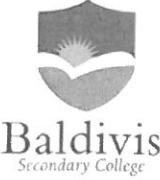


Name:	Answers		Date:	
Class:				
	Year 11 Essential Mathematics 2018 Mini-Test 1.5 Topic – Units of Energy		<div style="border: 1px solid black; padding: 5px; text-align: right;"> $\frac{12}{13}$ Weighting: 1% </div>	
	Total Time:	15 minutes		
Weighting:	1%			
Equipment:	To be provided by the student: Pen, pencil, ruler, 1 double sided A4 page of notes, scientific calculator			

Full working out must be shown to get full marks. Attempt all questions.

Question 1	4 marks
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Convert the following to kilojoules.

a) i) 6070 joules	ii) 250 calories	iii) 867 joules	iv) 5.8 Wh
$6070 \div 1000$	250×4.184	$867 \div 1000$	$5.8 \times 3600 \times 1000$
$= 6.07 \text{ kJ}$	$= 1046 \text{ kJ}$	$= 0.867 \text{ kJ}$	$= 20\,880\,000 \text{ J}$
			$= 20\,880 \text{ kJ}$

(1 mark each correct answer)

Question 2	1 mark
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An air conditioner has a power rating of 3.2 kW. Write this rating in watts.

$$3.2 \text{ kW} \times 1000 = 3200 \text{ W}$$

(1 mark for correct answer)

Question 3	1 2 marks
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During swimming training, Michael swam for 90 minutes burning off 3900 kJ of energy.

How many calories did he burn?

$$3900 \div 4.184 = 932 \text{ Cal}$$

(1 mark for correct answer)



Question 4

3 marks

Jayne has a recommended daily intake of 8700 kJ. She eats 60g of a fruit and nut trail mix with the following nutritional information.

Nutrition Information

Servings per package: 8

Serving size: 30g

Nutrition	Avg Qty Per Serving	Avg Qty Per 100g
Energy	648kJ	2160kJ
Protein	5.1g	16.9g
Fat, total	10.7g	35.6g
– saturated	1.4g	4.8g
Carbohydrate	8.9g	29.6g
– sugars	6.9g	23.0g
Sodium	9mg	29mg

- a) How many kilojoules of energy does Jayne consume?

$$648 \times 2 \quad \text{or} \quad \frac{60}{100} \times 2160$$

$$= 1296 \text{ kJ} \quad \quad \quad = 1296 \text{ kJ}$$

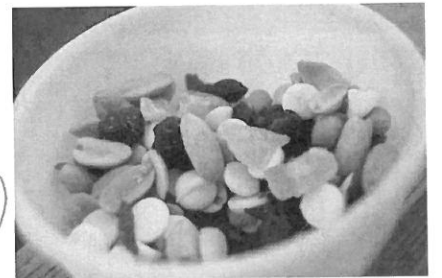
- b) What percentage of her recommended daily intake is this?

$$\frac{1296}{8700} \times 100 = 14.9\%$$

$$\text{or } 15\%$$

(1 mark for correct working + 1 mark for answer)

(1 mark for correct answer rounded to 15% is okay)



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Question 5

3 marks

- a) Doug's 60 cm television has a power rating of 150 W, while Jeremy's 96 cm television is rated at 320 W. They both use their televisions for 1 hour every day. How much less energy will Doug's television use per year?

$$320 - 150 = 170 \text{ W difference}$$

$$170 \times 1 \text{ hr} \times 365 = 62050 \text{ Wh}$$

$$= 62.05 \text{ kWh}$$

(1 mark for power difference + 1 mark for kWh)

- b) What is the difference in cost in dollars if the cost of energy is 24c/kWh?

$$0.24 \times 62.05 = \$14.89$$

(1 mark for \$ answer
half marks for correct answer in ¢)