



International Junior Math Olympiad

GRADE 5

Time Allowed: 90 minutes

Name:

Country:

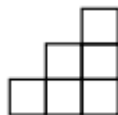
INSTRUCTIONS

1. Please DO NOT OPEN the contest booklet until told to do so.
2. There are 30 questions.
Section A: Questions 1 to 10 score 2 points each, no points are deducted for unanswered question and 1 point is deducted for wrong answer.
Section B: Questions 11 to 20 score 3 points each, no points are deducted for unanswered question and 1 point is deducted for wrong answer.
Section C: Question 21 to 30 score 5 points each, no points are deducted for unanswered or wrong answer.
3. Shade your answers neatly using a 2B pencil in the Answer Entry Sheet.
4. No one may help any student in any way during the contest.
5. No electronic devices capable of storing and displaying visual information is allowed during the exam. Strictly NO CALCULATORS are allowed into the exam.
6. No exam papers and written notes can be taken out by any contestant.

SECTION A – 10 questions

Question 1

How many rectangles are there in the figure below?



- A. 6
- B. 10
- C. 15
- D. 13
- E. 14

Question 2

February 2017 has 28 days. The number of days in this year's February is how many times of the number of days in one week?

- A. 4 times
- B. 7 times
- C. 21 times
- D. 35 times
- E. None of the above

Question 3

There were 400 members in a chess club last year. The number of members decreased by 5% this year. How many members are there in the chess club this year?

- A. 395
- B. 390
- C. 385
- D. 380
- E. 375

Question 4

The product of all the factors of 10 is equal to _____.

- A. 17
- B. 100
- C. 50
- D. 200
- E. 10

Question 5

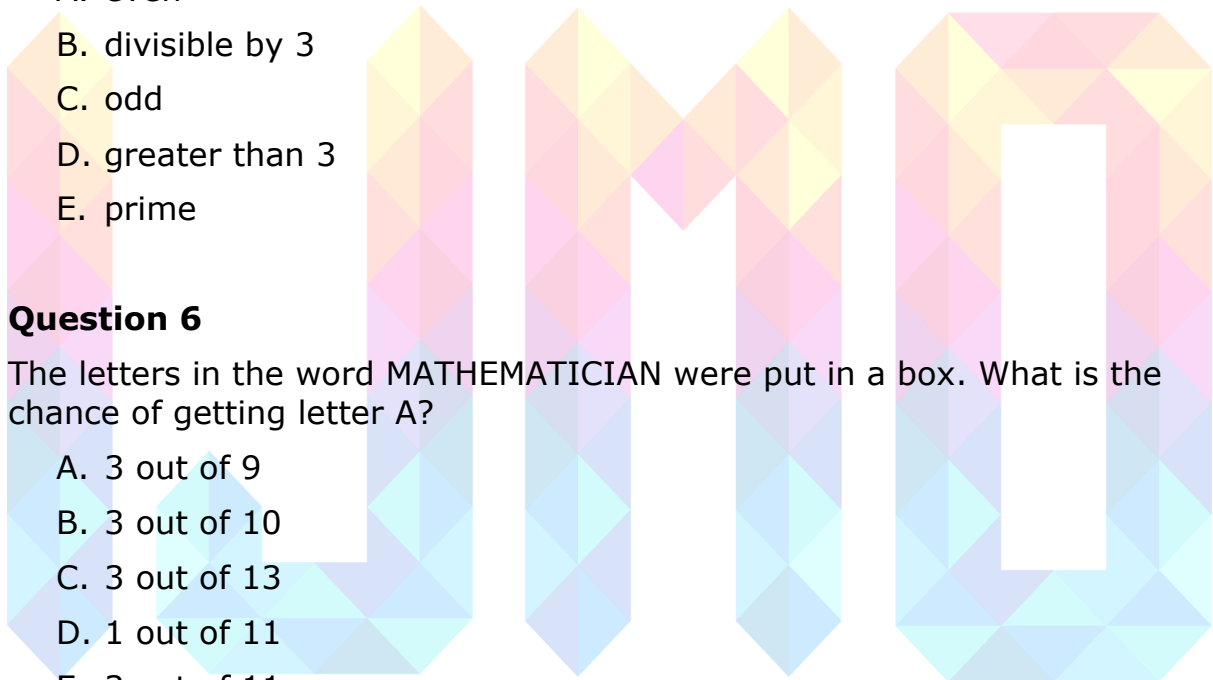
The sum of two prime numbers is always _____

- A. even
- B. divisible by 3
- C. odd
- D. greater than 3
- E. prime

Question 6

The letters in the word MATHEMATICIAN were put in a box. What is the chance of getting letter A?

