Reveal the number

The game Reveal the number was created within the project SciMaG - Science&Math educational games from preschool to university. The project is co-founded by the Erasmus+ Program of the European Union, KA220-SCH – Cooperation partnerships in school education (023-1-HR01-KA220-SCH-000165485).

Co-funded by the European Union

Rules

GAME RULES

Given non-periodic real number are discovered by solving various problems.

Find the natural logarithm (Functions)

	TASK	SOL.		TASK	SOL.
SciMaG	**REVEAL THE NUMBER**		SciMaG	**REVEAL THE NUMBER**	
1	**2 .**	**2**	4	$f(x) = \frac{x^2 + 4x - 5}{x - 8}$ For a function f to be defined, x must not be equal to ____	**8**
SciMaG	**REVEAL THE NUMBER**		SciMaG	**REVEAL THE NUMBER**	
2	**7**	**7**	5	$f(x) = \log(x - 2)$ For a function f to be defined, x must be greater than ____	**2**

	TASK	SOL.		TASK	SOL.
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
3	**1**	**1**	6	$f(x) = \sqrt{x-8}$ For a function *f* to be defined, *x* must be greater than or equal to _____	**8**
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
7	It is valid: |sin(*x*)| is always less than or equal to ____	**1**	10	Given a quadratic function $f(x) = x^2 + 8$. The ordinate of the vertex of the parabola is ____	**8**

	TASK	SOL.		TASK	SOL.
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
8	$f(x)=8\cos(x+2)$ is given . The amplitude of the function f is _____	8	11	$f(x)=\sin(\frac{\pi}{2}x+\frac{\pi}{3})$ The function f is given. The fundamental period of the function f is _____	4
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
9	$f(x)=\cos(\pi x+\frac{\pi}{4})$ The function f is given. The fundamental period of the function f is _____	2	12	$f(x)=(x-7)(x-3)$ is given . The abscissa of the vertex of the parabola is _____	5

	TASK	SOL.		TASK	SOL.
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
13	The zero point of the function $f(x)=\log_2(x-8)$ is $x_0=$_____	**9**	16	$f(x)=e^{x-5}$ is given . For which x is the function value equal to 1?	**5**
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
14	For the function $f(x)=x^2$ it is true that Im $f=[a,+\infty>$. $a=$____	**0**	17	Given an even function f for which $f(4)=2$. What is $f(-4)$?	**2**

	TASK	SOL.		TASK	SOL.
SciMaG	**REVEAL THE NUMBER**		SciMaG	**REVEAL THE NUMBER**	
15	Given an odd function f for which $f(2025)=-4$. What is $f(-2025)$?	**4**	18	Given a function f such that $f(x+1)=2(x+1)-1$. What is $f(2)$?	**3**
SciMaG	**REVEAL THE NUMBER**		SciMaG	**REVEAL THE NUMBER**	
19	Given a function f for which $f(2x+4)=2(x+2)-1$. What is $f(6)$?	**5**	22	$f(x)=x^2$ is given . The ordinate of the vertex of the parabola is _____	**0**

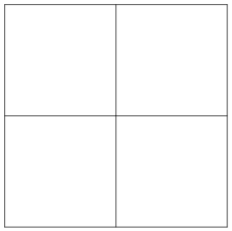
	TASK	SOL.		TASK	SOL.
SciMaG	**REVEAL THE NUMBER**		SciMaG	**REVEAL THE NUMBER**	
20	For the function $f(x)=x^2+3$ it is true that Im $f=[a, +\infty >$. $a=$____	**3**	23	f with period 4 is given. If $f(4)=2$, *what* is $f(16)$?	**2**
SciMaG	**REVEAL THE NUMBER**		SciMaG	**REVEAL THE NUMBER**	
21	Given the function $f(x)=x^2+4x+6$. The ordinate of the point where the graph of the function f intersects the y- axis is _____	**6**	24	Given a function f such that $f(x)+f(x+1)=x+2$. What is $f(6)+f(7)$?	**8**

