

MATHCOUNTS[®] Problem of the Week Archive

Wrapping Up the School Year – June 5, 2023

Problems

Final exams often accompany the final days of school. Sherry has had four tests so far in her science class, each worth $\frac{1}{6}$ of her final grade. She scored 87%, 89%, 92% and 91% on these tests. Her final exam is worth the rest of her final grade. What percentage does Sherry need to score on the final exam to guarantee a final average of at least 90%? Express your answer to the nearest tenth.

Later, Sherry took her Algebra exam. Her teacher added one extra credit question at the end that read: Find two integer values of x such that the sum of any two members of the ordered triple $\{x, -4, 29\}$ is a perfect square. What are the two integer values that Sherry can write to earn extra credit?

After finishing up her exams, Sherry needed to turn in the padlock for her locker. Unfortunately, Sherry rarely used her locker during the year and had forgotten her three-number combination. All she could remember was that it formed an arithmetic sequence, the first number was 6, and the numbers increased in value. If the largest number on the padlock is 45, how many different combinations are there that satisfy these conditions?