Math 4. Equations 4.

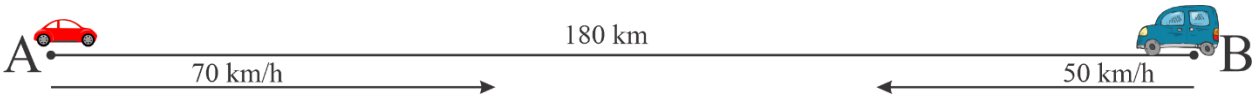
Speed, time, and distance.

The car moved for 3 hours at a speed of 70 km/h. How far did it travel? In this type of math problem, we typically assume that the car (or any other moving object) moves with constant speed along a straight line.

Let's denote the rate (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 rate (speed), time and distance, but you can use any other letters as well.

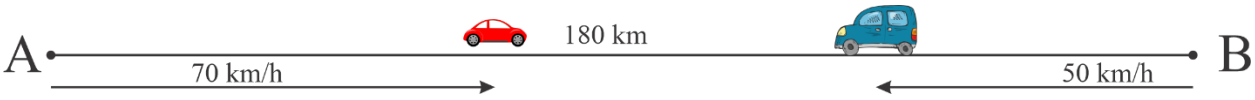
$$S = v \times t = vt$$

Example. *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 rate 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?*



In one hour the first car will cover 70 km, while the second car will cover 50 km.

The distance between the cars will be now



$180 - (70 + 50) = 60\ km.$

The speed of the decreasing of the distance is $70 + 50 = 120\ km\ per\ hour\ \left(\frac{km}{h}\right)$.

Time, needed to cover this distance is

$$t = \frac{S\ (distance)}{v(speed\ of\ decreasing)} = \frac{180}{120} = 1.5\ hour.$$

1. $1\frac{1}{2}$ km Julia walked in 20 minutes. What was her speed?

Represent your answer in

a. km/h

b. km/min

c. m/h

d. m/min

2. Make irregular fractions from regular:

(a) $1\frac{1}{13}$ (b) $3\frac{3}{5}$ (c) $11\frac{5}{8}$ (d) $4\frac{2}{3}$

3. A car travels x km in 2 hours and a bus travels x km in 3 hours. How much faster is a car compared to a bus?

4.A moving walkway at an airport moves at a pace of 0.55 meters per second. If Peter stands on the walkway as it moves, how long will it take to transport him 200 meters? If he walks on this walkway at a speed of 4 km/h, how long will it take him to get to the end of the 200-meter-long walkway?