



2^{WMO}
015

THE 8th
WORLD MATHEMATICAL
OLYMPIAD COMPETITION

L1

Stanford university • USA
2015 . 02



Name: _____ Grade: _____

Country: _____ Number: _____

Level 1: The World Cup Finals

Total marks: 120 Time: 90min



Section One: Multiple Choice Questions [40 marks in this section]

1. A volleyball match begins at 7:40pm and lasts for 45 minutes. It ends at ().

(A) 8:15 pm (B) 8:25 pm

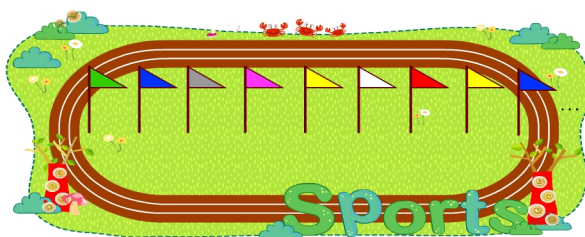
(C) 9:15 pm (D) 9:25 pm



2. There is a row of flags with many different colors on the playground. From the left side, red is the seventh surface while from the right side, it is the 4th surface. As such, this row of colored banners has () surfaces.

(A) 8 (B) 9

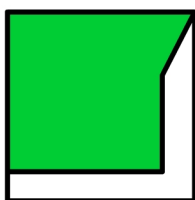
(C) 10 (D) 11



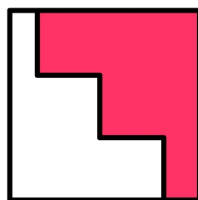
3. Please look at the four pictures below and find a picture. The area of the colour regions in this picture is bigger than that of the white regions, but the perimeter of the colour regions is less than that of the white regions. This picture is ().



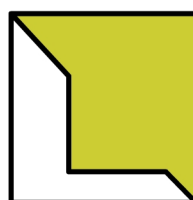
(A)



(B)



(C)



(D)

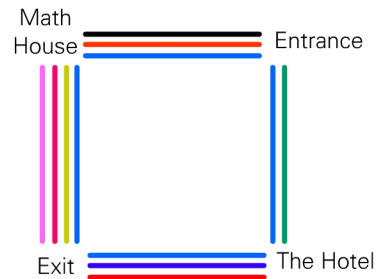
4. Uncle Jack is 45 years old and he has three children: Sam, who is 15, Kevin, who is 11, and David, who is 7. In () years, Uncle Jack will be as old as the sum of his children's ages.

- (A) 4 (B) 5
 (C) 6 (D) 7



5. Jayson, Mary, Carrey and Paul go out to play, they escaped the trap and saw a sign in the street. They decided to go to the hotel for lunch first before proceeding. They saw from the sign that the roads from the Entrance to the Math House consist of three roads. There are four roads from the Math House to the Exit. There are three more roads from the Exit to the Hotel. There are two roads from the Hotel to the Entrance. There are () different possible ways they can travel from the Entrance to the Hotel, assuming they do not mind taking longer distances and different routes.

- (A) 12 (B) 14
 (C) 38 (D) 72



6. Jayson and his friends decided go to the Math House to take a Math Quiz. After the test, our four heroes, Jayson, Mary, Carrey and Paul decided to guess their own scores. Jayson said, "If I received an A, Mary will get an A also." Mary said, "If I received an A, Carrey will get an A also." Carrey said, "If I received an A, Paul will get an A also." Everybody was right. However there were only two people who scored A. They were ().

- (A) Jayson and Mary (B) Mary and Carrey
 (C) Carrey and Paul (D) Paul and Jayson



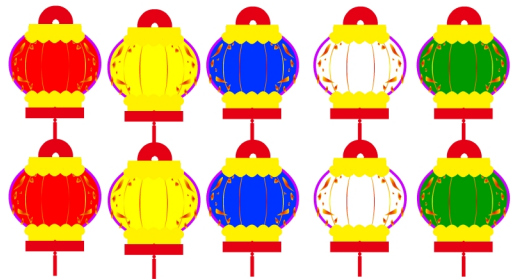


Section Two: Fill In the Blanks [40 marks in this section]

1. When the students of grade 3 take attend the math interest group, if there are 10 students per row, there can be 6 rows; if 12 students per row, there can be _____rows.



2. For international day, the school hung colored lights of red, yellow, blue, white, green, red, yellow, blue, white, green and so on in this order. In total, there are 103 colored bulbs, therefore the 103th bulb is the _____ colored bulb.



3. Catherine stumbled upon a magical land . She saw many different English phrases in this place. She realized that the different alphabets in the phrase “my favorite” stands for different numbers in the phrase. [m=0, y=1...e =9] If that is so, _____ is the sum of all letters in “m+y+f+a+v+o+r+i+t+e” .

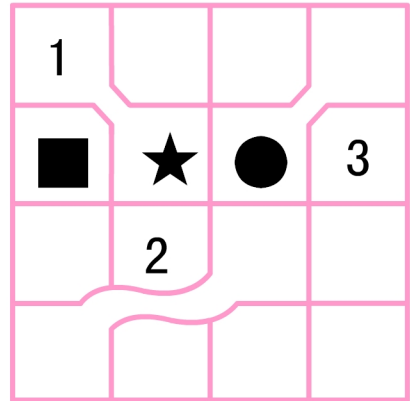
4. Fill in the blanks according to the requirement:

- ① Put the number 1,2,3,4 in the blanks, there is no repeat in every row and column
- ② Make sure the numbers in the two connected blanks are the same.

