1. Count the number of vowels in this question.

2. Evaluate $267 \div 3$.

3. What is one-eighth of the sum of one-eighth and one-eighth?

4. What is the 13th smallest whole number divisible by 3?

5. Danny Kim is 5 ft 3 in tall. If he wants to grow until he is exactly 2 in taller than Jeremy Lin, who is 75 in tall, how many inches must he grow?

6. Compute 111^2.

7. On his final exam, Licheng scored 60 points in math, 95 points in English, and 94 points in history. What is the average of his three scores?

8. 2012 people are in a room, and each wears either a red or blue hat. Each person is able to see the hats of everyone in the room except their own. One of the people inside the room, Kelley, surveys the room and counts 1451 red hats, while another, JP, counts only 1450. How many people are wearing blue hats?

9. What is the sum of the 50th positive even number and the 50th positive odd number?

10. Claire, Ryan, Dominic, and Kevin take the Joe Holbrook Memorial Math Competition, and each of them finishes in the top 4. Given that both Kevin and Claire place higher than Dominic, and Ryan does not finish in the bottom 2, who comes in 4th?

11. Compute $16.59 - 1.14 + 0.85$.

12. At Justin's Pizza Parlor, slices of pizza cost \$1.50 per slice, or \$9.00 for a whole pie of 8 slices. If Dr. Abramson wants to buy 1 slice of pizza for all 160 math team students, how much money does he save by buying all pies instead of all individual slices?

13. The number 446 can be factored as the product of two primes. Find the sum of those two primes.

14. Evaluate $0 - 1 + 2 - 3 + 4 - 5 + \cdots + 98 - 99$.

15. Fritz wants to fill up his snack shelf so that exactly $\frac{1}{4}$ of his snacks are chips, $\frac{1}{5}$ are crackers, $\frac{1}{6}$ is chocolate, and the rest are gummy worms. What is the smallest total number of snacks he must buy so that he can fulfill these conditions?

16. A soccer practice consists of 10 minutes of stretching, two 30 minutes games and a 15 minutes break between the games. If the practice ended at 6:00 PM, what time did the practice start?

17. If a square has the same perimeter as an equilateral triangle with side length 16, what is the area of that square?

18. Find the sum of the mean, median, and mode of the set $\{1, 1, 3, 4, 4, 5, 6, 6, 6\}$.

19. Find the largest digit X such that the 4-digit number $5X54$ is divisible by 3.

20. Mr. Wojcik gives his math class an 6-question True-False test. If Wooseok guesses every answer, what is the probability he gets all of them right?
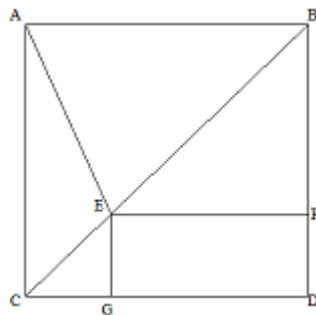
21. Mr. Lemma initially arranged his marching band in a square formation, before realizing that he preferred arranging them in 7 equal rows. If Mr. Lemma has between 150 and 200 students, how many people are in marching band?

22. If $36a + 30b = 360$, then what is the value of $\dfrac{a}{5} + \dfrac{b}{6}$?

23. If the sum of 30 consecutive numbers is equal to 945, what is the sum of the next 30 numbers?

24. What is the probability of rolling a sum of 5 when rolling a pair of fair, six-sided dice?

25. At a book store, $\dfrac{1}{4}$ of books sold are nonfiction and the rest are novels. If $\dfrac{1}{5}$ of the nonfiction books and $\dfrac{1}{12}$ of the novels have over 500 pages, what fraction of all the books have over 500 pages?

26. Charlie stacks cans in a triangular shape such that each row has two more cans than the row above it. If the top row has 1 can, and Charlie must stack 100 cans, how many rows of cans does he stack?

