

**Test for eager students, for your holiday**

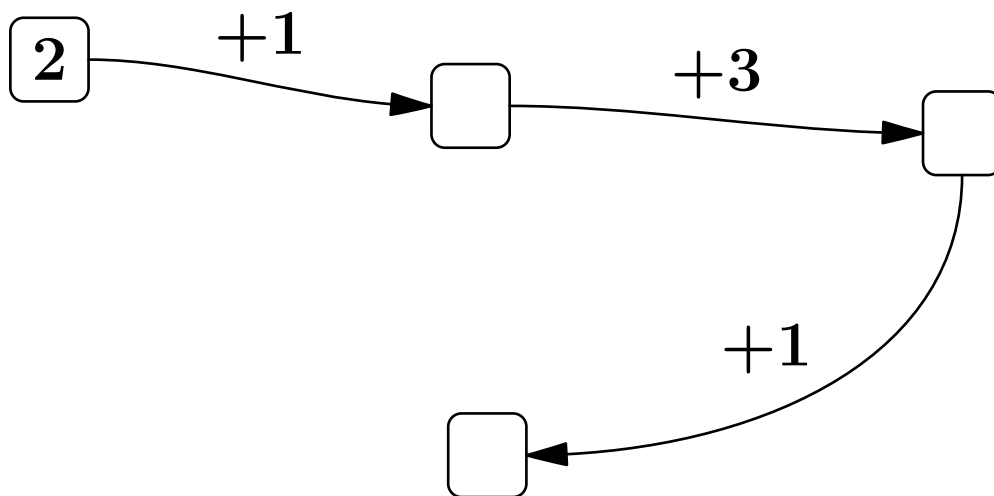
*It could be prepared by a teacher of your **favourite** subject...*

Write your solution of each problem on a separate, signed sheet. Clearly indicate the problem number. Please, let us know if you find a bag in GEZMAT... ;-)

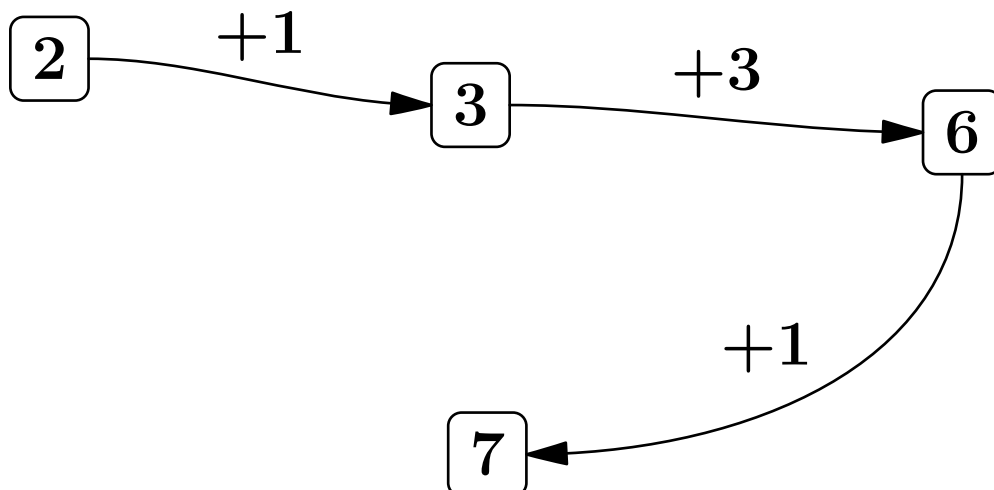
**1 (2) Problem – Number snake, addition, 0–10**

*Piotr Nieżurawski, update: 2017-09-02, id: en-numbers-0000100, diff: 1*

In the following number snake a number in each box except the first one must be equal to the number from the previous box modified in accordance with the description at the arrow. Enter the appropriate numbers in the empty boxes.



