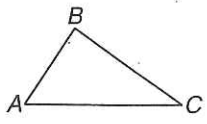


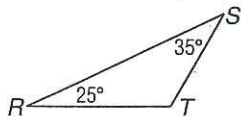
4-2 Study Guide and Intervention

Angles of Triangles

Angle Sum Theorem If the measures of two angles of a triangle are known, the measure of the third angle can always be found.

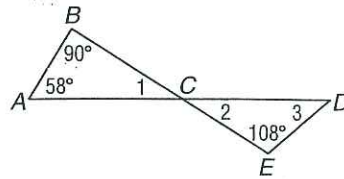
Angle Sum Theorem	The sum of the measures of the angles of a triangle is 180. In the figure at the right, $m\angle A + m\angle B + m\angle C = 180$.	
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Example 1 Find $m\angle T$.



$$\begin{aligned}
 m\angle R + m\angle S + m\angle T &= 180 && \text{Angle Sum Theorem} \\
 25 + 35 + m\angle T &= 180 && \text{Substitution} \\
 60 + m\angle T &= 180 && \text{Add.} \\
 m\angle T &= 120 && \text{Subtract 60 from each side.}
 \end{aligned}$$

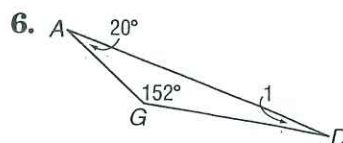
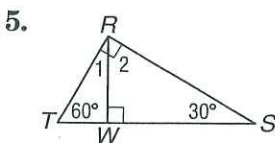
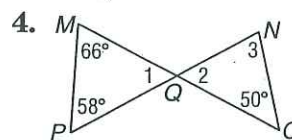
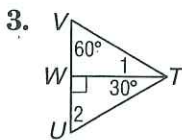
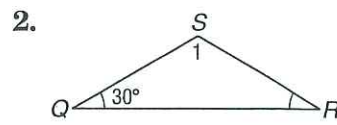
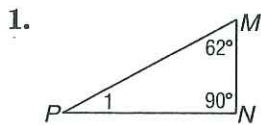
Example 2 Find the missing angle measures.



$$\begin{aligned}
 m\angle 1 + m\angle A + m\angle B &= 180 && \text{Angle Sum Theorem} \\
 m\angle 1 + 58 + 90 &= 180 && \text{Substitution} \\
 m\angle 1 + 148 &= 180 && \text{Add.} \\
 m\angle 1 &= 32 && \text{Subtract 148 from each side.} \\
 m\angle 2 &= 32 && \text{Vertical angles are congruent.} \\
 m\angle 3 + m\angle 2 + m\angle E &= 180 && \text{Angle Sum Theorem} \\
 m\angle 3 + 32 + 108 &= 180 && \text{Substitution} \\
 m\angle 3 + 140 &= 180 && \text{Add.} \\
 m\angle 3 &= 40 && \text{Subtract 140 from each side.}
 \end{aligned}$$

Exercises

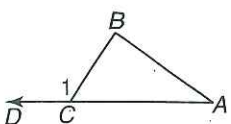
Find the measure of each numbered angle.



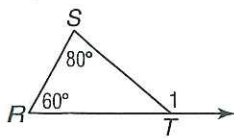
4-2 Study Guide and Intervention *(continued)*

Angles of Triangles

Exterior Angle Theorem At each vertex of a triangle, the angle formed by one side and an extension of the other side is called an **exterior angle** of the triangle. For each exterior angle of a triangle, the **remote interior angles** are the interior angles that are not adjacent to that exterior angle. In the diagram below, $\angle B$ and $\angle A$ are the remote interior angles for exterior $\angle DCB$.

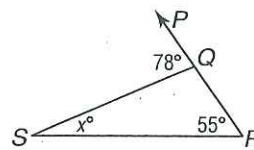
Exterior Angle Theorem	The measure of an exterior angle of a triangle is equal to the sum of the measures of the two remote interior angles. $m\angle 1 = m\angle A + m\angle B$	
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Example 1 Find $m\angle 1$.



$$\begin{aligned}
 m\angle 1 &= m\angle R + m\angle S && \text{Exterior Angle Theorem} \\
 &= 60 + 80 && \text{Substitution} \\
 &= 140 && \text{Add.}
 \end{aligned}$$

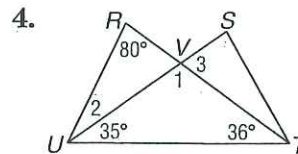
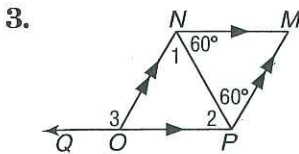
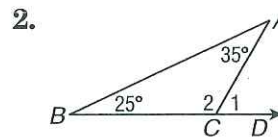
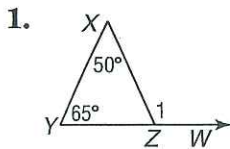
Example 2 Find x .



