Warm-Up 18

1. _____ How many positive integers are factors of 6,464?

2. _____ mi Marcus left his house at 6am to walk to school. He walked at a steady rate of 2 miles per hour. Halfway to school he realized that he had left his lunch at home. He ran home at a steady rate of 6 miles per hour, got his lunch, and then ran the rest of the way back to school, arriving just as the bell rang at 7:30am. How many miles does Marcus live from school? (Negate any time Marcus might have spent going inside to get his lunch).

3. _____ in The area of a highway billboard sign is 576ft^2. A cow on the billboard is 12 feet tall. If the area of the photograph that was enlarged to create the image on the billboard is 144in^2, what is the height in inches of the cow in the photograph?

4. _____ ft A locomotive engine pulls three different types of freight cars. The locomotive is 100 feet long and weighs 150 tons. Hopper cars are 80 feet long and weigh 40 tons. Box cars are 90 feet long and weigh 37 tons. Flat cars are 70 feet long and weigh 30 tons. What is the full length in feet of the train if it weighs 431 tons?

5. _____ If $2^n = 3$, evaluate 16^{n-1}. Express your answer as a common fraction in simplest form.

6. _____ How many 3-digit perfect squares can be expressed as the sum of five consecutive integers?

7. _____ Points A and B are randomly selected on circle C. What is the probability that AB<AC?

8. _____ ft In an automobile, track width is a measure of the distance between the centerline of two wheels which share the same axle. The front wheel track width for a particular race car is 6 feet. On a flat, circular course with a 1-mile circumference, how many more feet does the outside tire travel than the inside tire during the course of a 100-mile race? Express your answer in terms of pi.

9. _____ Children's building blocks are 1-inch by 2-inches by 5-inches. Blocks can be stacked on top of each other in any one of the three orientations. How many different heights are possible for a stack of four blocks?

10. _____ The decimal representation of a googol is a 1 followed by one-hundred zeros. What is the smallest number that can be added to a googol which creates an integer that is divisible by 99?