|  |
| --- |
| **Synopsis of high-quality task:**  Students will compare the value of season passes from 2 different ski areas. They will be given information about a family that wishes to purchase the passes and will justify the selection of the season pass using math calculations and reasoning.  **Anticipated student time spent on task:** 100 minutes  **Student task structure(s):** Partner work |
| [**Math Content Standards and Practices:**](http://www.doe.mass.edu/frameworks/math/2017-06.pdf)  **5.NBT.B.** Perform operations with multi-digit whole numbers and with decimals to hundredths.  **5.NBT.B.7** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction and between multiplication and division; relate the strategy to a written method and explain the reasoning used.  **SMP.2** Reason abstractly and quantitatively  **SMP.3** Construct viable arguments and critique the reasoning of others.  **SMP.4** Model with mathematics. |
| **Prior Knowledge:**  **4.NBT.B.** Use place value understanding and properties of operations to perform multi-digit arithmetic on whole numbers less than or equal to 1,000,000. |
| **Connections to the real-world:**  The choices are based on ski areas in Massachusetts that may be familiar to students. Even if students do not ski, the problem invites students to make price comparisons that may apply in various situations. |
| **Mastery Goals:**  Learning Objectives:  Students will be able to determine which ski pass option is most affordable by performing operations with decimals.  Students will be able to apply the mathematics they know to solve problems arising in everyday life.  Language Objectives:  Students will be able to write an explanation of their choice of most affordable ski passes.  Students will be able to justify their conclusions and communicate them to others. |
| **Teacher instructions**  **Instructional Tips/Strategies/Suggestions:**  **Day 1:** Introduce the task and assign partners. This task would be best with heterogeneous partners that may bring different strengths to the work. Students should be able to analyze the different options and select the type of passes for each family member.  **Day 2**: Complete price calculations and comparison of prices by ski area.  Write a paragraph to support their final answer.  Work on extension problem individually if time permits. |
| **Instructional Materials:**  Information for task: Family member description and ski area prices  Student Question Handout: Version 1 has a more open-ended task layout. Version 2 has students solve the same problem, but provides more scaffolding.  Scoring Rubric:   |  |  |  |  | | --- | --- | --- | --- | | Ski Pass Decisions  *Scoring Rubric* | On Target  (3)  Constructs and communicates a complete response | Almost There  (2)  Constructs and communicates a partial response | Not Yet  (1)  Does not construct  and communicate a relevant response | | Accuracy  -Use math skills | The entire problem is solved accurately | Part of the problem is solved accurately | The problem is not solved accurately | | Modeling/Representing  -Show your work/strategy (diagram, drawing, chart, table, graph, equation, etc.) | \*Shows appropriate work/strategy clearly and completely | \*Shows some appropriate work/strategy, but parts are missing or incorrect | \*Does not show appropriate work/strategy | | Reasoning  -Explain / justify your strategy  -Tell **WHY,** not how  -Put solution in context (use sentence frame) | \*Explanation is complete and organized  → Uses math vocabulary correctly  → Puts answer in a sentence frame. | \*Explanation is missing parts or is not organized | \*Explanation is not included or is incorrect |   Comments: |
| **Accessibility and Supports:**  **Two versions of the task are provided: Version 1 with no scaffolding; Version 2 with scaffolding.**  Potential sentence starters:  **The family should choose \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ski pass because\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**  **\_\_\_\_\_(family member)\_\_\_\_\_\_ should buy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ski pass because\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.** |

Student Worksheet

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Ski Season Decisions**

The Slopester family wants to purchase a ski pass for each family member for the 2018-2019 ski season. They are trying to decide between purchasing passes to Ski Ward or Wachusett Mountain. They will purchase passes to only one ski area for each member of the family. See the other handout for prices.

Read carefully through the following information about the family and the ski pass options. You will be asked to choose the ski passes that the family should purchase for the upcoming ski season.

