

## ACTIVITY 4

## ALGEBRAIC EXPRESSIONS

- The expression  $5000(L - 105)$  models the annual number of deaths in the U.S. from shotgun wounds if the average level of lead in the bloodstream is  $L$ .
  - Evaluate the expression to find the number of deaths expected at the lead level of 210.  
**525,000**
  - Evaluate the expression to find the number of deaths expected if the level were to drop to 180.  
**375,000**
  - How many deaths would be expected each year if the lead level dropped to 107?  
**10,000**
- The expression  $0.12t + 5.44$  models the number of algebra students worldwide, in millions, that pass M050 on their first attempt,  $t$  years after 2000. Give the answers in two forms. For example, 4.1 million and 4,100,000.
  - Evaluate the expression to find the number of students that passed M050 on the first attempt in 2000.  
**5.44 million**  
**5,440,000**
  - Evaluate the expression to find the number of students that passed M050 on the first attempt in 2009.  
**6.52 million**  
**6,520,000**
  - How many more students passed the first time in 2009 than in 2000?  
**1,080,000**
- The expression  $0.6(220 - A)$  gives the optimum heart rate in beats per minute that a person should achieve during exercise for the exercise to be most beneficial at their age  $A$ .
  - Use the distributive property to rewrite the expression without parentheses.  
 **$132.0 - 0.6A$**
  - Use each form of the expression to determine the optimum heart rate for a 20-year old runner.  
**120 beats per minute**
  - In a sentence explain what the answer represents in terms of the situation.  
**Optimum heart rate for a 20 year old runner is 120 beats / min.**
- The percentage  $P$  of married women in the U.S. labor force who have children under 6 is modeled by the expression  $1.25g + 12$  where  $g$  is the number of years since 1960.
  - What percent of the labor force were married women with children under 6 in the year 1960?  
**12 %**
  - What percent of the labor force were married women with children under 6 in the year 2000?  
**62 %**
  - What percent of the labor force were married women with children under 6 in the year 2010?  
**74.5 %**
- The expression  $10(s - 65) + 50$  is used to determine the speeding fine, in dollars, for a driver who is caught speeding at  $s$  miles per hour in a 65 mph zone in Indianapolis.
  - What is the fine for a speeder driving 70 mph? **\$ 100**
  - What is the fine for a speeder driving 85 mph? **\$ 250**
  - The parentheses were not removed in the expression because it helps to explain how the speeding fine is determined. In a sentence, explain how to determine a speeding fine in a 65 mph zone in Indianapolis.  
**MPH over 65 MPH is fined \$10 / mph with a \$50 initial fine.**