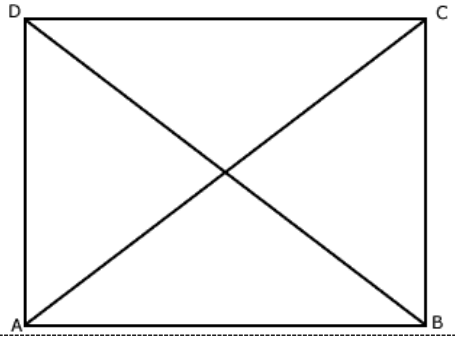
	TASK	SOL.		TASK	SOL.
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
25	The zero point of the function $f(x)=\log_{16}(x-6)$ is $x_0=$_____	**7**	28	$f(x)=2^{x-2}$ is given. For which x is the function value equal to 2?	**1**
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
26	$f(x)=\frac{x-16}{x-4}$ For the function f it is true that $D_f = \mathbf{R} \setminus \{a\}$. $a=$_____	**4**	29	Given an even function f for which $f(1)=3$. What is f(-1)?	**3**

	TASK	SOL.		TASK	SOL.
SciMaG	**REVEAL THE NUMBER**		SciMaG	**REVEAL THE NUMBER**	
27	Given an odd function f for which $f(-1)=-7$. What is $f(1)$?	**7**	30	Given the function $f(x)=2(x+1)+3$. What is the *y- intercept* intercepted by the graph of the function f ?	**5**

Discover the number pi (mathematics)

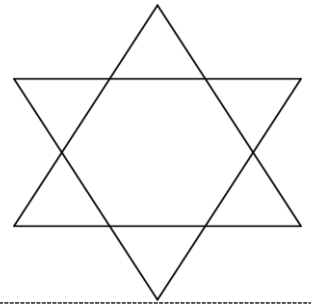
	TASK	SOL.		TASK	SOL.
1	**REVEAL THE NUMBER** 3.		2	**REVEAL THE NUMBER** HOW MANY ZEROES ARE THERE IN THE FIRST 50 DIGITS OF PI?	1
3	**REVEAL THE NUMBER** ANITA IMAGINED A NUMBER. SHE ADDED 12 TO THE IMAGINED NUMBER, AND THEN MULTIPLIED THE NUMBER BY 3. THE RESULT SHE OBTAINED WAS 48. WHAT NUMBER DID ANITA IMAGINE?	4	4	**REVEAL THE NUMBER** I AM NEITHER SIMPLE NOR COMPLEX, AND I AM ALSO KNOWN AS THE SMALLEST NATURAL NUMBER. WHAT NUMBER AM I?	1

	TASK	SOL.		TASK	SOL.
5	**REVEAL THE NUMBER** HOW MANY SQUARES ARE IN THE PICTURE? 	5	6	**REVEAL THE NUMBER** THE SUM OF THREE ADJACENT ODD NUMBERS IS 21. WHICH IS THE LARGEST OF THESE NUMBERS?	9
7	**REVEAL THE NUMBER** I AM THE ONLY EVEN PRIME NUMBER. WHAT NUMBER AM I?	2	8	**REVEAL THE NUMBER** I AM A NATURAL NUMBER. IF YOU TURN ME UPSIDE DOWN, YOU GET A NATURAL NUMBER 3 BIGGER THAN ME! DO YOU KNOW WHAT NUMBER I AM?	6

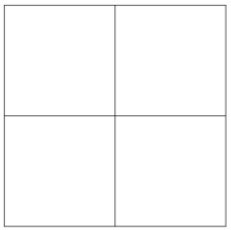
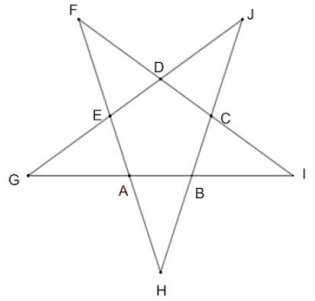
	TASK	SOL.		TASK	SOL.
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
9	IMAGINE A NUMBER. ADD ITS FOLLOWER TO IT. ADD 9 MORE AND DIVIDE THE RESULT BY 2. BY HOW MUCH IS THE OBTAINED NUMBER GREATER THAN YOUR IMAGINED NUMBER.	5	10	HOW MANY ANGLES DOES THE SMALLEST POLYGON HAVE?	3
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
11	THE SUM OF THREE CONSECUTIVE NUMBERS IS 12. WHICH ONE IN THIS SERIES IS THE LARGEST?	5	12	HOW MANY TRIANGLES ARE THERE IN THE PICTURE? 	8