- A. 3 out of 9
- B. 3 out of 10
- C. 3 out of 13
- D. 1 out of 11
- E. 3 out of 11



Question 7

What fraction of this square is shaded if the line inside divides the square into two equal parts?



- A. $\frac{1}{2}$
- B. $\frac{1}{3}$
- C. $\frac{3}{8}$
- D. $\frac{3}{5}$
- E. $\frac{3}{4}$

Question 8

Mr. Cho received a container of fresh eggs. He sold $\frac{1}{3}$ of the eggs in the morning and sold 320 eggs in the afternoon. At the end of the day, he found that $\frac{1}{4}$ of the eggs were not sold. How many eggs did he receive in the beginning?

- A. 768
- B. 448
- C. 549
- D. 1224
- E. 1600

Question 9

Cindy saved \$15 in the first month, \$30 in the second month, \$45 in the third month, and so forth. The amount of money she saved in the last month was \$120. How much money did Cindy save in total?

- A. 210
- B. 300
- C. 350
- D. 420
- E. 540

Question 10

A number is added to 3. The sum is then multiplied by 5. When 8 is subtracted from the product, the result is 12. What is this number?

- A. 5
- B. 4
- C. 3
- D. 2
- E. 1



Section B – 10 questions**Question 11**

A tournament had six players. Each player played every other player only once, with no ties. If Helen won 4 games, Ines won 3 games, Janet won 2 games, Kendra won 2 games and Lara won 2 games, how many games did Monica win?

- A. 0
- B. 1
- C. 2
- D. 3
- E. 4

Question 12

How many numbers are there in the sequence 10, 13, 16, 19, ..., 70, 73?

- A. 20
- B. 21
- C. 22
- D. 60
- E. 61

Question 13

There are two plants in Mrs. Saumya's garden. One is 44 cm tall, and it grows 3 cm every 2 years. The other is 80 cm tall, and it grows 5 cm every 6 years. In how many years will the two plants have the same height?

- A. 36 years
- B. 40 years
- C. 48 years
- D. 52 years
- E. 54 years

Question 14

A "leap year" is a year which has 366 days including February 29 as an additional day. Any year that is divisible by 4 is a leap year, but a year that is divisible by 100 is a leap year only if it is also divisible by 400. How many leap years are there from 2000 to 2017?

- A. 3
- B. 4
- C. 5
- D. 6
- E. None of the above

Question 15

A snail fell into a hole that is 10 metres deep. Every day it would climb 3 metres up but then it would fall 2 metres down while sleeping during the night. After how many days would the snail climb out of the hole?

- A. 8 days
- B. 7 days
- C. 10 days
- D. 5 days
- E. 9 days

Question 16

The distance from Amit's house to the school is 4 times the distance from the post office to the school. The distance from the school to his house is 2 km. What is the distance from his house to the post office?



- A. 1.75 km
- B. 1.5 km
- C. 2.2 km
- D. 2.5 km
- E. 8 km

Question 17

A cheetah was running at 5 km per hour for ten seconds until it spotted an impala it wanted to catch. The cheetah then run faster and averaged to 60 km per hour for the next 40 seconds. The impala went away and the cheetah slowed down to an average of 5 km per hour for ten seconds. Rounded to the nearest km per hour, what was the cheetah's average speed for the entire minute?

- A. 54 km/h
- B. 50 km/h
- C. 46 km/h
- D. 42 km/h
- E. 35 km/h

Question 18

I added the first ten whole numbers greater than 0. I forgot to include one whole number and I got 50 as the sum. Which one of these ten whole numbers I did not add?

- A. 1
- B. 3
- C. 5
- D. 7
- E. 6

Question 19

Five fishermen, Ahe, Bahe, Cahe, Don, and Zella, all wanted to go out fishing. However, they only had three fishing poles, so only three of them could go out each day. How many different groups of 3 fishermen can be formed?

