

# PROPORTIONALITY AND PERCENTAGES

# VOCABULARY

DIRECTLY PROPORTIONAL → Directamente proporcional

INVERSELY PROPORTIONAL → Inversamente proporcional

MAGNITUDE → Magnitud

UNIT → Unidad

CROSS-MULTIPLICATION → Multiplicación en cruz

LINE-MULTIPLICATION → Multiplicación en línea

PERCENTAGE → Porcentaje

# COMMON MAGNITUDES and UNITS

<b>MAGNITUDE</b>	<b>UNIT</b>
WEIGHT	gram, kilogram, ...
COST	euros, cent, ...
SPEED	kilometre/hour, metre/hour,...
TIME	moth, week, day, hour, minute, second,...
DISTANCE/LENGTH	metre, centimetre,...

# THEORY

## Problems of direct proportion

- 1) Put magnitudes and units
- 2) Put dates
- 3) Put D
- 4) Do cross-multiplication

## Inversely proportional problems

- 1) Put magnitudes and units
- 2) Put dates
- 3) Put I
- 4) Do line-multiplication

## Problems of percentages

- 1) Put magnitudes and units
- 2) Put dates
- 3) Do cross-multiplication

## EXERCISE 1

Say if the quantities are directly proportional, inversely proportional or non-proportional:

	D	I	X
1. The volume of an amount of oil and its weight			
2. The price of apples and the number of kilos I can buy with the money I have			
3. The price of cinema tickets and the time the film lasts			
4. The distance travelled by a car and the number of revolutions of its wheel			
5. A person's age and height			
6. The speed of a car and the time it takes to travel a certain distance.			
7. The weight of a fish and its cost.			
8. The speed of a car and the time it takes to travel			

## EXERCISE 1

Say if the quantities are directly proportional, inversely proportional or non-proportional:

	D	I	X
1. The volume of an amount of oil and its weight	X		
2. The price of apples and the number of kilos I can buy with the money I have		X	
3. The price of cinema tickets and the time the film lasts			X
4. The distance travelled by a car and the number of revolutions of its wheel	X		
5. A person's age and height			X
6. The speed of a car and the time it takes to travel a certain distance.		X	
7. The weight of a fish and its cost.	X		
8. The speed of a car and the time it takes to travel		X	

## Exercise 2

I paid 9.2€ for four pieces of chocolate. How much do I have to pay if I buy three pieces?

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**Solution: 6.9 €**



## Exercise 3

A hiker, walking at 4 km/h, travels a certain distance in 30 minutes. How long will it take a cyclist to cycle the same distance at 15 km/h?

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**Solution: 8 minutes**

## Exercise 4

There are 30 students in my class. 40% stay and eat in the school cafeteria. How many eat in the school?

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**Solution: 12 students**

## Exercise 5

If 100 g of smoked salmon costs 2,4€, how much will  
260 g cost?

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**Solution: 6.24€**

## Exercise 6

A clothing store announces a discount of 15% on all their clothes. How much is a dress that usually cost 140 €?

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**Solution: 119€**



## Exercise 7

A farmer has enough food in his barn to feed 25 cows for 18 days. How long can the farmer feed 45 cows with the same food?

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**Solution: 10 days**

## Exercise 8

On Monday the cost of a plane ticket was 140€m but on Wednesday it was 15% more expensive. What was the cost of the plane ticket on Wednesday?

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**Solution: 161€**

## Exercise 9

7000 people in a city of 20000 inhabitants live in rented houses. What percentage is it?

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**Solution: 35%**

## Exercise 10

For every 20€ you spend on shopping, you receive a three euros discount. How many discount vouchers will you get if you spend 140€?

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For every 20€ you spend on shopping, you receive a three euros discount. How many discount vouchers will you get if you spend 140€?

**Solution: 21€**