EXERCISES

Practice and Problem Solving
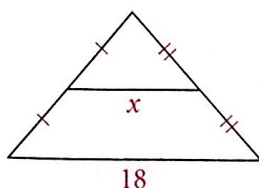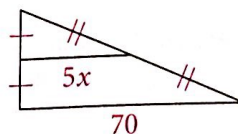
A **Practice by Example**

Example 1
(page 244)

Mental Math Find the value of x.

1.

18

2.

5x

70

3.

84

3x

4.

$x-1$

45

5.

$x-1$

5

6.

$5x-2$
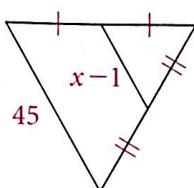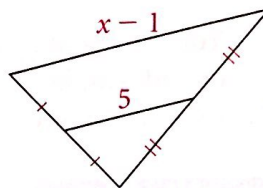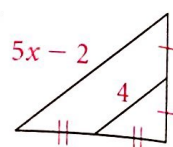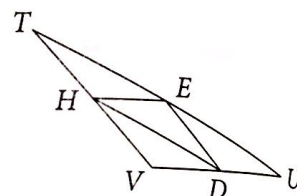
4
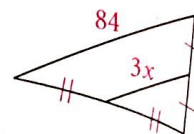
Points E, D, and H are midpoints of $\triangle TUV$.
$UV = 80$, $TV = 100$, and $HD = 80$.

7. Find HE.   **8.** Find ED.
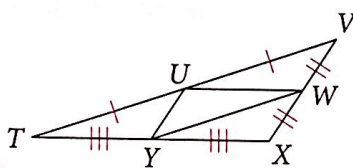
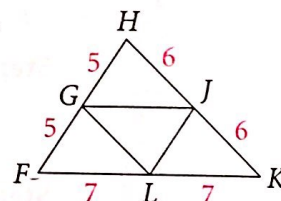**9.** Find TU.   **10.** Find TE.

Example 2
(page 245)

Identify pairs of parallel segments in each diagram.
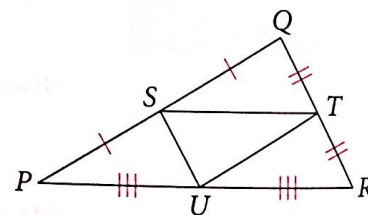
11.

12.

13. a. In the figure at the right, identify
pairs of parallel segments.
b. If $m\angle QST = 40$, find $m\angle QPR$.

Name the segment that is parallel to the given segment.
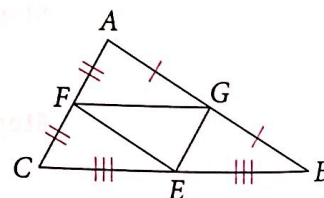
14. $\overline{AB}$ **15.** $\overline{BC}$

16. $\overline{EF}$ **17.** $\overline{CA}$
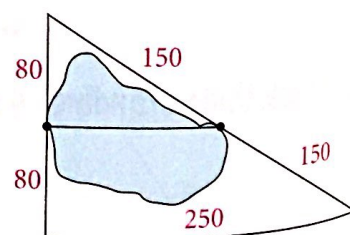
18. $\overline{GE}$ **19.** $\overline{FG}$

Example 3
(page 245)

20. Indirect Measurement Kate wants to paddle
her canoe across the lake. To determine how
far she must paddle, she paced out a triangle,
counting the number of strides, as shown.
a. If Kate's strides average 3.5 ft, what is the
length of the longest side of the triangle?
b. What distance must Kate paddle across
the lake?