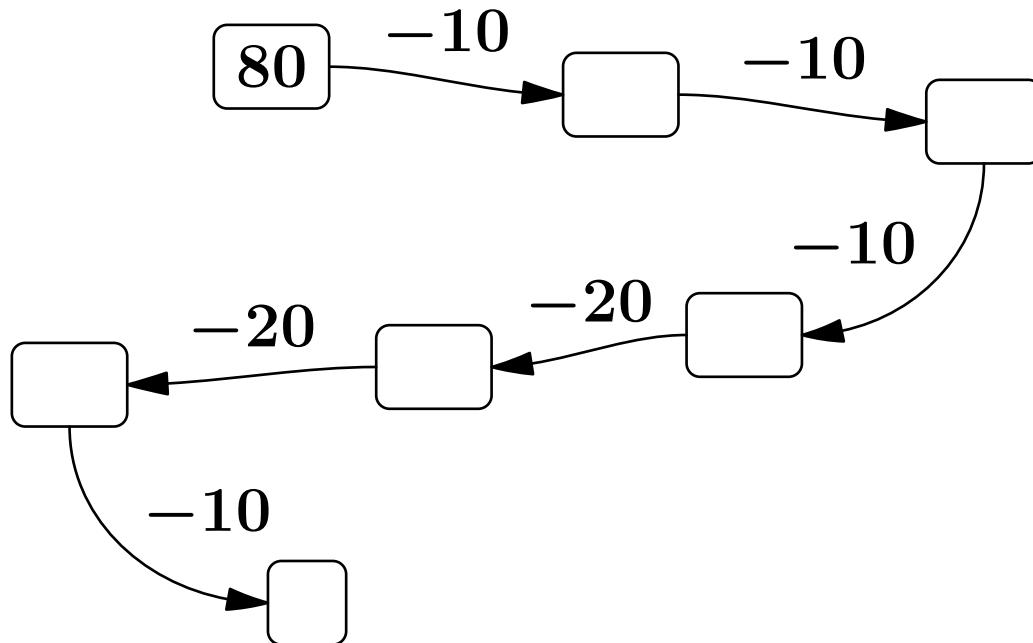
Answer:



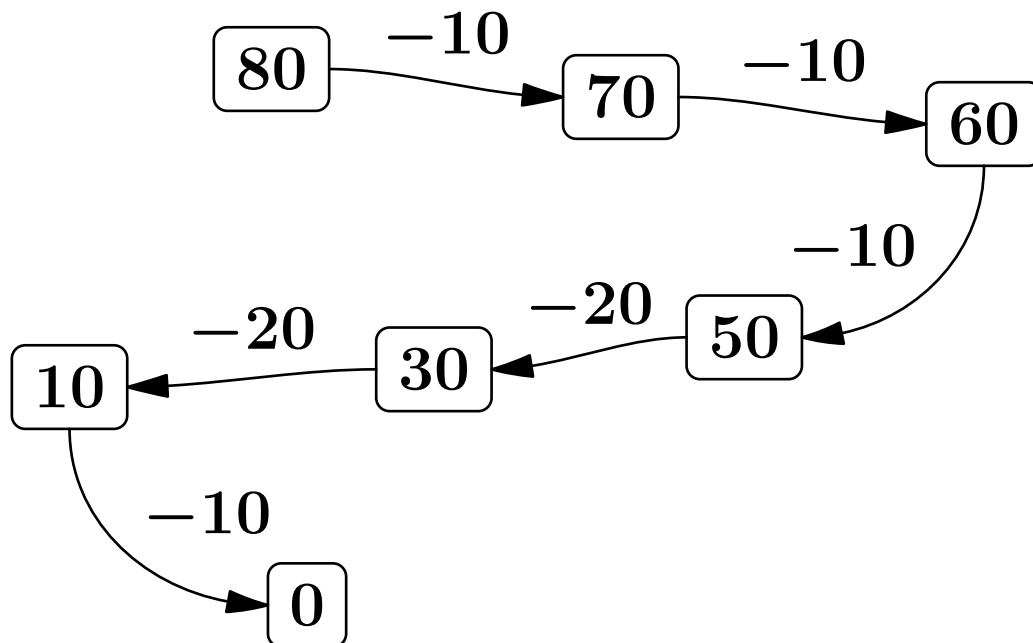
**2 (2) Problem – Number snake, subtraction of multiples of 10, 0–100**

*Piotr Nieżurawski, update: 2017-09-02, id: en-numbers-0000121, diff: 1*

In the following number snake a number in each box except the first one must be equal to the number from the previous box modified in accordance with the description at the arrow. Enter the appropriate numbers in the empty boxes.



