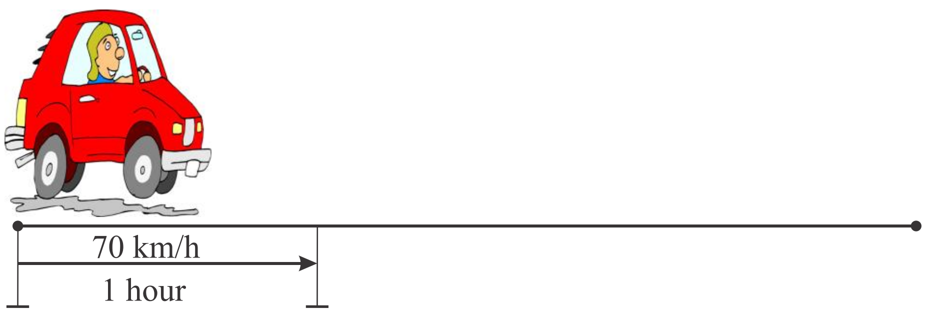
Math 4a. Class work 16.

1. Speed, time, and distance.

Car was moving for 3 hours with the speed of 70 km/h. How far did it travel? In this kind of problems in math we always assume that the car (or any other moving object) is moving with the constant speed along the straight line. Of course, this seldom is the case in the actual reality, and in physics you will be studying the laws of motion in a more profound way.

Let's denote the speed of the car v, the time during which the car was moving t, and the distance it travelled, S. These letters are usually used for speed, time and distance, but you can use any other letters as well.



$$S = v \times t = vt$$

If $v = 70km/h$ and $t = 3h$, then $S = \frac{70k}{h} \times 3h = 70km$.

This is simple. If we know two out of three parameters, we always can find the third one.

$$S = vt;$$

$$v = \frac{S}{t};$$

$$t = \frac{S}{v};$$

1.1 Peter was walking for 15 minutes with the speed of 5km/h. How far did he go?

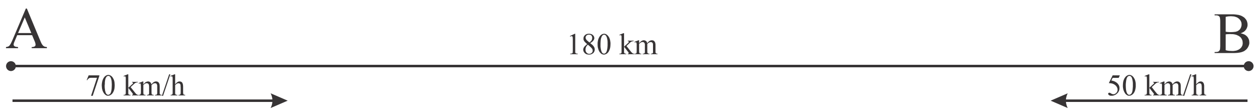
1.2 The distance between the Earth and Mars is 55,757,930 km. How fast the space ship should go to reach the red planet in 250 days? Represent the answer in the units of kilometers per hour.

1.3 The speed of the boat in a still water on a lake is 12 km/h. The speed of the river flow is 3 km/h. How many hours does the boat need to go from the city A to the city B if the distance between the two cities is 45 km and the city A is up on the river, i.e. the river flows from A to B?

How many hours does this boat need to go back from the city B to the city A?

1.4 The speed of the boat going downstream the river is 19 km/h, and the speed of the same boat going upstream this river is 15 km/h. What is the speed of the river stream and what is the speed of the boat in a still water on a lake?

1.5 Two cars start moving towards each other at the same time from the two cities, A and B. The distance between the cities is 180 km. The speed of the car that departed



from the city A is 50 km/h, the speed of the car that left from the city B is 70 km/h. In how many hours will they meet?

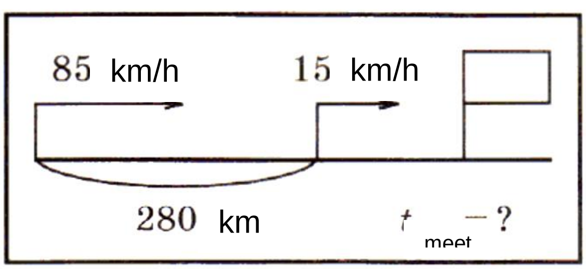
How far from the city A they will meet?

1.6 Two cars start moving at the same time in the same direction from cities A and B, as shown in the picture below.

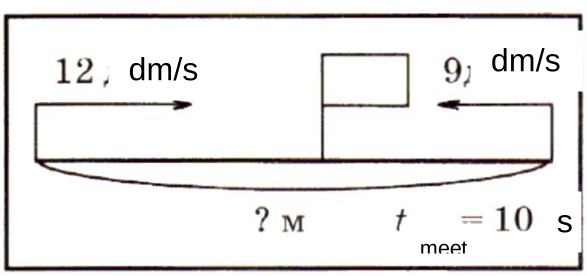
How many hours will it take for the faster car to catch up with the slower car? How far from the city A will they meet?

