mathemania
national math puzzle contest
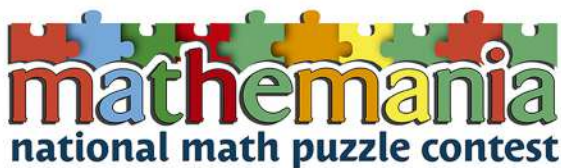
Secondary Schools Level
Sample Questions

organised by

GALAXY
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mathemania
national math puzzle contest

FOREWORD

NATIONAL MATHEMANIA PUZZLE CONTEST

Dear Mathemania Puzzle Contest 2017 participants,

Galaxy International School Uganda and Horizon International School Uganda are delighted to welcome you to Mathemania Puzzle Contest 2017. It is with excitement and great anticipation that we await the contest to serve more students every year with the aim of helping them develop some fundamental skills needed for 21st century education.

The puzzles in Mathemania Puzzle Contest are designed around 5 basic skills that are essential for students' success in different subject areas such as mathematics, sciences and technology. The skills include arithmetic, visual/spatial, counting, pattern finding, and logical reasoning.

You will find puzzles from the past Mathemania Puzzle contests in this booklet. We

hope that this booklet will help you to understand Mathemania puzzles and practice

techniques to solve them. Solving the puzzles without looking at the solutions will help you get many different skills and be ready for solving the new puzzles.

We are looking forward to hosting this grand event in 2017.

Let's get puzzled then.

Some technical details about the Puzzle Contest are as follows:

1. Levels

Participants are placed at three different levels in the contest according to their class.

Primary Category Local Schools P1 – P7, International Schools Y1 – Y7

Secondary Category Local Schools S1 – S6, International Schools Y8 – Y13

2. Skills

The puzzles in the contest are designed around 5 skills:

• Arithmetic, where understanding of numerical skills are assessed.

• Visual/Spatial, where the visual skills are required to solve the puzzles.

• Counting, where students are required to use a systematic way to count.

• Pattern, where discovery of different level patterns is expected.

• Logical Reasoning, where students use their logical and reasoning skills to tackle the puzzles.

1 Which of the lettered black boxes spoils the symmetry?
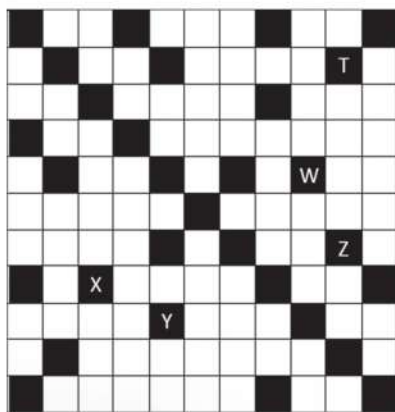
A) T
B) W
C) Z
D) Y
E) X

[3]

2 Which of the following is different than the others? [4]

A) B) C) D) E)

3 If 2+202=2022
then: 3+23+2=?

[3]

A) 3223
B) 3202
C) 2332
D) 2323
E) 3032

4 The given equation can be corrected by completely removing one of the digits. Which digit should be removed? [3]

$$(234 + 52 + 21 + 51) \div 13 = 2 + 3 + 4$$

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

5 1, 1, 2, c, 24, 120, 720, 5040
Find c.

A)   4
B)   6
C)   12
D)   3
E)   8

[3]

