

LESSON
4.1

Practice B

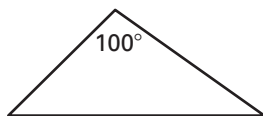
For use with pages 224–232

Complete the sentence with *always*, *sometimes*, or *never*.

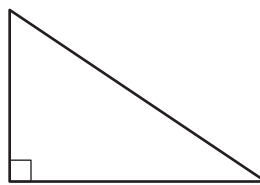
1. An isosceles triangle is ? a right triangle.
2. An obtuse triangle is ? a right triangle.
3. A right triangle is ? an equilateral triangle.
4. A right triangle is ? an isosceles triangle.

Classify the triangle by its sides and by its angles.

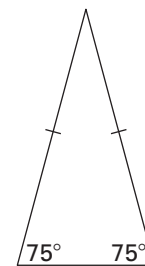
5.



6.



7.

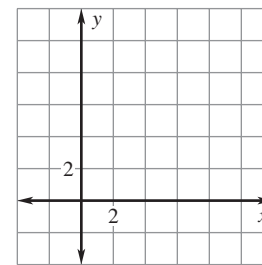
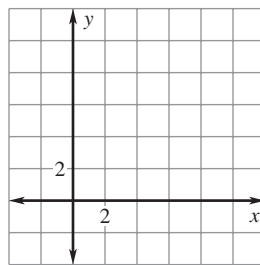
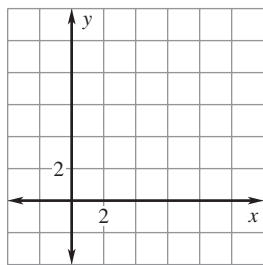


A triangle has the given vertices. Graph the triangle and classify it by its sides. Then determine if it is a right triangle.

8. $A(3, 1), B(3, 4), C(7, 1)$

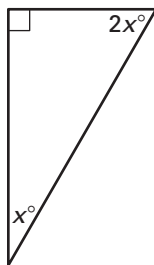
9. $A(1, 1), B(4, 0), C(8, 5)$

10. $A(2, 2), B(6, 2), C(4, 8)$

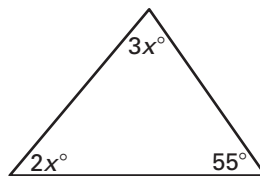


Find the value of x . Then classify the triangle by its angles.

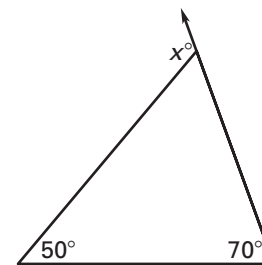
11.



12.



13.

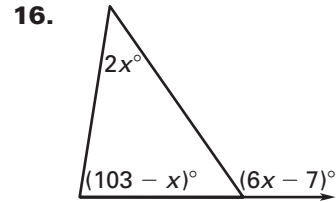
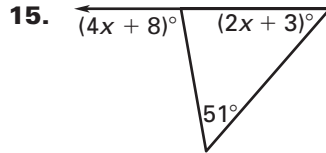
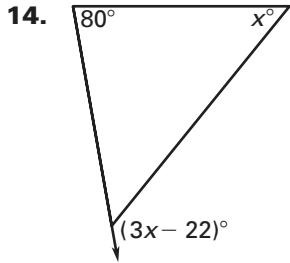


LESSON
4.1

Practice B *continued*

For use with pages 224–232

Find the measure of the exterior angle shown.



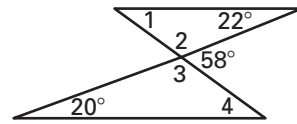
Find the measure of the numbered angle.

17. $\angle 1$

18. $\angle 2$

19. $\angle 3$

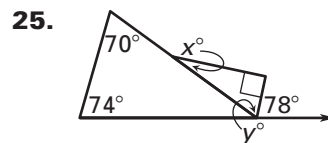
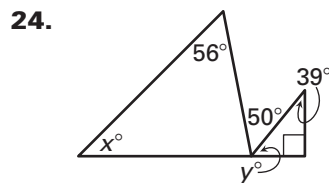
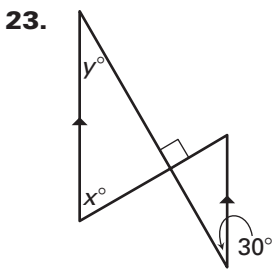
20. $\angle 4$



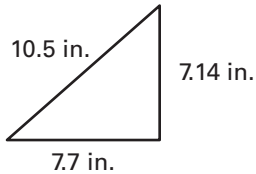
21. In $\triangle ABC$, $m\angle A = m\angle B + 30^\circ$ and $m\angle C = m\angle B + 60^\circ$. Find the measure of each angle.

22. In $\triangle ABC$, $m\angle A = 2(m\angle B)$ and $m\angle C = 3(m\angle B)$. Find the measure of each angle.

Find the values of x and y .



26. **Metal Brace** The diagram shows the dimensions of a metal brace used for strengthening a vertical and horizontal wooden junction. Classify the triangle formed by its sides. Then copy the triangle, measure the angles, and classify the triangle by its angles.



