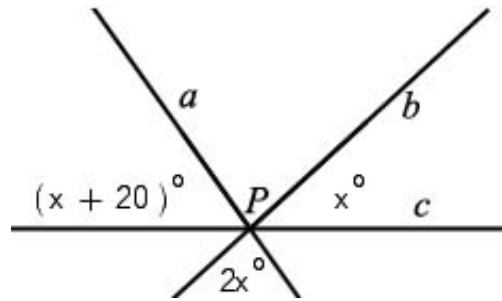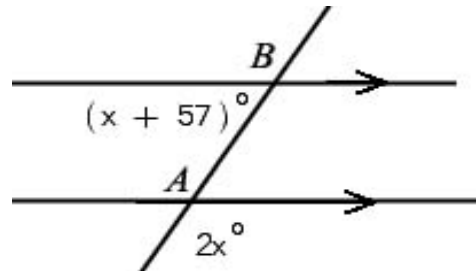Instructions: Write all responses on separate paper. Show all work for credit.
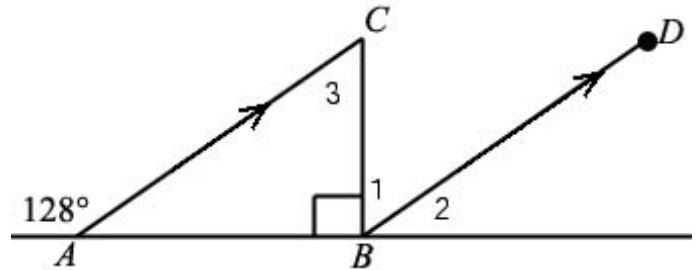
1. Given lines a, b and c intersecting at point P in the diagram to the right, what is the value of x?

2. Given that AB is a transversal cutting parallels in the diagram at right, find the value of x. Explain your reasoning.
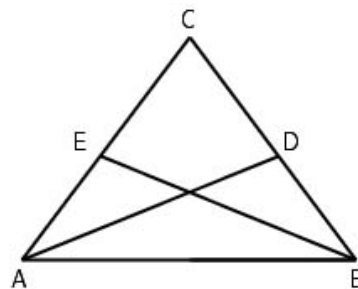
3. Given the transversal AB cutting parallel lines $AC \parallel BD$ in the diagram at right, explain how you deduce

    a. $\angle 2$

    b. $\angle 1$

    c. $\angle 3$

4. Find the value of x that will work in the figure at right. Explain your reasoning.
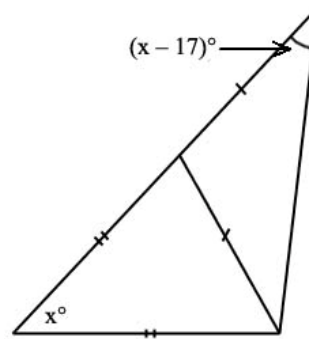
5. Given the figure at right with $AC = CB$ and $\angle DAB = \angle EBA$, prove that $AD = EB$. Use a two-column proof format.

6. A 16-ft ladder is leaning against a wall which is perpendicular to the floor. If the ladder reaches 12 ft up the wall, how far away from the base of the wall is the foot of the ladder?

7. Find the lengths of AB and BC in the triangle below.
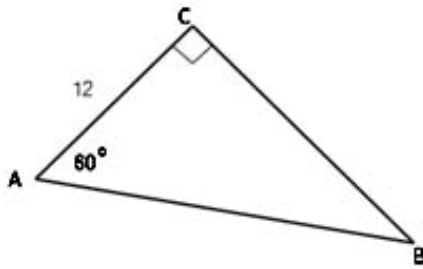
8. Consider this triangle at right:

   a. Find the perimeter of the triangle.
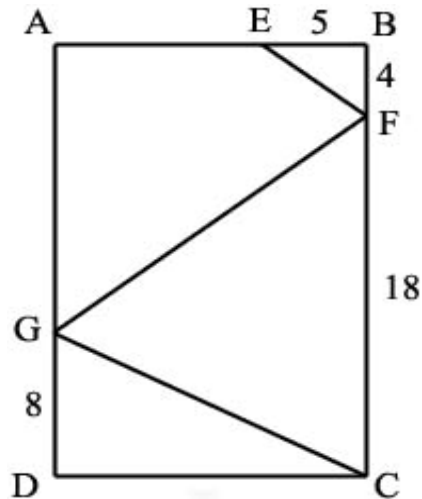
   b. Find the area of the triangle.
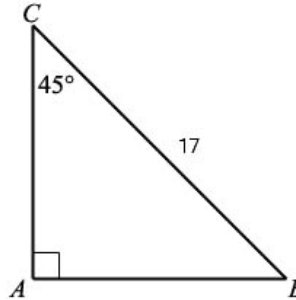
9. If *ABCD* (at right) is an isosceles trapezoid.
   a. Find the perimeter.
   b. Find the area.
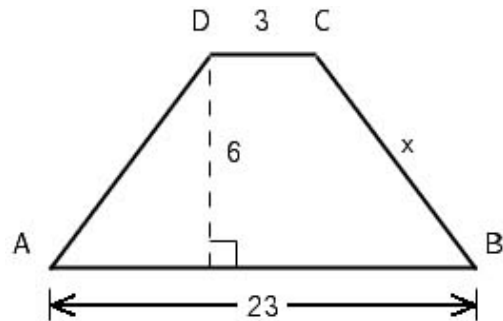
10. A sector in a circle of radius 10 has a central angle of 72°.
    a. Find the perimeter of the sector.
    b. Find the area of the sector.

11. Given rectangle ABCD in the diagram at right, with $\triangle CFG$ containing area 135 square units, find the area of the quadrilateral AEFG.

12. Find the area of the shaded region below. ABC is a right triangle. $\overset{\frown}{DE}$ is a semicircle of radius 8 in.