

Chapter 3 Test

1) $7x + 5 = 2x - 5$
 $5x + 5 = -5$
 $5x = -10$
 $x = -2$

3) $6\left(\frac{3}{2}\right) - 1 = 2\left(\frac{3}{2}\right) + 5$
 $9 - 1 = 3 + 5$
 $8 = 8$ True. Therefore $x = \frac{3}{2}$ is a solution to the equation.

5) $F = \frac{9}{5}C + 32$
 $90 = \frac{9}{5}C + 32$
 $58 = \frac{9}{5}C$
 $C = \frac{290}{9} \quad 32$

When it is 90°F , it is approximately 32°C .

7)

a) Let t be the time (in hrs) it takes for the Titanic and Carpathia to meet.

b) The Titanic travels a distance of $15.5t$ miles after t hours. Similarly, the Carpathia travels a distance of $1.5t$ after t hours. Even though both vessels are traveling towards each other, they were originally 58 miles apart. This means that the sum of the distances each traveled must equal 58 miles. Thus we have the equation $15.5t + 1.5t = 58$. It's solution represents the time (in hrs) it takes for both vessels to meet.

c) $15.5t + 1.5t = 58$
 $17t = 58$
 $t = \frac{58}{17} \text{ hrs} \quad 3.4 \text{ hrs}$

Since both started heading towards each other at 12:25 AM and met after 3.4 hrs (3 hrs 24 min), they met around 3:50 AM.

9) $\frac{10}{x} = \frac{3}{8}$
 $80 = 3x$
 $x = \frac{80}{3}$

11) Let p denote the population of polar bears in this arctic region. We have
$$\frac{15 \text{ tagged bears in region}}{p \text{ total bears in region}} = \frac{4 \text{ tagged bears in sample}}{10 \text{ total bears in sample}}$$

$$\frac{15}{p} = \frac{4}{10}$$
$$150 = 4p$$
$$p = 37.5$$

There are approximately 38 bears in this region.