

Charmin® Choices

Lately I have been buying toilet paper made from recycled paper at an environmental store, but last night we ran out, so I stopped at the local grocery store to pick up a roll. It has been a while since I shopped in the "bath tissue" aisle of a supermarket and I was unprepared for the number of choices available! I used to buy Charmin® brand and I was surprised to discover that it is now possible to buy white Charmin® in 8 different packages. I have listed the choices below. Please help me decide which is the best choice, as I was overwhelmed!

4-Roll Packages:

Ultra Charmin®: 2-ply with 170 sheets per roll costs \$1.29/pkg.

Ultra Charmin®: 1-ply with 560 sheets per roll costs \$2.49/ pkg.

Ultra Charmin® Double: 2-ply with 340 sheets per roll costs \$2.49/ pkg.

6-Roll Packages:

Charmin® Free: 1-ply with 280 sheets per roll costs \$1.98/ pkg.

Charmin® Plus: 1-ply with 170 sheets per roll costs \$1.98/ pkg.

Charmin® Ultra: 1-ply with 170 sheets per roll costs \$1.98/ pkg.

9-Roll Packages:

Charmin® Big Squeeze: 2-ply with 420 sheets per roll costs \$4.59/pkg.

Charmin® Ultra Big Squeeze: 2-ply with 260 sheets per roll costs \$4.59/pkg.

Exemplars

Grade Levels 6 - 8

Charmin® Choices

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Context

We had just finished a week of studying ratios and proportions. I wanted to assess the students' ability to apply these concepts in real life situations. We had done a few problems that asked for unit rates, but had not discussed unit pricing. I wanted to see if students could transfer their learning to this area. I was looking for a subject with universal appeal and it seems that this hit the spot. The students loved it! Cruising the bath tissue aisle of the grocery store really was an eye opener for me.

What This Task Accomplishes

This task gave the students an opportunity to use the skills of problem solving by setting up proportions, practice their division of decimals, and decision making in a problem-solving setting.

What the Student Will Do

Students first determined the price per roll and then the price per sheet of the various papers. They then could apply their personal preferences in choosing from packages whose prices were comparable. This task offers the opportunity to make a variety of mathematical

Exemplars

representations for comparing the prices of the various packages.

Time Required for Task

45 minutes

Interdisciplinary Links

We were conducting a unit on media advertising at the time we did this task. We talked about how many students used this brand of tissue and why. Most of them did use this brand and when they went home to discuss it, discovered that the reason was TV advertising and brand loyalty. Just about every student knew "Mr. Whipple".

Teaching Tips

Students needed very little assistance with this task. They worked alone and the only equipment needed was a calculator. They did the main work of the task in one 45-minute period and then went home to do final write-ups and final representations as many of them chose to use computers for this task.

Suggested Materials

- Calculators
- Toilet paper samples (optional)

Possible Solutions

According to the unit prices found on the grocery shelf, the four-pack of 1-ply paper is the cheapest at \$0.00111 per sheet. The most expensive are the Charmin® Plus and Charmin® Ultra, both in the six packs. See the Expert student's graph for complete cost comparisons. There is a lot of room for applying special factors in this task. Perhaps you have limited storage space so nine packs are impractical (and surprisingly not the cheapest way to buy toilet paper). Or maybe you need fragrance-free paper, or want the luxury of aloe added to your paper and are willing to pay for this additive. I was personally surprised to discover that the four-pack was so much cheaper than the same paper in a six pack. Some students considered that you might use twice as much 1-ply as 2-ply and compared costs based on this assumption. I am not convinced that there is one correct solution to this task, which is one of its appeals for me.

Benchmark Descriptors

Novice

This student did have an idea of what was being asked, but did not carry out what was started. S/he claims that Big Squeeze is the best buy, but never shows the calculations for this choice. S/he also bases his/her conclusion on the per roll price which is not the best strategy, as there

Exemplars

is a wide variety of number of sheets per roll. There is practically no mathematical language and there is no attempt at mathematical representation by this student. S/he was clearly not engaged in finding the solution of this task.

Apprentice

This student had some idea of how to begin to solve this task. S/he got off to a good start in finding the cost per roll, but describes this process incorrectly. S/he divided the cost per package by the number of rolls, not the "toilet paper" by "how many rolls are in the package."

His/her error on page two came from dividing the number of sheets by the cost per roll instead of the other way around. S/he did not see that \$.05 per sheet was too expensive to make sense.

