

Divisibility

Natural numbers (counting numbers)

We say that a natural number is divisible by another natural number if the result of this operation is a natural number. If this is not the case, then we are left with a remainder (r).

If r is 0, then we can tell that a is divisible by b .

If a and b are natural numbers, the result of division operation of $a \div b$ will be a quotient c .

$$a : b = c$$

\swarrow *dividend* \uparrow *divisor* \searrow *quotient*

$$a = b \times c$$

1. Divide

$76 : 9$

$231 : 15$

$622 : 9$

$3771 : 8$

$52974 : 9$

2. Claus has \$2. How many 27 cent chocolate bars can he buy?
3. A plastic bag may hold 15 cans of yogurt without tearing. How many plastic bags are needed to carry 72 cans of yogurt?
4. John came to a lemonade stand with a big empty pitcher which can hold 5 liters of lemonade. He wanted to buy only 1 liter (1L) of lemonade, but a merchant had only jars which could hold 3 liters (3L) and 2 liters (2L) of liquid. How merchant can measure 1L of lemonade if jars do not have any marks on them?
5. Next time when John came to the stand with the same pitcher, the merchant had only 3L and 5L jars. Can he sell to John exactly 4L of lemonade? How?

Divisibility traits:

- a number is divisible by 2 if it ends in an even digit.

Underline numbers divisible by 2: 25, 36, 80, 47

- a number is divisible by 5 if it ends in 0 or 5

Underline numbers divisible by 5: 25, 40, 56, 75

- a number is divisible by 3 if the total of its digits is divisible by 3

Underline numbers divisible by 3: 87, 34, 57, 91

- a number is divisible by 9 if the total of its digits is divisible by 9

Underline numbers divisible by 9: 45, 49, 91, 135

- a number is divisible by 11 if the total of its digits in the odd places equals the total of its digits in the even places

Underline numbers divisible by 11: 121, 144, 567, 242

Geometry

A **definition** is a statement of the meaning of something (a term, a word, another statement).

In our real life it is very useful and convenient to agree about terms and concepts, to give them a definition, before starting using them just to be sure that everybody knows what they are talking about.

6. Draw two line segments AB and CD in such way that their intersect
 - a. by a point
 - b. by a segment
 - c. don't intersect at all.

7. Using a ruler draw a straight line, put 3 points A , B , and C on it, so that 2 rays $-BC$ and BA are formed
8. Tony drew three lines, none of them are parallel:
- a. He marked 2 points on each of the three lines. He marked 3 points altogether. How can this be?
- b. Tony marked 2 points on each of three lines. He marked 4 points altogether. How can this be?

Remember the differences between the three:

