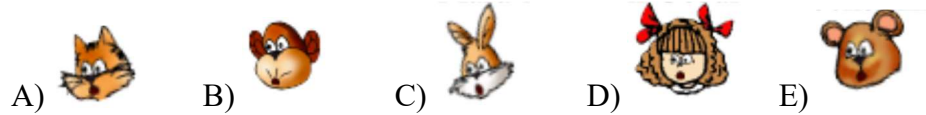# LEVELS 1 AND 2

SAMPLE QUESTION FOR 3 POINTS

Which toy comes before the 5th toy?

A)   B)   C)   D)   E)

SAMPLE QUESTION FOR 4 POINTS
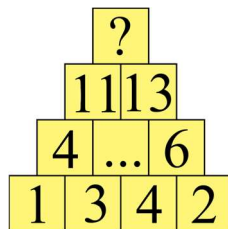
Which letter is missing from each of the words below?

SCHOL   BOK   PRBLEM   QUESTIN

A) A   B) E   C) O   D) I   E) U

SAMPLE QUESTION FOR 5 POINTS

Which number should replace the question mark in the pyramid?

A) 10   B) 14   C) 22   D) 24   E) 34

LEVELS 1 AND 2 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

Which toy comes before the 5th toy?

A)   B)   C)   **D)**   E)

SAMPLE QUESTION FOR 4 POINTS

Which letter is missing from each of the words below?

SCHOL   BOK   PRBLEM   QUESTIN

A) A   B) E   **C) O**   D) I   E) U

SAMPLE QUESTION FOR 5 POINTS

Which number should replace the question mark in the pyramid?

A) 10   B) 14   C) 22   **D) 24**   E) 34

LEVELS 3 AND 4

SAMPLE QUESTION FOR 3 POINTS

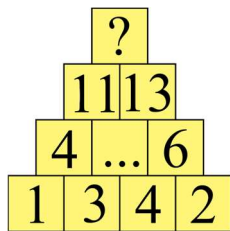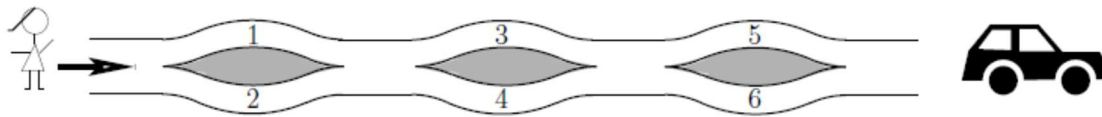Not taking any steps backwards, Anna travelled toward the car using a path shown in the picture, and picked up numbers she encountered along her way. Which set of the numbers below could she pick up?

A) 1, 2, 4   B) 2, 3, 4   C) 2, 3, 5   D) 1, 5, 6   E) 1, 2, 5

SAMPLE QUESTION FOR 4 POINTS

The square shown in the picture must be filled in such a way that each of the digits 1, 2, and 3 appears in each row and in each column once and only once. If Harry started to fill in the square as shown, what number can he write in the square marked with the question mark?

A) 1   B) 2   C) 3   D) 1 or 2   E) 1, 2 or 3

SAMPLE QUESTION FOR 5 POINTS

How many digits have to be written in order to write down every number from 1 to 100 inclusive?

A) 100   B) 150   C) 190   D) 192   E) 200

LEVELS 3 AND 4 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

Not taking any steps backwards, Anna travelled toward the car using a path shown in the picture, and picked up numbers she encountered along her way. Which set of the numbers below could she pick up?

A) 1, 2, 4   B) 2, 3, 4   **C) 2, 3, 5**   D) 1, 5, 6   E) 1, 2, 5

SAMPLE QUESTION FOR 4 POINTS

The square shown in the picture must be filled in such a way that each of the digits 1, 2, and 3 appears in each row and in each column once and only once. If Harry started to fill in the square as shown, what number can he write in the square marked with the question mark?

A) 1   B) 2   **C) 3**   D) 1 or 2   E) 1, 2 or 3

SAMPLE QUESTION FOR 5 POINTS
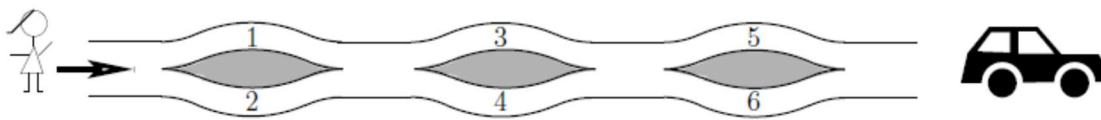
How many digits have to be written in order to write down every number from 1 to 100 inclusive?