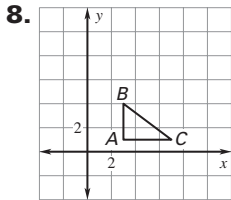
Lesson 4.1

Practice Level A

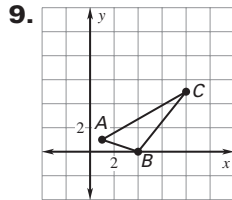
1. equilateral 2. isosceles 3. scalene
4. isosceles 5. right 6. acute 7. obtuse
8. equiangular 9. 55 10. 35 11. 45 12. 158
13. 90 14. 62 15. $m\angle 1 = 60^\circ$
16. $m\angle 1 = 60^\circ$; $m\angle 2 = 30^\circ$; $m\angle 3 = 80^\circ$
17. $m\angle 1 = 70^\circ$; $m\angle 2 = 65^\circ$; $m\angle 3 = 95^\circ$
18. $m\angle A = 45^\circ$; $m\angle B = 90^\circ$; $m\angle C = 45^\circ$
19. scalene; obtuse

Practice Level B

1. sometimes 2. never 3. never 4. sometimes
5. scalene, obtuse 6. scalene, right
7. isosceles, acute

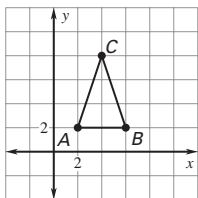


scalene; right triangle



scalene; not a right triangle

10. isosceles; not a right triangle



11. 30; right 12. 25; acute 13. 120; acute
14. 131° 15. 100° 16. 125° 17. 36° 18. 122°
19. 122° 20. 38° 21. $m\angle A = 60^\circ$, $m\angle B = 30^\circ$, $m\angle C = 90^\circ$ 22. $m\angle A = 60^\circ$, $m\angle B = 30^\circ$, $m\angle C = 90^\circ$
23. 60, 30 24. 45, 51 25. 24, 66
26. scalene; right

Practice Level C

1. scalene; 20; acute 2. isosceles; 25; acute
3. equilateral; 60; equiangular 4. $x = 10$; $y = 71$
5. $x = 50$; $y = 33$ 6. $x = 15$; $y = 42$
7. $x = 85$; $y = 58$ 8. 60° 9. 120° 10. 60°
11. 120° 12. 30° 13. 30° 14. 74°
15. $m\angle B = 115^\circ$; $m\angle C = 23^\circ$ 16. 8 in. by 11 in. by 11 in.; 8 in. by 8 in. by 14 in.
17. 864 in. 18. 576 in. 19. 1344 in.

Review for Mastery

1. right scalene 2. equiangular equilateral
3. obtuse isosceles 4. $m\angle ABD = 90^\circ$, $m\angle BDC = 60^\circ$ 5. $m\angle CAB = 80^\circ$, $m\angle CBA = 10^\circ$

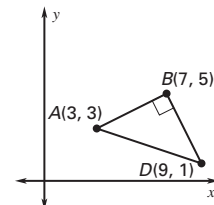
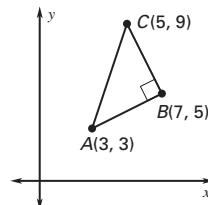
Problem Solving Workshop: Worked Out Example

1. The legs are \overline{RS} and \overline{TS} , and the base is \overline{RT} ; $m\angle 1 = 55^\circ$, $m\angle 2 = 110^\circ$
2. The legs are \overline{RS} and \overline{TS} , and the hypotenuse is \overline{RT} ; $m\angle SRT = 54^\circ$, $m\angle 1 = 144^\circ$

Challenge Practice

1. (5, 9)

2. (9, 1)



3. 60° , 60° , 60° 4. 63° , 36° , 81° ; acute
5. $x = 29$, $y = 64$ 6. $x = 12.9$, $y = 51.3$
7. $m\angle A = m\angle 1$

8. GIVEN: $\triangle ABC$

PROVE: Sum of exterior angles of $\triangle ABC$ is 360° .

By the definition of a straight angle, you know that $m\angle 1 + m\angle 2 = 180^\circ$, $m\angle 3 + m\angle 4 = 180^\circ$, and $m\angle 5 + m\angle 6 = 180^\circ$. So, it follows that the sum of all six angles is $180^\circ + 180^\circ + 180^\circ = 540^\circ$. By the Triangle Sum Theorem, you know that $m\angle 2 + m\angle 4 + m\angle 6 = 180^\circ$. The exterior angles of the triangle are $\angle 1$, $\angle 3$, and $\angle 5$. To find the sum of these three angles, subtract 180° from the sum of all six angles, 540° , to obtain 360° .

Lesson 4.2

Practice Level A

1. Check student diagram; $\overline{CP} \cong \overline{BI}$; $\overline{PN} \cong \overline{IY}$; $\overline{NC} \cong \overline{YB}$; $\angle C \cong \angle B$; $\angle P \cong \angle I$; $\angle N \cong \angle Y$
2. \overline{OP} 3. $\angle F$ 4. $\angle G$ 5. 110° 6. 7 km
7. $\triangle QPO$ 8. $\triangle EIG \cong \triangle QOM$; all corresponding sides and angles are congruent.
9. none 10. $\triangle KLN \cong \triangle MNL$; all corresponding sides and angles are congruent.
11. $\triangle DEG \cong \triangle HEF$; all corresponding sides and angles are congruent. 12. 25 13. 70 14. 11