

Name: \_\_\_\_\_ Score: \_\_\_\_\_ / 45

PLEASE DO NOT FILL IN ABOVE! (the "SCORE" blank)

Grade: \_\_\_\_\_ Team: \_\_\_\_\_

**This is a round consisting of 15 problems to be done in 25 minutes. Problems are in roughly ascending difficulty. Each question will be worth 3 points. Any figures or diagrams in the test may not be to scale.**

**No aids are permitted aside from pencils, pens, and provided scratch paper. In particular, no calculators or other computers are permitted. Communication with other people will result in a zero.**

**Record your answers in the box corresponding to the correct problem. Only answers printed in the boxes below will be scored.**

### Your Answers

1.	6.	11.
2.	7.	12.
3.	8.	13.
4.	9.	14.
5.	10.	15.

1. Solve for  $x$

$$5x = 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10$$

2. Rocky the rock has 4 rock friends. Rocky wants to share his 6 pies between himself and his rock friends. If each rock gets the same amount of pie, what amount of pie does each rock get? Express your answer as a decimal.
3. The chances of rolling a 5 twice on two separate six-sided dice can be expressed in simplest form as  $\frac{a}{b}$ . What is  $a + b$ ?
4. Find  $1(1 + 2(2 + 3(3)))$ .
5. If a square's area is 16 times as large as another square, how many times larger must its perimeter be?
6. Find the sum of all unique prime factors of 42.
7. The difference of the digits of a two-digit number is 0, while the sum of the digits is 16. What is the number?
8. Find  $1 - 2 + 3 - 4 + 5 - 6 + \dots - 2022 + 2023$ .
9. Snorlax is trying to lose weight for a marathon. His coach tells him to halve and then square root his weight to 23 lbs. How much does Snorlax weigh currently?
10. Let  $n$  be the number of degrees in a circle. Let  $m$  be the number of sides of a heptagon. What is the remainder when  $n$  is divided by  $m$ ?
11. In a race, the 9th-place athlete passes 5 people. The 5th-place runner then passes her. What place is she in?
12. I have a 4-sided die, a 6-sided die, an 8-sided die, a 12-sided die, and a 20-sided die. The faces on the dice are labeled 1 through  $n$ , where  $n$  is the number of sides the die has. I roll all the dice and sum up their values. How many square number sums can I roll?
13. Find the smallest positive integer that is divisible by both 91 and 98.
14. Find  $1423(3145)$ .
15. What is the distance between the vertex of  $y = 3x^2 - 6x + 1$  and  $(-1, 1)$ ?