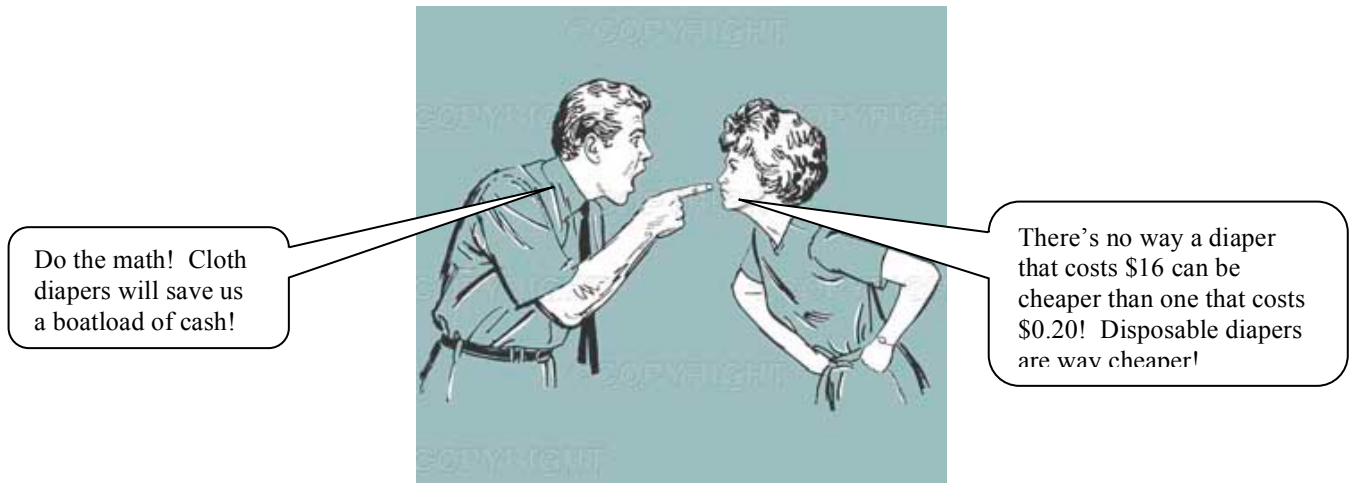


## DIAPERS

Did you know that you used to wear diapers? Your mom and/or dad changed your diapers quite a bit. Sounds bad? What is even worse than changing your smelly diapers is buying them! Diapers are not cheap and unfortunately you probably went through about ten a day.

In appreciation of Mother's Day and Father's Day it is time to do a little diaper cost analysis. This will give you an idea of how much, in today's dollars, your parents spent on diapers for you. We will also determine which type of diaper is cheaper: cloth or disposable diapers? Mr. Fehlner had a debate with his wife about it. See below:



Who was right, Mr. Fehlner or his wife?

### Information:

- On average, babies use between 8 and 10 diapers daily.
- Disposable diapers cost \$0.20 each.
- The fancy cloth diapers Mr. Fehlner wanted to buy are \$16 each, and he'll need to buy 20 of them.
- To clean cloth diapers, it costs about \$5 a month (to pay for the water, detergent, and electricity).

### What you need to do with this information:

- Make an input/output table for the cost of using disposable diapers per month for 6 months.
- Write an equation that represents the cost of buying disposable diapers, and graph the equation through 36 months.

### Then ....

- Make an input/output table for the cost of buying cloth diapers per month for 6 months.
- Write an equation that represents the cost of buying cloth diapers, and graph the equation through 36 months.

