



## MAGIC DICE

**Math skills:** Addition

**You will need:** Two dice

**Difficulty level:** 1

**Introduction:** Tell your class that you can find the sum of the dice without looking at them!

### **What to do:**

- ◆ Turn your back to the class and ask one volunteer to roll the dice. He should write the numbers that come up on the board (without letting you see them).
- ◆ Ask the volunteer to add the two numbers together and write the results on the board.
- ◆ Now ask him/her to pick up only one die carefully and add the number on the bottom of the die to the sum on the board.
- ◆ Next they have to roll the same die and add the number on top to the sum on the board. This is the magic number. Tell the class to remember the magic number and then have the volunteer erase the blackboard!
- ◆ Last, turn around, pick up the dice together (make sure you note the numbers on top, pretend to listen to them carefully and then tell the class what the magic number is!

**How it works:** Each die has 1-6 numbers on it and the sum of each top and bottom (of the same die) will always be 7. Now, let's say that your volunteer threw the dice and got 6 and 2.

- ◆ Add the two numbers together:  $6+2=8$
- ◆ Pick up a die and add the number on the bottom (if you pick 6 the bottom number will be 1:  $8+1=9$ )
- ◆ Roll this die again; let's say a 3 comes up this time.
- ◆ Add it on:  $9+3=12$
- ◆ When you turn around and look at the dice, add them up in your head:  $2+3=5$  and add on the number 7 which is the magic number:  $5+7=12$

### **Why it works:**

- ◆ A and B are two dice.
- ◆ After the first roll of A and B the top and bottom numbers are AT and BT and AB and BB, respectively.
- ◆ If A or B are rolled a second time the top numbers are AT/ or BT/ respectively.
- ◆ AT, AB, AT/, BT, BB, and BT/ can each have any of the following numbers: 1,2,3,4,5 and 6 provided that  $AT + AB = BT + BB = 7$
  
- ◆ Add the two numbers together after the first roll:  $A_T + B_T$
- ◆ Pick up one die, e.g. A, and add the bottom number:  
 $AT + BT + AB = BT + 7$
- ◆ Roll A again and add the top number:  $BT + 7 + AT/$   
BT and AT/ are seen and can be added to 7 to obtain the magic number:  $BT + AT/ + 7$
- ◆ In 2, if instead of selecting A, B is rolled a second time, the above process can be repeated to give the magic number:  $AT + 7 + BT/$