First Name: _____ **Last Name:** _____ **Grade:** _____
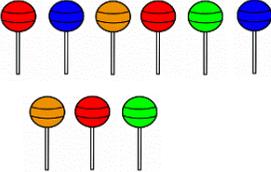
Teacher: _____ **Parent's email:** _____

Numbers and Digits

Welcome to the Math Challenge #7. In this challenge, once again we look at problems involving numbers and digits. A **number** is a count or measurement that is really an idea in our minds. We write or talk about numbers using numerals such as "3" or three. A digit is a symbol in a numerical system. While a number can represent a number word or combination of digits, a digit is a symbol in a numeral representation of a number.
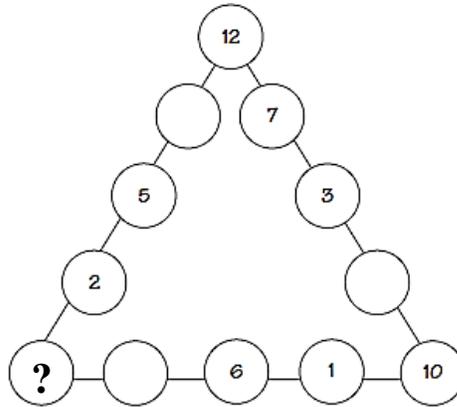
number
153
digit digit digit

Kinder & First Grade: solve at least 3 problems.
Second & Third Grade: solve at least 7 problems.
Fourth Grade and above: solve at least 12 problems.

Answer

1.	What number is represented in the picture?	
2.	Tim wrote the numbers from 1 to 15 in order without spaces: 12345678910…. Which digit was the 13th that Tim wrote?	

1. What number is represented in the picture?

2. Tim wrote the numbers from 1 to 15 in order without spaces: 12345678910…. Which digit was the 13th that Tim wrote?

3. The three numbers in each circle have a relationship that is the same in all six circles. Find the missing number where the question mark is.

Circles:
3 4
4

2
6
3

2 7
2

1 8
2

4 7
0

?
0 3
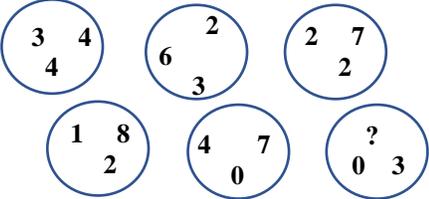
4. What number can represent the shaded squares in the picture?
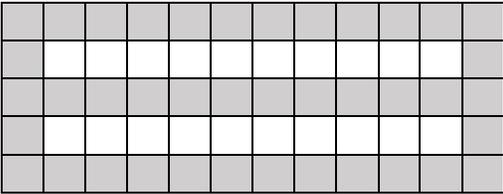
5. Lana's secret number is between 9 and 15 and exactly in the middle of the two numbers mentioned here. Find Lana's secret number.

6. Find the missing number that can replace the question mark.

$$\text{✈} - 5 = 3$$
$$9 - \text{✈} = ?$$
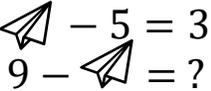
7.	Place the numerals 1 – 12 in the twelve circles below so that the sum of each side of the triangle is 36. The numbers can only be used once. There are few numbers already placed to give you a head start. What would be the number replacing the question mark?	

Triangle figure with circles containing: 12 (top), 7, 5, 3, 2, ?, 6, 1, 10

8.	In the addition problem at the right, the letters AB represent a two-digit numeral. If you know that the letter B is not a zero (0), which digit represent A and B?	AB AB +AB 19B

9.	How many **different** numbers are there in the picture?

✖	1	2	3	4	5	6
1	1	2	3	4	5	6
2	2	4	6	8	10	12
3	3	6	9	12	15	18
4	4	8	12	16	20	24
5	5	10	15	20	25	30
6	6	12	18	24	30	36

10.	Find the missing digits in the following problem.

```
   8 □ □            9 5 6
 + □ 6 5          + □ 7 □
 ─────────        ─────────
 □ , 2 9 5        1 , 6 □ 5
```

```
   8 □ □            9 5 6
 + □ 6 5          + □ 7 □
 ─────────        ─────────
 □ , 2 9 5        1 , 6 □ 5
```

11.	Ursula uses the digits 1, 2, 3, 4, 5, and 6 to make two three-digit numerals. Each digit is used once. The numbers are then subtracted. What is the greatest possible difference?

12.	In Clownland, they had a math operation called a "ClownIt" that look like this:

$5 \; 🤡 \; 3 \rightarrow 23$ The clown between the 5 and the 3 meant that you had to add 5 + 3, then multiply 5 x 3, and then add the results together.

What does this ClownIt puzzle equal to? $4 \; 🤡 \; 2 \; + \; 3 \; 🤡 \; 6 = ?$

13. Find the missing digits in the following problem.

```
      □ 9
    x 5 □
    -------
      1 1 6
  + □ , □ 5 □
  -------------
    1 , 5 6 6
```

```
      □ 9
    x 5 □
    -------
      1 1 6
  + □ , □ 5 □
  -------------
    1 , 5 6 6
```

14. The three-digit number NM8 is 296 more than the two-digit number NM. What is the value of the two-digit number NM?

15. Use the clues below to find the value of **P.QR**
    - My hundredths digit is one half my tenths digit.
    - My ones digit is twice my tenths digit.
    There is no digit 1 in any of the three letters.

    P.QR

16. If the number 4 is placed at the right end of a two-digit number XY, the value of the three-digit number thus formed is 247 more than XY. What is the original two-digit number XY?

17. The pages of a book are consecutively numbered from 1 through 384. How many times does the digit '8' appear in this numbering? *Hint:* make an organized list.

18. What digit is in the 45th decimal place in the decimal equivalent of 9/14?

Solution is available on January 18, 2019 at www.mathinaction.org