

Name: Key

Date: _____ HR: _____

Isosceles and Equilateral Triangles- HW#2

Find x .

$$1. \quad \begin{array}{l} \text{Isosceles triangle } STV \\ \angle S = 2x + 6 \\ \angle T = 3x - 6 \\ 2x + 6 = 3x - 6 \\ 12 = x \end{array}$$

$$2. \quad \begin{array}{l} \text{Equilateral triangle } FDE \\ \angle F = 6x^\circ \\ 6x = 60^\circ \\ x = 10 \end{array}$$

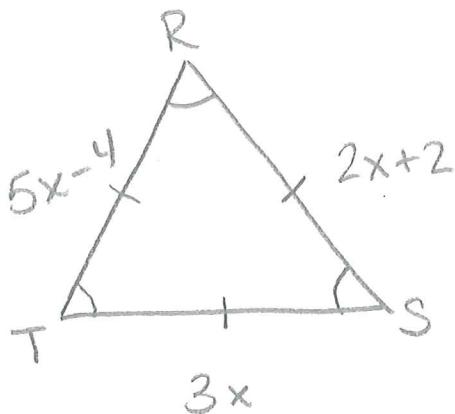
$$3. \quad \begin{array}{l} \text{Isosceles triangle } SRT \\ \angle S = 3x - 13 \\ \angle R = 2x \\ 2x = 3x - 13 \\ -x = -13 \\ x = 13 \end{array}$$

$$4. \quad \begin{array}{l} \text{Equilateral triangle } RTS \\ \angle T = 3x^\circ \\ \angle R = x^\circ \\ \angle S = x^\circ \\ x + x + 3x = 180^\circ \\ 5x = 180^\circ \\ x = 36 \end{array}$$

$$5. \quad \begin{array}{l} \text{Isosceles triangle } PQR \\ \angle P = 4x \\ \angle Q = x \\ \angle R = 40^\circ \\ 4x + x + 40 = 180^\circ \\ 5x + 40 = 180^\circ \\ 5x = 140^\circ \\ x = 28 \end{array}$$

$$6. \quad \begin{array}{l} \text{Equilateral triangle } YWZ \\ \angle Y = 3x^\circ \\ \angle W = 90^\circ \\ \angle Z = 3x^\circ \\ 3x + 3x + 90 = 180^\circ \\ 6x + 90 = 180^\circ \\ 6x = 90^\circ \\ x = 15 \end{array}$$

7. Find the measure of each side of equilateral $\triangle RST$ with $RS = 2x + 2$, $ST = 3x$, and $TR = 5x - 4$.



$$3x = 2x + 2$$

$$x = 2$$

$$x = \underline{\underline{2}}$$

$$5(2) - 4 = 6$$

$$RS = \underline{\underline{6}}$$

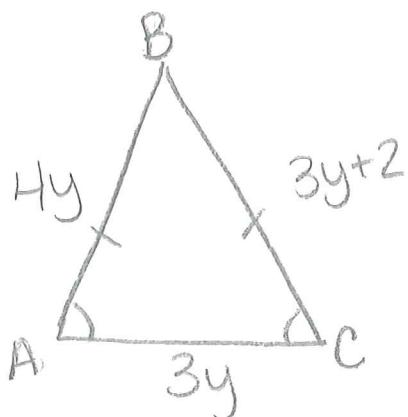
$$2(2) + 2 = 6$$

$$ST = \underline{\underline{6}}$$

$$3(2) = 6$$

$$TR = \underline{\underline{6}}$$

8. Find the measure of each side of isosceles $\triangle ABC$ with $AB = BC$ if $AB = 4y$, $BC = 3y + 2$, and $AC = 3y$.



$$4y = 3y + 2$$

$$y = 2$$

$$y = \underline{\underline{2}}$$

$$AB = 4(2) = 8$$

$$AB = \underline{\underline{8}}$$

$$BC = 3(2) + 2 = 8$$

$$BC = \underline{\underline{8}}$$

$$AC = 3(2) = 6$$

$$AC = \underline{\underline{6}}$$

9. Find the measure of each side of $\triangle ABC$ with vertices $A(-1, 5)$, $B(6, 1)$, and $C(2, -6)$. Classify the triangle.

$$AC = 11^2 + 3^2 = x^2$$

$$121 + 9 = x^2$$

$$\sqrt{130} = x$$

$\begin{array}{l} 2 \cong \text{sides} \\ \therefore \text{isosceles} \end{array}$

triangle

$$BC = 7^2 + 4^2 = x^2$$

$$49 + 16 = x^2$$

$$\sqrt{65} = x$$

$$AB = 7^2 + 4^2 = x^2$$

$$x = \sqrt{65}$$

