

Interior Angles of Triangles & Polygons

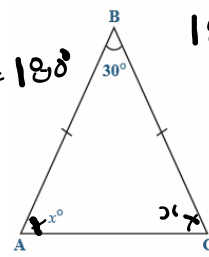
Equilateral Triangles:

3 identical sides and angles

Each angle will always measure 60°

Isosceles Triangles:

2 identical sides and angles



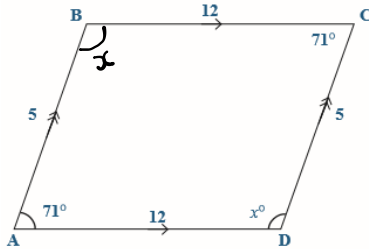
$$x + x + 30 = 180$$

$$180 - 30 = 150$$

$$\frac{150}{2} = 75$$

Rhombus & Parallelogram

The angles that are diagonally opposite each other are always equal



$$x + x + 71 + 71 = 360$$

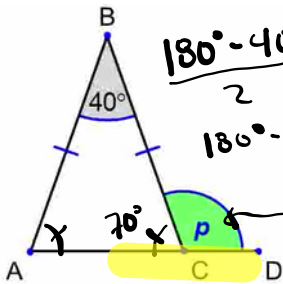
$$2x + 142 = 360 - 142$$

$$2x = 218$$

$$\frac{2x}{2} = \frac{218}{2}$$

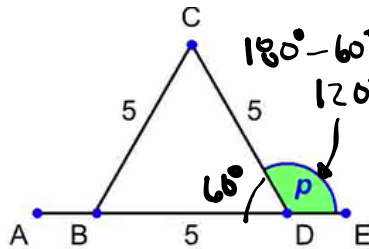
$$x = 109$$

EXAMPLES: Find the value of "p" for each diagram below



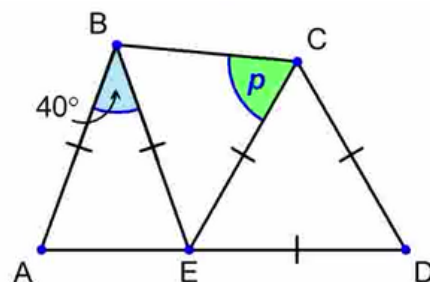
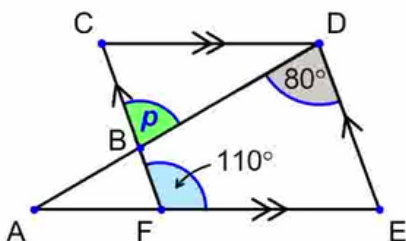
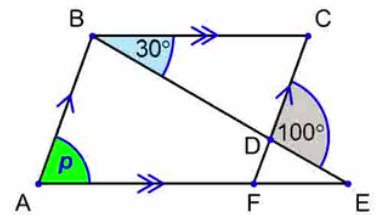
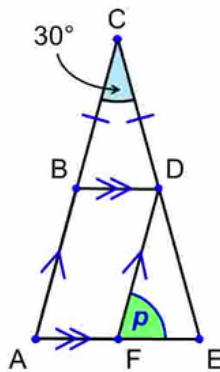
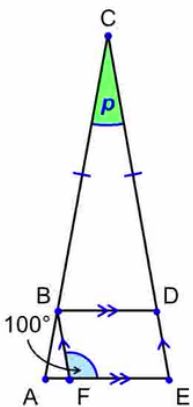
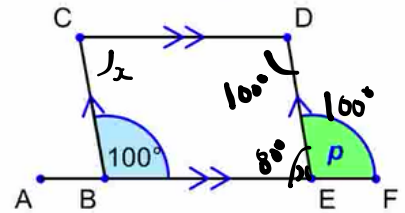
$$\frac{180 - 40}{2} = 70$$

$$180 - 70 = 110$$



$$\frac{180 - 60}{2} = 60$$

$$180 - 60 = 120$$



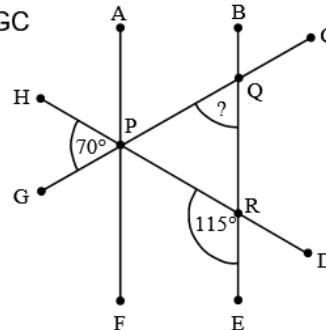
1. In the figure on the right: Line segments AF, HD and GC intersect at point P.

