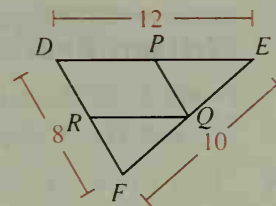


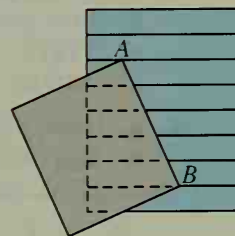
- Example**  $P$ ,  $Q$ , and  $R$  are midpoints of the sides of  $\triangle DEF$ .
- What kind of figure is  $DPQR$ ?
  - What is the perimeter of  $DPQR$ ?



- Solution**
- Since  $\overline{RQ} \parallel \overline{DE}$  and  $\overline{PQ} \parallel \overline{DF}$ , quad.  $DPQR$  is a parallelogram.
  - $RQ = \frac{1}{2}DE = DP = 6$  and  $PQ = \frac{1}{2}DF = DR = 4$ .  
Thus the perimeter of  $DPQR$  is  $6 + 4 + 6 + 4$ , or 20.

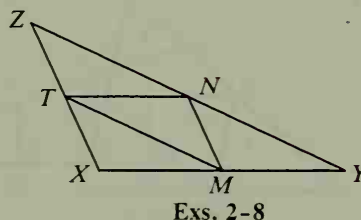
## Classroom Exercises

- You can use a sheet of lined notebook paper to divide a segment into a number of congruent parts. Here a piece of cardboard with edge  $\overline{AB}$  is placed so that  $\overline{AB}$  is separated into five congruent parts. Explain why this works.



$M$ ,  $N$ , and  $T$  are the midpoints of the sides of  $\triangle XYZ$ .

- If  $XZ = 10$ , then  $MN = \underline{\quad? \quad}$ .
- If  $TN = 7$ , then  $XY = \underline{\quad? \quad}$ .
- If  $ZN = 8$ , then  $TM = \underline{\quad? \quad}$ .
- If  $XY = k$ , then  $TN = \underline{\quad? \quad}$ .
- Suppose  $XY = 10$ ,  $YZ = 14$ , and  $XZ = 8$ .  
What are the lengths of the three sides of
  - $\triangle TNZ$ ?
  - $\triangle MYN$ ?
  - $\triangle XMT$ ?
  - $\triangle NTM$ ?



- State a theorem suggested by Exercise 6.
- How many parallelograms are in the diagram?
- What result of this section do the railings suggest?

