Exercises.

1. If we want to divide a number by 15, what numbers can we get as a remainder?

2. Evaluate the products and name the factors:
   Example: $3 \cdot 25 = 75, factors\ are\ 3\ and\ 25.$
   $a.\ \ 4 \cdot 12;$ $b.\ 7 \cdot 11;$ $c.\ 15 \cdot 20;$

3. The remainder of $1932 \div 17$ is 11, the remainder of $261 \div 17$ is 6. Is
   $$2193 = 1932 + 261$$
   divisible by 17? Is it possible to say without division?

4. Find all natural numbers such that when divided by 7, the quotient and remainder are equal?

5. Andrew is preparing for the Ironman competition. To do this, he swims for 37 minutes every day for 256 days, and also runs for 63 minutes every day for 256 days. How many minutes does he spend doing sports?

6. Rewrite the following expression without parenthesis, find the value of the expressions doing calculations with and without parenthesis.

   Example:
   $5 \cdot (4 + 3) = 5 \cdot 4 + 5 \cdot 3 = 20 + 15 = 35$
   $5 \cdot (4 + 3) = 5 \cdot 7 = 35$

   $a.\ \ 2 \cdot (3 + 8);$ $b.\ \ 3 \cdot (10 - 5);$ $c.\ \ (7 + 2) \cdot 5;$

7. Factor out the common factor, find the value of the expressions:
   Example:
   $21 + 49 = 3 \times 7 + 7 \times 7 = 7 \times (3 + 7) = 7 \times 10 = 70$
   $a.\ 35 - 25;$ $b.\ 44 + 77;$ $c.\ 81 - 45;$

8. Even or odd number will be the sum and the product of
   a. 2 odd numbers
   b. 2 even numbers

c. 1 even and 1 odd number
d. 1 odd and 1 even number
Can you explain why?

9.
a. Will the following numbers be divisible by 2:

123457, 1029384756, 43567219874563157830

b. by 3
1347, 45632, 5637984265
c. by 5:
5635, 78530, 657932, 45879515

10. Is the product of 1247 and 999 divisible by 3 (no calculations)?

11. Number a is divisible by 5. Is the product $a \cdot b$ divisible by 5?

12. Without calculating, establish whether the product is divisible by a number?

$a.\ 508 \cdot 12\ by\ 3$ $b.\ 85 \cdot 3719\ by\ 5$
$c.\ 2510 \cdot 74\ by\ 37$ $d.\ 45 \cdot 26 \cdot 36\ by\ 15$
$e.\ 210 \cdot 29\ by\ 3, by\ 29$ $f.\ 3800 \cdot 44 \cdot 18\ by\ 11, 100, 9$

13. Without calculating, establish whether the sum is divisible by a number, explain:
$a.\ 25 + 35 + 15 + 45\ by\ 5$; $b.\ 14 + 21 + 63 + 28\ by\ 7$
$c.\ 18 + 36 + 54 + 90\ by\ 9$;

14. How many vans are needed to take 55 students on a field trip if a van can take 12 students?

15. Seven friends came to Polly's birthday party. She wants to give each friend an equal number of candies. How many candies will each guest get and how many candies will be left if Polly has 24 candies in total?

16. The summer vacation is 73 days long. Which day of the week will be last day of vacations if the first day was Tuesday?

17. Show that among any three consecutive natural numbers there will be one divisible by 3.

18. Among four consecutive natural numbers will be a number

    a. Divisible by 2?

    b. Divisible by 3?

    c. Divisible by 4?

    d. Divisible by 5?

19. Evaluate (what is the best way to compute it? Hint: use the distributive and/or associative property):

$a.\ 23 \times 15 + 15 \times 77;$ $b.\ 79 \times 21 - 69 \times 21;$ $c.\ 340 \times 7 + 16 \times 70;$

$d.\ 250 \times 61 + 25 \times 390;$ $e.\ 67 \times 58 + 33 \times 58;$ $f.\ 55 \times 682 - 45 \times 682$

20. Evaluate (what is the best way to compute it? Hint: use the commutative property):

a. $(972 + 379) - 972;$

b. $(382 + 417) - 416;$

c. $851 - (831 + 7);$

d. $134 - 98 - 2;$

e. $83 \cdot 9 - 73 \cdot 9;$

f. $24 \cdot 96 - 24 \cdot 86;$

g. $(538 + 245) - 245;$

h. $(725 + 158) - 625;$

i. $276 - (18 + 176);$

j. $580 - 79 - 21;$

k. $7 \cdot 38 - 7 \cdot 28;$

l. $716 \cdot 52 - 616 \cdot 52;$