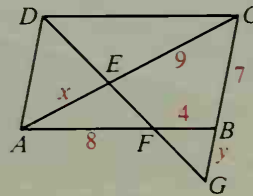


## Algebraic Exercises

In Exercises 1–9 find the value of  $x$ .

- A**
- On a number line,  $R$  and  $S$  have coordinates  $-8$  and  $x$ , and the midpoint of  $\overline{RS}$  has coordinate  $-1$ .
  - Two vertical angles have measures  $x^2 + 18x$  and  $x^2 + 54$ .
  - The measures of the angles of a quadrilateral are  $x$ ,  $x + 4$ ,  $x + 8$ , and  $x + 12$ .
  - The lengths of the legs of an isosceles triangle are  $7x - 13$  and  $2x + 17$ .
  - Consecutive angles of a parallelogram have measures  $6x$  and  $2x + 20$ .
  - A trapezoid has bases of length  $x$  and  $x + 8$  and a median of length  $15$ .
  - $\frac{3x - 1}{4x + 2} = \frac{2}{3}$
  - $\frac{5}{8} = \frac{x - 1}{6}$
  - $\frac{x}{x + 4} = \frac{x + 3}{x + 9}$

- B**
- The measure of a supplement of an angle is 8 more than three times the measure of a complement. Find the measure of the angle.
  - In a regular polygon, the ratio of the measure of an exterior angle to the measure of an interior angle is  $2:13$ . How many sides does the polygon have?
  - The sides of a parallelogram have lengths 12 cm and 15 cm. Find the lengths of the sides of a similar parallelogram with perimeter 90 cm.
  - A triangle with perimeter 64 cm has sides with lengths in the ratio  $4:5:7$ . Find the length of each side.
  - In  $\triangle XYZ$ ,  $XY = YZ$ . Find the measure of  $\angle Z$  if  $m\angle X:m\angle Y = 5:2$ .
  - In the diagram,  $\overline{AB} \parallel \overline{DC}$  and  $\overline{AD} \parallel \overline{GC}$ . Find the values of  $x$  and  $y$ .



## Proof Exercises

- A**
- Given:  $\overline{SU} \cong \overline{SV}$ ;  $\angle 1 \cong \angle 2$   
Prove:  $\overline{UQ} \cong \overline{VQ}$
  - Given:  $\overrightarrow{QS}$  bisects  $\angle RQT$ ;  $\angle R \cong \angle T$   
Prove:  $\overrightarrow{SQ}$  bisects  $\angle RST$ .
- B**
- Given:  $\triangle QRU \cong \triangle QTV$ ;  $\overline{US} \cong \overline{VS}$   
Prove:  $\triangle QRS \cong \triangle QTS$
  - Given:  $\overrightarrow{QS}$  bisects  $\angle UQV$  and  $\angle USV$ ;  $\angle R \cong \angle T$   
Prove:  $\overline{RQ} \cong \overline{TQ}$
  - Given:  $\overline{EF} \parallel \overline{JK}$ ;  $\overline{JK} \parallel \overline{HI}$   
Prove:  $\triangle EFG \sim \triangle IHG$
  - Given:  $\frac{JG}{HG} = \frac{KG}{IG}$ ,  $\angle 1 \cong \angle 2$   
Prove:  $\overline{EF} \parallel \overline{HI}$

