

# Warm-Up 6

1. \_\_\_\_\_ What is the simplified value of  $(2 + 4 + 6 + \dots + 48 + 50) - (1 + 3 + 5 + \dots + 47 + 49)$ ?

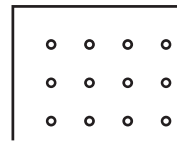
2. \_\_\_\_\_ For prime numbers  $p$  and  $q$ ,  $p + q = 102$  and  $p > q$ . What is the least possible value of  $p - q$ ?

3. \_\_\_\_\_ Sally is taking a test with 10 questions. Each answer is either True or False. She knows the correct answer for five of the questions and randomly guesses on the other five questions. What is the probability that she will have at least eight correct answers on the test? Express your answer as a common fraction.

Sally	
1. F	6. F
2. T	7. F
3. F	8. T
4. F	9. F
5. T	10. T

4. \_\_\_\_\_ The sum of two numbers is 32, and the product of these two numbers is 48. What is the sum of the reciprocals of the two numbers? Express your answer as a common fraction.

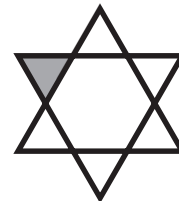
5. \_\_\_\_\_ <sup>sequins</sup> Fabric is run through a machine that fastens sequins in rows and columns such that each sequin is four inches vertically and horizontally from the next closest sequins, forming a grid as shown. There is always a four-inch space with no sequins at the beginning, end and side margins of the fabric. If a piece of fabric 60 inches by 72 inches is fed through the machine, how many sequins will be attached?



6. \_\_\_\_\_ What is the value of  $(2x^3) \div (2x)^3$  when  $x = 2007$ ? Express your answer as a common fraction.

7. \_\_\_\_\_ <sup>sq units</sup> What is the area of the quadrilateral with vertices at  $(1, 1)$ ,  $(5, 2)$ ,  $(4, 4)$  and  $(2, 3)$ ?

8. \_\_\_\_\_ A six-pointed star is formed by overlapping two congruent, equilateral triangles, placed such that each side of the original triangles is trisected. What fraction of the area of the six-pointed star is the shaded triangle? Express your answer as a common fraction.



9. \_\_\_\_\_ <sup>sq meters</sup> Alexander used exactly 20 meters of fencing around three sides of a rectangular flower bed beside his house. He did not fence the fourth side, which is an eight-meter section along the side of the house. What is the area of this flower bed?

10. \_\_\_\_\_ <sup>units</sup> Circles with centers at  $(2, 2)$  and  $(17, 10)$  are both tangent to the  $x$ -axis. What is the distance between the closest points of the two circles?