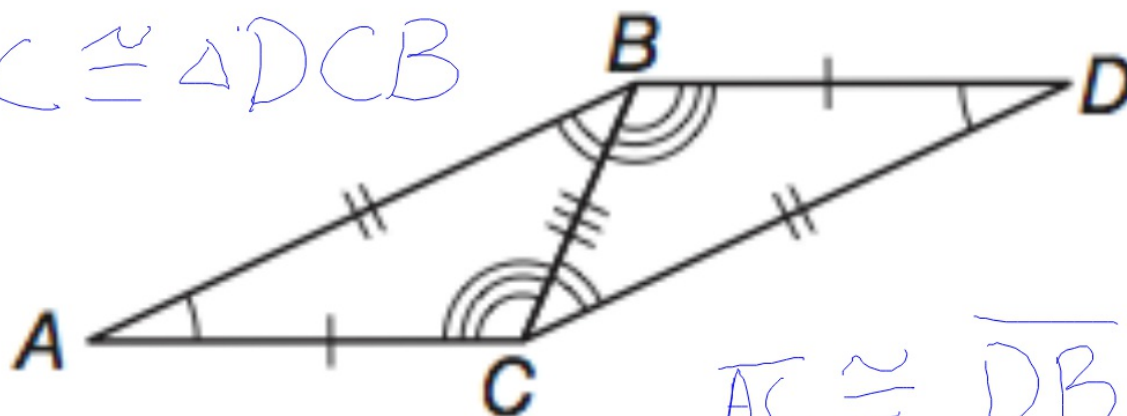# Geometry   BELL WORK

Show that the polygons are congruent by identifying all congruent corresponding parts. Then write a congruence statement.

$\triangle ABC \cong \triangle DCB$

$\angle A \cong \angle D$

$\angle ABC \cong \angle DCB$

$\angle ACB \cong \angle DBC$

$\overline{AC} \cong \overline{DB}$

$\overline{AB} \cong \overline{DC}$

$\overline{BC} \cong \overline{CB}$

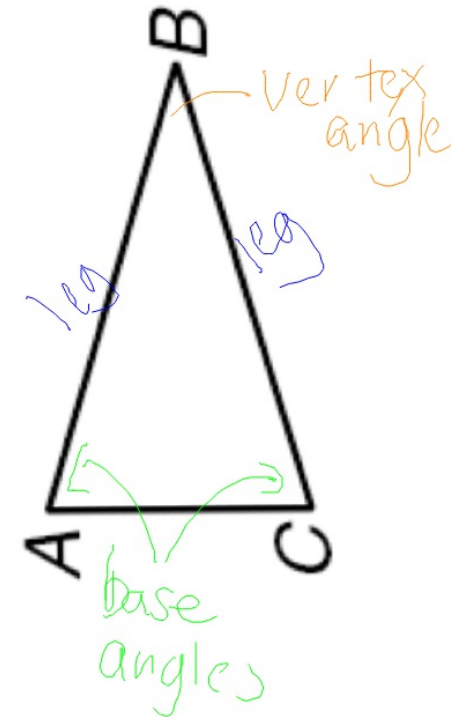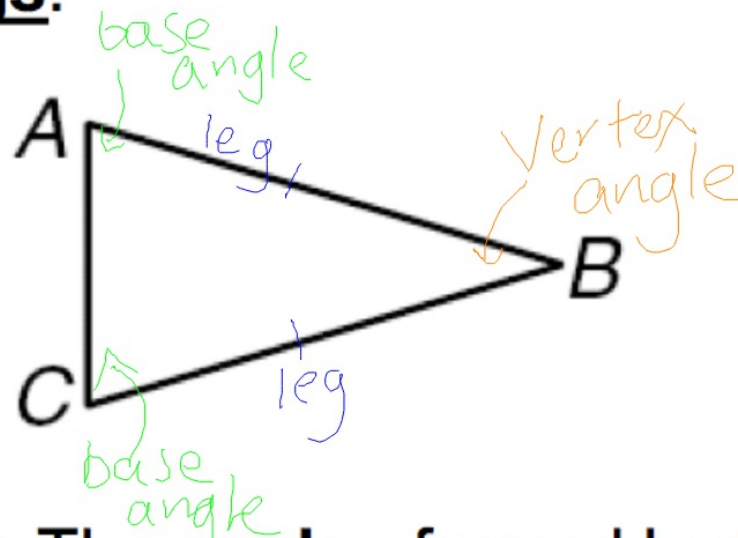# 4-6 Isosceles and Equilateral Triangles

We have found ways to identify and prove traingles congruent and worked with isosceles and equilateral triangles.

Now we will use the properties of equilateral and isosceles triangles.

G-CO Understand congruence in terms of rigid motion
G-CO.B.8 Explain how the criteria for triangle congruence follow from the definition of congruence in terms of rigid motions.

