2022-2023 Junior Mathematical Olympiad

Round One Examination (Grade 4) - 1:00pm

For each question, determine the letter corresponding to the correct or best response; along with the question number, indicate this letter by shading it on the answer sheet

1. Which of the following is an even number?

   (A) 2023   (B) $2 + 0 + 2 + 3$ (C) $202 - 3$ (D) 202×3 (E) $202 + 3$

2. What is the value of
$$20 + 2 \times 3?$$

   (A) 26   (B) 2026   (C) 66   (D) 2023   (E) 25

3. The grid below gives the position of different shapes. The ♠ is at $B4$.

	1	2	3	4
A		♡		
B				♠
C		♢	★	
D	♣			

   On which square is the ★?

   (A) $A3$ (B) $C3$ (C) $D4$ (D) $B4$ (E) $C2$

4. If D means "move down" and R means "move right" , which of the following sequence of moves will get you from **A** to **Z**?
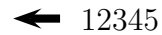
A			
			Z

   (A) $DRRDDD$ (B) $DDRDDR$ (C) $RDRDRR$ (D) $RRDDDD$ (E) $RDRDDR$

5. A passenger aircraft has 3 seats on each side of a centre aisle in each row. It is designed to carry 150 passengers. How many rows of seats does the aircraft have?

   (A) 50   (B) 37   (C) 33   (D) 32   (E) 25

6. How many edges does a cube have?
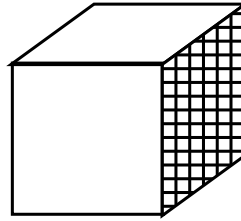
(A) 4 (B) 6 (C) 8 (D) 10 (E) 12

7. Five cars are represented by the numbers 1 to 5. They drive in the direction of the arrow.

$$\longleftarrow \ 12345$$

First, the last car overtakes two cars in front of it. Then the now second to last car overtakes two in front of it. Finally in the end, the car that is now in the middle overtakes the two in front of it. In which order do the cars now drive?

(A) 12345 (B) 21354 (C) 21534 (D) 31425 (E) 41253

8. What is the difference between the largest 5-digit number and the smallest 5-digit number which can be formed from rearranging the 5 digits below?
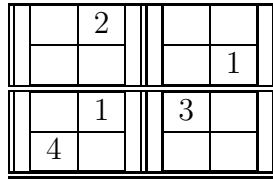
$$1, 2, 3, 4, 5$$

(A) 41,967 (B) 41,976 (C) 44,444 (D) 42,024 (E) 41,076

9. What fraction of the largest triangle is shaded?
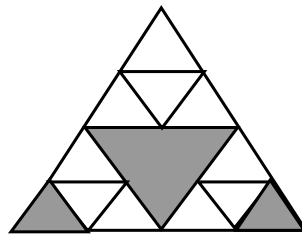
(A) 1/2 (B) 1/3 (C) 1/4 (D) 7/16 (E) 3/8

10. The game of **Magic Fours** is played on a 4×4 grid. When completed, each of the numbers $1, 2, 3$ and 4 occurs in each row and column of the 4×4 grid and also in each 2×2 corner of the grid.


When the grid shown is completed, the sum of the four numbers in the corners of the 4×4 grid is

(A) 13   (B) 11   (C) 15   (D) 12   (E) 10

11. Janae is given a large block of chocolate which is made up of square pieces and is 6 pieces wide and 8 pieces long.
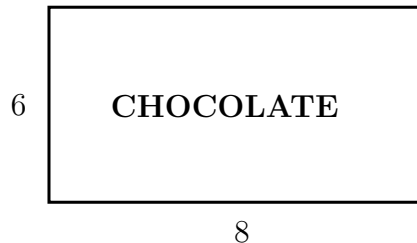
She eats all the outer pieces. What fraction of the block is left?

(A) 1/4   (B) 1/3   (C) 1/2   (D) 2/3   (E) 3/4

12. Beatrice gives a number problem to Harry. She told him to choose a number, add 5 to it, double that sum and then subtract 10. Harry's

answer was 30. Which number did he choose?