	TASK	SOL.		TASK	SOL.
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
13	IMAGINE A NUMBER BETWEEN 10 AND 20. SUBTRACT FROM IT THE SUM OF ITS DIGITS. WHAT NUMBER DID YOU GET?	9	14	THE SUM OF THREE CONSECUTIVE NUMBERS IS 21. DETERMINE THE ARITHMETIC MEAN OF THESE THREE NUMBERS.	7
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
15	ALL OTHER SINGLE-DIGIT NUMBERS ARE LESS THAN ME, AND ALL TWO-DIGIT NUMBERS ARE GREATER THAN ME. WHAT NUMBER AM I?	9	16	THE PERIMETER OF A RECTANGLE IS 8, AND ONE SIDE IS 2 LONGER THAN THE OTHER. WHAT IS THE LENGTH OF THE LONGEST SIDE?	3

	TASK	SOL.		TASK	SOL.
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
17	THE AREA OF A RECTANGLE IS 6, AND THE LENGTHS OF ITS SIDES ARE CONSECUTIVE NUMBERS. WHAT IS THE LENGTH OF THE SHORTER SIDE?	2	18	MAJA IMAGINED A NUMBER. SHE ADDED 2 TO THE IMAGINED NUMBER, MULTIPLIED THE OBTAINED NUMBER BY 6 AND OBTAINED 30. WHAT NUMBER DID MAJA IMAGINE?	3
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
19	THE AREA OF A SQUARE WHOSE SIDE IS HALF SMALLER THAN THIS NUMBER IS 16. WHAT NUMBER IS IT?	8	20	THE PERIMETER OF AN ISASCOLE TRIANGLE IS 20. ONE SIDE IS TWICE SHORTER THAN THE OTHER. WHAT IS THE LENGTH OF THE SHORTER SIDE?	4

	TASK	SOL.		TASK	SOL.
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
21	IVANKA HAS THREE SONS. EACH SON HAS 3 SISTERS. HOW MANY CHILDREN DOES IVANKA HAVE?	6	22	ONE CAR TRAVELS FROM RIJEKA TO ZAGREB IN 2 HOURS. HOW MANY HOURS DO 2 CARS TRAVEL FROM RIJEKA TO ZAGREB?	2
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
23	THE PERIMETER OF AN OBSECULAR TRIANGLE IS 15. IF ITS SIDE LENGTHS ARE CONSECUTIVE NUMBERS, WHAT IS THE LENGTH OF THE LARGEST SIDE?	6	24	DIVIDE THE NUMBER OF TRIANGLES IN PICTURE BY 2. 	4

	TASK	SOL.		TASK	SOL.
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
25	WHAT IS THE LENGTH OF A SIDE OF A SQUARE WHOSE AREA IS 1 LESS THAN 10?	3	26	LEA IMAGINED A NUMBER, DIVIDED IT BY 3 AND ADDED 16 TO THE NUMBER. SHE ADDED 3 TO THE NUMBER AND OBTAINED THE NUMBER 20. WHAT NUMBER DID LEA IMAGINE?	3
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
27	IF 8 PEOPLE CAN EAT 8 APPLES IN 8 MINUTES, HOW MANY MINUTES DOES IT TAKE FOR ONE PERSON TO EAT ONE APPLE?	8	28	ANA AND DAVID ARE BROTHER AND SISTER. WHEN DAVID WAS BORN IN 2020, ANA WAS THREE YEARS OLD. HOW MANY YEARS DIFFERENCE WILL THERE BE BETWEEN ANA AND DAVID IN 10 YEARS?	3

	TASK	SOL.		TASK	SOL.
29	**REVEAL THE NUMBER** IN A BOX YOU HAVE 9 BALLS AND AN OLD-TIME SCALE. ONE BALL IS A LITTLE LIGHTER THAN THE OTHERS. WHAT IS THE MINIMUM WEIGHING NECESSARY TO DETECT WHICH BALL IS LIGHTER THAN THE OTHERS?	2	30	**REVEAL THE NUMBER** I AM THE NUMBER OF THE DAY OF THE WEEK. WHAT NUMBER AM I?	7
31	**REVEAL THE NUMBER** HOW MANY RECTANGLES ARE IN THE PICTURE? 	9	32	**REVEAL THE NUMBER** DIVIDE THE NUMBER OF TRIANGLES IN THE PICTURE BY 2. 	5

