



## Math Activity

### It All Adds Up – Calculating the Cost of Cigarettes

#### Objective

To show students the expenses associated with smoking through basic math concepts. (45-60 minutes)

#### **Materials Needed**

- Paper
- Calculators
- Overhead projector or chalkboard for demonstration

#### **Anticipatory Set:**

Have students write down a list of things that they would like to buy for themselves for \$10, \$50, and \$250. (This will give them a personal comparison of things that they want and would have to give up in order to have the money to buy cigarettes).

#### **Step One**

Begin by telling the students that the average cost of a pack of cigarettes in PA is \$4.75. (inclusive of the 6% sales tax).

Have students calculate the cost of cigarette smoking based on smoking a pack a day:

- For a week
- For a month
- For a year
- For five years
- For ten years

#### **ANSWER:**

- For a week =  $\$4.75 \times 7 = \$33.25$
- For a month =  $\$33.25 \times 4\text{wks} = \$133$
- For a year =  $\$133 \times 12 = \$1,596$
- For five years =  $\$1,596 \times 5 = \$7,980$
- For ten years =  $\$1,596 \times 10 = \$15,960$

Average cost for a Toyota Corolla, \$15,250



## Step Two

Divide the students into groups of two or three. Give the students the scenario that they are working a part-time job to make some extra cash during school. Have the students pretend that they work 10 hours a week for minimum wage, which is \$7.15 an hour in the state of Pennsylvania.

Have the students calculate how much they would make for a week, month, and a year at that pay rate.

### ANSWER:

Week:  $10 \text{ hrs} \times \$7.15/\text{hr} = \$71.50/\text{week}$

Month:  $4 \text{ weeks} \times \$71.50 = \$286/\text{month}$

Year:  $12 \text{ months} \times \$286 = \$3,432/\text{year}$

What if they worked 40hrs per week during summer vacation (12 weeks)?

### ANSWER:

Week:  $40 \text{ hrs} \times \$7.15 = \$286$

Summer:  $12 \text{ weeks} \times \$286 = \$3,432/\text{year}$

## Step Three

**Part A.** Ask the students to work in their groups to figure out how much money they would lose if they smoked a pack of cigarettes a day. Have them calculate the cost using the timelines of a week, month, and year. Have them calculate what smoking two packs a day would do to their paycheck. How much money do they have left over?

Have students calculate how much smoking 1 cigarette costs them if smoking 1 cigarette takes approximately 5 minutes and making the assumption of smoking 1 pack per day.

**ANSWER:** If the average cost of cigarettes is \$4.75 for 20 cigarettes and each cigarette takes 5 minutes, at a pack a day, it costs a PA smoker \$2.86/hour.

$5 \text{ minutes} \times 20 \text{ cigarettes} = 100 \text{ minutes}$

$100 \text{ minutes}/60 \text{ minutes per hour} = 1.66$

$\$4.75/1.66 \text{ minutes} = \$2.86$



**Part B.** Ask the students about material items that they perhaps desire to purchase. Have them determine how many packs of cigarettes they would have to buy to equal the price of the item. For example:

- The average cost of a movie ticket for a newly-released movie is \$9
- The average cost of a CD is \$12
- The average cost of a video game is \$40
- The average cost of an Ipod Nano is \$250

Invite the students to work with estimations of items they would like to own, such as clothes, TVs, etc. Have the students compare their calculations and consider what they would rather purchase. Did they realize how expensive a smoking habit is? Does it seem like a good idea to use that much of their wages on purchasing cigarettes? What do they think would be the wisest choice to spend their money?

#### **Step Four**

If your class is advanced enough, you may have the students calculate the additional costs of smoking on a yearly basis.

For example:

- The average cost of mints or gum for a year is \$50
- The average cost of whitening teeth once a year is \$600
- The average cost of dry-cleaning a nice outfit or suit once a month for a year is \$144 (due to smell of smoke)



**Conclusion:** Cigarettes aren't cheap! The expense of cigarettes is often something that is overlooked by people with a smoking habit, possibly because cigarettes are often purchased a single pack at a time. But it all adds up, and this activity is a great way to demonstrate the cost of cigarettes while utilizing important arithmetic concepts necessary to a student's educational experience.

#### **Facts to share:**

#### Relative to Step 3 Part A

The Beverly Fund | P.O. Box 330266 | San Francisco, CA 94133-0266 | 650.504.2164 [www.beverlyfund.org](http://www.beverlyfund.org)

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Some other Pennsylvania diversions, priced roughly by the hour:

- Ice skating: \$7/hr
- Phillies game (cheap seats): \$5/hr
- Smoking: \$2.86/hr
- Movie w/popcorn & soda: \$11/hr
- Dinner @ McDonald's: \$11/hr

Other facts:

Lung cancer is the #1 cancer killer in the U.S. and kills more men and women every year than breast, prostate and colon cancers combined.

In the U.S. 565,000 people are estimated to die from cancer in 2008, according to the American Cancer Society Cancer Facts and Figures 2008. 161,840 of those people will have died from lung cancer, accounting for 29% of all cancer deaths.

In Pennsylvania, it is estimated by the American Cancer Society Cancer Facts and Figures 2008, that 70,110 people will be diagnosed with cancer, with 10,320 being diagnosed with lung cancer. It is further estimated that 8,230 Pennsylvanians will die from lung cancer in 2008.

Please provide any feedback about this activity to: [info@beverlyfund.org](mailto:info@beverlyfund.org) so that we can make any necessary changes to improve it. Thank you.