WINMAC

2022

Dash Round

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.

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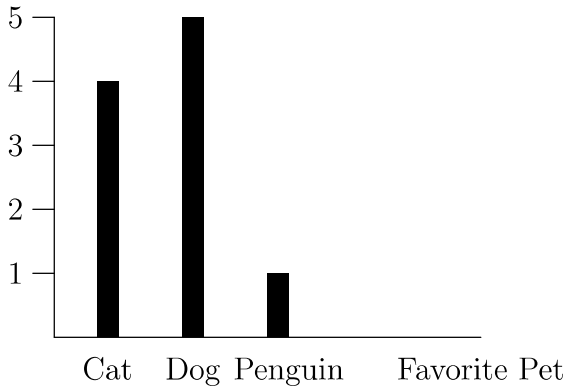
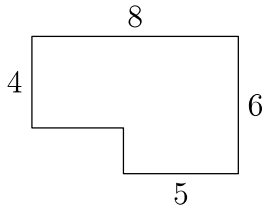
1. Find the number in the place of the question mark.

$$3 + 9 + 12 = 3 \times ?$$

2. The bar graph shows the preferences for pets of ten 4th-graders. How many of the 4th-graders did not choose cat as their favorite pet?



3. Find the perimeter of the shape below.



4. In a class with 20 students, 14 students have iPhones, 9 have iPads, and 2 have neither. How many students have both an iPhone and an iPad?

5. Abracadabra reads a book with 100 pages, numbered 1, 2, 3, and so on. How many times does the digit 1 appear in the page numbers?

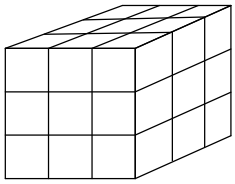
6. Solve the following equation: $2022 \times 2 + 2022 - 2 \times 2 \times 2022 =$ _____.

7. Simplify the following:

$$\frac{2}{4} \times \frac{4}{3} \times \frac{8}{2} \times \frac{16}{1}$$

8. The Binchester Music Competition started at 8:00 AM and ended 1000 minutes later. At what time did the competition end?

9. A 3 by 3 by 3 cube is placed on a table, and the outside of the cube is painted green except for the face lying on the table. It is then cut into 1 by 1 by 1 cubes as shown. How many 1 by 1 by 1 cubes have only one green face?



10. Sun is going to have a picnic with Moon. Sun has 5 pairs of pants, 3 shirts, and 2 hats. If Sun wants to wear a hat, a pair of pants, and a shirt, how many different outfits can they wear?

11. Roe buys a bag of sardines for \$6.99. She has a large number of pennies, nickels, and dimes, but only one quarter. If Roe only pays in coins and receives no change, what is the least number of coins she must use?

12. Numbers are placed in a triangular pattern as shown below. The pattern continues until there are 11 rows in total. How many *more* odd numbers are there than even numbers?

1
2 2
3 3 3
4 4 4 4
... same pattern continues ...

13. Bella the Bacteria recently floated across magical radioactive material, causing parts of her DNA to mutate. Bella's DNA has 400 parts, numbered 1, 2, 3 ..., 400. A part mutates when its number:

    (a) Is a multiple of 3,

    (b) Is a perfect square, or

    (c) Has 2 as the tens digit.

    There are two DNA parts that experience all three mutations listed above, numbered M and N. Find $M + N$. Note that a perfect square is the product of a number multiplied by itself.

14. The 6-digit number $2022\overline{AB}$ is divisible by 88. A and B are different one-digit numbers. Find the unique two-digit number $\overline{AB}$.

15. Kyle plays chess. Every chess game he plays lasts 6 minutes. He wins 50% of the games he plays. Each time he wins, he plays another game. If he loses or draws, he stops playing. If Kyle starts a chess game at 6:00 pm, what is the expected time he stops playing chess?