equal to $\sum_{k=1}^{20} 2k$?

- ⦿ 420
- ○ 210
- ○ 2
- ○ 40

1 / 1 point

✓ **Correct**

By applying one of our Sigma notation simplification rules, we can rewrite the summation in question as $2\left(\sum_{k=1}^{20} k\right) = 2 \times 210 = 420$.

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

- ○ 70
- ○ 48
- ○ 7
- ⦿ 63

1 / 1 point

✓ **Correct**

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 $Z = \{-2, 4, 7\}$?

- ○ 69
- ⦿ 14
- ○ $\sqrt{14}$
- ○ 42

1 / 1 point

✓ **Correct**

To get the variance of a set of numbers, you need to perform four steps:

First compute the mean (which is 3)

Then calculate all the squared differences between the numbers in the set and this mean (here you get 25, 1, 16)

Then add all these up (here you get 42)

Then divide by the number of elements in the set (which is 3).

Therefore, the variance of Z

$$= \frac{1}{3}[(-2-3)^2 + (4-3)^2 + (7-3)^2]$$

$$= \frac{1}{3}[25 + 1 + 16] = \frac{42}{3} = 14$$

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

- ○ $\{0, 0, 0, 0, 0, 0\}$
- ○ $\{1, 1, 1, 1\}$
- ⦿ $\{2, 5, 9, 13\}$
- ○ $\{5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5\}$

1 / 1 point

✓ **Correct**

Intuitively, the numbers in this set are spread out.