2nd International Mathematics Assessments for Schools (2012-2013)

Upper Primary Division Round 2

Time: 120 minutes

Printed Name：　　　　　　　　　　*Code*：　　　　　　　*Score*：

Instructions:

- Do not open the contest booklet until you are told to do so.

- Be sure that your name and code are written on the space provided above.

- Round 2 of IMAS is composed of three parts, total score is 100 marks.

- Questions 1 to 5 are given in multiple-choice test. Each question has five possible options marked as A, B, C, D and E. Only one of these options is correct. After making your choice, fill in the appropriate letter on the space provided. Each correct answer is worth 5 marks. There is no penalty for an incorrect answer.

- Questions 6 to 13 are short answer test. Only Arabic numerals are accepted; using other written text will not be honored or credited. Some questions have more than one answer, as such all answers are required to be written down on the space provided to obtain full marks. Each correct answer is worth 5 marks. There is no penalty for incorrect answer.

- Questions 14 and 15 require detailed solution or process in which 20 marks are to be awarded to completely written solution. Partial marks may be given to incomplete presentation. There is no penalty for an incorrect answer.

- Using of electronic computing devices is not allowed.

- Only pencil, blue or black ball-pens may be used to write your solution or answer.

- Diagrams are not drawn to scale. They are intended as aids only.

- After the contest the invigilator will collect the contest paper.

The following area is to be filled up by the judges; the contestants are not supposed to mark anything here.

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total Score	Signature
Score																	
Score																	

Upper Primary Division Round 2

Questions 1 to 5, 4 marks each

1. Andrew converted 15,700 Yuan to US Dollars for his foreign travel. He spent US$1,612 on this trip, and converted the remaining US Dollars back to Yuan. The currency exchange rate (shown below) for that day was the same as on the day when he converted his Yuan to US Dollars. How much Yuan would he get?
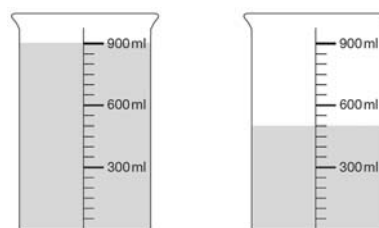
Currency Exchange Rate	
US Dollars	
Buying	6.25
Selling	6.28

   （A）5550　　　（B）5652　　　（C）6275　　　（D）7500　　　（E）10000

   Answer：_____

2. Which of the statements below is always true?
   （A）The sum of several odd numbers is an odd number.
   （B）The sum of an odd numbers and an even number is an even number.
   （C）The sum of two prime numbers is an even number.
   （D）The sum of two odd numbers is a composite number.
   （E）One of any three consecutive positive integers must be divisible by 3.

   Answer：_____

3. The diagram shows two identical graduated cylinders of capacity 900 ml, each containing some water. In order for both cylinders to contain the same amount of water, how much water should be poured from the cylinder on the left into the cylinder on the right?
   （A）125　　　（B）150　　　（C）175
   （D）200　　　（E）225

   Answer：_____

4. One of the following two-digit numbers is attached at the end of 2013 to make a six-digit number. Which number is attached if the six-digit number is divisible by 3, 4 and 7?
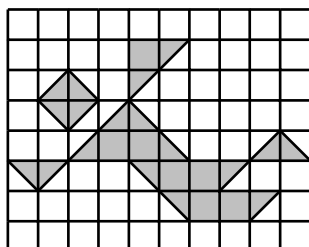   （A）12　　　（B）20　　　（C）48　　　（D）56　　　（E）78

   Answer：_____

5. Each of the following five six-sided die has 1, 2, 3, 4, 5 and 6 spots on its faces. Which one has a different arrangement of spots from the other four?

（A）　　　（B）　　　（C）　　　（D）　　　（E）
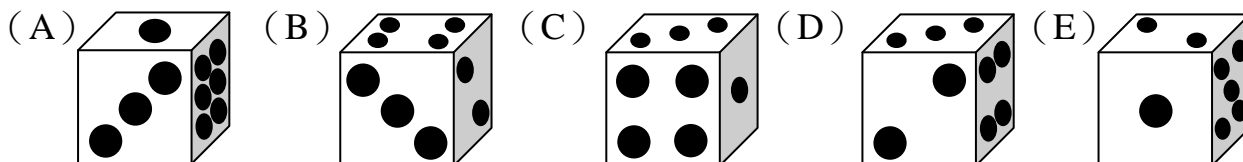
Answer：＿＿＿＿＿＿＿

Questions 6 to 13, 5 marks each

6. In the 8 × 10 grid below, how many percents of the figure is shaded?

Answer：＿＿＿＿＿＿＿ %

7. Andy and Ben started at 7:00AM from town *A* and jogged along the same road in the same direction. Andy jogged at a constant speed of 6 km/h while Ben jogged at a constant speed of 4 km/h. At 9:00AM, Ben borrowed a bike along the road and rode at a constant speed of 10 km/h. He caught up with Andy at town *B*. What was the distance between town *A* and town *B*?

Answer：＿＿＿＿＿＿＿ km

8. In a promotional sale, anyone who buys a cup of juice at the regular price of 7 dollars can get a second cup of juice by paying 1 more dollar. What is the minimum number of dollars a party of 9 people must pay if each of them wants a cup of juice?

