Math Field Day

Leap Frog 6-8 sample questions

## (taken from some other contests)

Note: the problems given below are examples of problems given to 6-8 graders in other contests. They do not cover all the topics that can occur on the Math Field Day Leap Frog 6-8 contest this year. They are only intended to give you a rough idea of the difficulty of the problems that may be given.

1. The mean (average) of all five of Jodi's test scores is exactly 84. The mean of her first three test scores is exactly 80. What is the mean of her last two test grades?

   (a) 86

   (b) 88

   (c) 90

   (d) 96

   (e) None of the above

2. The letters in **MATH COMPETITION** are cycled as shown and placed on a numbered list. The **next** correct spelling of occurs in row number n. Find the value of n.

   1.   MATH COMPETITION
   2.   ATHM OMPETITIONC
   3.   THMA MPETITIONCO
   .   .
   .   .
   .   .
   n.   MATH COMPETITION

3. Four chefs require 10 minutes to prepare 20 desserts. At this rate, how many chefs are needed to prepare 75 desserts in 15 minutes?

   (a) 10

   (b) 12

   (c) 15

   (d) 20

   (e) None of the above

4. In the addition example shown below, different letters represent different digits. What is the value of the three-digit number BAC?

$$
\begin{array}{cc}
A & A \\
B & B \\
+\quad C & C \\
\hline
B\quad A & C
\end{array}
$$

   (a) 123

   (b) 198

   (c) 429

   (d) 573

   (e) None of the above

5. A dollar was changed into 16 coins consisting of just nickels and dimes. How many dimes were there in the change?

   (a) 3

   (b) 5

   (c) 7

   (d) 9

   (e) None of the above

6. The numbers 1 through 9 are placed one per square in the figure. The total of the 5 numbers in he horizontal row is the same as the total of the 5 numbers in the vertical column. find all the different values that M can be.
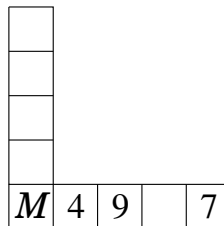
   (a) 1

   (b) 1 and 3

   (c) 2

   (d) 1, 2, and 5

   (e) None of the above

7. A group of 21 people went to the county fair either in a stagecoach or in buggies. Later the same stagecoach and buggies brought them back. On the trip to the fair, 9 people rode in the stagecoach and 3 people rode in each buggy. On the return trip, 4 people rode in each buggy. How many people rode in the stagecoach?

   (a) 4

   (b) 5

   (c) 6

   (d) 7

   (e) 8

8. Find the largest factor of 2520 that is not divisible by 6. What is the sum of its digits?

   (a) 7

   (b) 9

   (c) 10

   (d) 14

   (e) None of the above

9. Find the smallest positive number that has a remainder of 1 when divided by 4, a remainder of 2 when divided by 5, and a remainder of 3 when divided by 6. What is the sum of its digits?

   (a) 12

   (b) 13

   (c) 15

   (d) 16

   (e) None of the above

10. Daniel did a number trick with Zach. He told him to pick an even number, double it, add 48 , divide by 4 , subtract 6 , multiply by 2 and subtract his original number. He then told him the result he should have attained. What was it?

   (a) 15

   (b) 12

   (c) 11

   (d) 10

   (e) 9

11. Let D be the sum of the odd numbers from 1 to 99 inclusive, and let N be the sum of the even numbers from 2 to 98 inclusive:

$$D = 1 + 3 + 5 + \ldots + 99$$

and

$$N = 2 + 4 + 6 + \ldots + 98$$

Which is greater, D or N, and by how much?

   (a) D, 48
   (b) N, 48
   (c) D, 50
   (d) N, 50
   (e) None of the above

12. Given 7 segments whose length are the elements of the set S=2,3,5,8,13,21,34 , what is the number of distinct triangles that can be formed using any three of these segments?

   (a) 0
   (b) 7
   (c) 10
   (d) 120
   (e) 720

13. Find the sum of all possible 4-digit numbers that can be created using the 4 digits in the set 3,5,8,6.

   (a) 146586
   (b) 146652
   (c) 146696
   (d) 146674
   (e) 146718

14. A person agreed to work one year for $40,000 plus a nice every expensive horse. He quits after 7 months and u
plus the horse. How many dollars was the horse worth, if the paid salary reflects the fair proportion of his yearly salary?

   (a) 17000
   (b) 20000
   (c) 21000
   (d) 22000
   (e) 23000

15. The product of three whole numbers is 60. The numbers are all different and greater than 1. The sum of these three numbers is 13. What is the sum of their squares?

    (a) 65
    (b) 109
    (c) 113
    (d) 169
    (e) None of the above

16. Twenty-two students chartered a bus for their trip to San Francisco. Just before they left ten more students decided to go. This resulted in each of the original 22 students getting $15 back. What was the charge for the use of the bus?

    (a) $150
    (b) $330
    (c) $480
    (d) $1,056
    (e) None of the above

17. What is the average of all integers from -49 to 51?

    (a) 0
    (b) 0.51
    (c) 51
    (d) $\frac{51}{101}$
    (e) None of the above

18. Ninety cookies were divided into 3 piles in ration $1 : 2 : 6$. How many cookies are in the largest pile?

    (a) 36
    (b) 48
    (c) 60
    (d) 66
    (e) None of the above

19. What is the degree measure of the angle between the minute hand and the hour hand of a clock when it displays the time as exactly 3:30?

   (a) 60°
   (b) 67.5°
   (c) 75°
   (d) 90°
   (e) None of the above

20. The figure shown below has right angles at both bottom corners. The length of each side is marked in inches. What is its area in square inches?
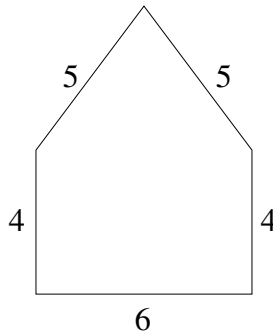
   (a) 24
   (b) 36
   (c) 40
   (d) 49
   (e) None of the above

21. How many positive three-digit integers are there that do not contain the digit 7?

   (a) 356
   (b) 574
   (c) 897
   (d) 996
   (e) None of the above