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| 1EGC_Black | Student Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_    **Eastern Goldfields College**  Mathematics Essentials 2016  Application 31 |
|  | Time allowed: 60 minutes Total Marks: 40 marks (10%) |

NB Minus 1 incorrect rounding or missing/incorrect units

**DAILY ENERGY INPUT**

**Calculating BMI**

1. Calculate the BMI for the following people, rounding to the nearest whole number. Show all your working.   
 (8 marks: 4, 4)

* 1. Adam is a 17 year old male, 178 cm, weighing 99 kg.

(Must have this line to get full marks) If 99 ÷ 1782 then 1 mark and no follow through

= 31.24605 (Not necessary to show this)

= 31

* 1. Alison is a 17 year old female, 172 cm tall, weighing 58 kg.

(As above)

= 19.605

= 20

c. Using the diagram above, determine what weight range each of these people are in. (2 marks: 1, 1)

* 1. Adam’s weight range = overweight
  2. Alison’s weight range = normal weight

**Calculating Calories**

**Food Intake**

1. In order to get into a healthy weight range, how many calories per day should each person have? (2 marks: 1, 1)
   1. Adam 2750-500 = 2250
   2. Alison 2100
2. Adam and Alison were given the following 2 options for the day. Calculate the number of calories for each option. (9 marks: 3, 3, 3)
3. What is the total number of calories for Option 1? Show working.

561 + 760 + (1640 x 0.5) = 2141 cal addition ✓ 820 ✓ total ✓

**OPTION 2**

b) What is the total number of calories for Option 2? Show your working

(2 x 100) + (1.5 x 130) + 270 + 640 + 38 + 91 + 258 + 230 + 333 = 2255 cal

c) Which would be the better option and give 2 reasons why?

Option 2.

* Greater variety of food for similar caloric value.
* More foods eaten/regular meals
* Healthier options

\*\* any reasonable response

**Exercise**

1. Calculate the number of calories burnt for each of the following exercises, rounding to 1 decimal place, where necessary. Show your working. (6 marks)

|  |  |  |  |
| --- | --- | --- | --- |
| **Exercise Activity** | **Duration** | **Multiplier** | **Calories Burnt / Exercise** |
| Vacuuming | ½ hour | 4.0 | 2.0 |
| Jogging | 20 min | 8.6 | 2.8667 = 2.9 |
| Rugby Training | 1 hour | 43.8 | 43.8 |
| Walking Fast | ¾ hour | 4.6 | 3.45 = 3.5 |
| Bike ride – moderate pace | 1 hour | 8.0 | 8.0 |

1 mark – multiplier column correct (right or wrong)

1 mark – each correct answer for calories burnt

1. Peter is a 17 year old male who is 1.76 m tall and weighs 102 kg. (13 marks: 2, 1, 2, 1, 2, 1, 3, 1)  
   1. Calculate Peter’s BMI, rounding to the nearest whole. Show your working.

= 32.9287 1 mark working

= 33 1 mark – rounding

* 1. Peter wants to lose weight, what is Peter’s recommended food intake for a day?

2750 – 500 = 2250

* 1. If Peter eats in one day, the same food as Option 2 (question 4), except he goes to Pizza Hut for dinner instead. So, instead of steak and vegetables, he eats 4 slices of Supreme pizza. Calculate Peter’s food intake for the day.

(2 x 100) + (1.5 x 130) + 270 + 640 + 38 + 91 + 333 + 1640 = 3407 cal

Q3b answer (follow through error) – 258 – 230 = 1767 cal (or follow through)

1767 + 1640 (pizza)

3407 cal (or follow through error) ✓

* 1. What is the difference between what Peter has eaten to his recommended food intake for the day?

3407 – 2250 = 1157 cal ✓ Follow through c) - d)

* 1. On this day, Peter did a 40 minute jog in the morning and a 1 hour rugby training in the evening, how many calories did Peter burn through exercise for the day?

Jog = 0.6667 x 8.6 = 5.7333 = 5.7 ✓

Rugby = 1 x 43.8 = 43.8

TOTAL = 43.8 + 5.7 = 49.5 cal ✓

* 1. Calculate Peter’s total energy input for the day.

Total energy input = Food intake – exercise Follow through c) - e)

= 3407 – 49.5

= 3357.5 cal ✓

* 1. Peter’s goal is to lose weight, was this a successful day for Peter? Explain why/why not?  
       
     No. His food intake was above is recommended intake. Then his total energy input was also above the recommended as he did not exercise enough/use enough calories through the day.

No ✓ Energy input is more than daily cal ✓ He will gain weight/he is over by approx. 1107cals✓

Or follow though from f)

* 1. What would happen to Peter if he continued with this outcome every day?

He would continue to gain weight and continue to be overweight. ✓

Or follow though from g)