Name _____    Date _____

# Real-Life Application: When Will I Ever Use This?

*For use with the lesson "Model Direct Variation"*

## Gasoline Prices

In Sacramento, California, gasoline prices fluctuated dramatically during the first half of 1999. After recording near record lows of $1.05 per gallon in February, fires and mechanical failures that shut down four California refineries drove up prices to around $1.67 per gallon in April. Because of California's strict clean-air specifications set by the California Air Resources Board (CARB), obtaining gas from other refineries was not an option. Wholesale distributors, fearing they would run out of gasoline that met CARB specifications, bid up gasoline prices. After the refineries re-opened, prices once again began falling and dropped to around $1.42 per gallon by May. Increases in worldwide crude oil prices, the main factor in driving gasoline prices up (or down), kept the price of gasoline from returning to the pre-crisis levels.

**In Exercises 1–3, use the following information.**

The cost of gasoline (in dollars) at a gas station varies directly with the number of gallons of gasoline that you pump. It costs $27.95 to fill your 13-gallon tank at a station in Sacramento.

1. Write a direct variation model that relates the number of gallons $g$ to the total cost $c$ (in dollars) to fill the tank.

2. Use your model from Exercise 1 to determine how much it will cost to fill up a car with a 19-gallon tank.

3. If you decide to buy a higher grade of gasoline, what will change in your model?

**In Exercises 4 and 5, use the following information.**

In many collegiate towns, gasoline stations raise their prices when students return to campus in August. The cost of gasoline (in dollars) and the number of gallons pumped by selected customers in eight university towns in Indiana are shown in the table below.

| University | Town | Total Cost | Number of Gallons |
|---|---|---|---|
| Ball State | Muncie | $19.71 | 9 |
| DePauw | Greencastle | $48.18 | 22 |
| Indiana State | Terre Haute | $41.61 | 19 |
| Indiana | Bloomington | $70.08 | 32 |
| Purdue | West Lafayette | $28.47 | 13 |
| Taylor | Fort Wayne | $35.04 | 16 |
| Notre Dame | South Bend | $54.75 | 25 |

4. Write a ratio model that relates the total cost for gasoline to the number of gallons pumped.

5. Estimate the total cost for a car that needs 18 gallons of gasoline to fill the tank.