6 How many lines are there on the figure?   [4]

A)   23
B)   24
C)   25
D)   26
E)   27
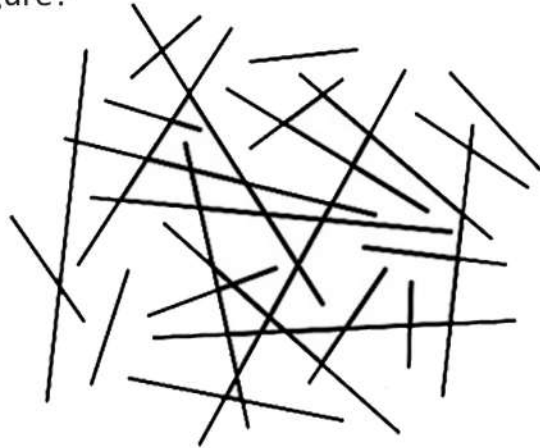
7 Bosphorus= 😊 😆 😉 😝 😃 😆 😗 😞 😉
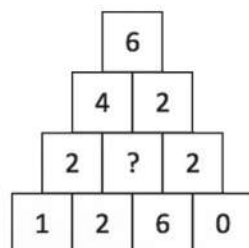Parasourolophosaurus= 1 2 3 2 4 5 6 3 5 7 5 1 8 5 4 2 6 3 6 4

6 3 4 8 5 9 =?

A) 😞 😉 😗 😃 😆 😜

B) 😗 😆 😝 😃 😉 😞

C) 😞 😳 😆 😉 😃 😄

D) 😞 😗 😉 😃 😆 😳

E) 😞 😗 😉 😃 😳 😆

[4]

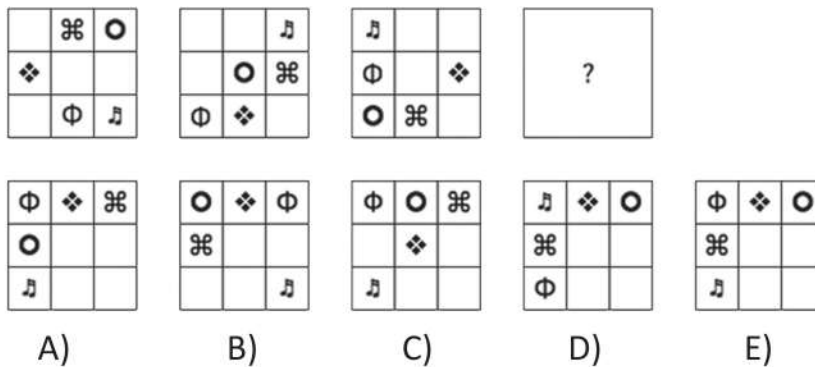**8** The following numbers are written according to a system. What should be written instead of the question mark?

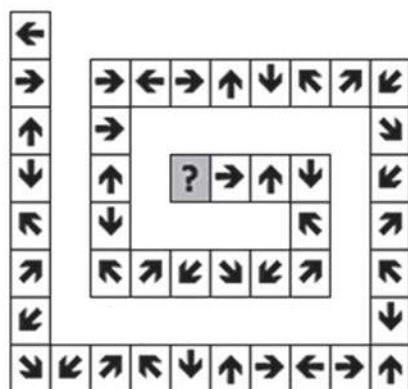|	6		
	4	2	
	2	?	2
1	2	6	0

A) 2   B) 4   C) 5   D) 7   E) 0   [4]

2

9

	⌘	O
❖		
	Φ	♪

		♪
	O	⌘
Φ	❖	

♪		
Φ		❖
O	⌘	

	?	

Φ	❖	⌘
O		
♪		

A)

O	❖	Φ
⌘		
		♪

B)

Φ	O	⌘
	❖	
♪		

C)

♪	❖	O
⌘		
Φ		

D)

Φ	❖	O
⌘		
♪		

E)

[3]

10 What should be written instead of the question mark in the following pattern?

A) ↙   B) ←   C) ↘   D) ↑   E) ↖

[3]

11 How many different ways are there to score 60 using three darts only on this dartboard?
(Each dart always lands on a sector and no dart falls on the floor)
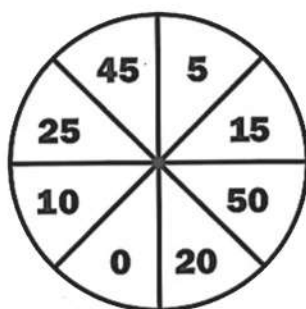
A) 7   B) 8   C) 9   D) 4   E) 5

[4]

12 Samuel: "Prof. Daniel has over 1000 books."
Emanuel: "No, he has less than 1000 book"
Robert: "Of course, he has at least one book."