On page three the student states that Charmin® Free is the best buy and that does make some sense as there are more sheets per roll for that brand. But, the student ignores the price per sheet information from page two in his/her final decision making. Mathematical language is lacking and the comparison data is not well organized into charts or tables. I believe many of the errors in this piece would have been spotted if the student had checked his/her work or tried to verify his/her solution.

Practitioner

This student showed some excellent reasoning in his/her solution. The decision about one vs. two-ply paper is very interesting and well founded. S/he does a good job of informing the reader of his/her thought processes, although his/her mathematical language is rather weak. The mathematical representation is well done and complete. There are some calculation errors to be found in the chart. However, while brief, this solution does accomplish the task as assigned and is clear in presentation.

Expert

This student used technology to his/her advantage in representing his/her solution in an easy to read manner. S/he took a straightforward approach to the solution and applied no special factors to her approach. It is not the most creative solution I received, but it is the clearest. The student clearly articulates his/her reasoning throughout the narrative. The chart is clearly organized, easy to read and makes it easy to compare the costs. The graph provides a clear visual comparison of the prices of the various packages. This graph is representational of many done by students in the class using computer technology.

Exemplars

Novice

Does not account for all seven choices.

What we had to figure out was what was the Best deal on Charmin Bath Tissue.

The way we did it was we divided the price by how many rolls there was in a package.

How we did it was we took a calculator. Then we divided 4 into \$1.29, and at the rest we did the same way But with how many rolls they each had.

The answer for each roll.

4 rolls in a package = Ultra Charmin 2ply
for 1 roll = \$.32, Ultra Charmin 1ply
for 1 roll = \$.62, Ultra Charmin Double
2 ply for 1 roll = \$.62

Student should show work and/or results of these calculations.

Charmin Big Squeeze is the Best Buy

Gives no justification for this statement.

Exemplars

Apprentice

Charmin Choices

4 Ultra Charmin 2ply - 33¢

6 Ultra Charmin 1ply - 66¢

4 Ultra Charmin Double 2ply - 66¢

6 Charmin Free - 33¢

6 Charmin Plus - 33¢

6 Charmin Ultra - 33¢

6 Charmin Big Squeeze - 51¢

9 Charmin Ultra Big Squeeze 51¢

How I did it.

I divided the Charmin's toilet paper by how many rolls are in the package and that told me how many one roll would cost.

Exemplars

Apprentice

These costs per sheet are incorrect.

<u>Brand</u>	<u>cost per sheet</u>	<u>sheets</u>
Ultra Charmin-2	5¢	170
Ultra Charmin-1	8¢	560
Ultra Charmin Double-2	5¢	340
Charminfree-1	8¢	280
Charmin Plus-1	5¢	170
Charmin Ultra-1	5¢	170
Charmin Big Squeeze-2	8¢	420
Charmin Ultra Big Squeeze-2	5¢	260

How I did it.

Where was the work done?
The reader cannot track where the error was made.

I divided how many sheets by the cost per one roll and got how many cents per sheet.

Exemplars

Apprentice

Charmin Free is not the cheapest paper, nor does it offer the most sheets.

<u>cost for Each Group</u>	<u>cost per roll</u>	<u>sheets</u>
Ultra Charmin 1	33¢	170
Charmin Free-1	33¢	280
Charmin Big Squeeze-2	51¢	420

<u>Two Best</u>	<u>Cost per roll</u>	<u>sheets</u>
Charmin Free-1	33¢	280
Ultra Charmin-1	33¢	170

<u>Best Charmin</u>	<u>Cost per roll</u>	<u>Sheets</u>
Charmin free-1	33¢	280

Why I picked it!

I picked Charmin Free because you can get more sheet then you can with Ultra Charmin because you only get 170 sheets.

Exemplars

Apprentice

This write up does not address the mathematics of this task.

Write up
On each page that I did
I wrote how I did everything.
On Page 3 or the last page it say
what was my choice of Charmin's and
why I picked it. On the 2 page
I wrote the cost per one
sheet of Charmin. On the 1 page
I have how much the different
kinds of Charmins per roll.

Exemplars

Practitioner

Applies the special factor of wanting 2-ply option, too.

CHARMIN CHOICES

Gives 1-ply option too.