**Information about the Slopester Family:**

|  |
| --- |
| * Mr. Slopester likes to ski, but he has a long commute to Boston for work. He only has time to ski on the weekends. |
| * Mrs. Slopester works at Shrewsbury High School. She usually skis on the weekend, but plans to take her two younger kids to ski no more than twice a month after school during the week. |
| * Ethan Slopester is 17 years old. He plans to ski with some of his friends at least one night a week as well as on the weekends. |
| * Julia Slopester is 11 years old. She will usually ski on the weekends, but will also ski if her mom takes her after school during the week. |
| * Mac Slopester is 5 years old. He will usually ski on the weekends, but will also ski if his mom takes him after school during the week. |
| * The Slopesters live 5 miles from Ski Ward. |
| * The Slopesters live 22 miles from Wachusett Mountain. |

**SKI WARD Season Pass Prices:**

|  |  |
| --- | --- |
| UNLIMITED SEASON PASSES | |
| 1st Family Member | $579.30 |
| 2nd Family Member | $551.25 |
| 3rd Family Member | $495.20 |
| 4th Family Member | $457.15 |
| 5th Family Member | $425.10 |
| Ages 5 and under | $179.50 |
| WEEKDAY SEASON PASSES (Monday-Friday) $325.50 per person | |

**WACHUSETT MOUNTAIN Season Pass Prices Per Person:**

|  |  |
| --- | --- |
| Gold Season Pass (unlimited 7 days/7 nights per week) | $679.30 |
| Silver Season Pass   * Weekdays (Mon-Fri except holidays and school vacation weeks) * All nights (Monday-Sunday) * Weekends before 12/22 and after 2/24. | $479.40 |
| Bronze Season Pass   * Weekdays (Mon-Fri except holidays and school vacation weeks) * All nights (Monday-Sunday) | $389.20 |
| Junior Bronze Season Pass   * Weekdays (Mon-Fri except holidays and school vacation weeks) * All nights (Monday-Sunday) * Ages 6-12 | $279.25 |
| Weekender Pass  Valid all weekends/holidays/school vacation weeks (8am-4pm) | $499.50 |
| **Children 5 and under ski free with an adult with a Season Pass.** | |

**STUDENT QUESTIONS HANDOUT Version 1 Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Be sure to answer each of the following questions completely and show all necessary math to support your answers.

1. Which ski area and which pass do you recommend that the Slopester family purchase as the most affordable option for each member of the family? Explain your reasoning in detail. (You must pick one ski area for the entire family, but each family member may purchase a different type of pass).

2) What is the total cost of the season passes that you selected in question 1? Show all work.

3) How much more would it cost the family to buy season passes at the ski area that you did NOT select? Show all work to support your answer.

The costs of Day Passes (skiing for one day) are as follows:

Ski Ward Day Pass: $49.50 for everyone, except children 5 and under are $10.25.

Wachusett Mountain Day Pass: Ages 13 and up: $70.50; Age 6-12: $57.50 and Ages 5 and under: $17.00

4) How many days would the Slopester family need to go skiing at Ski Ward to make it cheaper to purchase a Season Pass rather than Day Passes for each day? Show all work to support your answer.

5) How many days would the Slopester family need to go skiing at Wachusett Mountain to make it cheaper to purchase the Season Pass rather than the Day Passes for each day? Show all work to support your answer.

Extension:

Go back and answer the same questions about your own family. Use a separate sheet of paper. Include any people that usually participate in family activities with you. (Don’t worry if you or your family members don’t actually ski!)

**STUDENT QUESTIONS HANDOUT Version 2**

Be sure to answer each of the following questions completely and show all necessary math to support your answers.

1. Complete the following table of prices for each family member for Ski Ward.

a)

|  |  |
| --- | --- |
| Family member | Cost |
| Mr. Slopester |  |
| Ms. Slopester |  |
| Ethan |  |
| Julia |  |
| Mac |  |

b) Find the total cost of Ski Ward passes for the Slopester family. Show your work.

2)

* 1. Complete the following table of prices for each family member for Wachusett Mountain.

|  |  |  |
| --- | --- | --- |
| Family Member | Type of Pass | Cost |
| Mr. Slopester |  |  |
| Ms. Slopester |  |  |
| Ethan |  |  |
| Julia |  |  |
| Mac |  |  |

b) Explain why you picked the particular type of Wachusett pass for each person.

c) Find the total cost of the Wachusett passes for the Slopester family. Show all of your work.

