

MATHCOUNTS[®] Problem of the Week Archive

Planning for Next Year – May 20, 2024

Problems

Kyra's school building this year was overcrowded due to a lot of new registered students. Classroom space was a real issue. In looking ahead to next year, the administration figures that if teachers did not stay in their classrooms during their planning/off periods and allow other teachers to come in to use the room, it might free up space and the administration could hire more teachers. This year each teacher teaches 5 class periods per day, but the school day is 7 full class periods long. If there are 43 teachers in the school, what is the fewest number of classrooms that are needed, assuming any teacher can teach in any classroom during any period of the day and there are no other scheduling restrictions?

As the administration looks ahead to next year, Kyra is concentrating on finishing up this year well. Students at her school receive 4 quarter grades, a mid-term exam grade and a final exam grade for each class. The quarter grades are all weighted equally, the mid-term exam grade is double the weight of a quarter grade, and the final exam grade is four times the weight of a quarter grade. What fraction of the final course grade is the final exam grade? Express your answer as a common fraction.

Knowing that the final course grade is determined in the manner described above, Kyra can figure out what grade she needs to earn on the final exam to earn at least a 90% for her final course grade. These are her other grades she has earned so far: Q1 = 92%, Q2 = 85%, Q3 = 88%, Q4 = 84%, and mid-term exam = 89%. What is the least whole percent she must earn on the final exam?