(A) 15   (B) 25   (C) 45   (D) 40   (E) 30

13. A rectangular wire grid is made up of 15 equal squares as shown.
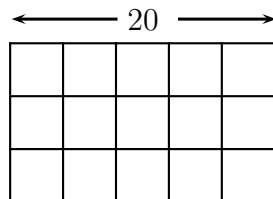
If the length of the grid is 20 cm, what is the total length, in centimetres, of the wire in the grid?

(A) 144   (B) 150   (C) 152   (D) 164   (E) 170

14. In a family, each of the children have at least one brother and at least two sisters. What is the smallest number of children in this family?

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

15. A film lasts 90 minutes. It began at 17 : 10. During the film, there were two advertisement breaks, one lasting 8 minutes and the other lasting 5 minutes. What time did the film ends?

    (A) 18 : 13   (B) 18 : 27   (C) 18 : 47   (D) 18 : 53   (E) 19 : 13

16. Two rectangles with measurements 8×10 and 9×12 overlap as shown in the diagram below.
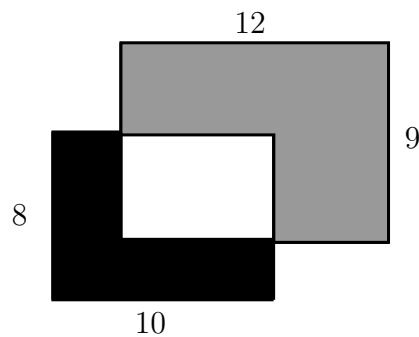
    The area of the black portion is 37. What is the area of the grey portion?

    (A) 60   (B) 62   (C) 62.5   (D) 64   (E) 65

17. In a classroom the children sit in rows. In each row there are the same amount of children. In Bobby's row there are 2 children to the left of him and 3 children to the right of him. In front of Bobby there are 2 rows and just one row behind him. How many children in total are in Bobby's class?

    (A) 8   (B) 15   (C) 18   (D) 20   (E) 24

18. Sixteen trees are equally spaced along one side of a straight road. The distance from the first tree to the fifth is 80 metres. What is the distance in metres between the first tree and the last tree?

    (A) 90   (B) 300   (C) 305   (D) 320   (E) 240

19. Monika has filled a table with numbers

9	1	5
3	7	6
4	7	4

When she adds the numbers in each row and in each column together, the result should always be the same. She has however, made a mistake. In order to get the same result every time, she has to change one single number. Which number does Monika have to change?

(A) 1   (B) 3   (C) one of the 4   (D) 5   (E) one of the 7

20. When I opened my new math book the sum of the two page numbers facing me was 317. What will be the number of the next page?

(A) 167   (B) 160   (C) 155   (D) 164   (E) 318

21. A dance group has 39 boys and 23 girls. Each week 6 more boys and 8 more girls join the group until there is an equal number of boys and girls in the group. This occurs after week 8. What is the total number of boys and girls that are in the group after week 8?

(A) 144   (B) 154   (C) 164   (D) 174   (E) 184

22. In an icecream shop, where each icecream is sold at the same price, there is some money in a drawer. After 6 icecreams were sold, there were $700 in the drawer. After a total of 16 icecreams were sold, there were $1200 in the drawer. How many dollars were there in the drawer at the start?

(A) 200   (B) 300   (C) 400   (D) 500   (E) 600

23. Jimmy has $\frac{1}{5}$ more money than Yola, and Bobbi has $\frac{1}{5}$ less money than Jimmy. What fraction less money does Bobbi have than Yola?

(A) 1/25   (B) 1/20   (C) 3/50   (D) 7/100   (E) 2/25

24. You have enough $2, $3 and $4 stamps and you want to stick them in a row. How many ways are there to get a total of exactly $10 using exactly 4 stamps?

(A) 4   (B) 6   (C) 8   (D) 10   (E) 12

25. Five girls ate plums. Laura ate 2 plums more than Sophie. Betty ate 3 plums less than Laura. Clara ate 1 plum more than Betty and 3 less than Alice. Which two of the girls ate the same amount of plums?

(A) Alice and Betty   (B) Alice and Laura   (C) Alice and Sophie   (D) Clara and Laura   (E) Clara and Sophie