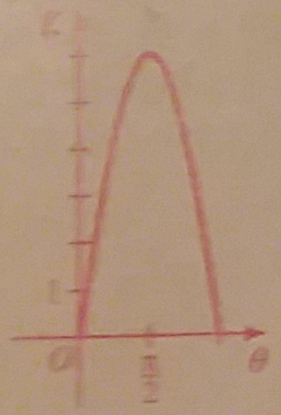
two triangles have two pairs of corresponding sides equal and the corresponding included angles are supplementary, then their areas will be equal. This result will be used later when applying the law of sines to find the included angle of a triangle when the area is given.

Additional Answers
Written Exercises

If $K = 6 \sin\theta$,
then $\theta = \{\theta \mid 0 < \theta < \pi\}$;
range $= \{K \mid 0 < K \leq 6\}$



Suggested Assignments

Standard
Day 1: 342/1–15 odd
Day 2: 343/19–27 odd
Comprehensive
342/1, 7, 9, 15, 19, 27, 31, 33, 35

Supplementary Materials

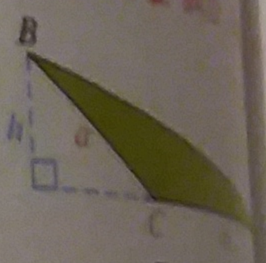
digits. Give lengths to the nearest tenth of a degree. In Exercises 1–4, find the area of each $\triangle ABC$.

A

1. **a.** $a = 4,\ b = 5,\ \angle C = 30°$ 5
   b. $a = 4,\ b = 5,\ \angle C = 150°$ 5
2. **a.** $b = 3,\ c = 8,\ \angle A =$ [illegible]
   b. $b = 3,\ c = 8,\ \angle A =$ [illegible]
3. **a.** $a = 6,\ c = 2,\ \angle B = 45°$ $3\sqrt{2}$
   b. $a = 6,\ c = 2,\ \angle B = 135°$ $3\sqrt{2}$
4. **a.** $a = 10,\ b = 20,\ \angle C =$ [illegible]
   b. $a = 10,\ b = 20,\ \angle C =$ [illegible]

2. **a.** $6\sqrt{3}$ **b.** $6\sqrt{3}$ 4. **a.** [illegible]

5. What does the formula $K = \frac{1}{2}ab \sin C$ become when $\angle C$ is a right angle? Draw a sketch to illustrate.
6. As shown in the diagram at the right, $\angle C$ in $\triangle ABC$ is obtuse. Show that the formula $K = \frac{1}{2}ab \sin C$ gives the area K of $\triangle ABC$.



Ex. 6

7. Find the area of $\triangle XYZ$ if $x = 16$, $y = 25$, and $\angle Z = 52°$. 158
8. Find the area of $\triangle RST$ if $\angle S = 125°$, $r = 6$, and $t = 15$. 36.9
9. The area of $\triangle ABC$ is 15. If $a = 12$ and $b = 5$, find the measure(s) of $\angle C$
10. The area of $\triangle PQR$ is 9. If $q = 4$ and $r = 9$, find the measure(s) of $\angle P$
11. Find the area of a regular octagon inscribed in a circle of radius 40 cm.
12. Find the area of a regular 12-sided polygon inscribed in a circle of radius 8 cm. 192 cm^2
13. Adjacent sides of a parallelogram have lengths 6 cm and 7 cm, and the measure of the included angle is 30°. Find the area of the parallelogram.
14. Sketch a parallelogram with sides of lengths a and b and with an acute angle θ. Express the area of the parallelogram in terms of a, b, and θ. $A = ab \sin\theta$
15. Suppose a triangle has two sides of lengths 6 cm and 4 cm and an included angle θ. Express the area of the triangle as a function of θ. State the domain and range of the function and sketch its graph.
16. Suppose a triangle has two sides of lengths a and b. If the angle between these sides varies, what is the maximum possible area that the triangle can attain? What can you say about the minimum possible area? $\frac{1}{2}ab$; no min.

B

17. **a.** Given $\triangle ABC$ with an inscribed circle as shown at the right, show that the radius r of the circle is

problems 2;7;8;11