Solve Linear Equations Worksheets

For each of the following problems, write an equation and solve.

1. Given a right triangle, find the measures of all of the angles, in degrees, if one angle is a right angle and the measure of the second angle is six less than seven times the measure of the third angle.

2. In a triangle, the measure of the first angle is six times a number. The measure of the second angle is nine less than the first angle. The measure of the third angle is three times the number more than the measure of the first angle. Determine the measure of each angle in degrees.

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1. Given a right triangle, find the measures of all of the angles, in degrees, if one angle is a right angle and the measure of the second angle is six less than seven times the measure of the third angle.

Let x represent the measure of the third angle. Then, $7x - 6$ can represent the measure of the second angle. The sum of the two angles in the right triangle will be $90°$.

$$7x - 6 + x = 90$$
$$8x - 6 = 90$$
$$8x - 6 + 6 = 90 + 6$$
$$8x = 96$$
$$\frac{8}{8}x = \frac{96}{8}$$
$$x = 12$$

The third angle is x and therefore measures $12°$. Replacing x with 12 in $7x - 6$ gives $7(12) - 6 = 84 - 6 = 78$. Therefore, the measure of the second angle is $78°$. The measure of the third angle is $90°$.

2. In a triangle, the measure of the first angle is six times a number. The measure of the second angle is nine less than the first angle. The measure of the third angle is three times the number more than the measure of the first angle. Determine the measure of each angle in degrees.

Let x be the number. Then, the measure of the first angle is $6x$, the measure of the second angle is $6x - 9$, and the measure of the third angle is $3x + 6x$. The sum of the measures of the angles in a triangle is $180°$.

$$6x + 6x - 9 + 3x + 6x = 180$$
$$21x - 9 = 180$$
$$21x - 9 + 9 = 180 + 9$$
$$21x = 189$$
$$\frac{21}{21}x = \frac{189}{21}$$
$$x = 9$$

Replacing x with 9 in $6x$ gives $6(9) = 54$. Replacing x with 9 in $6x - 9$ gives $6(9) - 9 = 54 - 9 = 45$. Replacing x with 9 in $3x + 6x$ gives $54 + 3(9) = 54 + 27 = 81$. Therefore, the angle measures are $54°$, $45°$, and $81°$.

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