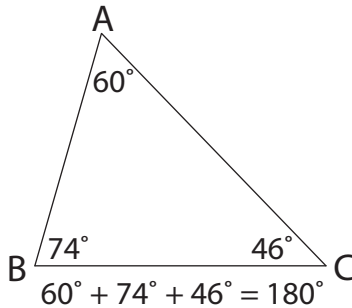


Investigating Angles in a Triangle

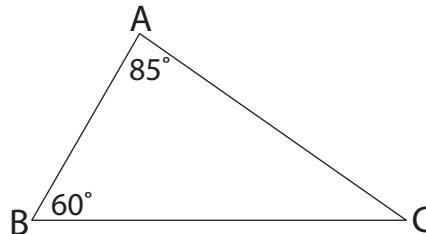


Quick Review

- The sum of the **interior angles** in a triangle is 180° .



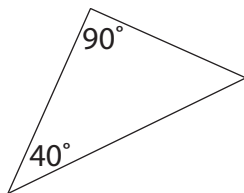
- To find the measure of $\angle C$ in triangle ABC:
 $\angle A + \angle B + \angle C = 180^\circ$
 Since $\angle A = 85^\circ$ and $\angle B = 60^\circ$,
 $85^\circ + 60^\circ + \angle C = 180^\circ$
 $145^\circ + \angle C = 180^\circ$
 $180^\circ - 145^\circ = 35^\circ$
 So, the measure of $\angle C$ is 35° .



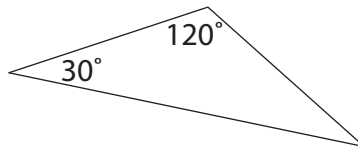
Try These

- Determine the measure of the third angle without measuring.

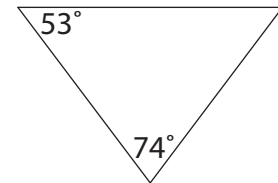
a)



b)



c)



- Two angles of a triangle are given.
 Find the measure of the third angle.
 Show your work.

a) $70^\circ, 60^\circ$ _____

b) $25^\circ, 90^\circ$ _____

c) $110^\circ, 40^\circ$ _____

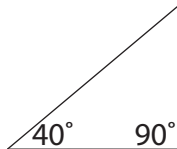
Practice

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

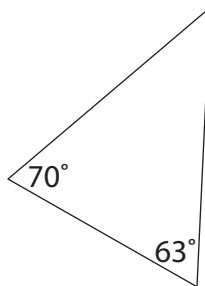
a) $35^\circ, 65^\circ, 80^\circ$ b) $55^\circ, 50^\circ, 50^\circ$ c) $45^\circ, 45^\circ, 90^\circ$ d) $95^\circ, 45^\circ, 50^\circ$

2. Determine the measure of the third angle without measuring.

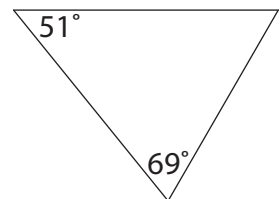
a)



b)



c)



3. Two angles of a triangle are given.
Find the measure of the third angle.

a) $62^\circ, 85^\circ$ _____ b) $60^\circ, 25^\circ$ _____ c) $37^\circ, 90^\circ$ _____

Stretch Your Thinking

Can you construct triangle DEF? Explain.

$$\angle D = 109^\circ$$

$$\angle E = 60^\circ$$

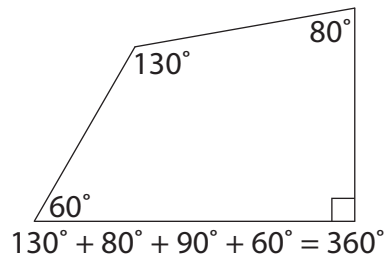
$$\angle F = 12^\circ$$

Investigating Angles in a Quadrilateral



Quick Review

- The sum of the interior angles in a quadrilateral is 360° .



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

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

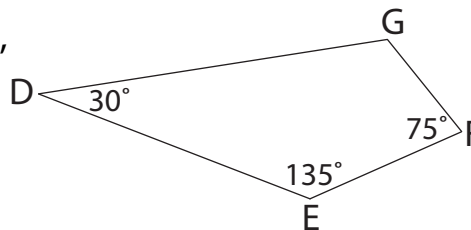
Since $\angle D = 30^\circ$, $\angle E = 135^\circ$, and $\angle F = 75^\circ$,

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

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

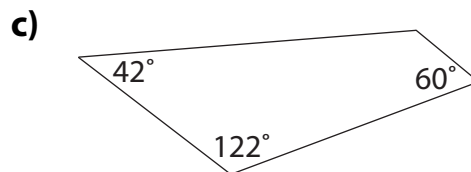
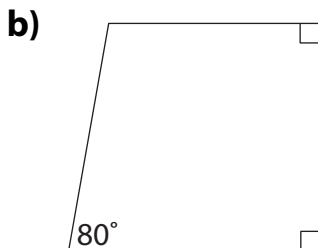
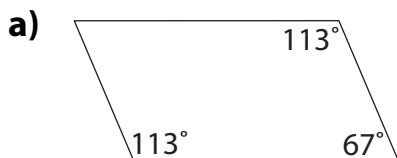
$$360^\circ - 240^\circ = 120^\circ$$

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



Try These

- Determine the measure of the fourth angle without measuring.



- 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°	80°	26°	
B	120°	75°	97°	
C	76°	75°	84°	
D	150°	100°	70°	
E	37°	83°	151°	

Stretch Your Thinking

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