27. A fraction in simplest form has its numerator increased by 48 and its denominator increased by 64. Amazingly, the new fraction is still numerically equal to the old one! What is this fraction, in simplest form?

28. What is the average of all five-digit numbers that contain only the digits 1, 3, 5, 7, and 9? 11333 and 53971 are two such numbers.

29. Five boys and three girls play in a chess tournament. Each person plays one game against every person of the opposite gender, and two games against every other person of their own gender (they don't play themselves!). How many total games are played?

30. How many divisors of 2500 are multiples of 5?

31. In a new game called Kopemon, a Kopemon called Kipachu uses an attack called Shocking Thunder, which does 100 damage. However, there is a 10% chance that it will be ultra-effective! and do double the damage. What is the average damage that can be done by a Kipachu's Shocking Thunder?

32. How many ways are there to arrange 3 identical dogs and 2 identical cats in a line if the animals on both ends must be the same?

33. A rectangle $OPQR$ is placed inside a circle with center O such that point Q is on the circumference. If $OR = 8$ and $OP = 6$, what is the area of this circle?

34. Paula is trying paint a house in 40 minutes; however, it takes her one hour to complete this task. She has a helper, Abhiram, who, when working with her, paints just fast enough to finish painting the house in exactly 40 minutes. If both Paula and Abhiram work at constant speeds, how long does it take Abhiram to paint a house alone (in minutes)?

35. Arjun decides to make a sequence of numbers going: $1, 1, 2, 1, 2, 3, 1, 2, 3, 4 \cdots$ If the pattern continues this way, then find the sum of the first 63 numbers in the sequence.

For problems 36 through 39, fill in the following crossword puzzle, putting a single digit in each box.

```
+-----+-----+
| 1   | 2   |
|     |     |
+-----+-----+
| 3   |     |
|     |     |
+-----+-----+
```
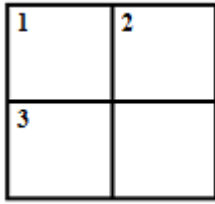
36. (1 across) A perfect cube

37. (1 down) A perfect square

38. (2 down) A multiple of 8

39. (3 across) A multiple of 13

40. 75% of boys at BCA take Spanish, while 40% of girls do. If half of all kids take Spanish, what is the ratio of boys to girls at BCA?

41. What is the length of the longest segment that can be placed fully inside a rectangular prism with dimensions 5, 6, and 30?

42. What is the circumference of a circle that is inscribed in a triangle with sides 12, 16, and 20?

43. A happy pair of numbers is pair of two numbers such that each digit in one number is exactly one greater than the corresponding digit in the second number. For example, 1283 and 2394 are a happy pair. The sum of two numbers in a certain happy pair is 5823. What is the larger number?

44. Dennis drives from his house to school and back. On the way there, he drives half the *time* at 40mph and the other half the *time* at 60mph. On the way back, he drives half the *distance* at 40mph and the other half of the *distance* at 60mph. What is his average speed for the entire trip?

45. Two integers are selected at random from $-12, -11, \cdots, 13, 14, 15$. What is the probability that the product of the integers is both positive and even?

46. Compute the last two digits of 6^{34}.

47. Izzy and Arthur play a game where they take turns flipping an unfair coin that comes up heads with probability $\frac{2}{3}$. Whoever gets a heads first wins. If Izzy starts flipping first, what is the probability that she will win?

48. A certain solid has 8 triangular faces and 6 octagonal faces. How many edges does it have?

49. A bug starts at point A of equilateral triangle ABC. Each second, the bug randomly moves to one of the adjacent vertices, each with probability $\frac{1}{2}$. What is the probability that after 3

seconds the bug has visited all 3 vertices? (Note: the bug has already visited point A, since that is its starting point).

50. In the diagram above, $ABCD$ is a square with side length 12, $EF = 2 \cdot EG$. What is the area of $\triangle AEC$?