1.7. For the four pictures below, come up with the problem and solve it.

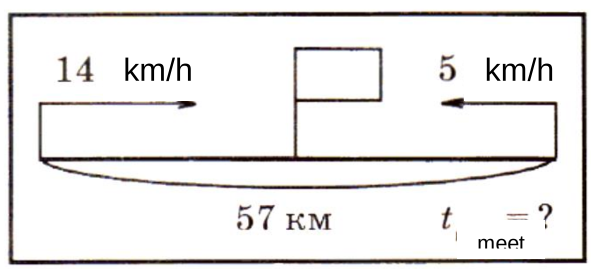
a)



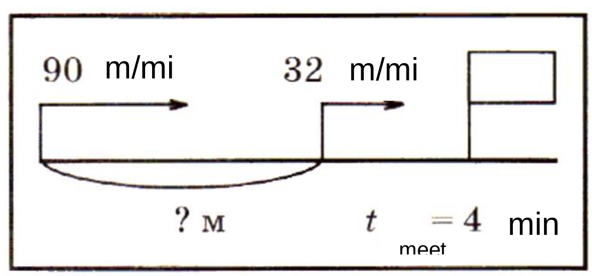
b)



c)



d)



Distributive property of addition and multiplication:

Evaluate the following numeric expressions:

$$8\frac{5}{11} \cdot 4\frac{2}{9} + 8\frac{5}{11} \cdot 6\frac{7}{9};$$

$$6\frac{3}{5} \cdot 7\frac{1}{6} - 2\frac{1}{6} \cdot 6\frac{3}{5};$$

$$9\frac{3}{8} \cdot 2\frac{5}{7} - 2\frac{5}{7} \cdot 7\frac{3}{8};$$

$$3\frac{3}{4} \cdot 3\frac{3}{4} + 3\frac{3}{4} \cdot \frac{1}{4}.$$

What is the most convenient way to do it?

Rewrite without parentheses:

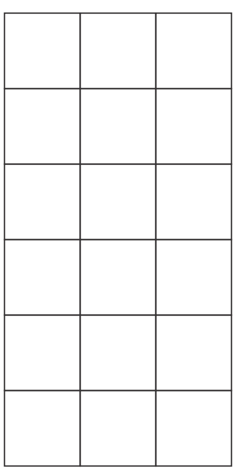
$34 - (a - 28) =$

$54 + (x - 11.8) =$

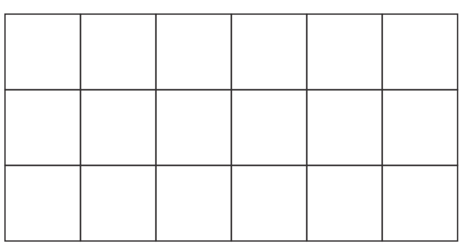
$1.2 \cdot (s + 3) =$

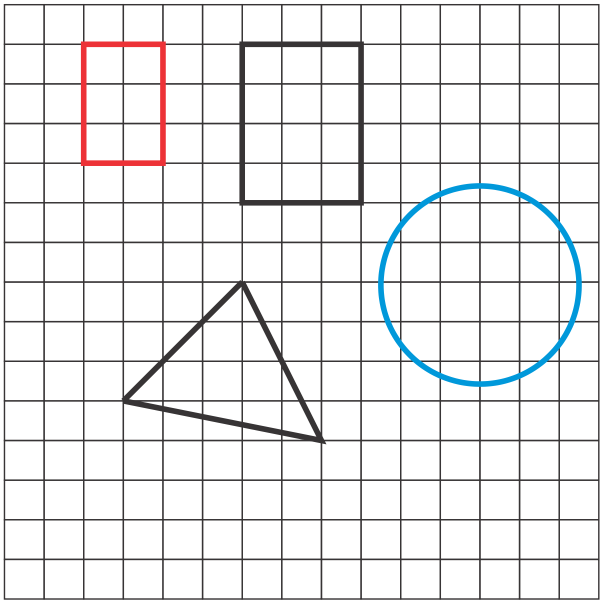
$(2 + x)(3 + a) =$

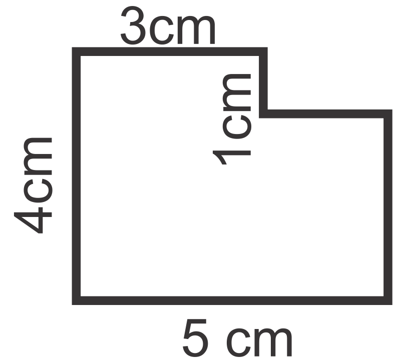
1. **Geometry.**

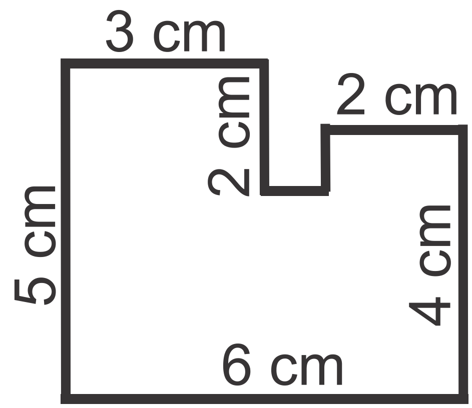


The area of a shape can be measured by comparing the shape to squares of a fixed size. The standard unit of area is the square meter (written as m^2), which is the area of a square whose sides are one meter long. A shape with an area of three square meters would have the same area as three such squares.






3cm
1cm
4cm
5 cm


3 cm
2 cm
2 cm
5 cm
4 cm
6 cm