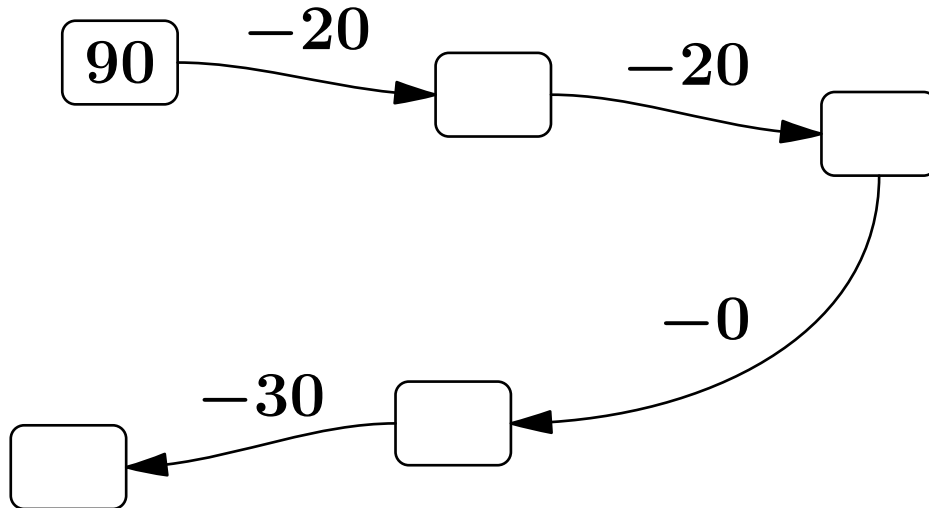
Answer:



**3 (2) Problem – Number snake, subtraction of multiples of 10, 0–100**

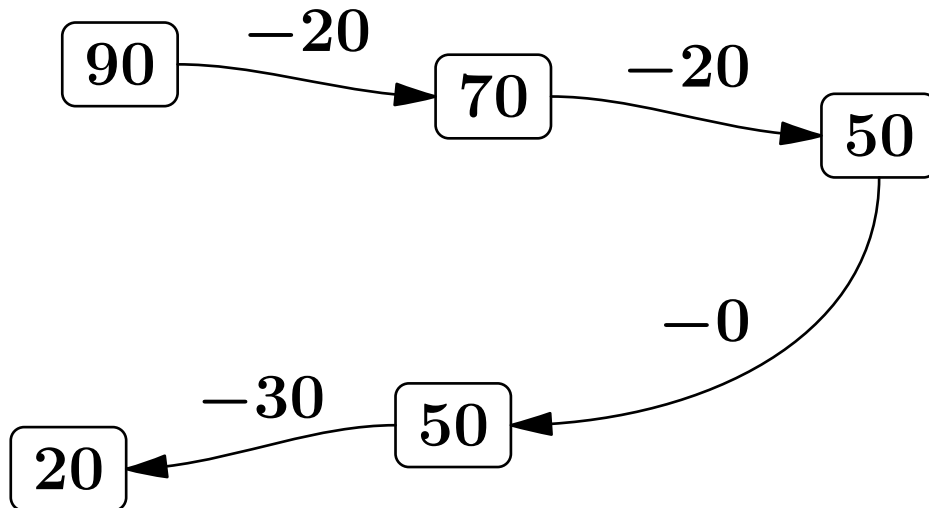
*Piotr Nieżurawski, update: 2017-09-02, id: en-numbers-0000121, diff: 1*

In the following number snake a number in each box except the first one must be equal to the number from the previous box modified in accordance with the description at the arrow. Enter the appropriate numbers in the empty boxes.



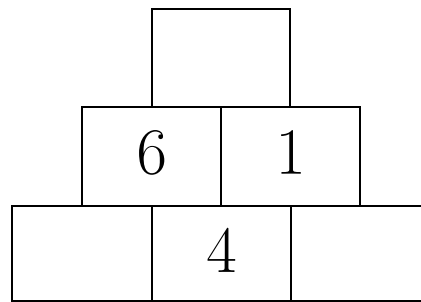
From the following 8 problems 2 are randomly chosen.

