Name: _____

1)

A fisherman sold some big fish at $4 each and twice as many small fish at $1 each. He received a total of $72 for the big and small fish. How many big fish did he sell?

2)

A "Magic Square" has the property that the sum of the three numbers in each and every row, column, and diagonal is the same. What number should be in the center box of the Magic Square shown at the right?

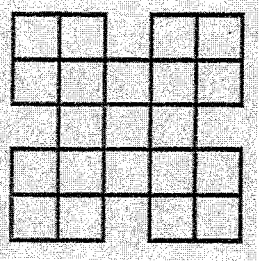
9		17
19	?	3
	15	

3)

Two dogs run around a circular track 300 feet long. One dog runs at a steady rate of 15 feet per second, the other at a steady rate of 12 feet per second. Suppose they start at the same point and time. What is the least number of seconds that will elapse before they are again together at the starting point?

4)

Each of the small boxes in the diagram at the right is a square and congruent to each of the others. How many different squares can be traced using the lines of the diagram as sides?



5)

A box contains over 100 marbles. The marbles can be divided into equal shares among 6, 7, or 8 children with 1 marble left over each time. What is the least number of marbles that the box can contain?

6)

Mr. Chin went to a store where he spent one-half of his money and then $14 more. He then went to another store where he spent one-third of his remaining money and then $14 more. He then had no money left. How much did he have when he entered the first store?

7)

If 48 is added to one-third of a number, the triple of the number is the result. What is the number?

8)

In the multiplication example at the right, different letters represent different digits. What two-digit number does AB represent?

$$\begin{array}{r} A\ B \\ \times\ A\ B \\ \hline C\ A\ B \\ B\ D\ B\ \ \\ \hline B\ E\ D\ B \end{array}$$

9)

The average of six numbers is 7. If two of the six numbers are removed, the average of the remaining numbers is 8. What is the sum of the two numbers which were removed?

10)

If you start with 4 and count by 3s, you get the sequence 4, 7, 10, ... , N where 4 is the first number, 7 is the second number, 10 is the third number, and so forth. If N is the fiftieth number, what number does N represent?

11)

$7^1 = 7$, $7^2 = 7 \times 7 = 49$, $7^3 = 7 \times 7 \times 7 = 343$, and so forth.
When multiplied out, 7^2 has a units digit of 9, 7^3 has a units digit of 3, and so forth. What is the units digit of 7^{20}?

12)

In the five-digit number A6A41, each of the As represents the same digit and A6A41 is divisible by 9. What digit does A represent?

13)

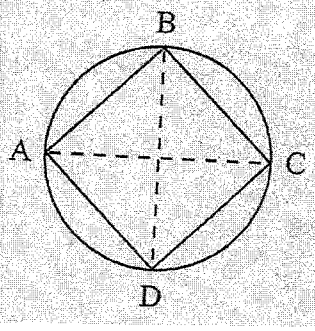
Eight people want to play a 48-minute game as a team but only a team of exactly five is allowed to play. However, during the game, a player may be replaced by someone else. Suppose each of the eight people plays in the game for the same amount of time. How many minutes will each of the eight people play?

14)

What number multiplied by itself is equal to the product of 32 and 162?

15)

Square ABCD has all four of its vertices on a circle with diameter 10 units in length. Segments AC and BD are diameters. How many square units of area does square ABCD have?



16)

In the addition example at the right, different letters represent different digits. What digit does A represent?

$$\begin{array}{r} A\ A \\ +\ A\ A \\ \hline C\ A\ B \end{array}$$

17)

The fraction F at the right is an extended fraction. What simple fraction in lowest terms is equal to F?

$$F = \cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{3}}}$$

18)

The sum of the first 25 multiples of 4 is: $4 + 8 + 12 + \cdots + 100$.
The sum of the first 25 multiples of 3 is: $3 + 6 + 9 + \cdots + 75$.
What number is equal to the difference of the two sums?

19)

When I open my Math book, two pages face me and the sum of the two page numbers is 317. What is the number of the very next page?

20)

The sum of the ages of Alice, Betty, and Clara is 29 years. Betty is 4 years older than Alice and Clara is 6 years older than Betty. What is Alice's age?