{_____}} \]

Which two angles have equal measures? 

\[ \underline{\text{_____}} \]

10. Which two sides are of equal length? 

\[ \underline{\text{_____}} \]

Which two angles have equal measures? 

\[ \underline{\text{_____}} \]

These triangles are not drawn to scale. Identify and shade the isosceles triangles.

11. 

\[ \begin{align*} \text{86°} \\ 46° \end{align*} \] 

\[ \begin{align*} \text{64°} \\ 52° \end{align*} \] 

\[ \begin{align*} \text{75°} \\ 74° \end{align*} \] 

\[ \begin{align*} \text{80°} \\ 80° \end{align*} \] 

\[ \begin{align*} \text{30°} \\ 90° \end{align*} \]
These triangles are not drawn to scale. Find the unknown angle measures.

12. Find the measure of $\angle F$.

13. Find the measure of $\angle C$.

14. Find the measure of $\angle TRS$.

15. Find the measure of $\angle d$. 
Complete. Use your protractor and centimeter ruler to measure the sides and angles. Which figure is an equilateral triangle? Check the box.

16. \( \triangle ABC \)

- \( AB = \) ________ cm
- \( BC = \) ________ cm
- \( AC = \) ________ cm
- \( m\angle A = \) ________
- \( m\angle B = \) ________
- \( m\angle C = \) ________

17. \( \triangle XYZ \)

- \( XY = \) ________ cm
- \( YZ = \) ________ cm
- \( XZ = \) ________ cm
- \( m\angle X = \) ________
- \( m\angle Y = \) ________
- \( m\angle Z = \) ________

Complete. \( \triangle ABC \) is an equilateral triangle.

18. Which angles have measures equal to the measure of \( \angle A \)?

19. Which sides have lengths equal to the length of \( AB \)?

20. What can you say about the angles of triangle \( ABC \)?
These triangles are not drawn to scale. Identify and shade the equilateral triangles.

21.

These triangles are not drawn to scale. Find the unknown angle measures.

22. Find the measure of $\angle Q$.

23. Find the measures of $\angle Y$ and $\angle Z$. 
These triangles are not drawn to scale. Find the unknown angle measures.

24. \( WX = XY = YW \). Find the measure of \( \angle d \).

25. Find the measure of \( \angle e \).

26. Triangle \( PQR \) is an equilateral triangle. Triangle \( PST \) is an isosceles triangle. The measures of \( \angle a \), \( \angle b \), and \( \angle c \) are the same. Find the measure of \( \angle d \).
Math Journal

1. A teacher asked her students to sketch and label the angles of a triangle. These are the angle measures that three students chose to draw.

Wayne: 120°, 80°, 10°  Ashley: 70°, 28°, 72°  Frank: 51°, 37°, 92°

Will each student be able to draw his or her triangle? Explain your answer.

Wayne: 

Ashley: 

Frank: 

2. What are two ways to identify an isosceles triangle?

3. Jordan is measuring the angles of a triangle. He finds out that \( m\angle A = m\angle B = 60° \). Without measuring \( \angle C \), he says that triangle \( ABC \) is an equilateral triangle.

Is he correct? Explain why.
Practice 4  Triangle Inequalities

Complete. Measure the sides of the triangle to the nearest half inch. Then fill in the blanks.

1. \( AB = \) ________ in.
2. \( BC = \) ________ in.
3. \( AC = \) ________ in.
4. \( AB + BC = \) ________ in.
5. \( BC + AC = \) ________ in.
6. \( AB + AC = \) ________ in.

Use your answers in Exercises 1 to 6 to answer the questions below. Fill in the blanks with Yes or No.

7. Is \( AB + BC > AC \)? ________
8. Is \( BC + AC > AB \)? ________
9. Is \( AB + AC > BC \)? ________
Complete. Measure the sides of the triangle to the nearest centimeter. Then fill in the blanks.

10. $XY = \underline{________}$ cm  
11. $YZ = \underline{________}$ cm

12. $XZ = \underline{________}$ cm  
13. $XY + YZ = \underline{________}$ cm

14. $YZ + XZ = \underline{________}$ cm  
15. $XY + XZ = \underline{________}$ cm

Use your answers in Exercises 10 to 15 to answer the questions below. Write the sides of the triangle to make the inequalities true.

16. $XY + YZ > \underline{________}$

17. $YZ + XZ > \underline{________}$

18. $XY + XZ > \underline{________}$

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Chapter 13  Properties of Triangles and Four-Sided Figures
Show whether it is possible to form triangles with these lengths.

19. 6 in., 8 in., 12 in.

20. 9 in., 13 in., 3 in.