Which is cheaper? *Be specific about which situation you're talking about.*

### Help Sheet:

- Argument for disposable:

Diapers per day	Diapers per month	Cost Per Diaper	Cost Per Month for <u>270</u> diapers
8 to 10	240 to 300	\$0.20	\$54

- Argument for cloth:

Initial purchase	Cleaning cost per month
$\$16 \times 20 = \$320$	\$5

1. Complete the table to show the cost of disposable diapers for the various numbers of months:

Months	2	3	4	5	6	7	8	10	12	18	24	30	36
Cost	\$108	\$162	\$216	\$270	\$324	\$378	\$432	\$540	\$548	\$972	\$1296	\$1620	\$1944

2. If a youngster wore diapers for 48 months, what math would you do to find the total cost of disposable diapers over 48 months (don't do the math, just explain the math you would do)?

$$\text{Cost for 48 months} = 48 \text{ times } \$54 \text{ per month.}$$

3. What math are you doing over and over again to find the total cost regardless of the number of months?

$$\text{Cost for number of months (N)} = N \times \$54/\text{month}$$

4. Write a rule or equation that gives the total cost © for any number of months (m) of using disposable diapers.

$$C = \$54 * m$$

5. Complete the table to show the cost of cloth diapers for the various numbers of months:

Months	2	3	4	5	6	7	8	10	12	18	24	30	36
Cost	\$330	\$335	\$340	\$345	\$350	\$355	\$360	\$370	\$380	\$410	\$440	\$470	\$500

6. If a youngster wore diapers for 48 months, what math would you do to find the total cost of cloth diapers over 48 months (don't do the math, just explain the math you would do)?

$$\text{Cost} = \$320 + \$5 * 48 \text{ months}$$

7. What math are you doing over and over again to find the total cost of cloth diaper usage regardless of the number of months?

$$\text{Cost} = \$320 \text{ (initial cost)} + \$5 * \text{number of months}$$

8. Write a rule or equation that gives the total cost (c) for any number of months (m) of cloth diaper usage.

$$C = \$320 + \$5 * m$$

9. Graph the cost of using each diaper on the graph on the next page. Carefully consider what intervals to use on each axis.



10. Do the graphs intersect? What does this point tell us about the cost of the two different types of diapers? Be specific and use math in your response.

Yes. They intersect between 7 and 8 months. At 7 months disposable diapers would cost \$324 and cloth diapers would cost \$350. At 8 months disposable diapers are a better deal. But at 8 months disposable diapers would cost \$378 and cloth diapers are less at \$355.

11. Knowing that babies/toddlers go through 8 – 10 per day, typically for 3 years (maybe more or less), which type of diaper seems like a better deal?

Definitely cloth diapers are a better deal ... more trouble though.

12. Lets assume you wore disposal diapers for about three years. How much in today's money did you cost your parents/caregivers in diapers?

$9 \text{ diapers a day} \times 365 \text{ days per year} \times 3 \text{ years} \times \$0.20 \text{ per diaper} = \$1971$

13. Your homework is to go home and interview someone who might know how long you used diapers for and what type of diapers you wore. Get detailed information on your diaper experience and use that to determine how much you cost your caregivers in diapers.

14. Due to inflation, costs keep going up and up. For example, years ago, a candy bar that costs about 80 cents today only cost 25 to 40 cents back in the early 80's. This is also true for diapers. Try to find out how much diapers actually cost about 10 to 15 years ago, so that you can get a better idea of how much your caregivers spent on diapers for you. Use that diaper cost to find a better estimate of your cost in diapers.

I couldn't find the cost of diapers 10 years ago. So, I'll just guess that they cost  $\frac{1}{2}$  of what they cost now. Then I must have cost my parents about \$1,000 in diaper cost. That's a lot of money!

15. You should be pretty thankful to your parents or who ever your caregivers were for buying and changing your diapers for all those years. You know you might have a child some day and you will have to buy and change their diapers! Ha! Which type of diaper will you go with? Assume that the cost of diapers goes up about 3% a year and you have a baby 15 years from now. How much should you expect to spend on diapers for your baby? Make sure to show all your work below.

$$(1.03)^{15} * \$1,971 = \$3,071$$

Remember to thank your mom, dad or whoever took care of your diapers for you!

Activity shared to you by [www.yummymath.com](http://www.yummymath.com) via Andy Fehlner, 8<sup>th</sup> grade teacher in Newton MA, who wrote and shared the original activity with us.

Activity updated by his friends at **YummyMath.com**