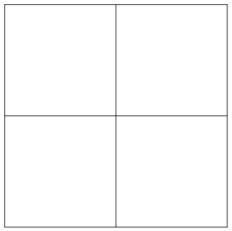
	TASK	SOL.		TASK	SOL.
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
33	I AM A SPECIAL NUMBER. I AM NOT POSITIVE, AND I AM NOT NEGATIVE. I AM DIVISIBLE BY EVERY OTHER NUMBER, BUT THAT'S WHY YOU CAN'T DIVIDE ANY NUMBER WITH ME. WHAT NUMBER AM I?	0	34	IF YOU ADD THIS NUMBER WITH ITSELF, YOU WILL GET THE SAME RESULT AS MULTIPLYING THAT NUMBER WITH ITSELF. WHAT NUMBER IS THAT?	2
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
35	IVAN IMAGINED A NUMBER. HE MULTIPLIED IT BY 4, SUBTRACTED 12 AND DIVIDED THE NUMBER BY 5. THE RESULT HE OBTAINED WAS 4. WHAT NUMBER DID IVAN IMAGINE?	9	36	THE PERIMETER OF AN EQUOSALAR TRIANGLE IS 24. WHAT IS THE LENGTH OF ITS SIDE?	8

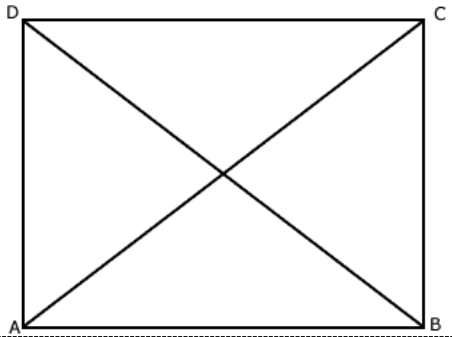
	TASK	SOL.		TASK	SOL.
37	**REVEAL THE NUMBER** THE SUM OF THREE CONSECUTIVE NUMBERS IS 15. WHICH ONE IN THIS SERIES IS THE SMALLEST?	4	38	**REVEAL THE NUMBER** MARIO CAME UP WITH A NUMBER. HE MULTIPLIED IT BY 15 AND SUBTRACTED 6 FROM THE NUMBER HE OBTAINED. HE ADDED 1 TO THE NUMBER HE OBTAINED AND OBTAINED THE SMALLEST TWO-DIGIT NUMBER. WHAT NUMBER DID MARIO CAME UP WITH?	1
39	**REVEAL THE NUMBER** IMAGINE ONE EVEN NUMBER. ADD 18 TO IT. DIVIDE THE RESULT BY 2 AND SUBTRACT HALF OF THE IMAGINE NUMBER. WHAT NUMBER DID YOU GET?	9	40	**REVEAL THE NUMBER** THE SQUARE OF THIS NUMBER IS BETWEEN 40 AND 50. WHAT NUMBER IS THAT?	7

	TASK	SOL.		TASK	SOL.
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
41	IF YOU SHARE ANY NUMBER WITH ME, NOTHING WILL CHANGE. WHAT NUMBER AM I?	1	42	A SQUARE TABLE CAN SEAT 4 PEOPLE ON EACH SIDE OF THE TABLE. 10 PEOPLE CONNECTED SEVERAL TABLES INTO ONE TABLE AND SIT DOWN SO THAT THEY OCCUPIED ALL THE FREE SEATS. WHAT IS THE GREATEST NUMBER OF TABLES THEY COULD USE?	6
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
43	MARKO IMAGINED A NUMBER. HE SUBTRACTED 5 FROM THE IMAGINED NUMBER, DIVIDED THE OBTAINED NUMBER BY 2, ADDED 10 AND OBTAINED 12. WHAT NUMBER DID MARKO IMAGINE?	9	44	WHICH SINGLE-DIGIT NUMBER HAS THE NUMBER OF LETTERS WHAT IS ITS VALUE?	3

Discover the number pi (law and mathematics)