21. 2 cm, 4 cm, 7 cm
The lengths of two sides of each triangle are given. Name a possible length for the third side. The lengths are in whole centimeters or whole inches.

22. 

\[ \text{AB is greater than 10 centimeters.} \]

A possible length for \( \overline{AB} \) is 

\hspace{5cm} \text{ centimeters.} 

23. 

\[ \text{QR is greater than 9 inches.} \]

A possible length for \( \overline{QR} \) is 

\hspace{5cm} \text{ inches.} 

Solve.

24. In the triangle \( \triangle EFG \), \( EF = 21 \) centimeters, \( FG = 11 \) centimeters.

The length of \( \overline{EG} \) is in whole centimeters and is greater than 25 centimeters. What is a possible length of \( \overline{EG} \)?
Practice 5  Parallelogram, Rhombus, and Trapezoid

Complete. Figure $ABCD$ is a parallelogram. Measure the sides and angles of the figure.

1. $AD = \underline{\hspace{2cm}}$ cm
2. $AB = \underline{\hspace{2cm}}$ cm
3. $BC = \underline{\hspace{2cm}}$ cm
4. $DC = \underline{\hspace{2cm}}$ cm
5. $m\angle A = \underline{\hspace{2cm}}$
6. $m\angle B = \underline{\hspace{2cm}}$
7. $m\angle C = \underline{\hspace{2cm}}$
8. $m\angle D = \underline{\hspace{2cm}}$
9. Name the parallel sides of the figure. ________________
10. Name the opposite angles that are equal. ________________

This parallelogram is not drawn to scale. Fill in the blanks.

11. $m\angle Q = m\angle \underline{\hspace{2cm}}$
    \hspace{1cm} = \underline{\hspace{2cm}}
12. $m\angle P = 180^\circ - \underline{\hspace{2cm}}$
    \hspace{1cm} = \underline{\hspace{2cm}}
13. $m\angle R = m\angle \underline{\hspace{2cm}}$
    \hspace{1cm} = \underline{\hspace{2cm}}
These parallelograms are not drawn to scale.
Find the unknown angle measures.

14. \(56^\circ\)

15. \(135^\circ\)

16. \(61^\circ\), \(73^\circ\)

17. \(139^\circ\), \(58^\circ\)

18. \(x\), \(y\), \(z\)

19. \(28^\circ\), \(62^\circ\), \(p\)
Complete. Write the name of another side or angle of each rhombus.

20. \( AB = BC \)

21. \( m\angle B = m\angle \) _________

22. \( m\angle A = m\angle \) _________

23. \( UV = \) _________

24. \( m\angle S = m\angle \) _________

25. \( m\angle T = m\angle \) _________

This rhombus is not drawn to scale. Fill in the blanks.

26. \( m\angle X = m\angle \) _________ = _________

27. \( m\angle W = \) _________ - _________ = _________

28. \( m\angle Y = m\angle \) _________ = _________
These rhombuses are not drawn to scale. Find the unknown angle measures.

29. \[ 125° \]

30. \[ 57° \]

31. \[ 129° \]

32. \[ 52° \]

33. \[ 45° \]

34. \[ 106° \]
Measure the unknown angles. Then fill in the blanks.

**ABCD** is a trapezoid where \( \overline{AB} \parallel \overline{DC} \).

35. \( m\angle A = \) ________

36. \( m\angle B = \) ________

37. \( m\angle C = \) ________

38. \( m\angle D = \) ________

39. \( m\angle A + m\angle D = m\angle \underline{\hspace{1cm}} + m\angle \underline{\hspace{1cm}} = \underline{\hspace{1cm}}

These trapezoids are not drawn to scale. Find the unknown angle measures.

40. \( \overline{AB} \parallel \overline{DC} \)

41. \( \overline{EH} \parallel \overline{FG} \)

42. \( \overline{JK} \parallel \overline{ML} \)

43. \( \overline{PS} \parallel \overline{QR} \)
These trapezoids are not drawn to scale.
Find the unknown angle measures.

44. $TU \parallel WV$

45. $VW \parallel YX$

46. $AB \parallel DC$

47. $EH \parallel FG$
Put On Your Thinking Cap!

Challenging Practice

This figure is a rhombus and $\angle ADO = \angle CDO$. Find the measure of $\angle DOC$. 

\[
\begin{align*}
\angle ADO &= \angle CDO \\
\angle DOC &= 36^\circ
\end{align*}
\]
Put On Your Thinking Cap!

Problem Solving

1. \(ABCD\) is a trapezoid in which \(AD \parallel BC\). Find the measure of \(\angle CED\).

2. \(ABCD\) is a parallelogram and \(CDEF\) is a rhombus. Find the measure of \(\angle ADE\).