[5]

If only one of these statements is true, how many books does Prof. Daniel have?
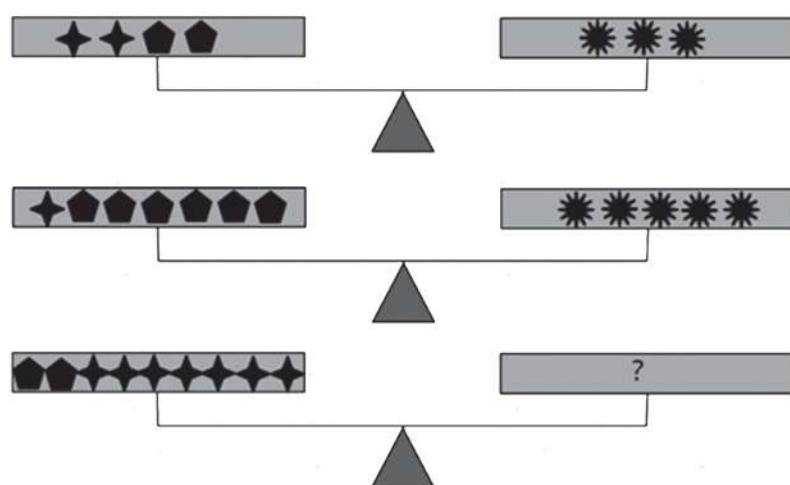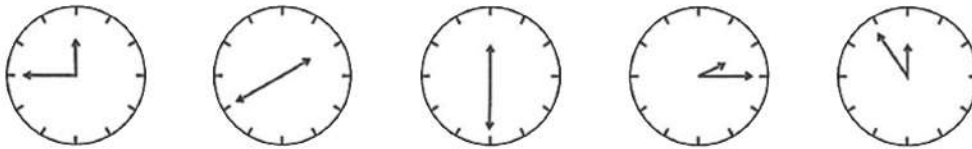
A) 1001   B) 1100   C) 999   D) 1   E) 0

13

[4]

All systems of scales above are perfectly balanced. Which of the following must be put in the last scale instead of the question mark, in order to maintain the balance?
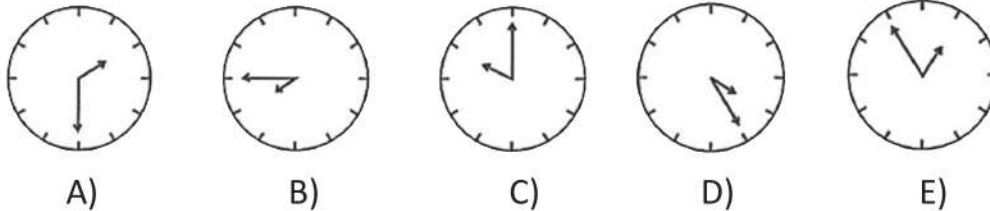
A) ✹✹
B) ✹✹✹✹✹
C) ✹✹✹✹✹✹✹
D) ✹✹✹
E) ✹✹✹✹

14

Which of the following continues the pattern?

A)   B)   C)   D)   E)

[4]

15 Which of the following figure is drawn less than the others?

[5]

A)

B)

C)

D)

E) None of them

16 The following is a Strimko Puzzle. All the numbers in a row, in a column and in a stream (groups of numbers shown with lines) must be different than each other and they must be a number from 1 to 5.
Using these rules, find the number that is shown with "X".
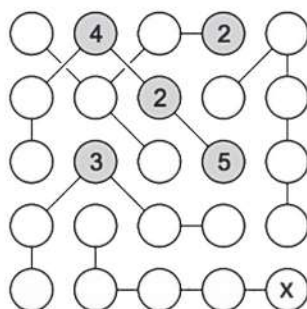
A) 1
B) 2
C) 3
D) 4
E) 5

[5]

17 The following number series is called a Fibonacci sequence: [3]
1, 1, 2, 3, 5, 8, 13, 21, ...

where each number is calculated as the sum of
previous two terms.
1+1=2
1+2=3
2+3=5
3+5=8 and so on
Which one of the given options is not a Fibonacci number?