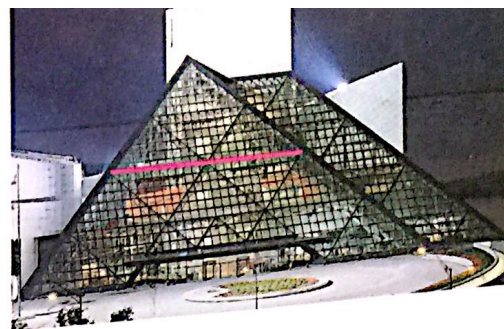**21. a. Architecture** The triangular face of the Rock and Roll Hall of Fame in Cleveland, Ohio, is isosceles. The length of the base is 229 ft 6 in. What is the length of the highlighted segment?
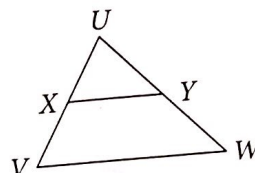
b. Writing Explain your reasoning.

X is the midpoint of $\overline{UV}$. Y is the midpoint of $\overline{UW}$.

22. If $m\angle UXY = 60$, find $m\angle V$.

23. If $m\angle W = 45$ find $m\angle UYX$.

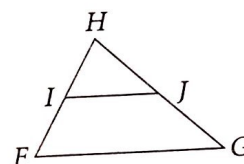**24.** If $XY = 50$, find VW.

25. If $VW = 110$, find XY.

26. Coordinate Geometry The coordinates of the vertices of a triangle are $E(1, 2)$, $F(5, 6)$, and $G(3, -2)$.

a. Find the coordinates of H, the midpoint of $\overline{EG}$, and J, the midpoint of $\overline{FG}$.

b. Verify that $\overline{HJ} \parallel \overline{EF}$.

c. Verify that $HJ = \frac{1}{2}EF$.

$\overline{IJ}$ is a midsegment of $\triangle FGH$. $IJ = 7$, $FH = 10$, and $GH = 13$. Find the perimeter of each triangle.
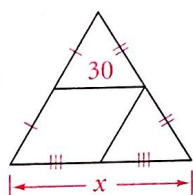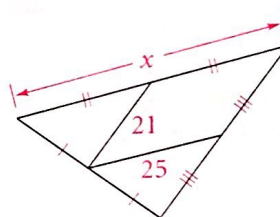
27. $\triangle IJH$

28. $\triangle FGH$

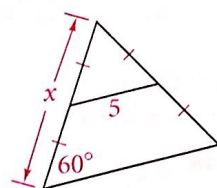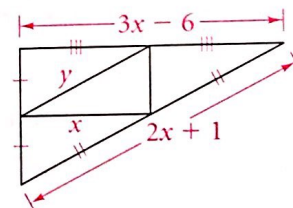$\boxed{x^2}$ **Algebra** Find the value of each variable.
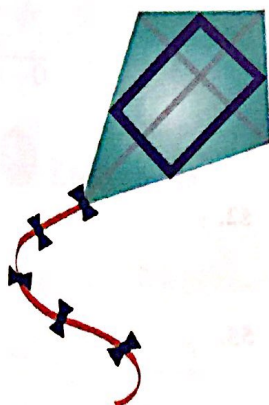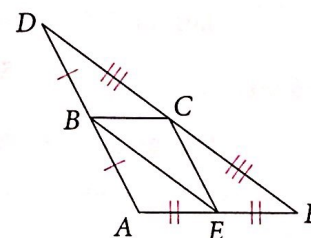
29.

30.

31.

32.

33. Kite Design Marita is designing a kite to look like the one on the left. Its diagonals are to measure 64 cm and 90 cm. She will use ribbon to connect the midpoints of its sides. How much ribbon will Marita need?

Use the figure at the right for Exercises 34–36.

34. If $DF = 24$, $BC = 6$, and $DB = 8$, find the perimeter of $\triangle ADF$.

$\boxed{x^2}$ **35. Algebra** If $BE = 2x + 6$ and $DF = 5x + 9$, find the value of x, then find DF.

$\boxed{x^2}$ **36. Algebra** If $EC = 3x - 1$ and $AD = 5x + 7$, find the value of x, then find EC.

Exercise 33