

***18. Negate each of the following:**

(a) All mathematics problems are easy.

(b) Some numbers are not natural numbers.

***19. Consider the following statement: If a bird is a Western Tanager, then it has a red head.
Write each of the following:**

(a) The converse of the statement.

(b) The contrapositive of the statement.

(c) The inverse of the statement.

***20. Find a valid conclusion for the following argument:**

**If a person uses a calculator, she makes fewer computation errors than one who does not.
Rose uses a calculator.**

One of Dr. Wonderful's other mind-reading tricks involves birthdays. Use a calculator and follow along with the crowd as he gives the directions. Press $\boxed{=}$ on your calculator after each step.

1. Enter the month of your birthday.
2. Multiply by 5.
3. Add 20.
4. Multiply by 4.
5. Subtract 7.
6. Multiply by 5.
7. Add the day of your birthday.
8. Subtract the number of days in a non-leap year.

"Oh," "Ah," and "Look at that" can be heard throughout the crowd. What do people see on the display of their calculator?

To the right of each step above, write an algebraic expression that correctly describes Dr. Wonderful's direction. Study the sequence of expressions and then explain how place value helps to explain how this "magic number trick" works.

EXTENSIONS Write some magic tricks of your own. Write the algebraic expression for each step so that you can justify your final result. Try them out on your classmates.