A) 100   B) 150   C) 190   **D) 192**   E) 200

LEVELS 5 AND 6

SAMPLE QUESTION FOR 3 POINTS

Evaluate $2007 \div (2 + 0 + 0 + 7) - 2 \times 0 \times 0 \times 7$

A) 1   B) 9   C) 214   D) 223   E) 2007

SAMPLE QUESTION FOR 4 POINTS

Alex, Ben, Carl, and Daniel each participates in a different sport: karate, soccer, volleyball, and judo. Alex does not like sports played with a ball. Ben practices judo and often attends soccer games to watch his friend play. Which of the following statements is true?

A) Alex plays volleyball.

B) Ben plays soccer.

C) Carl plays volleyball.

D) Daniel does karate.

E) Alex does judo.

SAMPLE QUESTION FOR 5 POINTS

To the right of a certain two-digit number the same number has been written, creating a four-digit number. How many times is the new four-digit number greater than the original two-digit number?

A) 100   B) 101   C) 1000   D) 1001   E) 10

LEVELS 5 AND 6 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

Evaluate $2007 \div (2 + 0 + 0 + 7) - 2 \times 0 \times 0 \times 7$

A) 1   B) 9   C) 214   **D) 223**   E) 2007

SAMPLE QUESTION FOR 4 POINTS

Alex, Ben, Carl, and Daniel each participates in a different sport: karate, soccer, volleyball, and judo. Alex does not like sports played with a ball. Ben practices judo and often attends soccer games to watch his friend play. Which of the following statements is true?

A) Alex plays volleyball.

B) Ben plays soccer.

C) Carl plays volleyball.

D) Daniel does karate.

E) Alex does judo.

SAMPLE QUESTION FOR 5 POINTS

To the right of a certain two-digit number the same number has been written, creating a four-digit number. How many times is the new four-digit number greater than the original two-digit number?

A) 100   **B) 101**   C) 1000   D) 1001   E) 10

LEVELS 7 AND 8

SAMPLE QUESTION FOR 3 POINTS

Rose bushes are planted in a line on both sides of a path. The distance between the bushes is 2 m. What is the largest number of bushes that can be planted if the path is 20 m long?

A) 22   B) 20   C) 12   D) 11   E) 10

SAMPLE QUESTION FOR 4 POINTS

x is a strictly negative integer. Which of the expressions is the greatest?

A) $x + 1$ B) $2x$ C) $-2x$ D) $6x + 2$ E) $x - 2$

SAMPLE QUESTION FOR 5 POINTS

A certain broken calculator does not display the digit 1. For example, if we type in the number 3131, only the number 33 is displayed, with no spaces. Mike typed a 6-digit number into that calculator, but only 2007 appeared on the display. How many different numbers could Mike have typed?

A) 12   B) 13   C) 14   D) 15   E) 16

LEVELS 7 AND 8 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

Rose bushes are planted in a line on both sides of a path. The distance between the bushes is 2 m. What is the largest number of bushes that can be planted if the path is 20 m long?

A) 22　　　　　B) 20　　　　　C) 12　　　　　D) 11　　　　　E) 10

SAMPLE QUESTION FOR 4 POINTS

x is a strictly negative integer. Which of the expressions is the greatest?

A) $x + 1$　　　　　B) $2x$　　　　　**C) $-2x$**　　　　　D) $6x + 2$　　　　　E) $x - 2$

SAMPLE QUESTION FOR 5 POINTS

A certain broken calculator does not display the digit 1. For example, if we type in the number 3131, only the number 33 is displayed, with no spaces. Mike typed a 6-digit number into that calculator, but only 2007 appeared on the display. How many different numbers could Mike have typed?
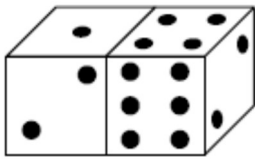
A) 12　　　　　B) 13　　　　　C) 14　　　　　**D) 15**　　　　　E) 16

LEVELS 9 AND 10

SAMPLE QUESTION FOR 3 POINTS

In the picture, what is the sum of the number of dots on the faces of the dice which you cannot see?

