

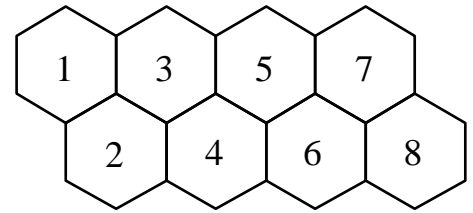
**INTERNATIONAL MATHEMATICS AND SCIENCE OLYMPIAD  
FOR PRIMARY SCHOOLS (IMSO) 2007**

**Mathematics Contest in Taiwan, Exploration Problems**

Name: \_\_\_\_\_ School: \_\_\_\_\_ Grade: \_\_\_\_\_ ID number: \_\_\_\_\_

Answer the following 5 questions. Write down your answer in the space provided after each question. Each question is worth 8 points. Time limit: 60 minutes.

1. How many different routes from cell 1 to cell  $n$  can you find if you always move to an adjacent cell labeled with a higher number?
- (a) 1 to 3 (1 point)
  - (b) 1 to 6 (3 point)
  - (c) 1 to 12 (4 point)



2. The number 21 can be expressed as a sum of two or more consecutive positive integers in 3 different ways, namely

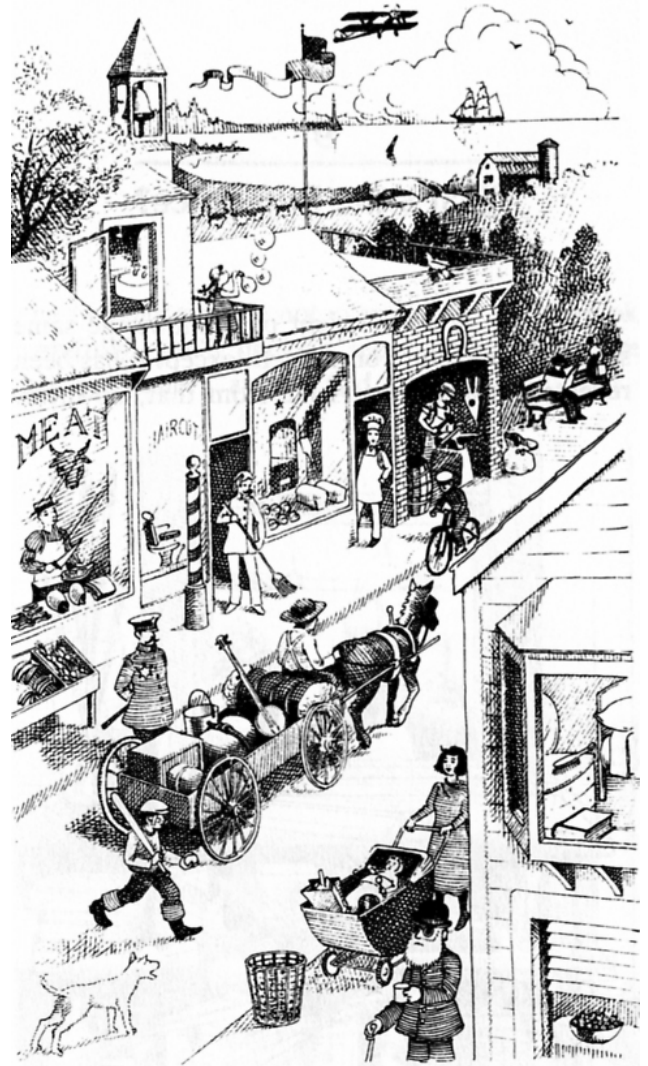
$$10+11$$

$$6+7+8$$

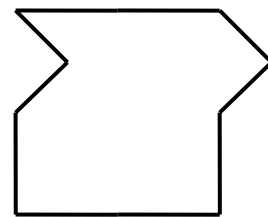
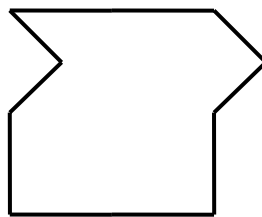
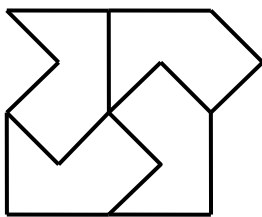
$$1+2+3+4+5+6.$$

How many different ways can (a)100 (3 point) ; (b)210 (5 point) be expressed as such sum in?

3. There are at least 89 things in the right picture with names that begin with the letter B. How many can you find? Write down 16 things.  
(0.5 point each correct answer;  
−0.5 point each incorrect answer.)



4. The figure on the left is divided into four congruent parts—four units of identical size and shape that can be laid flush on top of one another. Divide the figure on the right into five congruent parts (4 point), and then six (4 point).



5. In how many different ways can these nine barrels be arranged in three tiers of three so that :  
(a) no barrel shall have a smaller number than its own below it? (3 point)  
(b) no barrel shall have a smaller number than its own below it or to the right of it? (5 point)