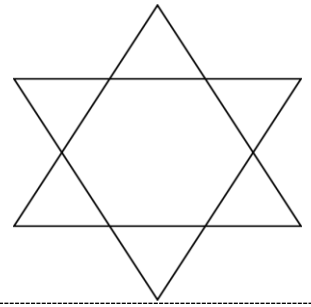
	TASK	SOL.		TASK	SOL.
1	**REVEAL THE NUMBER** 3.		2	**REVEAL THE NUMBER** HOW MANY ZEROES ARE THERE IN THE FIRST 50 DIGITS OF PI?	1
3	**REVEAL THE NUMBER** ANITA IMAGINED A NUMBER. SHE ADDED 12 TO THE IMAGINED NUMBER, AND THEN MULTIPLIED THE NUMBER BY 3. THE RESULT SHE OBTAINED WAS 48. WHAT NUMBER DID ANITA IMAGINE?	4	4	**REVEAL THE NUMBER** IF YOU SEE AN ADVERTISEMENT "NEW IPHONE FOR 99 EUROS" WITH GREAT PICTURES AND A DESCRIPTION ON A WEBSITE AND THE NOTE: "LIMITED OFFER, HURRY BEFORE IT'S GONE!", WHAT DO YOU DO? 3) CLICK AND BUY NOW, BECAUSE THIS IS A GREAT OPPORTUNITY THAT YOU CAN'T MISS! 2) YOU SEND IT TO ALL YOUR FRIENDS AND BRAG HOW IT WILL SOON BE YOURS. 1) DON'T BELIEVE THIS OFFER BECAUSE IT'S TOO GOOD TO BE TRUE. IT HAS TOO GOOD TO BE TRUE. IT HAS TO BE A SCAM: YOU'LL EITHER GET NOTHING OR JUST A FAKE IPHONE. 0) CHECK IF IT HAS THE MELODY "I CAN BY MYSELF FLOWERS" AND "RIM TIM TAGI DIM" AND ONLY THEN DO YOU BUY.	1

	TASK	SOL.		TASK	SOL.
5	**REVEAL THE NUMBER** HOW MANY SQUARES ARE IN THE PICTURE? 	5	6	**REVEAL THE NUMBER** THE SUM OF THREE ADJACENT ODD NUMBERS IS 21. WHICH IS THE LARGEST OF THESE NUMBERS?	9
7	**REVEAL THE NUMBER** WHAT SHOULD CONSUMERS DO IF THEY PURCHASE A PACKAGE OF READY-MADE PASTA WITH SAUCE IN A STORE THAT IS SPOILED? 4) PRETEND THAT NOTHING HAPPENED AND LEAVE IT GORGEOUS ON THE TABLE. 1) LEAVE IT IN THE REFRIGERATOR BECAUSE IT MAY IMPROVE IN THE COLD. 5) START DANCING AND SINGING “MANGIO PASTA” LIKE GRŠE AND PEKI. 2) CONTACT THE SELLER AND REQUEST A REFUND OR REPLACEMENT.	2	8	**REVEAL THE NUMBER** I AM A NATURAL NUMBER. IF YOU TURN ME UPSIDE DOWN, YOU GET A NATURAL NUMBER 3 BIGGER THAN ME! DO YOU KNOW WHAT NUMBER I AM?	6

	TASK	SOL.		TASK	SOL.
9	**REVEAL THE NUMBER** IMAGINE A NUMBER. ADD ITS FOLLOWER TO IT. ADD 9 MORE AND DIVIDE THE RESULT BY 2. BY HOW MUCH IS THE OBTAINED NUMBER GREATER THAN YOUR IMAGINED NUMBER.	5	10	**REVEAL THE NUMBER** WHAT RIGHTS DO EU CONSUMERS HAVE WHEN THEY BUY SOMETHING ONLINE? 7) THAT THEY CAN ONLY RETURN THE PRODUCT IF IT IS BLUE, AND THEY WANTED RED. 3) THAT THEY CAN RETURN THE PRODUCT WITHIN 14 DAYS OF DELIVERY, REGARDLESS OF THE REASON. 1) THAT THEY CAN RETURN A PRODUCT THAT THEY DON'T KNOW HOW TO USE, UNLESS THE DELIVERY MAN KNOWS HOW TO DANCE THE LAMBADA. 9) THAT THEY CAN RETURN THE PRODUCT, EVEN IF THEY ACCIDENTALLY EAT IT.	3
11	**REVEAL THE NUMBER** THE SUM OF THREE CONSECUTIVE NUMBERS IS 12. WHICH ONE IN THIS SERIES IS THE LARGEST?	5	12	**REVEAL THE NUMBER** HOW MANY TRIANGLES ARE THERE IN THE PICTURE?  	8

