# Grade 6

**Problem №1.**

A prime number is called a "super-prime" if doubling it, and then subtracting 1, results in another prime number. What is the number of super-primes less than 15?
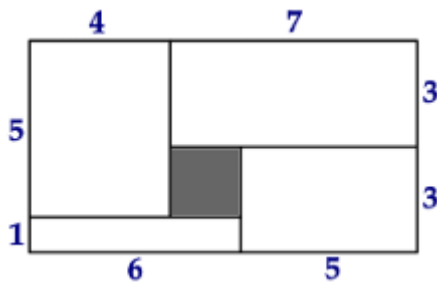
    A) 1      B) 2      C) 3      D) 4      E) 5

**Problem №2.**

The ratio of three numbers is 1:2:4 and the sum of their squares is 189. What is the sum of these three numbers?

    A) 21      B) 28      C) 35      D) 42      E) 49

**Problem №3.**

A large rectangle, with side lengths 6 and 11 units, is divided into five smaller rectangles, as shown. The side lengths of four of the five rectangles are shown in the diagram. What is the area of the fifth rectangle, the shaded region?



    A) 1      B) 2      C) 3      D) 4      E) 5

**Problem №4.**

The five numbers listed below are repeated in the same order indefinitely.

$$3, 4, 5, 6, 7$$

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With these repetitions, the following infinite sequence of numbers is created:

$$3, 4, 5, 6, 7, 3, 4, 5, 6, 7, 3, 4, 5, 6, 7, 3, 4, 5, 6, 7, ...$$

What is the 101$^{st}$ number in this sequence of numbers?

A) 2     B) 3     C) 4     D) 5     E) 6

## Problem №5.

4 pens cost the same as 6 mechanical pencils. Tim bought 24 pens for $144. How many mechanical pencils could Tim buy with $156?

A) 39     B) 38     C) 26     D) 37     E) 40

## Problem №6.

The number 48 has the property that it is divisible by the digit in the ones position, because 48 is divisible by 8. The number 49, for example, does not have this property, because 49 is not divisible by 9. How many numbers between 20 and 40 have this property?

A) 7     B) 8     C) 9     D) 10     E) 11

## Problem №7.

In magic squares, the sums of numbers in each row, each column, and each diagonal are all the same. In the magic square shown, five numbers have been erased and replaced with letter A, B, C, D and E. What is the sum of these missing numbers, A+B+C+D+E?

| A | 24 | B |
|---|----|---|
| 18 | C | D |
| 25 | E | 21 |

A) 70     B) 80     C) 90     D) 100     E) 110

**Problem №8.**

Josh wrote down every even integer he could construct given the following restrictions:

- Every number is greater than 200 and less than 700.

- In every number, no two digits are the same.

- The digits come from the set {1, 2, 5, 7, 8, 9}

How many different integers did he write down?

A) 8        B) 10        C) 12        D) 14        E) 16

**Problem №9.**

In how many ways can 47 be written as the sum of two primes?

**Problem №10.**

In a local math contest with ten problems, a student gains 5 points for each correct answer and loses 2 points for an incorrect answer. If Arya answered all the problems and scored 29 points, how many questions did she answer correctly?

**Problem №11.**

How many distinct six-digit numbers that are multiples of 5 can be formed using digits 1, 2, 3, 4, 5, 6 if no digits are repeated?

**Problem №12.**

When you multiply Sophie's age and Sony's age, you get 36. If you add their ages together, you get 15. Sophie is older than Sony. How old is Sony?

**Problem №13.**

Reverse the digits of 1746 and we get 6471, the new number is larger than the original number by 4725. How many four-digit numbers satisfy such condition?

**Problem №14.**

On a 40-problem mathematics competition round, the following scoring system was established:

❖ Correct answer results in +1 point.
❖ Incorrect answer results in +0.5 points.
❖ Blank answer results in 0 points.

If Billy received 25 points for the answers he submitted and Billy had twice as many correct answers as incorrect answers, how many incorrect answers did he submit?

**Problem №15.**

The 7-digit numbers $\overline{74A52B1}$ and $\overline{326AB4C}$ are multiples of 3. Find the largest possible value of digit C?