A) 15   B) 12   C) 7   D) 27   E) another answer

SAMPLE QUESTION FOR 4 POINTS

To fill in the table, we need to write 0 or 1 in each cell in such a way that the sum of numbers of each row and of each column is equal to 2. What are x and y?

A) $x = 1, y = 1$ B) $x = 1, y = 0$ C) $x = 0, y = 1$

D) $x = 0, y = 0$ E) It is impossible to determine.

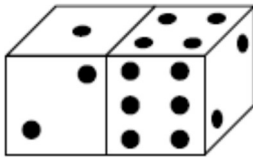| 0		0
		0
	x	1
	y	

SAMPLE QUESTION FOR 5 POINTS

A certain island is inhabited by liars and truth-tellers (the liars always lie and the truth-tellers always tell the truth). One day 12 islanders, both liars and truth-tellers, gathered together and issued a few statements. Two people said: "Exactly two people among us twelve are liars." Four other people said: "Exactly four people among us twelve are liars." The other six people said: "Exactly six people among us twelve are liars." How many liars were there?

A) 2   B) 4   C) 6   D) 8   E) 10

LEVELS 9 AND 10 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

In the picture, what is the sum of the number of dots on the faces of the dice which you cannot see?

A) 15   B) 12   C) 7   **D) 27**   E) another answer

SAMPLE QUESTION FOR 4 POINTS

To fill in the table, we need to write 0 or 1 in each cell in such a way that the sum of numbers of each row and of each column is equal to 2. What are x and y?

A) $x = 1, y = 1$ B) $x = 1, y = 0$ C) $x = 0, y = 1$

D) $x = 0, y = 0$ E) It is impossible to determine.

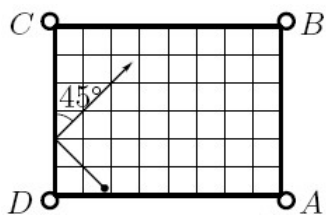| 0		0	
		0	
	x		1
	y		

SAMPLE QUESTION FOR 5 POINTS

A certain island is inhabited by liars and truth-tellers (the liars always lie and the truth-tellers always tell the truth). One day 12 islanders, both liars and truth-tellers, gathered together and issued a few statements. Two people said: "Exactly two people among us twelve are liars." Four other people said: "Exactly four people among us twelve are liars." The other six people said: "Exactly six people among us twelve are liars." How many liars were there?

A) 2   B) 4   **C) 6**   D) 8   E) 10

LEVELS 11 AND 12

SAMPLE QUESTION FOR 3 POINTS

A billiard ball always bounces off the side of a billiard table at an angle of 45° as shown. If it continues on the path shown, which pocket will the ball fall into?

A) A   B) B   C) C   D) D

E) The ball will not fall into any pocket.

SAMPLE QUESTION FOR 4 POINTS

The square *ABCD* lies in a plane and its edge measures 1. Consider all squares that share at least two vertices with the square *ABCD*. What is the area of the region covered by all of such squares, not including ABCD?

A) 5   B) 6   C) 7   D) 8   E) 9
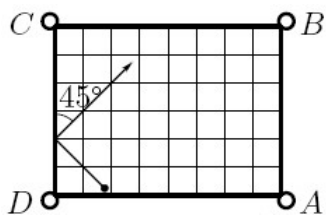
SAMPLE QUESTION FOR 5 POINTS

What is the measure of the acute angle of a rhombus with side of length equal to the geometric mean of its diagonals?

A) 15°   B) 30°   C) 45°   D) 60°   E) 75°

LEVELS 11 AND 12 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

A billiard ball always bounces off the side of a billiard table at an angle of 45° as shown. If it continues on the path shown, which pocket will the ball fall into?

A) A   B) B   **C) C**   D) D

E) The ball will not fall into any pocket.

SAMPLE QUESTION FOR 4 POINTS

The square *ABCD* lies in a plane and its edge measures 1. Consider all squares that share at least two vertices with the square *ABCD*. What is the area of the region covered by all of such squares, not including ABCD?

A) 5   B) 6   **C) 7**   D) 8   E) 9

SAMPLE QUESTION FOR 5 POINTS

What is the measure of the acute angle of a rhombus with side of length equal to the geometric mean of its diagonals?

A) 15°   **B) 30°**   C) 45°   D) 60°   E) 75°