

# WORKSHEET

**TOPIC:** Energy balance & weight control

**CLASS:** .....

**NAME:** .....



## Task 1

**A.** After visiting the following websites, answer the following questions.

<https://www.youtube.com/watch?v=VEQaH4LruUo>

<https://www.youtube.com/watch?v=VI83xlubuf8>

<https://www.youtube.com/watch?v=cKRf53I737E>

<https://www.youtube.com/watch?v=JGdrLpdriJE>

**A1.** Explain the importance of energy in the body, stating the reasons why the human body needs it.

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**A2.** The bio-energy released into the body during digestion is converted into other forms of energy. Record these forms of energy and for each one separately, state its main function.

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**A3.** Do all foods provide the same amount of energy? Justify your answer.

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**A4.** What are the nutrients of calorific value and those of no calorific value? Indicate the calorific value (Kcal or Kj) they provide to the body.

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**A5.** The alcohol contained in various beverages is a chemical compound, a product of carbohydrate fermentation. It is considered a source of energy, since it is broken down in the body, giving 7 calories per gram. What do we mean when we say that the calories from alcohol are "empty"?

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## Task 2

**A. Calculate the calories of the following foods, based on the calorific value of their nutrients (information can be obtained from the 4th slide in the PPT).**

<b>Milk (100ml):</b>	
<b>Energy and nutrients</b>	<b>Per serving (100 ml)</b>
<b>Calories (Kcal/KJ)</b>	..... Kcal ..... KJ
<b>Fat</b> <b>(of which) saturated</b>	<b>1,5 g</b> <b>1 g</b>
<b>Carbohydrates</b> <b>(of which) sugars</b>	<b>4,8 g</b> <b>4,8 g</b>
<b>Protein</b>	<b>3,5 g</b>
<b>Salt</b>	<b>0,11 g</b>
<b>Calcium</b>	<b>130 mg</b>
<b>Vitamin B12</b>	<b>0.50 mg</b>

**Breakfast cereals (1 small bowl 30 gr):**



Energy and nutrients	Per serving (30 gr)
Calories (Kcal/KJ)	..... Kcal
Fat	0,42 g
(of which) saturated	0,15 g
Carbohydrates	22,8 g
(of which) sugars	3,54 g
Protein	2,76 g
Salt	0,342 g
Fibre	2,25 g

**Croissant with praline filling (1 piece / 80gr):**



Energy and nutrients	Per serving (80 gr)
Calories (Kcal/KJ)	..... Kcal
Fat (of which) saturated	22,4 g 11,2 g
Carbohydrates (of which) sugars	33,6 g 15,2 g
Protein	5,6 g
Salt	0,4 g



**Crisps (100 gr):**



<b>Energy and nutrients</b>	<b>Per serving (100 gr)</b>
<b>Calories (Kcal/KJ)</b>	..... Kcal
<b>Fat</b> <b>(of which) saturated</b>	<b>34,1 g</b> <b>4,8 g</b>
<b>Carbohydrates</b> <b>(of which) sugars</b>	<b>48,3 g</b> <b>0,6 g</b>
<b>Protein</b>	<b>6,3 g</b>
<b>Salt</b>	<b>1,7 g</b>

**Fresh-squeezed orange juice (100 ml):**



<b>Energy and nutrients</b>	<b>Per serving (100 ml)</b>
<b>Calories (Kcal/KJ)</b>	..... Kcal
<b>Fat</b> <b>(of which) saturated</b>	<b>0 g</b> <b>0 g</b>
<b>Carbohydrates</b> <b>(of which) sugars</b>	<b>11,3 g</b> <b>11,3 g</b>
<b>Protein</b>	<b>0,2 g</b>
<b>Salt</b>	<b>0 g</b>
<b>Vitamin C</b>	<b>30 mg</b>

B. Compare the calorific value of the foods above and record the main conclusions.

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**Task 3**

A. Yesterday, Maria (13 years old) consumed the foods listed in the table below.

After visiting the following web pages, fill in the blanks in the table below.

<https://www.nutritionix.com/>

<https://www.nutritionvalue.org/nutritioncalculator.php>

<https://explorefood.foodafactoflife.org.uk/Calculator/Recipe>

Meals	Foods	Calories (kcal)
Breakfast	A glass of fresh-squeezed orange juice	;
	Ham and cheese puff pastry pie	650
Snack	Two green apples	;
Lunch	Two pieces (triangle) of pizza special	760
	A glass of chocolate milkshake	;
Afternoon snack	A chocolate croissant (about 80 gr)	;
Dinner	Cheese omelette	430
	A slice of white bread	70
	A piece of cheesecake	;
<b>Total calories:</b>		

A1. Evaluate Maria's diet (nutritional value, nutrients, etc.).

