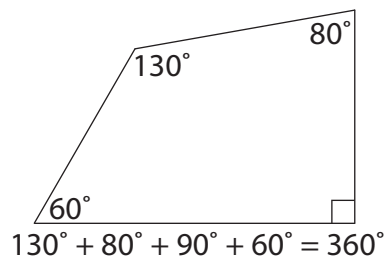


# Investigating Angles in a Quadrilateral



## Quick Review

- ▶ The sum of the interior angles in a quadrilateral is  $360^\circ$ .



- ▶ To find the measure of  $\angle G$  in quadrilateral DEFG:

$$\angle D + \angle E + \angle F + \angle G = 360^\circ$$

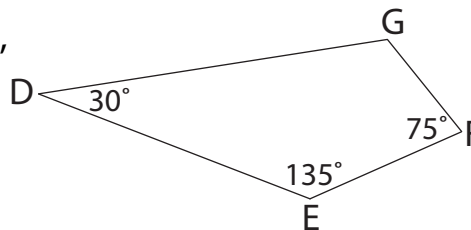
Since  $\angle D = 30^\circ$ ,  $\angle E = 135^\circ$ , and  $\angle F = 75^\circ$ ,

$$30^\circ + 135^\circ + 75^\circ + \angle G = 360^\circ$$

$$240^\circ + \angle G = 360^\circ$$

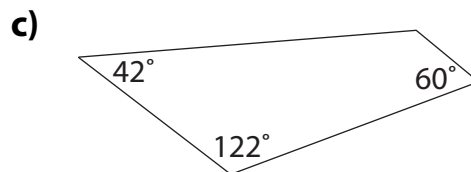
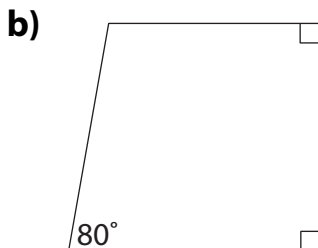
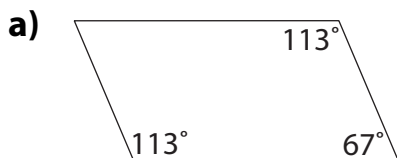
$$360^\circ - 240^\circ = 120^\circ$$

So, the measure of  $\angle G$  is  $120^\circ$ .



## Try These

- Determine the measure of the fourth angle without measuring.



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- Three angles of a quadrilateral are given. Find the measure of the fourth angle.

a)  $25^\circ, 70^\circ, 110^\circ$  \_\_\_\_\_

b)  $42^\circ, 38^\circ, 100^\circ$  \_\_\_\_\_

c)  $90^\circ, 90^\circ, 41^\circ$  \_\_\_\_\_

d)  $115^\circ, 95^\circ, 63^\circ$  \_\_\_\_\_

e)  $107^\circ, 36^\circ, 49^\circ$  \_\_\_\_\_

f)  $116^\circ, 72^\circ, 49^\circ$  \_\_\_\_\_

## Practice

1. Determine if a quadrilateral can be drawn with the angle measures given. If a quadrilateral can be drawn, draw and label it.

a)  $90^\circ, 75^\circ, 60^\circ, 135^\circ$

b)  $50^\circ, 45^\circ, 70^\circ, 120^\circ$

c)  $125^\circ, 70^\circ, 85^\circ, 80^\circ$

2. Find the measure of the fourth angle in each quadrilateral.

Quadrilateral	$\angle J$	$\angle K$	$\angle L$	$\angle M$
A	$149^\circ$	$80^\circ$	$26^\circ$	
B	$120^\circ$	$75^\circ$	$97^\circ$	
C	$76^\circ$	$75^\circ$	$84^\circ$	
D	$150^\circ$	$100^\circ$	$70^\circ$	
E	$37^\circ$	$83^\circ$	$151^\circ$	

## Stretch Your Thinking

Is it possible to make a quadrilateral with 3 obtuse angles and 1 right angle? Explain.

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