UNIT 6. PROBLEMS.

A COLLECTION OF PROBLEMS

- ✓ **Here is a little collection about different kinds of problems. They are for extra practice and to revise this unit.**
- ✓ **Print these exercises. Cut and paste them in your notebook.**
- ✓ **We'll check them in our next lesson.**
- ✓ **Don't forget, you need to read them very well to understand them. It's very important to spend enough time if you wish to resolve problems successfully.**

1. PROBLEMS ABOUT PORCENTAGES.

Exercise 1. In the last local elections, if there were 2500 people in the census and the mayor received 1500 votes, what percentage of the population voted for the mayor? Solution: 60 %

Exercise 2. A sweater costs €45 and it is sold for €36 on the sales. What is the percentage reduced? Solution: 20%

Exercise 3. We take 2,000 liters of water from a deposit what was full, and the level goes down by 8%. What is the capacity of the deposit?
Solution: 25,000 l.

Exercise 4. In a town with 10,000 inhabitants, 15% are immigrants, and 40% of these immigrants are Ecuadorians.

a) How many Ecuadorians live in this town?

b) What percentage of the population is Ecuadorian?

2. PROBLEMS ABOUT WATCHES.

Exercise 5. It's 3 o'clock. What time between 3 and 4 o'clock is one hand on top of the other? Solution: 3 h 16 min 21 s.

Translation: Un reloj marca las 3 en punto. ¿A qué hora entre las 3 y las 4 se superpondrán las agujas?

Exercise 6. The time is exactly two o'clock. What time do the hands form a right angle for the first time? Solution: 2h 27 min 16 sec.

Traslation: Un reloj marca las 2 en punto. ¿A qué hora formarán sus agujas por primera vez un ángulo recto?

3. PROBLEMS ABOUT CARS.

Exercise 7. Town A is about 300 kilometers from town B. At 9 o'clock in the morning, a car at 90 km/h leaves town A towards town B, and another car leaves town B towards town A at 60 km/h.

When will they meet? Solution: in 2 hours.

What time will they meet? Solution: at 11:00.

Exercise 8. Town A is about 180 kilometers from town B. At 9 o'clock a car leaves from each town and they are driving in the same direction.The car that leaves Town A is driving at 90 km/h, and the other car is driving at 60 km/h.

When will they meet? Solution: in 6 hours.
What time will they meet? Solution: at 15:00.

4. PROBLEMS ABOUT TAPS.

Exercise 9. A tap takes 3 hours to fill a deposit and another tap takes 4 hours. How long do they take both together? Solution: 1 h 42 min 35 sec.

Exercise 10. A tap fills a deposit in 4 hours; a second tap takes 3 hours. If we take the plug out the deposit when it is full, it is empty in 6 hours. How long does it take us to fill the deposit if we open both taps and we take the plug out? Solution: 2 h 24 min.

Exercise 11. A tap A fills a deposit in 4 hours, and another tap B, in 6 hours. The deposit has got a plug and if we take it out, it will be empty in 2 hours. How long do we take to fill the deposit again if the plug is out? Note: interpret the result. Attention: the data aren't wrong.

5. PROBLEMS ABOUT MIXINGS.

Exercise 12. We mix 30 kg of second-class almonds which cost € 6 /kg, and 20 kg of first-class almonds whose price is € 8 / kilogram. What price must we charge if we want to earn € 0.80 per kilogram?

6. PROBLEMS ABOUT DISTRIBUTIONS.

Exercise 13. Mel, John and Julian play the lottery and they contribute €20, €30 and €40, respectively. If they win a prize of € 1,350, how much is there for each one?

Exercise 14. We have to share € 220 in an inverse proportion among the three fastest runners in a competition. Calculate the money for each one.