

13.6 EXERCISES

HOMWORK KEY

 = **WORKED-OUT SOLUTIONS**
on p. WS1 for Exs. 17, 25, and 45

 = **TAKS PRACTICE AND REASONING**
Exs. 20, 33, 34, 45, 47, 49, and 50

SKILL PRACTICE

1. **VOCABULARY** Copy and complete: In a triangle with sides of length a , b , and c , $\frac{1}{2}(a + b + c)$ is called the ?.

2. **WRITING** Express Heron's formula in words.

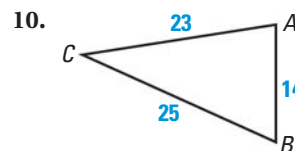
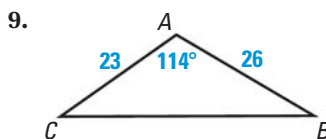
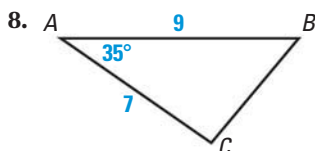
EXAMPLES 1 and 2

on pp. 889–890
for Exs. 3–20

CHOOSING A METHOD For the given case, tell whether you would use the *law of sines* or the *law of cosines* to solve the triangle.

3. SSS 4. ASA 5. SSA 6. SAS 7. AAS

SOLVING TRIANGLES Solve $\triangle ABC$.



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11. $B = 25^\circ$, $a = 8$, $c = 6$ 12. $A = 103^\circ$, $b = 15$, $c = 24$ 13. $a = 18$, $b = 28$, $c = 13$
14. $a = 38$, $b = 31$, $c = 35$ 15. $C = 48^\circ$, $a = 17$, $b = 20$ 16. $B = 63^\circ$, $a = 29$, $c = 38$
17. $a = 10$, $b = 3$, $c = 12$ 18. $a = 23$, $b = 24$, $c = 20$ 19. $C = 96^\circ$, $a = 35$, $b = 43$

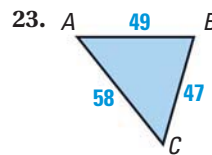
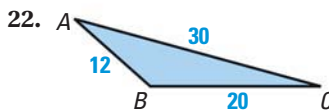
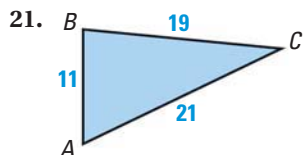
20.  **TAKS REASONING** What is the measure of angle B in $\triangle ABC$ if $a = 17$, $b = 29$, and $c = 14$?

- (A) 18.7° (B) 22.9° (C) 111.2° (D) 138.4°

EXAMPLE 4

on p. 891
for Exs. 21–33

FINDING AREA Find the area of $\triangle ABC$.




FINDING AREA Find the area of $\triangle ABC$ with the given side lengths.

24. $a = 12$, $b = 7$, $c = 8$ 25. $a = 5$, $b = 11$, $c = 10$ 26. $a = 25$, $b = 24$, $c = 19$
27. $a = 14$, $b = 20$, $c = 28$ 28. $a = 31$, $b = 23$, $c = 17$ 29. $a = 81$, $b = 67$, $c = 71$
30. $a = 43$, $b = 59$, $c = 48$ 31. $a = 51$, $b = 51$, $c = 43$ 32. $a = 38$, $b = 25$, $c = 61$

33.  **TAKS REASONING** What is the area of $\triangle ABC$ if $a = 21$, $b = 16$, and $c = 13$?

- (A) 66 units² (B) 104 units² (C) 1350 units² (D) 4368 units²

34.  **TAKS REASONING** Use the law of cosines to show that the measure of each angle of an equilateral triangle is 60° . *Explain* your reasoning.