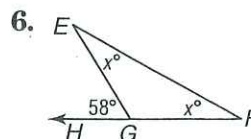
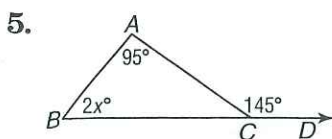
$$\begin{aligned}
 m\angle PQS &= m\angle R + m\angle S && \text{Exterior Angle Theorem} \\
 78 &= 55 + x && \text{Substitution} \\
 23 &= x && \text{Subtract 55 from each side.}
 \end{aligned}$$

Exercises

Find the measure of each numbered angle.



Find x .



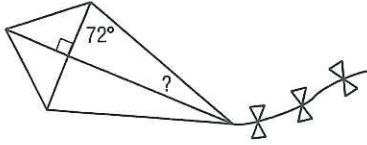
4-2

Practice

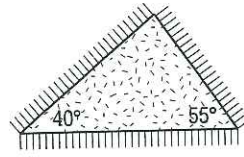
Angles of Triangles

Find the missing angle measures.

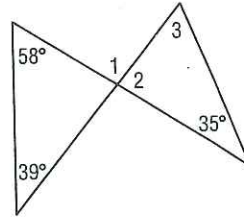
1.



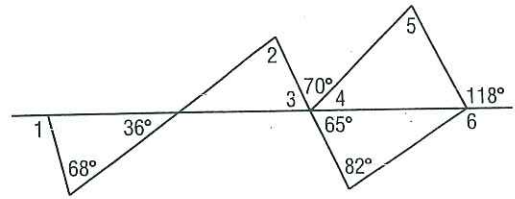
2.



Find the measure of each angle.

3. $m\angle 1$ 4. $m\angle 2$ 5. $m\angle 3$ 

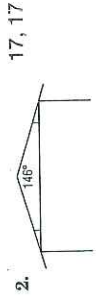
Find the measure of each angle.

6. $m\angle 1$ 7. $m\angle 4$ 8. $m\angle 3$ 9. $m\angle 2$ 10. $m\angle 5$ 11. $m\angle 6$ 

NAME _____ DATE _____ PERIOD _____

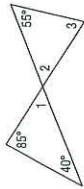
4-2 Skills Practice
Angles of Triangles

Find the missing angle measures.



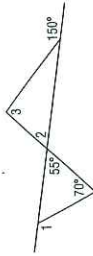
Find the measure of each angle.

- 3. $m\angle 1$ 55
- 4. $m\angle 2$ 55
- 5. $m\angle 3$ 70



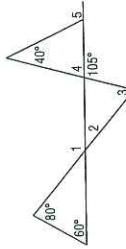
Find the measure of each angle.

- 6. $m\angle 1$ 125
- 7. $m\angle 2$ 55
- 8. $m\angle 3$ 95



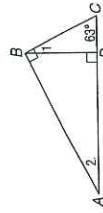
Find the measure of each angle.

- 9. $m\angle 1$ 140
- 10. $m\angle 2$ 40
- 11. $m\angle 3$ 65
- 12. $m\angle 4$ 75
- 13. $m\angle 5$ 115



Find the measure of each angle.

- 14. $m\angle 1$ 27
- 15. $m\angle 2$ 27

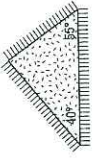
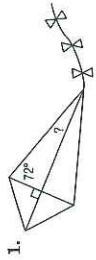


Lesson 4-2

NAME _____ DATE _____ PERIOD _____

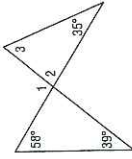
4-2 Practice (Average)
Angles of Triangles

Find the missing angle measures.



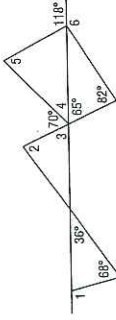
Find the measure of each angle.

- 3. $m\angle 1$ 97
- 4. $m\angle 2$ 83
- 5. $m\angle 3$ 62



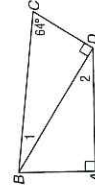
Find the measure of each angle.

- 6. $m\angle 1$ 104
- 7. $m\angle 4$ 45
- 8. $m\angle 3$ 65
- 9. $m\angle 2$ 79
- 10. $m\angle 5$ 73
- 11. $m\angle 6$ 147



Find the measure of each angle if $\angle BAD$ and $\angle BDC$ are right angles and $m\angle ABC = 84$.

- 12. $m\angle 1$ 26
- 13. $m\angle 2$ 32



14. CONSTRUCTION The diagram shows an example of the Pratt Truss used in bridge construction. Use the diagram to find $m\angle 1$.

55