Answer：＿＿＿＿＿＿＿ dollars

9. How many men are there in a party with 35 people if each person shakes hands with four women and six men?

Answer：＿＿＿＿＿＿＿ men

10. A rectangular strip, 30 cm in length and 3 cm wide, is folded in a pattern shown in diagram (2), producing a right angle $\angle ACB$. After the strip is completely folded as shown in diagrams (3) and (4), the lengths of *AM* and *GM* are equal. What is the length of *AC* in diagram (1)?


(1)   (2)   (3)   (4)
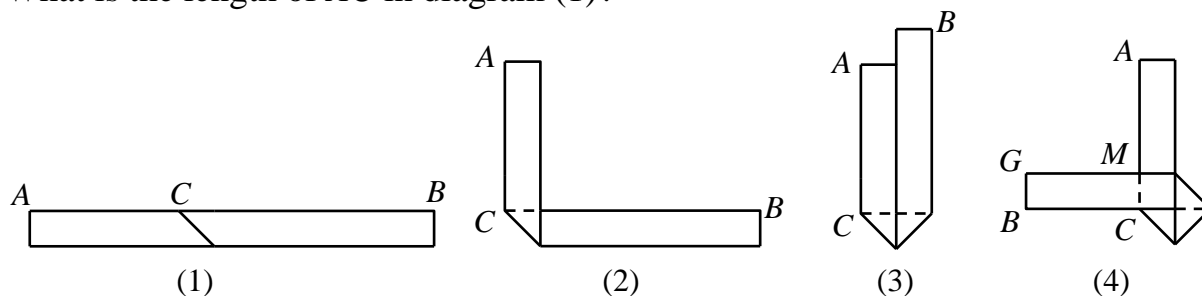
Answer： _____ cm

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11. In the figure, $\triangle ABC$ is a right triangle while *BDEC*, *BFGA* and *ACMN* are squares. If the area of the shaded portion is 48 cm², what is the area of $\triangle ABC$?
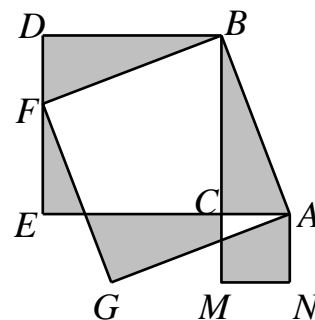
Answer： _____ cm²

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12. The diagram shows that if a rope is folded once and be cut in halves, it will separate into 3 pieces; and if it is folded twice instead, it will separate into 5 pieces. If it is folded 6 times instead, into how many pieces will it separate?
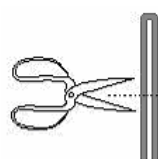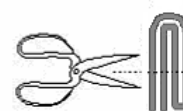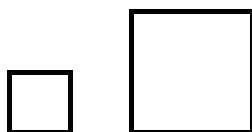

Fold 1 time   Fold 2 times

Answer： _____ pieces

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13. A 50 cm × 30 cm rectangle is to be covered with a combination of 10 cm × 10 cm and 20 cm × 20 cm tiles. How many different arrangements are possible?
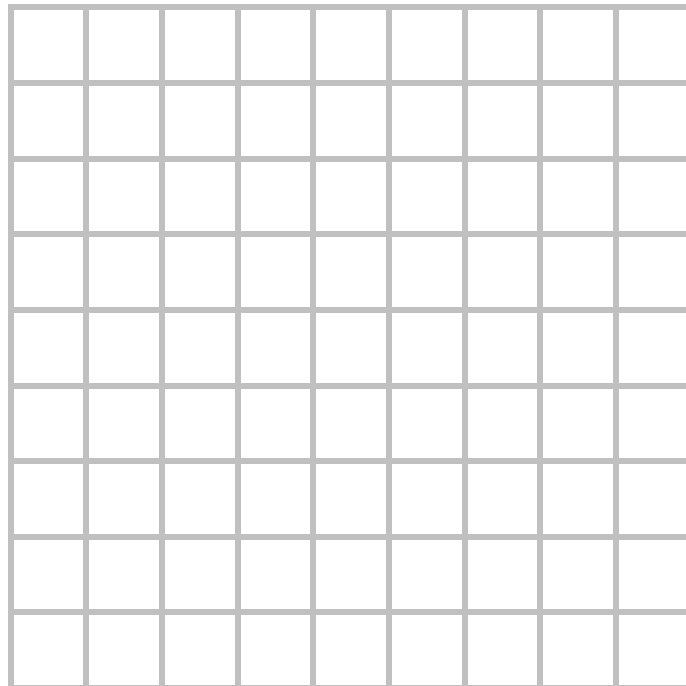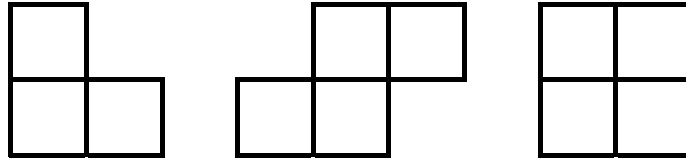

Answer： _____ arrangements

Questions 14 to 15, 20 marks each
(Detailed solutions are needed for these two problems)

14. How many positive integers n are there such that among the integers $n, n + 1, \cdots$ $n + 100$, there are exactly six which are squares of integers?

Answer： _____ positive integers

15. A 9×9 chessboard may be covered without overlap with a combination of the following three shapes. What is the minimum number of copies of the piece consisting of three squares must be used?

Answer： _____ copies