3) What is the difference in cost for the family to buy season passes at one ski area versus the other? Which ski area is the most affordable for the family? Show all work to support your answer.

4) Where do you think the family should purchase their season ski passes? Explain the reasoning for your recommendation

The costs of Day Passes (skiing for one day) are as follows:

Ski Ward Day Pass: $49.50 for everyone, except children 5 and under are $10.25.

Wachusett Mountain Day Pass: Ages 13 and up: $70.50; Age 6-12: $57.50 and Ages 5 and under: $17.00

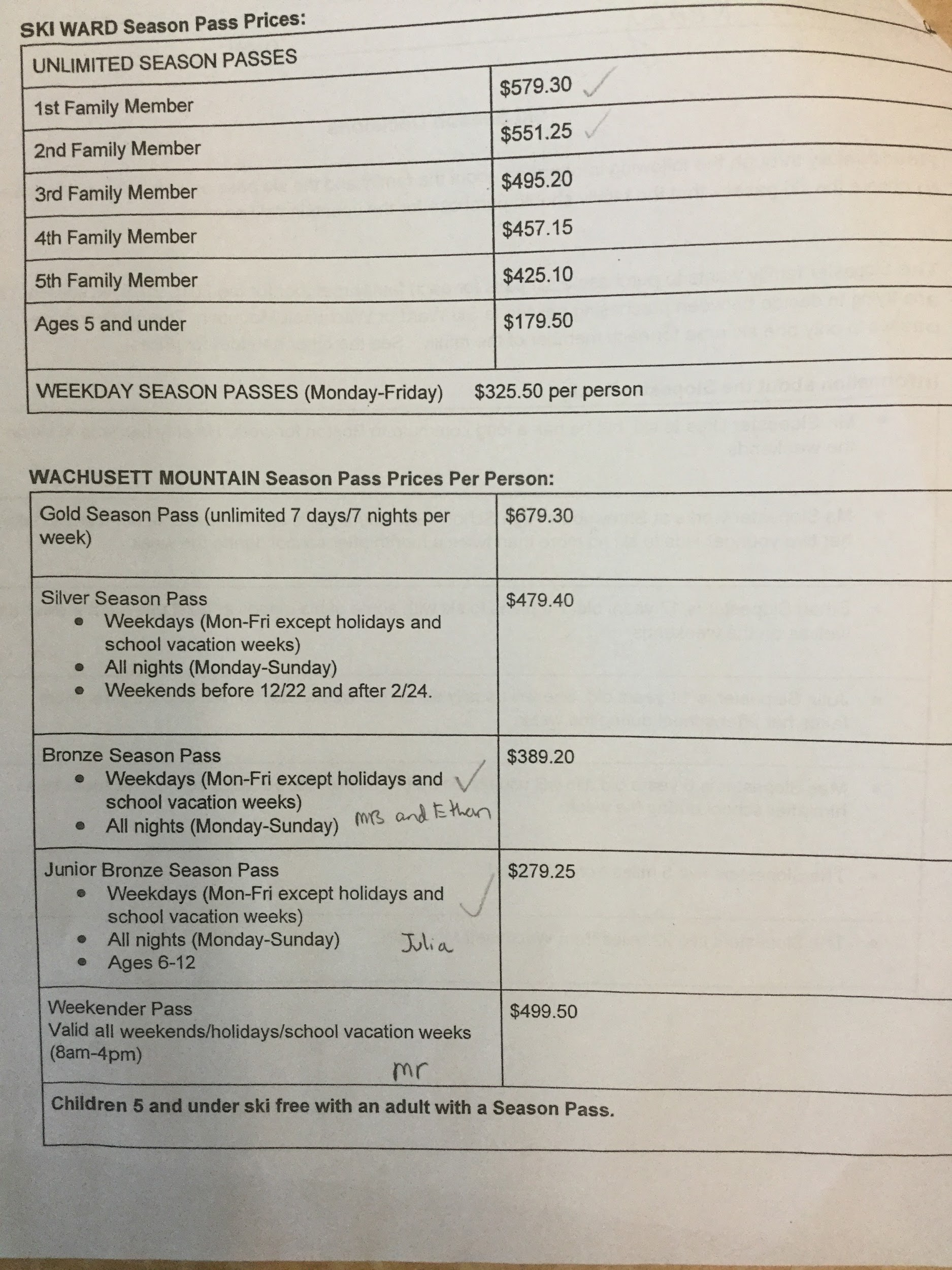
5) How many days would the Slopester family need to go skiing at Ski Ward to make it cheaper to purchase a Season Pass rather than Day Passes for each day? Show all work to support your answer.

