

1. Each type of fish thrives in a specific range of temperatures. The optimum temperatures for sharks range from 18 degrees Celsius to 22 degrees Celsius. Write an inequality that represents the temperatures where sharks will NOT thrive.

range - AND compound inequality

$$18 \leq x \leq 22$$

however it asks for when they do NOT thrive

$$x < 18^\circ\text{C} \text{ OR } x > 22^\circ\text{C}$$

2. The sum of four times a number and eight is between zero and twelve.

$$(+)(\cdot)x$$

between means AND

compound inequality

$$0 < 4x + 8 < 12$$

$$\frac{-8}{4} < \frac{4x}{4} < \frac{4}{4}$$

$$\boxed{-2 < x < 1}$$

3. Cindy has scores of 72, 82, 83, and 89 on her biology tests. Use a compound inequality to find the range of scores she can make on her final exam to receive a C in the course. The final exam counts as two tests, and a C is received if the final course average is from 77 to 84. The key is the word average

$$77 \leq \frac{72 + 82 + 83 + 89 + 2x}{6} \leq 84$$

$$6(77 \leq \frac{326 + 2x}{6} \leq 84)$$

$$462 \leq 326 + 2x \leq 504$$

$$\frac{136}{2} \leq \frac{2x}{2} \leq \frac{178}{2}$$

$$\boxed{68 \leq x \leq 89}$$

possible scores to still earn a C

4. Write a compound inequality that represents the situation: all real numbers that are less than -3 or greater than 7.

$$x < -3 \text{ OR } x > 7$$

5. Write a compound inequality that represents the situation: all real numbers that are at least -2 and at most 4.

$$x \geq -2 \text{ AND } x \leq 4$$

need to write as one inequality

$$\boxed{-2 \leq x \leq 4}$$