A) 233 B) 987 C) 1597 D) 2584 E) 6755

18 What is the minimum number of cubes that is needed to be added to the given figure to obtain a perfect cube?
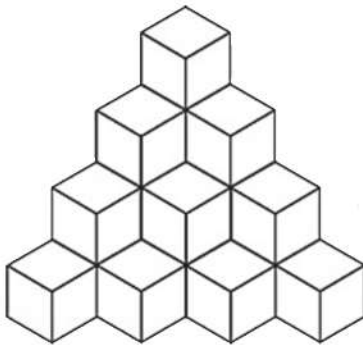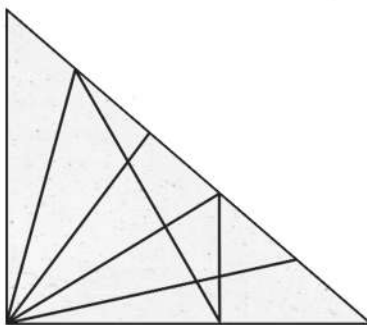
A) 20
B) 32
C) 44
D) 54
E) 64

[4]

19 How many triangles of any size are there in the following figure?

A) 15
B) 21
C) 28
D) 32
E) 36

[5]

20 First 4 figures of a pattern is given. Following the pattern, how many dots will there be in the 15th figure

i   II   III   IV

[5]

A) 120   B) 135   C) 105   D) 104   E) 144

21

[5]

I. $x \triangle xy - (x \triangle y) - 1$
II. $3 \triangle 7 = ?$

In the first equation, operation $\triangle$ is established. According to this function, which of the following does the question mark stand for in the second equation
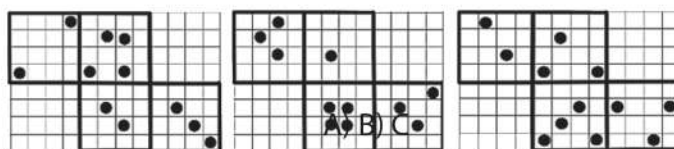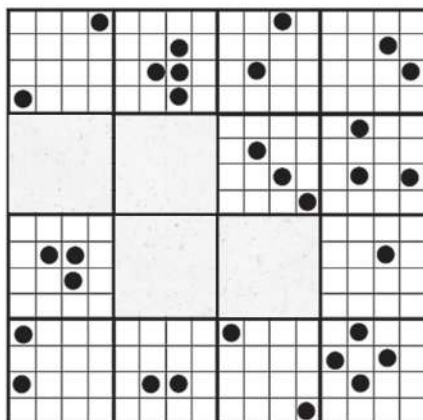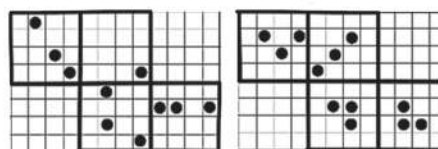
A) 4
B) 6
C) 8
D) 10
E) 12

22 What comes in the blank squares ?

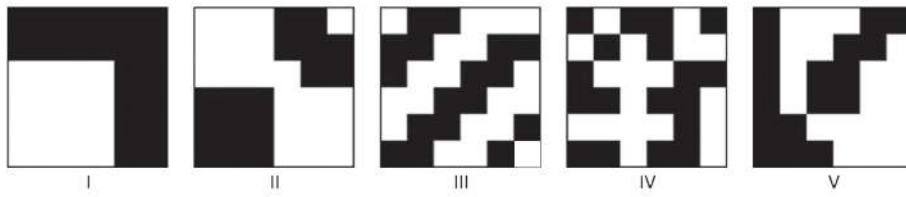A)   B)   C)

D)   E)

[4]

