International Mathematics Assessments for Schools

2014 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. What is the value of $2 + 0 + 1 + 4 + 2 \times 0 \times 1 \times 4$?
   （A）0 　　　（B）5 　　　（C）7 　　　（D）9 　　　（E）15

2. Which of the following numbers is the smallest?
   （A）298 　（B）312 　（C）231 　（D）357 　（E）101

3. Which of the following polygons has the greatest number of sides?
   （A） 　　（B） 　　（C） 　　（D） 　　（E）

4. The word "2014IMAS" appears on the screen. After each minute, the leftmost character moves over to become the rightmost character. How many minutes will elapse before the word "2014IMAS" appears on the screen once again?
   （A）5 　　　（B）6 　　　（C）7 　　　（D）8 　　　（E）9

5. The side length of each hexagon in the diagram is 1 cm. What is the perimeter, in cm, of the figure formed from these hexagons?

   （A）18 　　（B）20 　　（C）22 　　（D）24 　　（E）26

6. Thirty students numbered from 1 to 30 stand in a row. The teacher announces, "Will those numbered from 1 to 10 inclusive take one step forward, and those numbers 20 to 30 inclusive take one step backward." How many students remain in place?
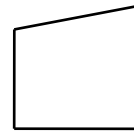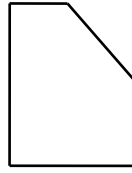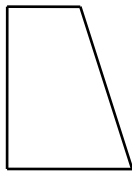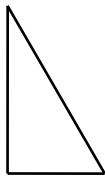   （A）9 　　（B）10 　　（C）11 　　（D）20 　　（E）21

7. Max throws four darts at the target shown in the diagram. All four darts hit the target, each scoring a different number of points. What is the minimum number of points Max has scored?
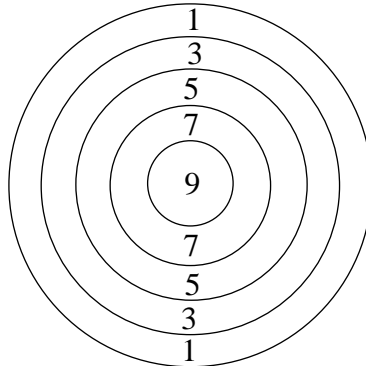
(A) 4   (B) 10   (C) 16   (D) 20   (E) 24

8. Which of the polygonal board below cannot be obtained from a rectangular board after one straight cut?
   (A)   (B)   (C)   (D)   (E)
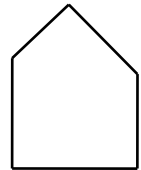
9. Benches are provided for children watching a movie. Each bench can seat 3 children. What is the minimum number of benches required to seat 25 children?
   (A) 7   (B) 8   (C) 9   (D) 10   (E) 11

10. A large bottle of apple juice costs 6.5 dollars while a small bottle of apple juice costs 2.8 dollars. How many dollars less is the cost of a large bottle compared to the total cost of three small bottles?


Item: Apple juice
Volume: 1500 mL
Price: $ 6.50

Item: Apple juice
Volume: 500 mL
Price: $ 2.80
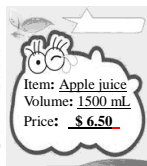
(A) 1.9   (B) 2.1   (C) 2.3   (D) 2.8   (E) 3.7

Questions 11-20, 4 marks each

11. A shell may be traded in for two baskets of fruit or three baskets of vegetable. Which of the following may not be obtained by trading in at most two shells?

（A）two baskets of fruit and three baskets of vegetable
（B）six baskets of vegetable
（C）two baskets of fruit
（D）three baskets of fruit and two baskets of vegetable
（E）three baskets of vegetable

12. Lana is a student in Grade 4. Which of the following is the closest approximation to her age?
（A）120 hours   （B）120 days   （C）120 weeks
（D）120 months   （E）120 years

13. There are 2 red balls, 6 yellow balls and 10 blue balls in a box. One ball is drawn at random. Which of the following statement is correct?