$$\overline{AF} \parallel \overline{BE}$$

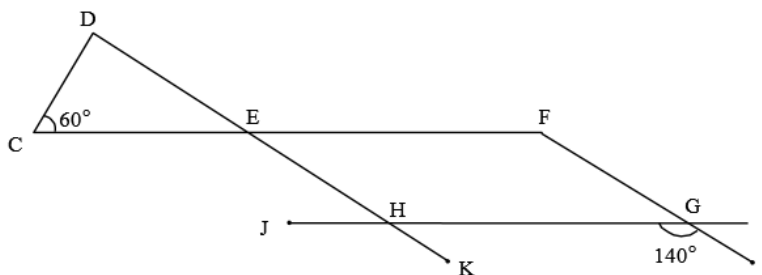
$$m\angle HPG = 70^\circ$$

$$m\angle PRE = 115^\circ$$

What is the measure of angle PQR?



2. Given triangle CDE and parallelogram EFGH below.



Match each statement with its appropriate reason.

Statements

Reasons

- | | |
|---|---|
| <p>1. $m\angle JHK = 140^\circ$</p> <p>2. $m\angle DEF = 140^\circ$</p> <p>3. $m\angle DEC = 180^\circ - 140^\circ = 40^\circ$</p> <p>4. $m\angle D = 80^\circ$</p> | <p>A) The sum of the angles in a triangle is 180°.</p> <p>B) Vertically opposite angles are equal.</p> <p>C) Supplementary angles on a straight line.</p> <p>D) Corresponding angles in parallel lines are congruent.</p> |
|---|---|

Statement (#)	Reason (letter)

- E) Alternate exterior angles in parallel lines are congruent.

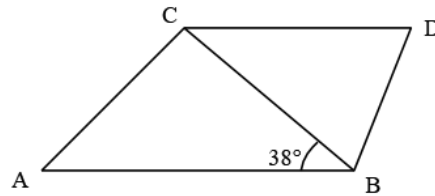
3. In the figure on the right,

$$\overline{AB} \parallel \overline{CD}$$

\overline{BC} is a transversal

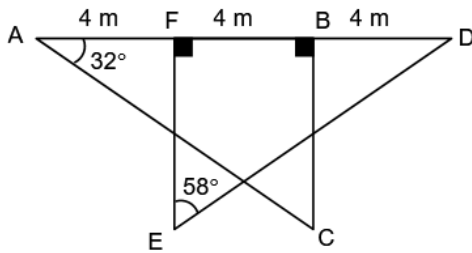
$$m \overline{BC} = m \overline{CD}$$

$$m \angle ABC = 38^\circ$$

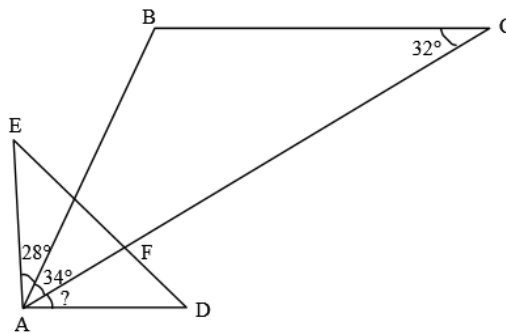


Show that the measure of angle BDC is 71° .

4. Prove that segments BC and FE in the diagram below are congruent.



5. Triangles ABC and DAE, shown below, are similar.



What is the measure of angle DAF?