

# TEACHER'S GUIDE

## Activity 13 - Paying at The Pump



### NATIONAL STANDARDS:

#### GEOGRAPHY

Standard 16. Understands the changes that occur in the meaning, use, distribution and importance of resources  
 Standard 18. Understands global development and environmental issues

#### MATHEMATICS

Standard 1. Uses a variety of strategies in the problem-solving process  
 Standard 2. Understands and applies basic and advanced properties of the concepts of numbers  
 Standard 3. Uses basic and advanced procedures while performing the processes of computation  
 Standard 9. Understands the general nature and uses of mathematics

#### SKILLS

Interpreting a chart, calculating price differences and percentages

#### OBJECTIVE

Students will learn some of the components involved in gas prices and use this knowledge to complete the worksheet

#### ACTIVITY PROCEDURE

Discuss with your students what they think consumers are paying for when they buy a gallon of gas. Brainstorm a list of what they think is included. The cost actually includes the process of refining the oil that becomes gasoline. Other costs include transporting the product to the stations, advertising the product, and taxes. Help your students understand the way supply and demand affect the price of crude oil and the price of gas.

Provide your students with the "Paying at the Pump" worksheet. Students can use a calculator, but should show the steps used to solve the problems. These questions are also good ways to illustrate the basic capabilities of Excel spreadsheets. Prices should also be rounded to the nearest cent.

#### ANSWERS

1.

	2011	2015
DISTRIBUTION & MARKETING	$\$3.45 \times 0.08 = \$0.28$	$\$2.64 \times 0.19 = \$0.50$
REFINING COSTS & PROFITS	$\$3.45 \times 0.11 = \$0.38$	$\$2.64 \times 0.25 = \$0.66$
FEDERAL & STATE TAXES	$\$3.45 \times 0.12 = \$0.41$	$\$2.64 \times 0.17 = \$0.45$
CRUDE OIL	$\$3.45 \times 0.69 = \$2.38$	$\$2.64 \times 0.39 = \$1.03$

2. Question: If a person drives a car with a 15-gallon tank, how much less would he or she spend in 2015 to cover the cost of Crude Oil on a full tank than in 2011? How much less is that as a percentage of the 2011 price for Crude Oil?

**Answer: In 2011, the tank had \$35.70 ( $\$2.38 \times 15$  gallons) worth of crude. In 2015 that same tank held \$15.45 worth ( $\$1.03 \times 15$  gallons), a difference of \$20.25 - That's  $20.25 / 35.70$  or about 59% less than in 2011.**

3. Question: In mid-2011, the price of crude oil rose dramatically. It accounted for 75% of the price of gasoline, which was then selling at \$4.06 per gallon. From that gallon, how much did crude oil contribute to that price in dollars and cents?

**Answer: Crude costs  $\$4.06 \times 0.75 = \$3.05$  for each gallon of gasoline.**

4. What was the average weekly price of gasoline in July? What was the average weekly price in August?

**July average  $(2.88 + 2.92 + 2.89 + 2.83) / 4 = \$2.88$**

**August average  $(2.78 + 2.72 + 2.8 + 2.73 + 2.6) / 5 =$  or  $\$2.726$  or  $\$2.73$**

5. Where was the greatest difference in cost and by what dollar amount?

**The difference in cost was a \$0.13 reduction between Aug 24 and Aug 31**