Mathematics Foundation

Practical Application

Camping Gear

Year 12 Unit 3

Brief Description:

This practical application allows students to demonstrate their understanding, problem solving and reasoning in the context of planning a budget for a camping trip. Students will need to use the mathematical thinking process throughout this assessment.\*

Syllabus Dot Points:

3.1.1 plan to solve an everyday problem involving whole numbers and/or money…

3.1.2 understand and use the relationships between the four operations to assist in calculations

3.1.3 choose and use the appropriate operation to efficiently solve a problem on a calculator or spreadsheet

3.1.5 determine the order of operations when solving problems involving multistep calculations

3.1.9 communicate solutions and processes used to reach solutions (oral and written), using language and symbols consistent with the context

Recommended Time:

1 - 2 lessons

Further Instructions:

A possible list of camping items has been included. Alternatively, students can conduct some research online themselves at <https://www.tentworld.com.au/>

In addition, you may want to encourage your students to use a spreadsheet program to complete their costs.

\*Students should be explicitly taught the Mathematical Thinking Process in conjunction with learning of course content, not just in assessment form. Copies of MAWA classroom posters are available at <https://drive.google.com/file/d/1c3GfM1o4cSBrzyWaFFIYlAmPU3-KS-rx/view>

Camping Gear

You and three friends have decided to go on a four-night camping trip in the school holidays. None of you have any camping equipment and need to know how much to save to be able to afford to go. You have done some research and have found an online store that has all the essentials you need. You have all agreed to evenly split the total bill.

Items that MUST be included:

* Campsite fee ($32 per night)
* Petrol ($140 total)
* Tent/s to sleep a total of 4 people
* Sleeping bags (one each)

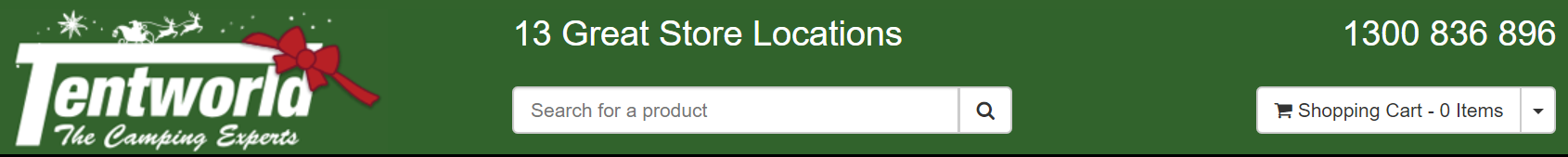
Optional extras:

* Mattress
* Light/torch
* Spare tent pegs
* Insect protection
* Chairs
* Table

Further information:

* You currently work three hours per week at the local supermarket and get paid $17.50 an hour. You ideally don’t want to have to use more than half your pay per week to save for the trip.
* There is 8 weeks before you plan to go.

How much do you have to each save per week to make sure your camping trip is a success? Explain in detail how you arrived at this result.



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Sample Response

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| **Interpret task and key information** | |
| You and three friends have decided to go on a four-night camping trip on the school holidays. None of you have any camping equipment and need to know how much to save to be able to afford to go. You have done some research and have found an online store that has all the essentials you need. You have all agreed to evenly split the total bill.  Items that MUST be included:   * Campsite fee ($32 per night) * Petrol ($140 total) * Tent/s to sleep a total of 4 people * Sleeping bags (one each)   Optional extras:   * Mattress * Light/torch * Spare tent pegs * Insect protection * Chairs * Table   Further information:   * You currently work three hours per week at the local supermarket and get paid $17.50 an hour. You ideally don’t want to have to use more than half your pay per week to save for the trip. * There is 8 weeks before you plan to go.   How much do you have to each save per week to make sure your camping trip is a success?  For this task, I need to work out the cost of buying equipment for camping for myself and three friends. I am going to have to go online and make a list of items. I will then have to work out how much we all need to pay. Another thing I will have to look at is how much money I earn per week and not go over half that amount. I think I might use a table to keep track of the money for each item. | |
| **Specific behaviours** | **Marks** |
| Highlights important information | 1 |
| Restated problem in their own words | 1 |
| Identifies that there is a limit on money to spend | 1 |
| **Total** | **/3** |

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| **Mathematical modelling** | |
| The first thing I am going to do is work out how much money I can save per week so I have some sort of idea how much I can buy.  Pay = 3 x 17.50  = $52.50  Half my pay = 52.20 ÷ 2 = 26.25  Eight weeks of saving = 8 x 26.25  = $210  This means that if I spend $210 and all my friends spend the same amount, we can have a total of $840.  The things I have to buy are:   * Campsite fee ($32 per night) * Petrol ($140 total) * Tent/s to sleep a total of 4 people * Sleeping bags (one each)   I will then try and add some things that will make our camping trip more comfortable.   |  |  |  | | --- | --- | --- | | Item | | Cost | | Campsite for 4 nights  4 x 32 = 128 |  | 128 | | Petrol |  | 140 | | Tent |  | 249.90 | | Sleeping bags  4 x 29.99 = 119.96 |  | 119.96 | | Air mattresses  4 x 24.99 = 99.96 |  | 99.96 | | Camping chairs  4 x 19.95 = 79.80 |  | 79.80 | | Lantern |  | 9.90 | | Insect repellent |  | 10.99 | | Peg hammer |  | 19.99 | | TOTAL | | $858.50 |   I don’t have enough for all of these items so I will have to remove something. I think I will take off the chairs because we can sit on a picnic blanket instead. I found one online for $24.99.  This means our new total is 858.50 – 79.80 + 24.99 =$803.69    To work out how much each person must pay I need to divide my total by 4.  803.69 ÷ 4 = $200.9225, which means about $200.92 each, or $201, round to nearest dollar. | |
| **Specific behaviours** | **Marks** |
| Calculates total pay earned | 1 |
| Calculates value of savings per week | 1 |
| Calculates the 8 weeks savings | 1 |
| States the total money available for all 4 people | 1 |
| Calculates cost of four nights accommodation | 1 |
| Calculates price of four sleeping bags | 1 |
| Includes all minimum requirements in costings | 1 |
| Calculates an overall total that is within spending budget | 1 |
| Calculates the amount each person must pay | 1 |
| Work is organised is easy to understand | 1 |
| **Total** | **/10** |

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| **Communicate** | |
| So overall, each person must pay $201 to cover all costs. I chose the 6 person tent so we could have a little more space when sleeping and added some comfort by include mattresses, a lantern, some insect repellent, a picnic blanket. I also bought a hammer to make it easier to put in the tent pegs. We have some money left over from our budget that we can use on some food instead, which will help make our camping trip a success. | |
| **Specific behaviours** | **Marks** |
| Relates quote back to original information | 1 |
| Includes total expense in conclusion | 1 |
| States the required cost in dollars | 1 |
| Writes at least two sentences. | 1 |
| **Total** | **/4** |

**Marking Checklist**

MTP Checklist Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **Interpret the task and key information**   * has identified key information * can rewrite problem in their own words * has identified any information that is not needed, or is missing * asked for clarification |
| **Choose the mathematics**   * identified all the mathematics required * chose an effective strategy: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Apply existing mathematical knowledge**   * followed through with their plan * showed all working (even when a mistake was made/changed their mind) * appropriate use of units applied * worked independently |
| **Interpret results**   * solutions answer the original problem * has identified what worked and what did not * has checked work by using a different method |
| **Communicate**   * work is organised allowing for partner/teacher to understand * can explain their work when asked * has written a concluding statement linking back to the original problem |
| **COMMENT:** |