23 Which of the following figures has equal areas of black and white [4]
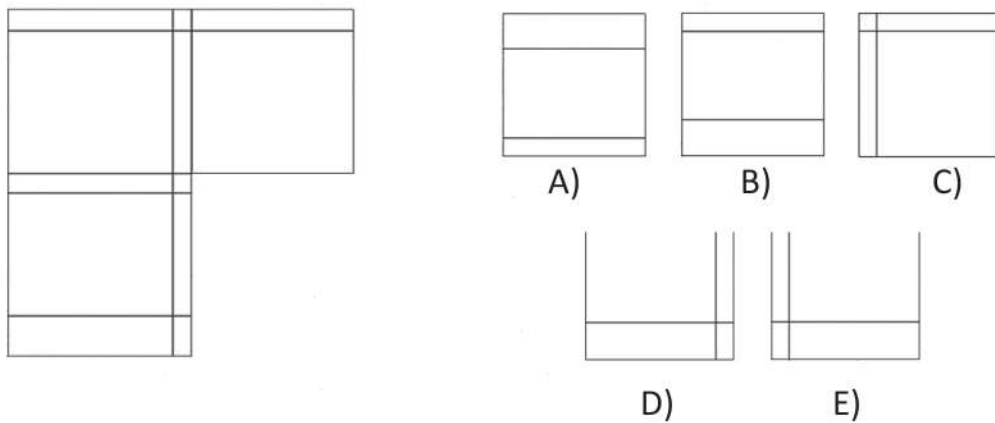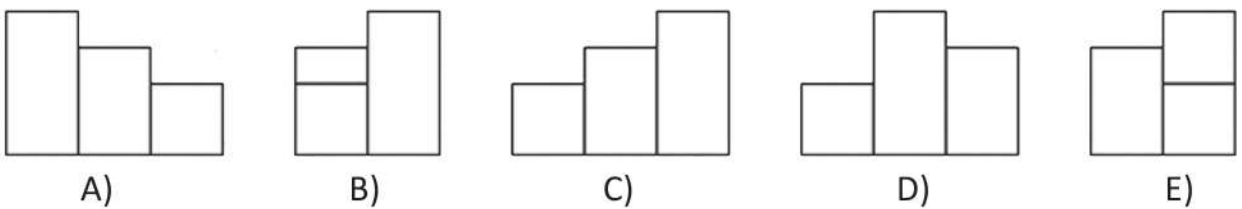

A) IV   B) V   C) III   D) I   E) II

24 Which of the following completes the given figure the best? [5]
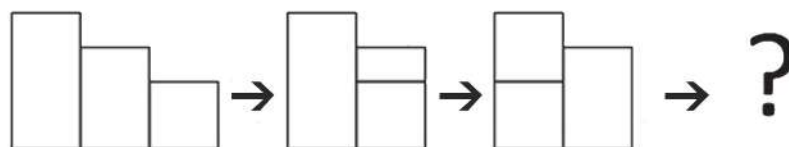
A)   B)   C)

D)   E)

25

A)   B)   C)   D)   E)

[4]

ANNUAL SPELLING BEE CONTEST

JUNIOR SECTION
Primary Schools CaMondaytego
11th June 2017,

SENIOR SECTION
Secondary Schools Category
12th June 2017, Tuesday

Written Section   09:00
Oral Section   13:00

AWARDS
for each category

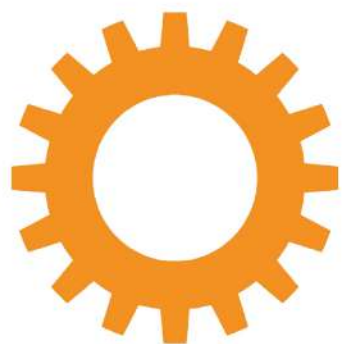1st Place   Gold Medal   400 000 ush   Certificate
2nd Place   Silver Medal   250 000 ush   Certificate
3rd Place   Bronze Medal 150 000 ush   Certificate