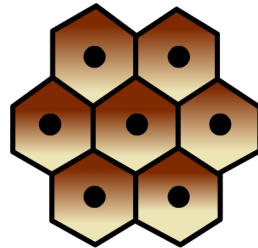
■ = _____

★ = _____

● = _____



5. Ali Parker realized that a set of pencils will be given away as souvenirs. [See picture]. He realized that a single pencil was encircled by a ring of 6 other pencils. _____ pencils did the organizers need to form a second ring.



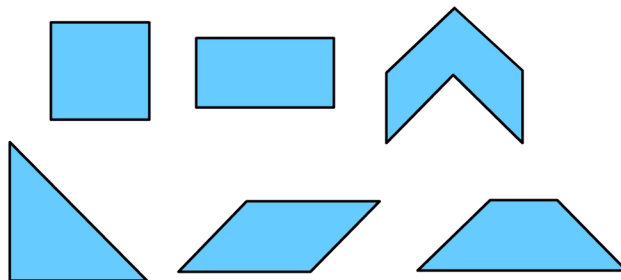
6. Lily found that the clock in his house had fell off the wall and broken into 3 different pieces. Each piece had four numbers. The interesting thing about this incident was that he realized the sums of the numbers on each piece are identical. The identical sum of the numbers on each piece is _____.



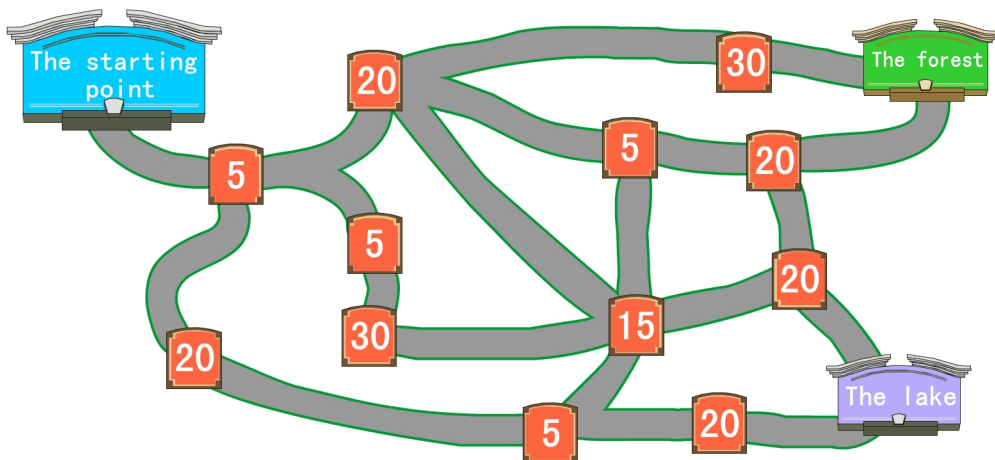


Section Three:Perating-Question [20 marks in this section]

1. Each of the six shapes below can be made up of the three isosceles triangles in the brackets: a bigger one and two smaller ones with the same size. Please draw the three parts for each shape by dashed lines. (10 marks)



- 2.The Shreks are ready to set off for a weekend trip and will be stopping at some rest stops along the way which have some numbers on them. From the starting point to their destination, the sum of the numbers at the rest stops along their journey is 100. Do you know if the Shreks are going to the forest or the lake? Please draw the route. (Mary not go back!) (10 marks)





Section Four: Answer the questions[20 marks in this section]

1. Jimmy was preparing for a celebration. He was tasked to buy 50 bottles of drinks for the guests. He went to three supermarkets, Metro, Carrefour, Wal-mart to make the purchase. Every bottle costs \$2.50, however every supermarket has different promotional tactics.

Metro- 2 bottles free for every 10 bottles purchased

Wal-mart- 50 cents discount for every bottle

Carrefour - Rebate of \$2 for every \$10 spent

Where would Draco make his purchase? Why? (8 marks)



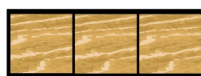
2. Juliet has moved to a new house and she wants to have new floor tiles for her room. Please look at the 5×5 square of her room. Tile shape and price are as follows. (12 marks)



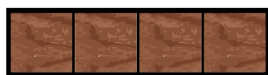
¥ 40



¥ 68



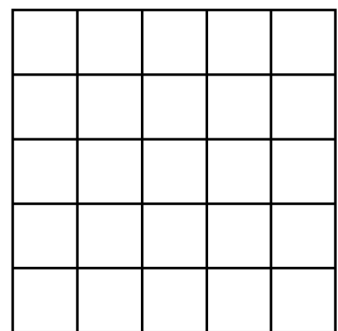
¥ 98



¥ 130



¥ 190



Juliet's Room

Would you please help Juliet design method for floor tile, draw graphics and calculate the money spent. (Floor tile not cutting, also can't overlap)