- A. 25
- B. 20
- C. 15
- D. 12
- E. 10

Question 20

To go from Town A to Town B, a car can take different paths (one way) as illustrated below:



How many different paths can the car take from Town A to Town B?

- A. 8
- B. 12
- C. 6
- D. 14
- E. 7



Section C – 10 questions

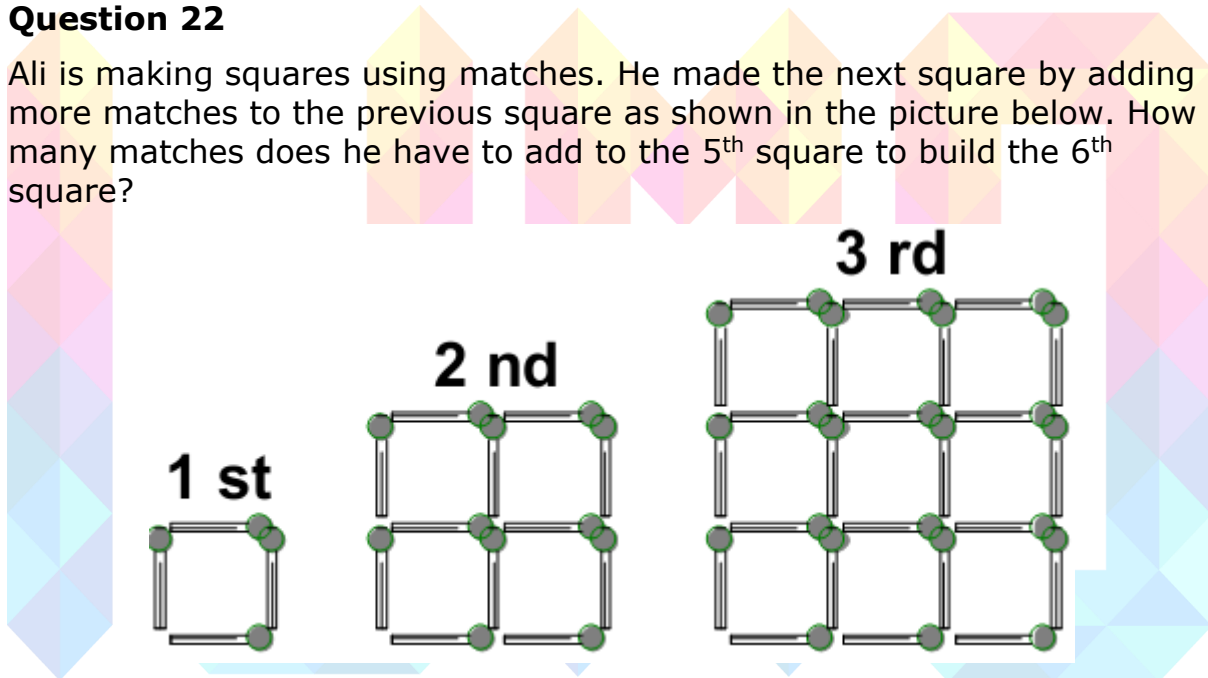
Question 21

To complete the grid below, each of the digits from 1 to 4 must occur exactly once in each row and in each column. What number should replace X?

1		2	
2	3		
			4
			X

Question 22

Ali is making squares using matches. He made the next square by adding more matches to the previous square as shown in the picture below. How many matches does he have to add to the 5th square to build the 6th square?



Question 23

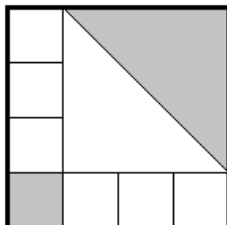
There were 60 birds on three trees. Then 6 birds flew away from the first tree, 8 birds flew away from the second tree and 4 birds flew away from the third tree. Now there are the same number of birds on each tree. How many birds were there on the second tree in the beginning?

Question 24

The brothers Tom and Jason gave truthful answers to the question about the number of members their chess club has. Tom said: "All the members of our club, except five girls, are boys." Jason said: "Every six members always includes at least four girls." What is the least number of members in their chess club?

Question 25

In the diagram below, the big square is divided into 7 identical squares and 2 identical triangles. The area of the shaded small square is 4 cm^2 . What is the total area of the shaded parts in cm^2 ?



