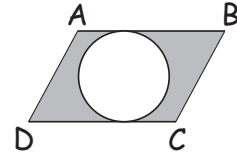




# Warm-Up 16

1. \_\_\_\_\_ units<sup>2</sup> In this figure, side AB of parallelogram ABCD is 10 units long. A circle of radius 3 units is drawn in the interior such that sides AB and CD of the parallelogram are tangent to it. What is the area of the shaded region? Express your answer in terms of  $\pi$ .



2. \_\_\_\_\_ If  $f(x) = 5x$ , and  $g(x) = f(x) - 3x - 7$ , what is the value of  $g(8)$ ?
3. \_\_\_\_\_ The sum of the digits of a two-digit positive integer is 8. When the digits are reversed, the new integer is 3 more than 4 times the original integer. What is the new integer?
4. \_\_\_\_\_ degrees The largest angle of a quadrilateral is four times its smallest angle. Another angle is 10 degrees more than twice the smallest. The fourth angle is 60 degrees less than 3 times the smallest. What is the measure of the largest angle?

5. \_\_\_\_\_ students At Melville Middle School 73 students are in the band, 65 students are in the chorus and 114 students play sports. Thirty-two are both in the band and play sports, 12 play sports and sing in the chorus, but no one is in both the band and the chorus. Five hundred fifty-eight students do not participate in any of these activities. How many students are there at Melville Middle School?



6. \_\_\_\_\_ sides How many sides does a convex polygon with 20 diagonals have?
7. \_\_\_\_\_ % On the number line, what percent of the interval  $-10 \leq x \leq 10$  satisfies the inequality  $x + 2 < \frac{5}{x-2}$ ?
8. \_\_\_\_\_ If  $a \Delta b = \frac{a-b}{2b+6}$ , what is the value of  $3 \Delta (5 \Delta 3)$ ? Express your answer as a common fraction.
9. \_\_\_\_\_ integers How many integers  $n$  satisfying  $3000 \leq n \leq 4000$  have the product of their digits equal to zero?
10. \_\_\_\_\_ Let PQRS be an isosceles trapezoid with bases  $PQ = 100$  units and  $RS = 26$  units. Suppose  $PS = QR = x$  units and a circle with center on base PQ is tangent to both segments PS and QR. If  $x$  is the smallest possible value, then what is the value of  $x^2$ ?