1. Let $B = \{3, 5, 10, 11, 14\}$. Is the following statement true or false: $3 \notin B$ **1 / 1 puntos**

- (•) False
- ( ) True

✓ **Correcto**
The symbol $\notin$ stands for "is not an element of." Since 3 is in an element of the set B, the given statement is not true.

2. Let $A = \{1, 3, 5\}$ and $B = \{3, 5, 10, 11, 14\}$. Which of the following sets is equal to the union $A \cup B$? **1 / 1 puntos**

- ( ) $\{1, 10, 18\}$
- ( ) $\{3, 5, 10, 11, 14\}$
- (•) $\{1, 3, 5, 10, 11, 14\}$
- ( ) $\{1, 3, 5, 3, 5, 10, 11, 14\}$

3. How many real numbers are there between the integers 1 and 4? **1 / 1 puntos**

- (•) Infinitely many
- ( ) 4
- ( ) None
- ( ) 2

✓ **Correcto**
There are in fact infinitely many real numbers between any pair of distinct integers, or indeed any pair of distinct real numbers!

4. Suppose I tell you that x and y are two real numbers which make the statement $x \geq y$ true. Which pair of numbers ***cannot*** be values for x and y? **1 / 1 puntos**

- ( ) $x = 2$ and $y = 1$
- ( ) $x = 10$ and $y = 10$
- (•) $x = -1$ and $y = 0$
- ( ) $x = 5$ and $y = 3.3$

5. Suppose that z and w are two positive numbers with $z < w$. Which of the following inequalities is false? **1 / 1 puntos**

- (●) $-5z < -5w$
- ( ) $-z > -w$
- ( ) $w - 7 > z - 7$
- ( ) $z + 3 < w + 3$

✓ **Correcto**

If we start with $z < w$ and multiply both sides by -5, we need to flip the less-than sign, which would give $-5z > -5w$. For an example, try $z = 1$ and $y = 2$ and see what happens!

6. Find the set of all x which solve the inequality $-2x + 5 \leq 7$ **1 / 1 puntos**

- (●) $x \geq -1$
- ( ) $x \leq -1$
- ( ) $x = -1$
- ( ) $x \geq -6$

7. Which of the following real numbers is not in the closed interval $[2, 3]$ **1 / 1 puntos**

- (●) 1
- ( ) 2.1
- ( ) 2
- ( ) 3

✓ **Correcto**

Recall that the closed interval $[2, 3]$ consists of all real numbers x which satisfy $2 \leq x \leq 3$. Since $2 \leq 1$ is false, $1 \notin [2, 3]$

8. Which of the following intervals represents the set of all solutions to: **1 / 1 puntos**

$-5 \leq x + 2 < 10$?

- ( ) $(7, 8)$
- ( ) $[-7, 8]$
- ( ) $[-5, 10)$
- (●) $[-7, 8)$

9. Which of the numbers below is equal to the following summation: $\Sigma_{k=2}^{5} 2k$? 1 / 1 puntos

- (●) 28
- ( ) 14
- ( ) 4
- ( ) 10

✓ **Correcto**

We compute $\Sigma_{k=2}^{5} 2k = 4 + 6 + 8 + 10 = 28$.

10. Suppose we already know that $\Sigma_{k=1}^{20} k = 210$. Which of the numbers below is equal to $\Sigma_{k=1}^{20} 2k$? 1 / 1 puntos

- ( ) 210
- ( ) 40
- ( ) 2
- (●) 420

11. Which of the numbers below is equal to the summation $\Sigma_{i=2}^{10} 7$? 1 / 1 puntos

- ( ) 70
- ( ) 48
- ( ) 7
- (●) 63

✓ **Correcto**

According to one of our Sigma notation simplification rules, this summation is just equal to 9 copies of the number 7 all added together, and so we get $9 \cdot 7 = 63$.

12. Which of the following numbers is the variance of the set $Z = \{-2, 4, 7\}$? 1 / 1 puntos

- ( ) $\sqrt{14}$
- ( ) 42
- ( ) 69
- (●) 14

13. Which of the following sets does *not* have zero variance? (hint: don't do any calculation here, just think!) 1 / 1 puntos

- ( ) $\{1, 1, 1, 1\}$
- ( ) $\{5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5\}$
- ( ) $\{0, 0, 0, 0, 0, 0, 0\}$
- (●) $\{2, 5, 9, 13\}$