2 red balls
6 yellow balls
10 blue balls
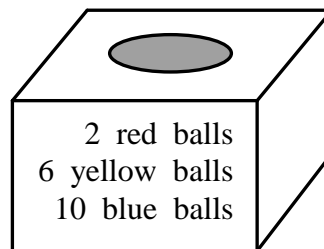
（A）The probability of drawing a blue ball is the lowest.
（B）It is equally likely to draw a ball of any colour.
（C）The probability of drawing a yellow ball is the highest.
（D）It is less likely to draw a yellow ball than a blue ball.
（E）The probability of drawing a yellow ball is the lowest.

14. Whenever the hour hand and the minute hand of a clock coincide, the number of germs in a dish increases by 10. Between 1:30 pm and 6:30 pm on the same day, by how many has the number of germs increased?

（A）20　　　　（B）30　　　　（C）40　　　　（D）50　　　　（E）60

15. The diagram shows a cubical die moving on a 1 by 8 board by tilting over an edge. The number on the face touching the board is imprinted on that square of the board. The numbers in the first four squares are 4, 1, 2 and 5. What is the total of all eight numbers?
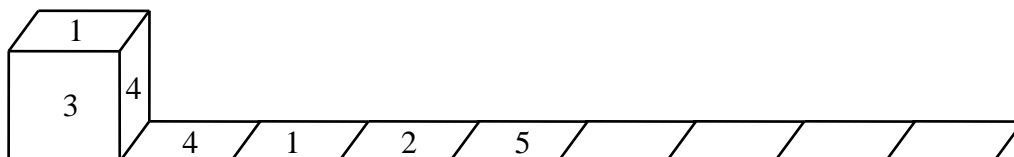
（A）21　　　　（B）22　　　　（C）23　　　　（D）24　　　　（E）25

16. The two stars in the diagram represent the same number. The sum of the three numbers in the second row is equal to twice the sum of the three numbers in the first row. What number does each star represent?

5	6	☆		
		☆	19	20

（A）7　　　　（B）8　　　　（C）13　　　　（D）17　　　　（E）18

17. A workman is moving 40 panes of glass. He gets 2 dollars for each pane. However, if he breaks one pane, he will have to pay 8 dollars instead of getting 2 dollars. If his total pay is 60 dollars, how many panes has he broken?

（A）1　　　　（B）2　　　　（C）3　　　　（D）4　　　　（E）5

18. Some children stand in a line and call out the numbers 1, 2 and 3 in cyclic order, starting with 1. If the last child calls out 2, which of the following number can be the number of children in the line?

（A）24　　　　（B）25　　　　（C）26　　　　（D）27　　　　（E）28

19. Max has a red box which contains 6 blue boxes. Each blue box contains 4 green boxes. How many boxes does Max have in total?
（A）10　　（B）11　　（C）24　　（D）25　　（E）31

20. The diagram shows a figure obtained by putting together 11 squares of the same size. If the perimeter of the figure is 48 cm, what is the area, in cm^2, of the figure?
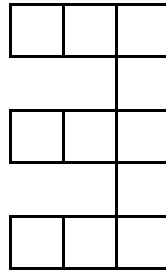

（A）11　　（B）22　　（C）33　　（D）44　　（E）48

Questions 21-25, 6 marks each

21. Some students are lined up in a rectangular array. Max is the 8th student in his column from the front, and the 13th from the back. There are 15 students to his left and 15 students to his right in the same row. How many students are in the line-up?

22. The area of a triangle is 50 cm^2. Each side is divided into five equal parts, and some pairs of division points are joined as shown in the diagram. What is the total area, in cm^2 of the shaded regions?
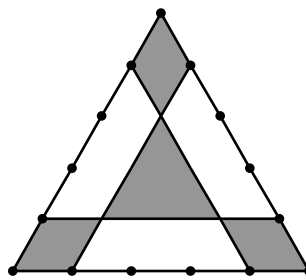
23. Oliver arranges his toy ducks and toy turtles in a row as shown in the diagram. He wishes to have all the toy ducks on the left and all the toy turtles on the right. He may switch the position of any two adjacent toys. What is the minimum number of switches he will require?

24. Every digit of a seven-digit multiple of 3 is 0, 2 or 3, and there are more 3's than 0's. If each of 0, 2 and 3 appears at least once, what is the sum of all seven digits?

25. When different buttons are pressed, a robot may move forward 1 cm, 3 cm or 5 cm. If buttons are pressed six times, how many different distances may the robot have moved?

✳ ✳ ✳