1 percent of quantity is a $\frac{1}{100}$ th part of it.

Percent.

One percent (1%) means 1 per 100. Percentage is a ratio expressed as a number out of 100. For example, if 20% of the students in grade 4 got a perfect score on the test, it means that 20 out of every 100 students got a perfect score.

$$\frac{20}{100} = \frac{1}{5}$$

Or every 5^{th} student got a perfect score.

1% of this line is shaded green: it is very small, isn't it?

Example 1.

To find 15% of 200 we need to divide 200 by 100 (to find oud how much is 1%) and then multiply the result by 15 (to find out how much is 15%):

$$\frac{200}{100} \cdot 15 = 200 \cdot \frac{15}{100} = 0.15 \cdot 200 = 2 \cdot 15 = 30$$

15% is $\frac{15}{100}$ or 0.15 of a number (quantity).

Example 2.

8% of a number is 25. What is the number?

We need to divide 25 by 8 (to find out how much is 1% of the unknown number) and multiply by 100 to find the number itself.

$$\frac{25}{8} \cdot 100 = 25 \cdot \frac{100}{8} = 25 : \frac{8}{100} = 25 : 0.08 = 312.5$$

Example 3.

Fresh cranberries contain 90% of water, while dry cranberries contain only 15% of water. How much water should be evaporated from 4.25 kg. fresh cranberries to obtain dry cranberries?

To find out how much water is in 4.25 kg. of fresh cranberries we need to calculate:

$$4250 \cdot 0.9 = 4250 : 100 \cdot 90 = 3825g.$$

So, there are 3825 g. of water and 425 g. of fiber/sugar/vitamins and other minor components of cranberries. After drying process, 425 g of fiber/sugar/vitamins will still be in the berries, but some water will be evaporated, leaving only 15% of the final product as water. Therefore, we can tell that 425 g. of fiber/sugar/vitamins is constitute 85% of the final product, and 15% is water. To find the amount of water in the final product:

$$425 : 85 \cdot 15 = 75g.$$

The last step is:

$$3825 - 75 = 3750\ g.$$

During the process. 3750 g. of water should de evaporated.

Exercises:

1. How many squares we have to shade to shade 10% of the line, 15%, 20%, 25%?

2. There are 200 pencils in the box. 3% of the pencils are red, 26% are yellow, and the rest are blue. How many red pencils are in the box?

3. Find:

1% from 100	120% from 250
7% from 200	5% from 50
100% from 49	25% from 48
1% from 300	200% from 300
20% from 15	

4. Find a number, if

1% of it is 2;	200% of it is 400;

10% of it is 12;
15% is 150;
3% of it is 0.24;

100% of it is 0.1;
50% of it is 1;
25% of it is 30;

5. 15% of the participant of math Olympiad solved 1 problem, 25% of the participant solved 2 problems, and the rest 24 students solved all three problems. Haw many students did participate in the math Olympiad?

6. Dry apricots contain 25% of water. How much water should be evaporated from 5 kg of fresh apricots to get dry apricots, if fresh apricots contain 85% of water?

7. Peter spent 15% of his money and 1.5 dollars on a doughnut and $\frac{3}{5}$ of his money and 30 cents on ice-cream. How much money did he have?

8. In Peter's bottle there is 10% more soda than in John's bottle. Peter drank 11% of his soda, while John drank 2% of his soda. So, who has more soda left?

9. Write an expression to find 15% of a number ***a***. Calculate 15% of the following numbers: 1540, 220, and 10.

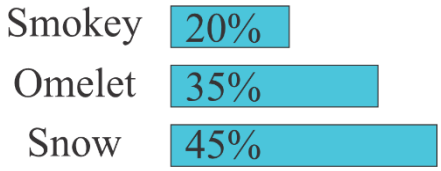
10. Write an expression to find a number, if 4% of it is equal to ***b***. Find the numbers for which 4% is equal to 8, 12, and 55.

11. During the year, the price of strudels was increased twice by 50%, and before New Year they were sold at half price.
    What is the current price of one strudel, if at the beginning of the year it cost 4 dollars?

12. After the crisis, all prices increased by 25%. By what percentage can fewer goods be bought with the same salary?

13. At what interest rate is it more profitable to deposit money in a bank for a year: 6% per year or 0.5% per month?

14. In one of the communities of a social network, there was a vote on which kitten in the photo is the cutest. By the morning, the votes were distributed as follows:



By the evening, more votes were added, but all the new votes were for Snow. As a result, Smokey was left with only 16% of the votes. What percentage of the votes did Omelet have in the evening?

15. Three pirates were dividing a bag of coins. The first took 3/7 of all the coins, the second took 51% of the remaining coins, and the third received 8 coins fewer than the second. How many coins were there in the bag?

16. Dry mushrooms contain 10% water. Fresh mushrooms contain 95% water. What was the weight of the fresh mushrooms if 30 g of dry mushrooms were obtained from them?

17. Sea water contains 5% salt (by weight). How many kilograms of fresh water should be added to 40 kg of sea water to obtain a solution with 2% salt?

18. There was milk in one glass and the same amount of coffee in another. One spoonful of milk was poured into the glass with coffee and stirred. Then the same spoonful of the mixture was poured back into the glass with milk. Now, which is greater: the amount of coffee in the milk glass or the amount of milk in the coffee glass?

19. A merchant accidentally mixed candies of the first type (priced at $3 per pound) with candies of the second type (priced at $2 per pound). At what price should this mixture be sold to obtain the same total amount, given that it is known that initially the total cost of all candies of the first type was equal to the total cost of all candies of the second type?