

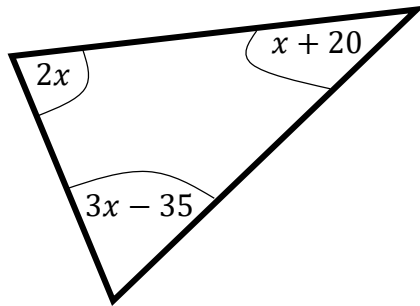


Timester Challenge

Algebra Angles

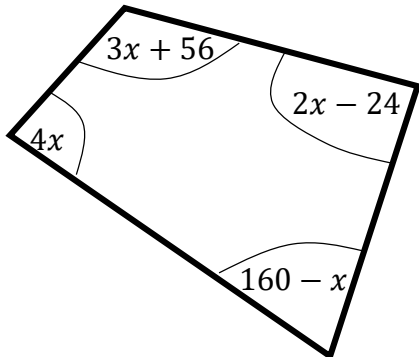


Work out the size of the smallest angle in the triangle.

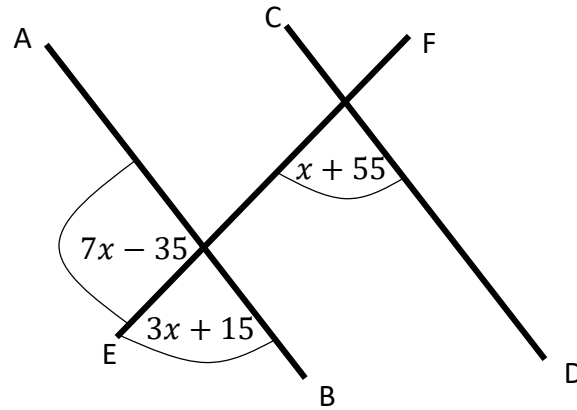


Bronze ★

The diagram shows a quadrilateral.
Find the value of x .



Bronze ★



AB, CD and EF are straight lines.
All angles are in degrees.
Show that AB is parallel to CD.

Silver ★

Here is a parallelogram.



Work out the value of x and the value of y .

Gold ★



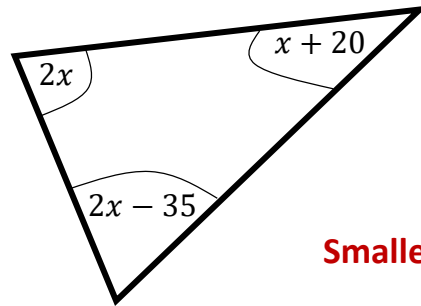
Timester Challenge

Algebra Angles

Answers



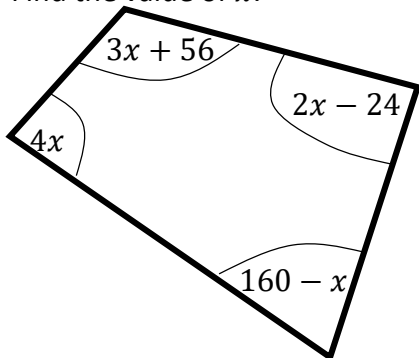
Work out the size of the smallest angle in the triangle.



$$\begin{aligned}
 5x - 15 &= 180 \\
 5x &= 195 \\
 x &= 39 \\
 \\
 2x &= 78^\circ \\
 \text{Smallest } 2x - 35 &= 43^\circ \\
 x + 20 &= 58^\circ
 \end{aligned}$$

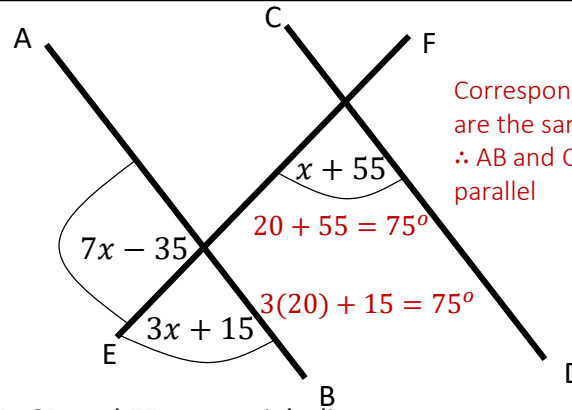
Bronze ★

The diagram shows a quadrilateral.
Find the value of x .



$$\begin{aligned}
 8x + 192 &= 360 \\
 8x &= 168 \\
 x &= 21^\circ
 \end{aligned}$$

Bronze ★



Corresponding angles are the same.
 \therefore AB and CD are parallel

AB, CD and EF are straight lines.
All angles are in degrees.

Show that AB is parallel to CD.
Angles on a straight line total 180°

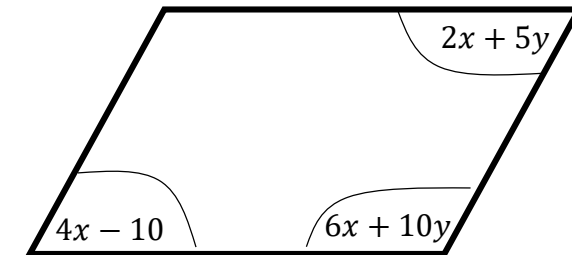
$$\begin{aligned}
 10x - 20 &= 180 \\
 10x &= 200 \\
 x &= 20
 \end{aligned}$$

For AB and CD to be parallel angle corresponding angles should be the same.

$$\begin{aligned}
 3x + 15 &= x + 55 \\
 2x + 15 &= 55 \\
 2x &= 40 \\
 x &= 20
 \end{aligned}$$

Silver ★

Here is a parallelogram.



Work out the value of x and the value of y .

Opposite angles in a parallelogram are the same.

$$4x - 10 = 2x + 5y$$

Rearrange to get $2x - 5y = 10$ (Eq 1)

Interior angles on parallel lines add up to 180°

$$8x + 15y = 180 \text{ (Eq 2)}$$

Simultaneous Equations

$$8x + 15y = 180$$

$$6x - 15y = 30 \quad (\text{Eq 1}) \times 3$$

$$14x = 210$$

$$x = 15$$

Sub $x = 15$ into Eq 2

$$8x + 15y = 180$$

$$8(15) + 15y = 180$$

$$120 + 15y = 180$$

$$15y = 60$$

$$y = 4$$

Gold ★