- **Isosceles** triangle: Δ with **two congruent sides** called **legs**.

Diagram labels (first triangle, A–B–C): base angle, leg, vertex angle, leg, base angle

*Diagram labels (second triangle, B–A–C):* vertex angle, leg, leg, base angles

- **Vertex** angle: The **angle** formed by the **two congruent sides**.

- **Base** angles: The **other two angles** (that are not the vertex angle, opposite the legs) of an isosceles Δ.

- **Isosceles Triangle Theorem**: If **two sides** of a triangle are **congruent**, then the **angles opposite** those sides are **congruent**.
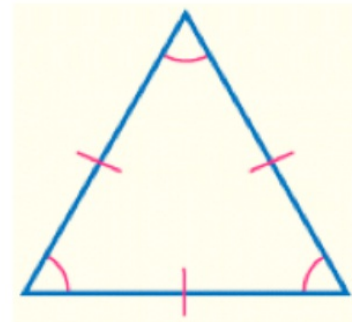- If **two angles** of a triangle are **congruent**, then the **sides opposite** those angles are **congruent**.

If $\overline{AB} \cong \overline{CB}$, then $\angle A \cong \angle C$.

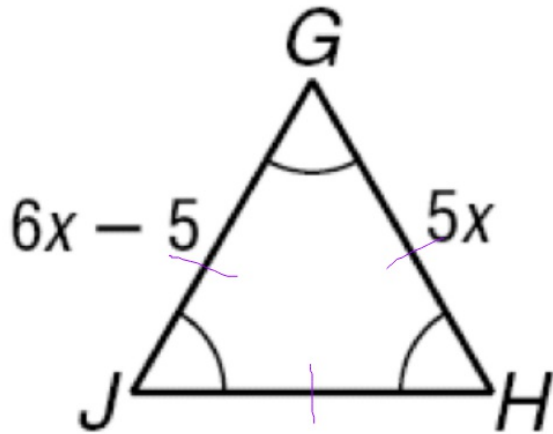If $\angle A \cong \angle C$, then $\overline{AB} \cong \overline{CB}$.
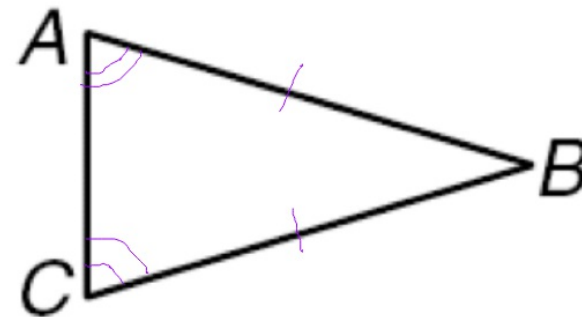
Properties of Equilateral Triangles:

1. A triangle is **equilateral** if and only if it is **equiangular**.

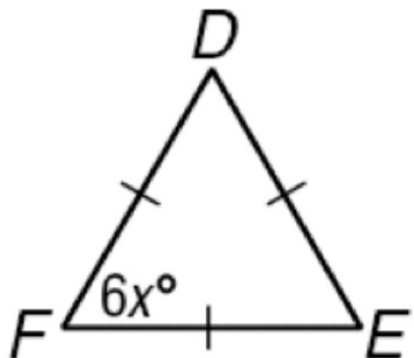2. Each angle of an equilateral triangle measures **60°**.

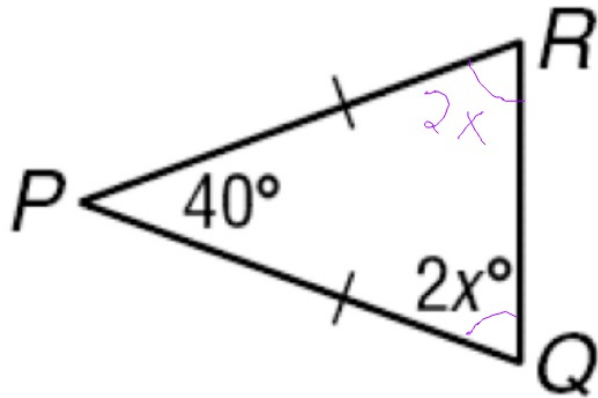Find the value of the variable.

$6x - 5$ $5x$

$6x - 5 = 5x$

$-6x \qquad -6x$

$-5 = -1x$

$\dfrac{-5}{-1} = \dfrac{-1x}{-1}$

$5 = x$

Find the value of the variable.

$6x = 60$

Find the value of the variable.

R

P 40°

2x

2x°

Q

$40 + 2x + 2x = 180$

$40 + 4x = 180$
$-40 \qquad -40$
_____

$4x = 140$
$\dfrac{4x}{4} = \dfrac{140}{4}$

$x = 35$

Find the value of the variable.

