

Part A

Pair/group work followed by individual work

Part A – Common part

Name:

Class:















In a thought-game a person is asked to think of a number and then to perform a number of arithmetic operations. When one gets to know what number the person finally has got, one is able to find out what number she/he thought of in the beginning. It appears as if one could read thoughts but it can be explained by mathematics.

Example

I tell you: Think of a number, subtract 3 and multiply what you get by 5. Add 15 and then divide by 5. Then you have got back the number you thought of.

- Test the thought-game with some other numbers.

The thought-game can be described in several different ways:

<i>In words</i>	<i>In pictures</i>	<i>In numbers</i>	<i>In mathematical symbols</i>
Think of a number		12	x
Subtract 3		$12 - 3 = 9$	$x - 3$
Multiply by 5	    	$5 \cdot 9 = 45$	$5(x - 3) = 5x - 15$
Add 15	    	$45 + 15 = 60$	$5x - 15 + 15 = 5x$
Divide by 5		$60/5 = 12$	$\frac{5x}{5} = x$
Result		12	x

- Study the example and discuss the different methods to describe the thought-game (in words, pictures, numbers or symbols).

Part A – Individual part

Name:

Class:

Anna tells her friend Jenny: Think of a number, add 5 and multiply what you got by 20. Subtract 100 and divide by 10. Tell me your result and I will tell what number you thought of.

Jenny says: I got the number 6.

Anna says: Then you thought of the number 3.

Jenny: How did you know that?

Anna: I just take half of it.

1.
 - a) Investigate if this is valid if you think of the number 10.
 - b) Choose another number and show that it is valid also for this number.
 - c) Show that it is valid for all numbers.
2. Create a thought-game “Think of a number” of your own, and show that it is valid for all numbers. Try to make your thought-game a little “tricky”. (6/7) ✕

At the assessment of your work the teacher will take into account

- how well you understand the problem
- how completely and correctly you solve the task
- how advanced your thought-game is
- how well structured and complete your account is
- how well you use the mathematical language.