Practice 2.3 (November 22)[1]

You have to fill this poll https://goo.gl/forms/taeaUUBDWUVVTVIi1 before Monday 21, 10 pm.

1. © Draw a plane model of the earth-moon system. Search the data you need and choose an appropiate scale.

2. A country with 6 million people consumes 120 million oil barrels in 5 months. What would be the spending during 4 months in a 5 million people country, if the expending per capita is the same?

3. © In the USA, car gasoline consumption is measured by the miles the car makes with one *galon* of gasoline. If an European car consumes 6 liters per 100 km, and a similar American model makes 38 miles per galon, which car is more efficient?

4. A car travels from Guadalajara to Barcelona, at constant speed. Next week, the trip is repeated, with a 20 % increase in the speed. How much decreases the duration of the trip?

5. Boyle-Mariotte law for gases tells that when temperature remains constant, pressure and volume of a gas are inversely proportional. What happens with the volume of a gas if the pressure decreases by 25 %?

6. We know that a tap with a given flow takes 4 to fill up a tank. If the flow decreases to 2/3 of the original, how much will it take to fill up the tank?

7. A medieval city has a supply of food for 6 months. Just before it is surrounded by the enemy, 1/4 of the population leaves the city and the people staying in town decide to reduce the daily portion per person by 1/3. How long will the original supply last?

8. A ship goes from Naples to Barcelona and the journey takes 30 days. Another ship goes from Barcelona to Naples and the journey takes 20 days. At which point of the trip will the ships find each other? (We assume that both ships use the same route, and that each ship moves at a constant speed).

9. With my usual driving conditions I can travel 800 km with a full deposit of gasoline. If gas consumption is increased by 40 %, how many kilometers will I be able to travel? (June 2015)

10. A textile factory has made 1600 coats in 20 days, working 8 hours per day. How much should the labour force be increased if they have an order of 2400 coats that have to be ready in 15 days, knowing that the workday is increased to 10 hours? (January 2014)

11. I have bought a coat with a 25 % discount. If I have paid 165 euros, which was the original price?

12. If the radius of a circle increases by 20 %, what happens with the lenght of the circle? And with the area of the disk?

13. In a cilindrical glass we increase the radius by 30 % and decrease the height also by 30 %. What is the percentage of change in the volume?

[1]The symbol © means that a problem can be solved with the help of a calculator.