Question 26

A group of boys were picking apples. They each picked 3 apples. Then three other boys joined them. They wanted to share the picked apples equally among all the boys present, but found out that this was not possible. However, one of the boys picked one more apple. Now everyone could have exactly two apples. How many boys were there in the original group?

Question 27

Let the operation $*$ be defined by $a * b = ab - a - b + 2$. If $7 * b = 13$, what is the value of b ?

Question 28

A game consists of black and white pieces. The number of black pieces is 5 more than 3 times the white pieces. 7 white and 15 black pieces are removed each round. After several rounds, there are 3 white and 56 black pieces left. How many pieces were there in the beginning?

Question 29

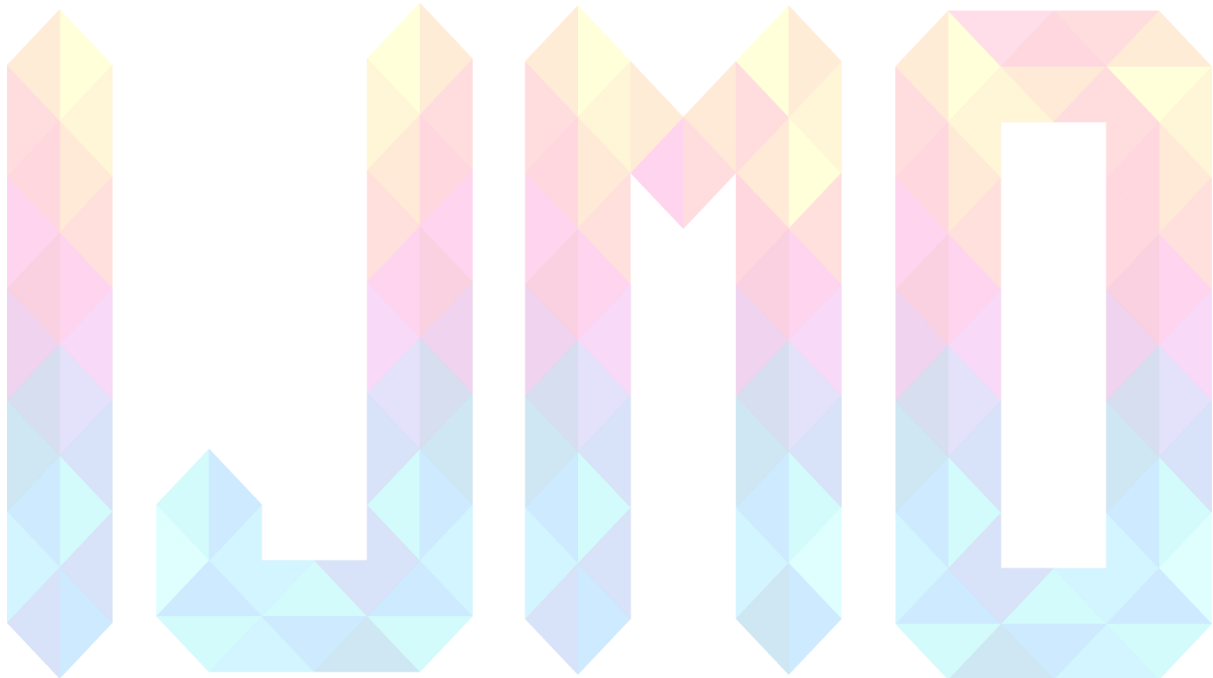
Nora cut a grey shape from a square paper that is 6 cm by 6 cm. Two vertices of the grey shape are the midpoints of the square's sides, and the other vertex is in the centre of the square. What is the area of the grey shape?



Question 30

A regiment has less than 1000 soldiers. The colonel planned in arranging the soldiers in the form of a rectangle. When he placed 17 soldiers in each row, one row was short of 1 soldier. When he placed 13 soldiers in each row, one soldier remains. If the regiment consists of three "battalions", each with the same number of soldiers, how big is a "battalion"?

END OF PAPER



1	C
2	A
3	D
4	B
5	D
6	C
7	C
8	A
9	E
10	E
11	C
12	C
13	E
14	C
15	A
16	B
17	D
18	C
19	E
20	B
21	0002
22	0024
23	0022
24	0007
25	0022
26	0005
27	0003
28	0213
29	0009
30	0113