S   2x + 6

▷V

T   3x − 6
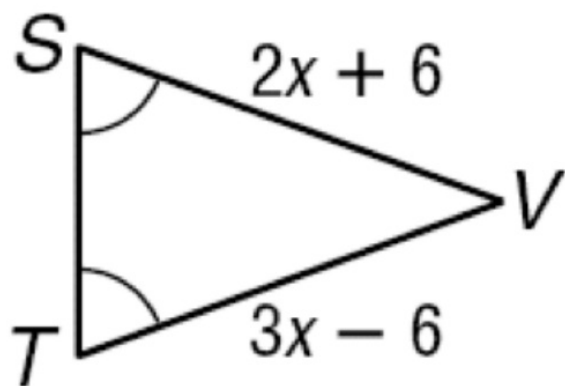
$2x + 6 = 3x - 6$
$-2x \quad -2x$
$6 = x - 6$
$+6 \quad +6$
$12 = x$

Find the value of the variable.

W

$\square$

$3x°$

$3x$

Y

Z
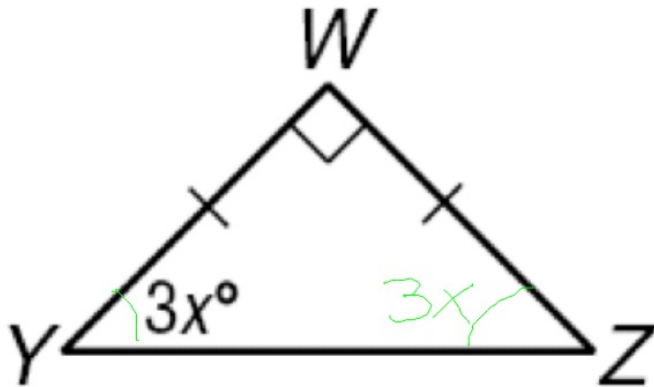
$3x + 3x + 90 = 180$

$6x + 90 = 180$

$-90 \quad -90$

$\dfrac{6x}{6} = \dfrac{90}{6}$

$x = 15$

Find the value of the variable.
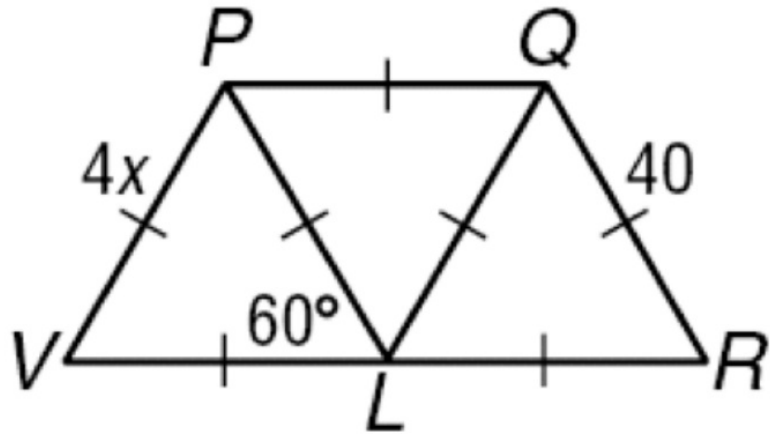
$4x = 40$

$x = 10$

Find the value of the variable.

T

$3x°$

$x°$

R   S
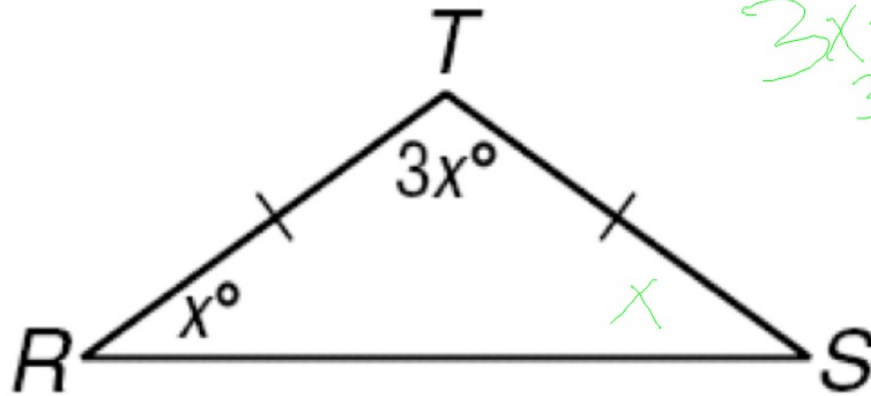
$3x + 1x + 1x = 180$
$3x + 2x = 180$
$\dfrac{5x}{5} = \dfrac{180}{5}$

$x = 36$

c.

Assignment:

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