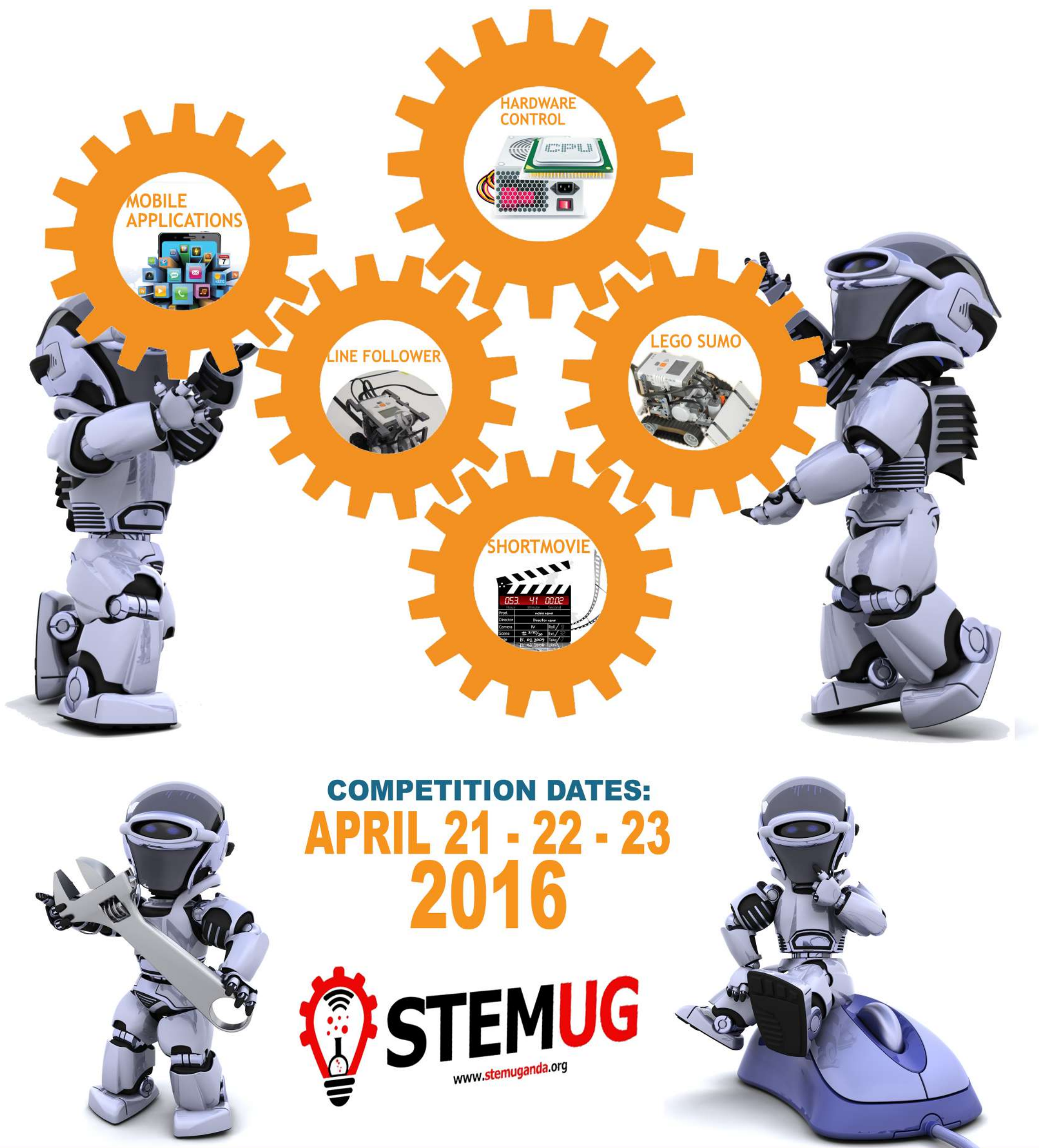Top 15 students are going to be awarded with certificates and special awards.

SPELLING BEE

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