	TASK	SOL.		TASK	SOL.
	REVEAL THE NUMBER WHAT DOES IT MEAN WHEN A PRODUCT SAYS "FREE GIFT"?			**REVEAL THE NUMBER**	
13	7) THAT VOJKO V WILL COME TO YOUR HOUSE AND SING "HERE I AM AGAIN". 8) THAT YOU WILL ACTUALLY PAY DOUBLE AS MUCH FOR SOMETHING ELSE YOU ORDERED. 9) IF, IN ADDITION TO WHAT YOU ORDERED, YOU ALSO RECEIVED AN ADDITIONAL PRODUCT (E.G. TESTER) WITHOUT PAYMENT OBLIGATION. 0) THAT YOU HAVE WON A FREE GIFT OF YOUR CHOICE.	9	14	THE SUM OF THREE CONSECUTIVE NUMBERS IS 21. DETERMINE THE ARITHMETIC MEAN OF THESE THREE NUMBERS.	7
	REVEAL THE NUMBER			**REVEAL THE NUMBER** WHAT SHOULD YOU DO IF YOU ORDER A GREEN PLASTIC-METAL CHAIR AND THEY DELIVERY YOU A GREEN WOODEN TABLE?	
15	ALL OTHER SINGLE-DIGIT NUMBERS ARE LESS THAN ME, AND ALL TWO-DIGIT NUMBERS ARE GREATER THAN ME. WHAT NUMBER AM I?	9	16	1) YOU SHOULD THROW THE TABLE IN THE GA AGE AND SAY: "NO MORE PROBLEMS!" 2) YOU SHOULD SPLIT THE TABLE AND PUT IT IN THE WOOD-BURNED STOVE AND SAY: "AT LEAST WE'LL BE WARM!" 3) YOU SHOULD ASK THE DEALER FOR A REFUND, OR AN EXCHANGE TO RETURN THE TABLE AND GET A CHAIR. 4) YOU SHOULD SEND THE TABLE TO THE MAYOR AND WRITE: "LET SOMEONE OF YOU SOLVE MY PROBLEM, BECAUSE YOU KNOW WHAT TO DO."	3

	TASK	SOL.		TASK	SOL.
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
17	THE AREA OF A RECTANGLE IS 6, AND THE LENGTHS OF ITS SIDES ARE CONSECUTIVE NUMBERS. WHAT IS THE LENGTH OF THE SHORTER SIDE?	2	18	MAJA IMAGINED A NUMBER. SHE ADDED 2 TO THE IMAGINED NUMBER, MULTIPLIED THE OBTAINED NUMBER BY 6 AND OBTAINED 30. WHAT NUMBER DID MAJA IMAGINE?	3
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
19	WHAT SHOULD YOU DO BEFORE BUYING A TOY ONLINE? 4) SEND A BIRD WITH A MESSAGE TO THE MERCHANT TO CHECK IF THE TOY IS NICE, WORKS AND IS SAFE. 8) CHECK THE PRICE AND TERMS OF PURCHASE OF THE TOY, AND THE REPUTATION OF THE RETAILER. 3) TRYING TO NEGOTIATE A DISCOUNT OF AT LEAST 50% ON A TOY, CLAIMING THAT IT IS THE ONLY WAY TO BUY IT BECAUSE YOU DON'T LIKE ITS COLOR. 5) CHECK ON SOCIAL MEDIA WHAT THE DEALER'S FAVORITE COLOR IS TO MAKE SURE YOU'RE GETTING A QUALITY TOY.	8	20	THE PERIMETER OF AN ISASCOLE TRIANGLE IS 20. ONE SIDE IS TWICE SHORTER THAN THE OTHER. WHAT IS THE LENGTH OF THE SHORTER SIDE?	4

	TASK	SOL.		TASK	SOL.
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
21	IVANKA HAS THREE SONS. EACH SON HAS 3 SISTERS. HOW MANY CHILDREN DOES IVANKA HAVE?	6	22	IF A MERCHANT CHARGES A PRODUCT OR SERVICE WRONGLY, WHAT CAN YOU DO? 2) CONTACT THE MERCHANT AND REQUEST A CORRECTION OF THE INVOICE. 8) CONTACT THE MERCHANT AND ASK HIM FOR A FRUIT OR CHOCOLATE CAKE. 4) IGNORE THE BILL BECAUSE IT'S THEIR PROBLEM THAT THEY MADE A MISTAKE. 6) PRETEND TO BE AN ACCOUNTING EXPERT AND CORRECT THE ACCOUNT YOURSELF.	2
	REVEAL THE NUMBER			**REVEAL THE NUMBER**	
23	THE PERIMETER OF AN OBSECULAR TRIANGLE IS 15. IF ITS SIDE LENGTHS ARE CONSECUTIVE NUMBERS, WHAT IS THE LENGTH OF THE LARGEST SIDE?	6	24	DIVIDE THE NUMBER OF TRIANGLES IN PICTURE BY 2. 	4