

- Two lines intersect to form vertical angles with measures of $(4x - 2)^\circ$ and $6(x - 3)^\circ$. Find the measures of the four angles formed at the intersection of the two lines. (2.6)
- Sketch two parallel lines intersected by a transversal. Then sketch the bisectors of two consecutive interior angles. What kind of triangle is formed by the transversal and the two bisectors? Explain your answer. (3.3, 4.1)
- Write a coordinate proof to show that in a right triangle, the length of the median to the hypotenuse is half the length of the hypotenuse. Use $\triangle RST$, which is right with vertices $R(0, 0)$, $S(2h, 0)$, and $T(0, 2k)$. (4.7, 5.3)

Decide whether the triangle is *acute*, *right*, or *obtuse*. Name the largest and the smallest angles of the triangle. (5.5, 9.3)

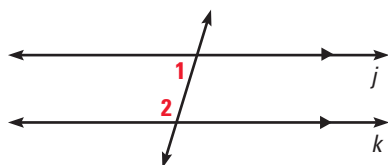
4. $\triangle ABC$, $AB = 12$, $BC = 8$, and $AC = 15$

5. $\triangle XYZ$, $XY = 10$, $YZ = 8$, and $XZ = 6$

 **TWO-COLUMN PROOF** Write a two-column proof. (3.3, 6.2)

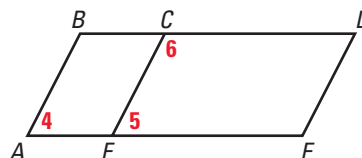
6. **GIVEN** $\triangleright j \parallel k$, $m\angle 1 = 73^\circ$

PROVE $\triangleright m\angle 2 = 107^\circ$



7. **GIVEN** $\triangleright ABDE$ and $CDEF$ are $\square$ s.

PROVE $\triangleright \angle 4$ and $\angle 6$ are supplementary.

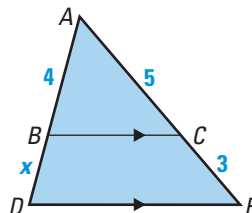


In Exercises 8 and 9, use *always*, *sometimes*, or *never* to complete the statement.

- The sides of a rhombus are ? congruent. (6.4)
- A trapezoid ? has rotational symmetry. (6.5, 7.3)
- A segment has endpoints $X(-3, 3)$ and $Y(-5, 8)$. The segment is reflected in the x -axis and then in the y -axis. Sketch the image of the segment after the two reflections. Describe a single transformation that would map $\overline{XY}$ to the final image. (7.2, 7.3, 7.5)

In Exercises 11–13, use the diagram.

- Show that $\triangle ABC \sim \triangle ADE$. (8.4)
- Find the value of x . (8.6)
- Find the ratio of the perimeter of $\triangle ABC$ to the perimeter of $\triangle ADE$. Then find the ratio of their areas. (11.3)

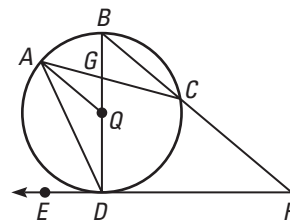


A right triangle has legs of lengths 7 and 24.

- Find the lengths of the hypotenuse and the altitude to the hypotenuse. (9.1, 9.2)
- Find the measures of the acute angles of the triangle. (9.6)

In $\odot Q$, $\overline{EF} \perp \overline{DB}$, $m\angle AQB = 50^\circ$, and $m\angle F = 40^\circ$. Find the measure of the angle or the arc. (10.2, 10.3, 10.4)

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|--------------------|---------------------|--------------------|
| 16. $\widehat{AD}$ | 17. $\angle ADB$ | 18. $\angle ACB$ |
| 19. $\angle EDB$ | 20. $\angle EDA$ | 21. $\widehat{DC}$ |
| 22. $\widehat{BC}$ | 23. $\widehat{ABD}$ | 24. $\angle BGC$ |

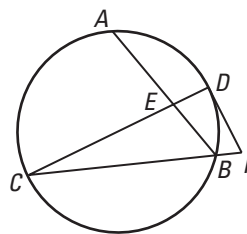


Suppose A is in the exterior of $\odot P$, and $\overline{AB}$ and $\overline{AC}$ are tangent to $\odot P$.

25. What can you conclude about $\angle BAC$ and $\angle BPC$? Explain. (10.1)
26. What special kind of quadrilateral is $BACP$? Explain. (6.5, 10.1)

In Exercises 27–29, use the diagram at the right. (10.5)

27. Find AE if $EB = 6$, $CE = 18$, and $ED = 4$.
28. Find BC if $DF = 6$ and $FB = 4$.
29. Find CE if $AE = 10$, $EB = 7$, and $ED = 3.5$.

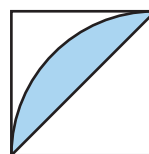


In Exercises 30 and 31, the endpoints of a diameter of a circle are $(-2, 1)$ and $(6, -5)$.

30. Write the standard equation of the circle. (10.6)
31. Find the circumference of the circle. Use $\pi \approx 3.14$. (11.4)

In Exercises 32 and 33, describe the locus of points in a plane. (10.7)

32. Points that are equidistant from the vertices of a regular hexagon.
33. Points that are equidistant from two perpendicular lines, j and k .
34. What is the sum of the measures of the interior angles of a convex polygon with 25 sides? (11.1)
35. Find the area of a regular octagon whose perimeter is 240 centimeters. (11.2)
36. A quarter circle and a diagonal are drawn inside a square, shown at the right. Find the probability that a randomly chosen point in the interior of the square lies in the shaded region. (11.6)



Ex. 36

37. Find the volume of a cone that is 7 feet in diameter and 6 feet high. (12.5)
38. Two right rectangular prisms are similar. The dimensions of the smaller prism are 4 inches, 5 inches, and 5 inches, and the volume of the larger prism is 1562.5 cubic inches. What is the scale factor of the two prisms? (12.4, 12.7)
39. **TABLE** A square table has hinged leaves that can be raised to enlarge the table. When all four leaves are up, the table top is a circle. If the area of the square table is 16 square feet, what is the area of the round table? (9.4, 11.5)
40. **HONEYCOMB** A cell of a honeycomb is a right regular hexagonal prism with base edges of 0.25 inch and a height of 0.75 inch. Find the lateral area of one cell. (12.2)
41. **TABLE TENNIS** The diameter of a table tennis ball is 1.5 inches. Find its surface area to the nearest tenth. (12.6)