In this task I was asked to find out which of the Charmin toilet papers was the best buy. I knew which of the toilet papers had one and two ply thicknesses. I also knew the price per package and how many rolls were in each package for each kind of Charmin toilet paper. The other thing I knew was how many sheets were in each roll.

The first thing I did was to divide the price per package by the number of rolls to get the price per roll. Then I divided that number by the number of sheets per roll to get the price per sheet. I went through this procedure with each of the 9 Charmin Choices and then organized them into a table.

According to my results Charmin Big Squeeze is the best buy. I think this because when I go down the line of prices per sheet it is the second cheapest in the row and the cheapest is only 1 ply, or one layer thick and the Charmin Big Squeeze is the best deal of all the choices of Charmin toilet paper at the store.

However, I thought 2 ply was the best deal because it is better quality buy my results would be different if I were just looking for the cheapest, not the best deal of toilet paper. If this were the case then I would say that Charmin Ultra 1 ply was the best deal because it is 1/10 of a cent cheaper.

Exemplars

Practitioner

NAME	OTHER INFO.	# PLY	PKG. COST	ROLL COST	SHEET COST
ULTRA CHARMIN	170 SHEETS, 4 ROLLS	2	\$1.29	\$0.32	\$0.0018
ULTRA CHARMIN	560 SHEETS, 4 ROLLS	1	\$2.49	\$0.62	\$0.0011
ULTRA CHARMIN DOUBLE	340 SHEETS, 4 ROLLS	2	\$2.49	\$0.62	\$0.0018
CHARMIN FREE	280 SHEETS, 6 ROLLS	1	\$1.98	\$0.33	\$0.0012
CHARMIN PLUS	170 SHEETS, 6 ROLLS	1	\$1.98	\$0.33	\$0.0019
CHARMIN ULTRA	170 SHEETS, 6 ROLLS	1	\$1.98	\$0.33	\$0.0019
CHARMIN BIG SQUEEZE	420 SHEETS, 9 ROLLS	2	\$4.59	\$0.51	\$0.0012
CHARMIN ULTRA BIG SQUEEZE	260 SHEETS, 9 ROLLS	2	\$4.59	\$0.51	\$0.0019

Nicely designed table, accurately set up.

Some of these sheet cost figures are incorrect.

Exemplars

Expert

Write-Up

I decided the best way to solve the problem, of finding the best buy of different types of Charmin toilet paper, was to find a common term that could be applied to all the choices of paper. I couldn't use the term price per package to compare the different types of paper because some packages contained more rolls. I also decided that I couldn't use the number of sheets because some packs contain the same number sheets at a different price.

I finally decided that the price per sheet was the easiest way to compare the different types and find the best buy. The way I found the price per sheet was taking the price/package and divided it by rolls/package then we divided it by sheets/roll. Then I took all the information on to an organized table which is on the next page.

After comparing all the data in my table I decided on more than one answer. If you wanted to buy a nine roll package I recommend that you buy Charmin Big Squeeze 2-ply which costs \$.0012143 per sheet. If you wanted to buy a six roll package I recommend that you buy Charmin Free 1-ply which cost \$.0011786 per sheet. If you want a 4 roll package and the best deal I recommend Ultra Charmin 1-ply which cost \$.0011116 per sheet.

Extension:

What if someone has irritated skin caused by toilet paper perfumes well I recommend buying Charmin Free 1-ply because it has no perfumes and has aloe.

Exemplars

Expert

4 Roll Packages

Name	Price/Package	Number of Sheets	Price/Sheet
Ultra Chamin 2 - ply	\$1.29	170 per roll	0.0018971
Ultra Chamin 1 - ply	\$2.49	560 per roll	0.0011116
Ultra Chamin Double 2 - ply	\$2.49	340 per roll	0.0018309

6 Roll Packages

Name	Price/Package	Number of Sheets	Price/Sheet
Chamin Free 1 - ply	\$1.98	280 per roll	0.0011786
Chamin Plus 1 - ply	\$1.98	170 per roll	0.0029117
Chamin Ultra 1 - ply	\$1.98	170 per roll	0.0029117

9 Roll Packages

Name	Price/Package	Number of Sheets	Price/Sheet
Chamin Big Squeeze 2 - ply	\$4.59	420 per roll	0.0012143
Chamin Ultra Big Squeeze 2 - ply	\$4.59	260 per roll	0.0019615

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Expert

Price/Sheet for Each Type