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**A2.** If Maria often chooses to eat this kind of food in her weekly diet, what do you think will happen to her? Justify your answer.

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**A3.** After visiting the website below, suggest various tasty healthy options that could replace the foods that you consider unhealthy.

<https://www.youtube.com/watch?v=0g1uOi8K0ml>

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**Task 4**

**A.** What do we mean by the term "basal metabolism"?

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**B.** Explain the meaning of the following sentences:

**B1.** "There is no way I can lose weight, because I have a low metabolism."

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**B2.** "I do not gain weight easily while I can eat anything, due to my high metabolism."

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**C.** Mention three factors that affect the function of basal metabolism and explain how they affect it.

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**D.** The following table presents various views on metabolism. Tick whether you agree or disagree with each point of view and justify your answer.

View	Agree or disagree	Justification
Strict diets increase metabolism.		
Heredity affects metabolism only to some extent.		
Metabolism slows down over the years.		
Dietary changes can boost metabolism.		
Cutting down on meals, I will increase my metabolism.		
Obese people have a low metabolism, while thin people have a higher one.		
In Greece - which has a warm climate - we burn more calories than e.g. in Finland.		
A slow metabolism is always slow and cannot change.		

**E.** Calculate your own basal metabolism, either using the basic formula for calculating basal metabolism (13th slide in ppt), or by following the link below:

<https://www.cdc.gov/healthyweight/bmi/calculator.html>

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F. Once you have calculated your basal metabolism, **calculate the total daily energy needs** taking into account: a) **your physical activity** (information can be obtained from the 19th slide in the PPT or by the following application:

<http://www.weightloss.com.au/weight-loss/weight-loss-tools/energy-needs-calculator.html>), but also b) **the thermic effect of foods**.

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### Task 5

A. "Energy balance: the equation for constant weight". Do you agree or disagree with this statement? Justify your answer, after watching the following video.

<https://www.youtube.com/watch?v=yqt8aaeHB5k>

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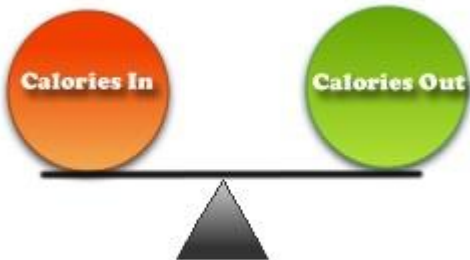
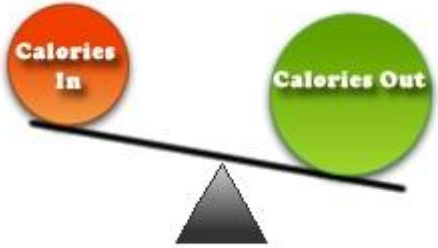

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B. The table below presents three cases of energy balance. **For each case, analyse the effect of energy balance on body weight, by giving examples.**

Energy balance	Body weight
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C.. The following table presents 5 different cases of human behaviour, in terms of their dietary choices and their lifestyle (eg physical exercise, etc.). Fill in a) the column with the type of energy balance for each case and b) the column related to the corresponding advice you would give for each case. You can also visit the following websites to find informational material.

<https://www.nhlbi.nih.gov/health/educational/wecan/downloads/calreqtips.pdf>

<https://www.healthychildren.org/English/healthy-living/nutrition/Pages/Energy-In-Recommended-Food-Drink-Amounts-for-Children.aspx>

Lifestyle (dietary choices, exercise, etc.)	Type of energy balance	Advice
Katerina, 16 years old, consumes 3200 kcal a day. He watches 6 hours of TV every day and does not exercise at all.		
Costas, 13 years old, does four hours of swimming training every day. He consumes 1800 kcal a day and often does not have time to eat breakfast.		
Eleni, 17 years old, consumes 2400 kcal a day. She goes to the gym every day for an hour and goes to bed without dinner every night.		
Nikos, 35 years old, consumes 3500 kcal a day. He always drives to work and works 12 hours a day in front of a computer screen. He hates gymnastics.		
Ioanna, 20 years old, consumes 2000 kcal a day. She eats 5 meals a day and walks daily for an hour.		

**D. Design a poster with tips for a rational diet in order to achieve energy balance.**