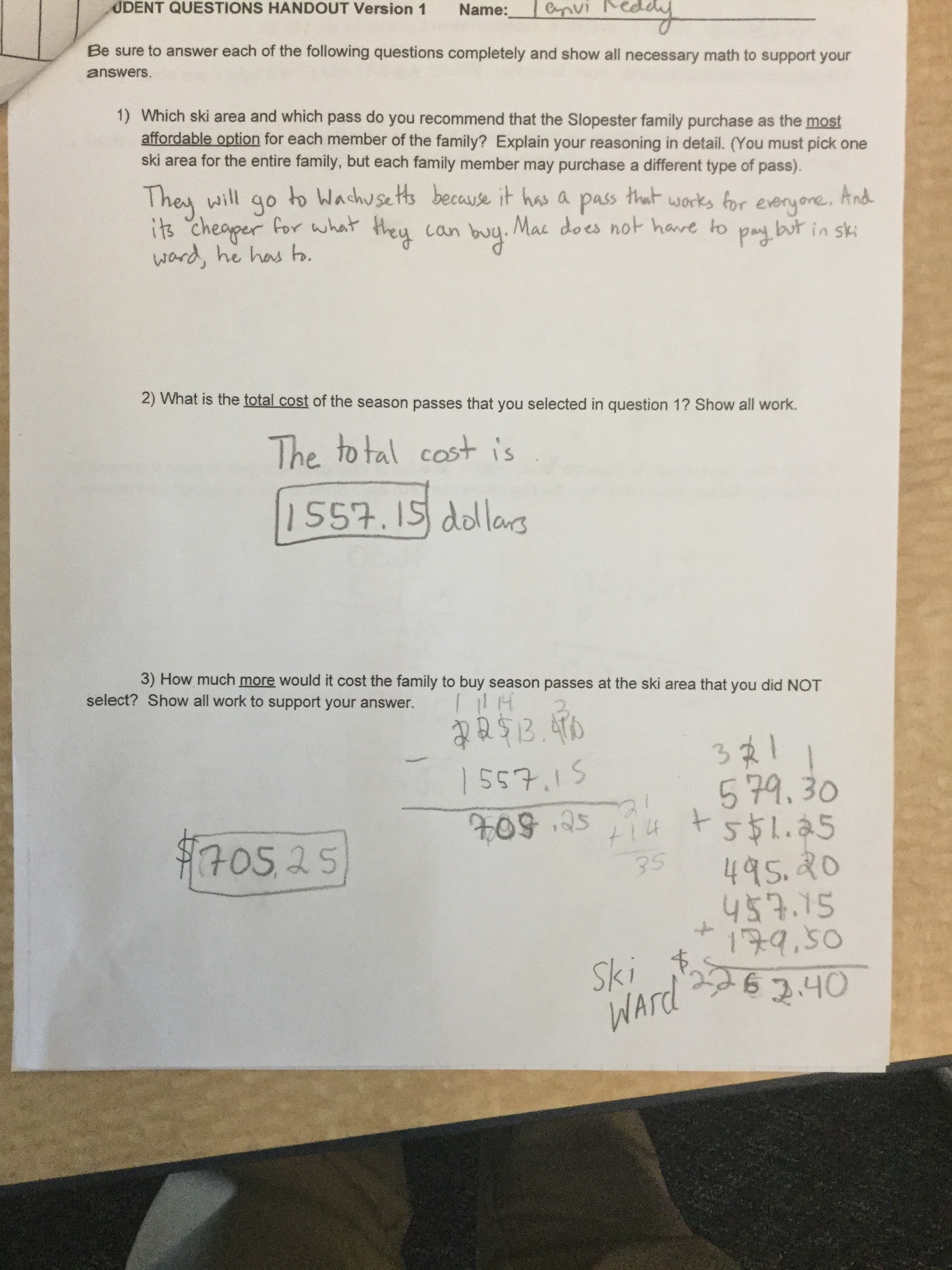
6) How many days would the Slopester family need to go skiing at Wachusett Mountain to make it cheaper to purchase the Season Pass rather than the Day Passes for each day? Show all work to support your answer.

