

International Mathematics Assessments for Schools

2013 MIDDLE PRIMARY DIVISION FIRST ROUND PAPER

Time allowed : 75 minutes

INSTRUCTION AND INFORMATION

GENERAL

1. Do not open the booklet until told to do so by your teacher.
2. No calculators, slide rules, log tables, math stencils, mobile phones or other calculating aids are permitted. Scribbling paper, graph paper, ruler and compasses are permitted, but are not essential.
3. Diagrams are NOT drawn to scale. They are intended only as aids.
4. There are 20 multiple-choice questions, each with 5 choices. Choose the most reasonable answer. The last 5 questions require whole number answers between 000 and 999 inclusive. The questions generally get harder as you work through the paper. There is no penalty for an incorrect response.
5. This is a mathematics assessment, not a test; do not expect to answer all questions.
6. Read the instructions on the answer sheet carefully. Ensure your name, school name and school year are filled in. It is your responsibility that the Answer Sheet is correctly coded.
7. When your teacher gives the signal, begin working on the problems.

THE ANSWER SHEET

1. Use only lead pencils.
2. Record your answers on the reverse side of the Answer Sheet (not on the question paper) by FULLY filling in the circles which correspond to your choices.
3. Your Answer Sheet will be read by a machine. The machine will see all markings even if they are in the wrong places. So please be careful not to doodle or write anything extra on the Answer Sheet. If you want to change an answer or remove any marks, use a plastic eraser and be sure to remove all marks and smudges.

INTEGRITY OF THE COMPETITION

The IMAS reserves the right to re-examine students before deciding whether to grant official status to their scores.

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Questions 1-10, 3 marks each

1. In an art class, the teacher presented shaped patterns. How many circular figures are there?



- (A) 1 (B) 2 (C) 3 (D) 4 (E) 5

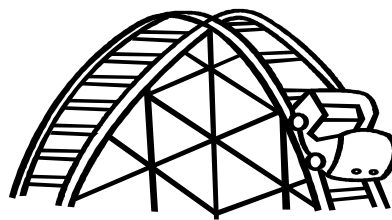
2. The clock in the diagram shows the time 7:30. The hour hand is between the numbers 7 and 8 and the minute hand points at number 6. What number will the minute hand be pointing 40 minutes later?



- (A) 2 (B) 4 (C) 6 (D) 8 (E) 10

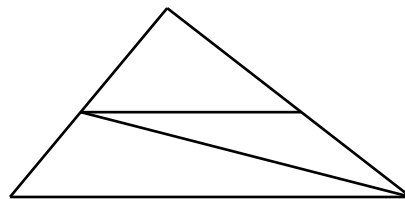
3. Which of the following is the closest length of time for one day?
- (A) half day (B) 2 days (C) 23 hours
(D) 26 hours (E) 1410 minutes

4. In the amusement park, a roller-coaster ride requires 5 tokens. Each token costs 5 dollars. How many dollars does Mickey have to spend for one ride?




- (A) 5 (B) 10 (C) 15 (D) 20 (E) 25

5. How many different triangles can be found in the diagram?



- (A) 1 (B) 3 (C) 4 (D) 5 (E) 6
-

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- occupy?
- 
- A row of eight cartoon animals: a monkey, a peacock, a cow, a goat, a giraffe, a donkey, a rabbit, and a fox.

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- (A) 1 (B) 3 (C) 4 (D) 6 (E) 8

Questions 11-20, 4 marks each

11. In a supermarket, apples are sold at 150 dollars for 6 pieces, and pears are sold at 30 dollars for 2 pieces. How much more expensive is the cost of each apple than a cost of each pear?



- (A) 1 (B) 3 (C) 5 (D) 10 (E) 12

12. Altogether, there are 240 books owned by 4 children. If Ace gives Bea 3 books, Bea gives Cec 4 books, Cec gives Dee 5 books and Dee gives Ace 6 books. Then each has the same number of books. Initially, how many books belong to the child with the least number of books?

- (A) 57 (B) 58 (C) 59 (D) 60 (E) 61

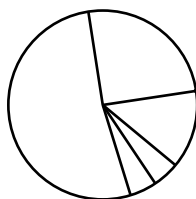
13. Zachary has a computer program which accepts an input and produces an output. Some of the data are shown in the table below.

Input	1	2	3	4	5	6	7
Output	4	7	10	13	16	?	22

What is the output when the input is 6?

- (A) 17 (B) 18 (C) 19 (D) 20 (E) 21

14. Hanna divides a circular piece of paper into 5 regions as shown in the diagram. She wants to paint each region using a color so that two regions sharing a common side with different colors. What is the smallest number of colors she needs?



