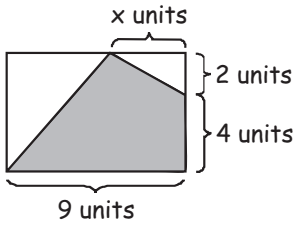
Workout 5

1. _____ What is the ratio of 1 hour, 10 minutes, and 20 seconds to 1 hour, 16 minutes, and 40 seconds? Express your answer as a common fraction.

2. _____ Aurian takes three quizzes, one midterm and one final exam in a math class. For his semester average, the midterm counts twice as much as a quiz and the final counts three times as much as a quiz. If his quiz scores were 82, 80 and 70, his midterm score was 60 and his final exam score was 80, what was his semester average?

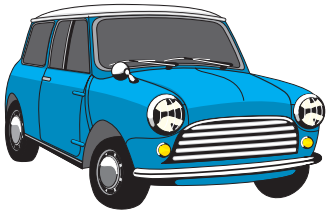
3. _____ Two-thirds of the area of the rectangle has been shaded, as shown. What is the value of x? Express your answer as a decimal to the nearest tenth.



4. $\$$_____ Two one-year investments are made. The total amount of money invested is \$7500. Some of the money is invested at 4% annual interest and the rest is invested at 5% annual interest. The interest on the 4% investment is \$75.00 more than the interest on the 5% investment. How much more money is invested at 4% than is invested at 5%?

5. _____ The set {2, 3, 5, 6, 7, 8, 10, 11, ... } consists of all of the positive integers that are not squares. When listed from least to greatest, what is the 2010th element in this set?

6. _____ full days



Yang sets out on a journey. Each day he travels $\frac{1}{5}$ of the remaining distance. What is the minimum number of full days he must travel to have completed at least 90% of the journey?

7. _____ sq units A rhombus has sides of length 60 units each and the lengths of its perpendicular diagonals are in the ratio of 2 to 1. What is the area of the rhombus, in square units?

8. _____ integers For how many integers x in {1, 2, 3, ... , 2010} is $x^2 + x^3$ the square of an integer?

9. _____ % A square-prism peg is placed snugly in a right cylindrical hole and, when pushed to the bottom of the hole, the top of the peg is even with the top of the hole. What percent of the hole is filled by the peg? Express your answer to the nearest whole number.

10. _____ If $x + \frac{1}{x} = 5$, what is the value of $x^3 + \frac{1}{x^3}$?