# Warm-Up 14

1. _____ The sum of the first three terms of an arithmetic sequence is 18, and the fourth term is 19. What is the fifth term of the sequence? Express your answer as a decimal rounded to the tenth.

2. _____% In the year 1990 it was estimated that 45% of the adult male population of Ligonville had a mustache. Ten years later the adult male population of Ligonville had increased by 10%, but the total number of men with mustaches had not changed. What percent of the adult males in Ligonville had a mustache in the year 2000? Express the percent as a mixed number in simplest form.

3. _____cm² The space diagonal of a cube connects two vertices which are not on the same face. What is the number of square centimeters in the surface area of a cube whose space diagonal is 6cm long?

4. _____ What is the least positive value of n for which 64,000 is a factor of (n!)?

5. _____ What is the sum of the roots of the equation $2x^2 - 3x - 4 = 0$? Express your answer as a common fraction in simplest form.

6. _____ How many non-congruent hexagons can be traced using the gridlines on the given figure?
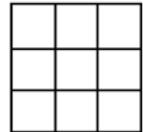
7. _____ If one-half of Eric's age is equal to two-thirds of Fred's age, and three-fourths of Fred's age is equal to four-fifths of Greg's age, what is the ratio of Eric's age to Greg's age? Express your answer as a common fraction in simplest form.

8. _____ To decide who gets to ride in the front seat of the car, Jake and Abbie each simultaneously hold up anywhere from one through five fingers on their right hands. If the total number of fingers held up is prime, Jake wins. Otherwise, Abbie wins. Assuming Jake always holds up a random number of fingers, how many fingers should Abbie hold up to maximize her chances of winning?

9. _____ What three-digit positive integer has distinct prime digits and is divisible by each of its digits?

10. _____ When Andy copied down his locker combination, he reversed the digits of exactly one of the three numbers in his combination. Additionally, he wrote the three numbers in the wrong order. If the combination that Andy copied was 12-23-34, how many possible correct combinations are there for his lock?

Written By Jason Batterson 2009