- (A) 1 (B) 2 (C) 3 (D) 4 (E) 5

15. Three rabbits are digging for radishes in a field. The White Rabbit and the Spotted Rabbit dig up 13 radishes between them. The Spotted Rabbit and the Black Rabbit dig up 11 radishes between them. The Black Rabbit and the White Rabbit dig up 16 radishes between them. What is the total number of radishes dug up by the three rabbits?

(A) 10 (B) 11 (C) 15 (D) 16 (E) 20

16. Three travellers are crossing a desert together. When Mickey has finished his water supply, Don still has 5 bottles of mineral water and Jan has 4 bottles. They share the water equally among them. Mickey pays the others 36 dollars for the water he has received. How many dollars should go to Don?

(A) 8 (B) 12 (C) 16 (D) 20 (E) 24

17. From a box of chocolate, Mickey takes out half the number of pieces and put one piece back. Then he takes out half of the remaining number of pieces of chocolates and puts one piece back. After he does this for a total of 5 times, there are only three pieces of chocolates are left in the box. How many pieces of chocolates are in the box initially?



(A) 158 (B) 78 (C) 38 (D) 34 (E) 18

18. A necklace has 27 beads. When part of the necklace becomes visible, it appears that the first two beads are black, the next two are white, the next two are black, the next two are white, as shown in the diagram. If this pattern continues, what is the total number of black beads in the necklace?



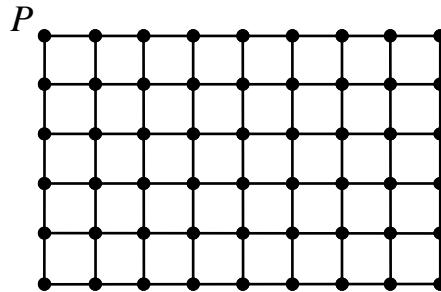
(A) 13 (B) 14 (C) 15 (D) 16 (E) 17

19. The digits 1 to 9 are placed inside the squares in the diagram, with a different digit in each of the boxes. Only the digit 2 is shown. If the equations are correct, what is the two-digit number formed by the digits in the first two boxes from the left?

$$\square \square \div \square \square = \square \square - \square \square = \boxed{2}$$

(A) 98 (B) 86 (C) 78 (D) 76 (E) 68

20. There are 54 grid points on a 5 by 8 grid as shown in the diagram where the side of each small square is 1 cm. Starting from point P , an ant crawls from point to point along the grid lines, visiting each grid point exactly once before returning to P . What is the maximum length of its path, in cm?

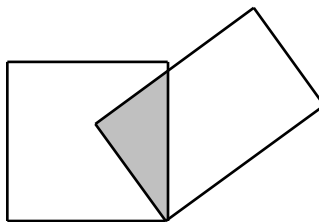


- (A) 26 (B) 30 (C) 36 (D) 54 (E) 93
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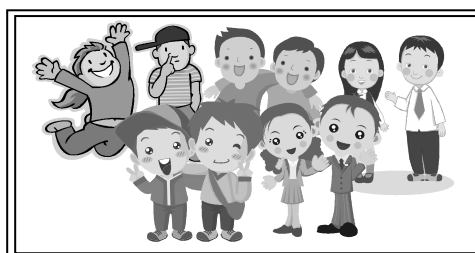
Questions 21-25, 6 marks each

21. Some cards are missing from a deck of 52 cards. If the incomplete deck is dealt to four players so that each receives the same number of cards, then 3 cards are left. If it is dealt to three players instead, with each still receiving the same number of cards, then 1 card is left. What is the maximum number of cards are there in the incomplete deck?

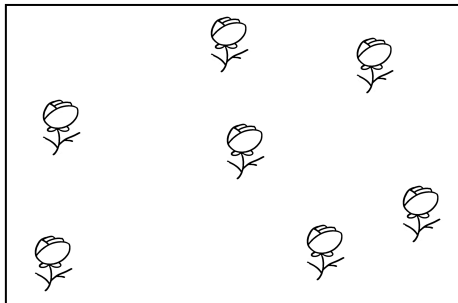
22. The diagram shows a 4 cm by 4 cm piece of paper overlapping a 3 cm by 5 cm piece of paper. By how many cm^2 does the area of the non-overlapped part of the square piece of paper exceeds the area of the non-overlapped part of the rectangular piece of paper?



23. For the class photo of 42 students, the photo shop charges 10 dollars for the first copy and 3 dollars for each additional copy. Moreover, a bonus of 2 copies is given for an order exceeding 30 copies. If each student gets one copy, how much must they pay the photo shop altogether?



24. The diagram shows 7 flowers printed on a piece of paper. What is the smallest number of straight lines we must draw to divide the piece of paper into several regions, so that each flower is in a different region?



25. The six faces of a cubical die are labeled with six different positive integers. If the numbers on any two adjacent faces differ by at least 2, what is the minimum value of the sum of these six numbers?