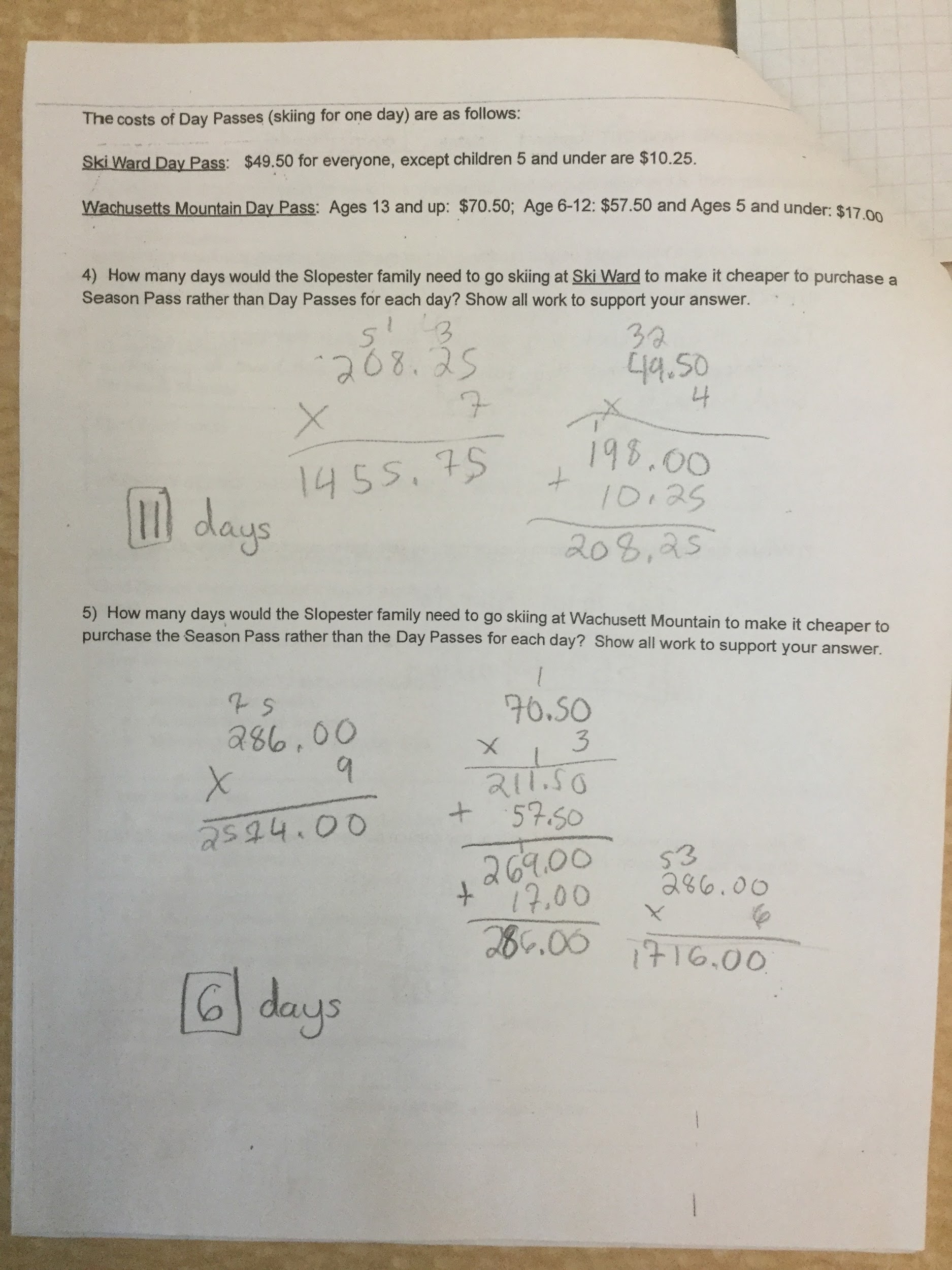
Extension:

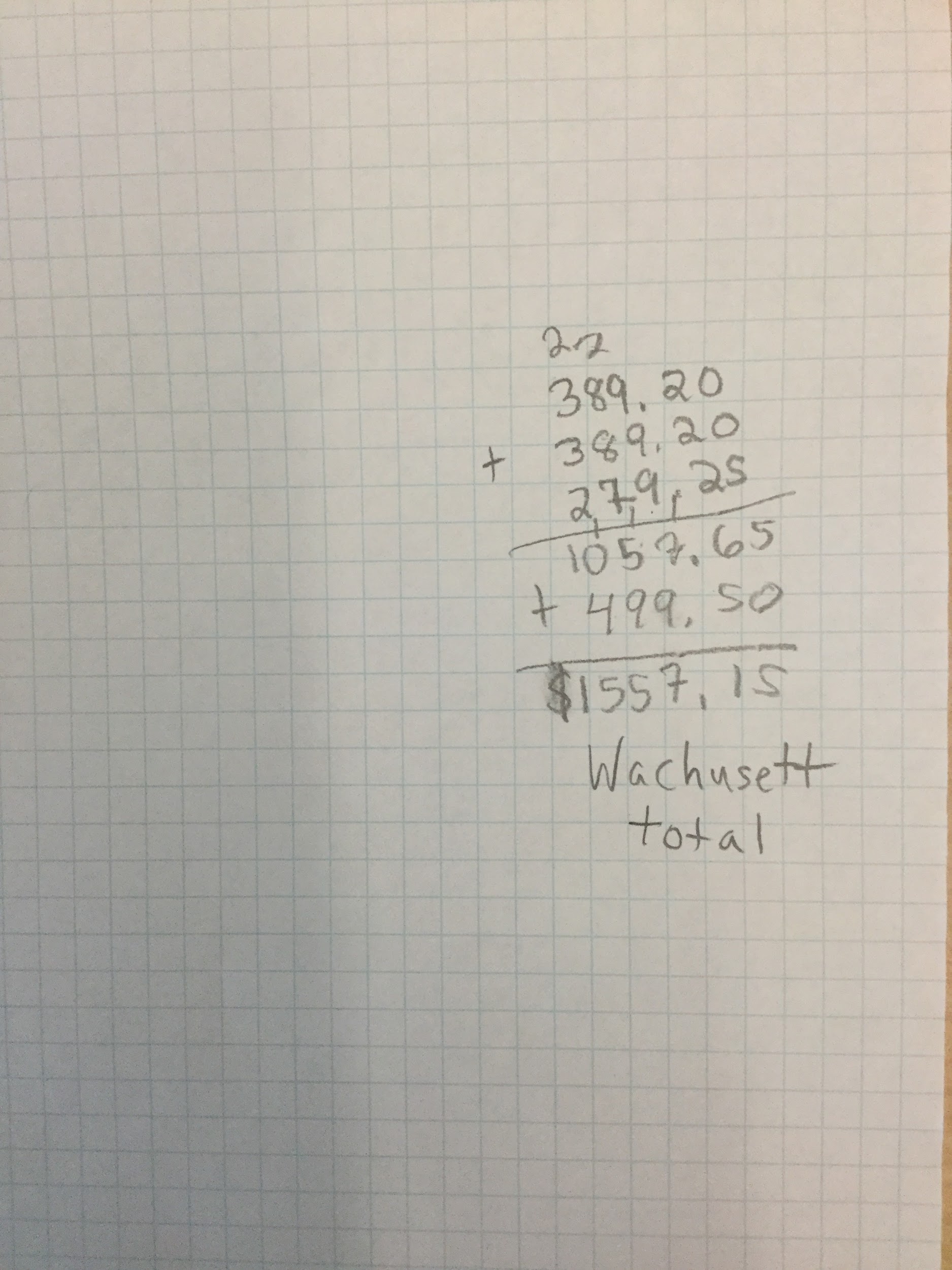
Go back and answer the same questions about your own family. Use a separate sheet of paper. Include any people that usually participate in family activities with you. (Don’t worry if you or your family members don’t actually ski!)

Sample Student Work

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