Answer:

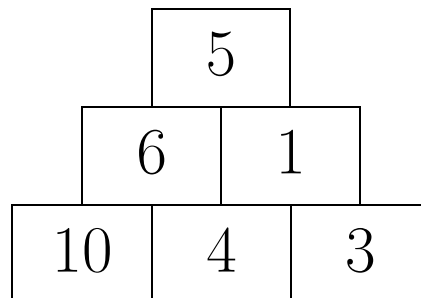
**4 (2) Problem – Number triangle, subtraction, 0–10**

*Piotr Nieżurawski, update: 2017-08-01, id: en-numbers-0000206, diff: 1*

In the following number triangle in each rectangle except those in the lowest row there must be a number that is the difference of the numbers from the two nearest rectangles from the lower row: from the number in the left rectangle the number in the right rectangle is subtracted. Enter the appropriate numbers in the empty rectangles.

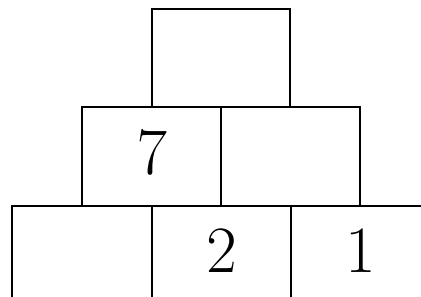


Answer:

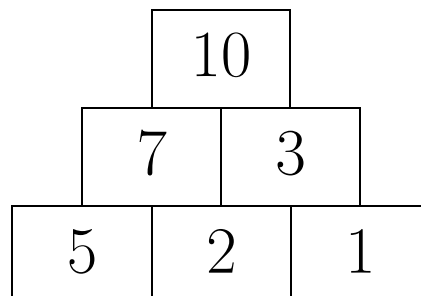
**5 (2) Problem – Number triangle, addition, 1–10**

*Piotr Nieżurawski, update: 2017-07-28, id: en-numbers-0000200, diff: 1*

In the following number triangle in each rectangle except those in the lowest row there must be a number that is the sum of the numbers from the two nearest rectangles from the lower row. Enter the appropriate numbers in the empty rectangles.



Answer:



**6 (2) Problem – Addition in columns, 100**

*Piotr Nieżurawski, update: 2017-09-03, id: en-numbers-0000310, diff: 1*

Calculate the following sums.

a)

	5	5
+	3	2

b)

	6	5
+	3	1

**Answer:**

a)

	5	5
+	3	2
	8	7

b)

	6	5
+	3	1
	9	6

**7 (2) Problem – Number of pages**

*Piotr Nieżurawski, update: 2017-09-10, id: en-numbers-0000500, diff: 1*

Wanda started reading a book at the beginning of page 30. After two hours she finished at the end of page 95.

- a) How many pages did she read?  
 b) How many pages did she read on average in one hour? **Command insert inserts just after the text of the problem.**

**Hint:** If Wanda started reading at the beginning of page 1 and finished at the end of page 2, how many pages would she read?

**Answer:** Wanda read 66 pages, her average rate was 33 pages per hour.

**8 (2) Problem – Plums**

*Piotr Nieżurawski, update: 2016-07-11, id: en-numbers-0001000, diff: 1*

John had 36 plums. Then he ate one-third of them. How many plums has John now?

**Add 3cm vertical space...**

**Hint:** How much is  $36:3$ ? Answer: 12.

**Answer:** John has 24 plums.

## 9 (2) Problem – Apples

*Piotr Nieżurawski, update: 2016-07-30, id: en-numbers-0002000, diff: 1*

Mark had 20 apples. John took half of Mark's apples and added them to his own stock. Then it turned out that John has 5 times as many apples as Mark. How many apples do John and Mark have together?

**Hint:** How many apples are left in Mark's stock? Answer: 10.

**Hint:** How many apples does John have? Answer: 50.

**Answer:** John and Mark together have 60 apples.

## 10 (3) Problem – Pebbles

*Piotr Nieżurawski, update: 2017-05-08, id: en-numbers-0003000, diff: 2*

Daria and Nela collected some pebbles on the beach. If Daria gave Nela 4 pebbles, then each girl would have the same number of pebbles. However, if Nela gave Daria 3 pebbles, then Daria would have twice as many pebbles as Nela. How many pebbles did have each of the girls?

**Change difficulty to change number of points for a problem. Add a grid.**

**Hint:**  $D - 4 = N + 4$  and  $D + 3 = 2(N - 3)$

**Answer:** Daria had 25 pebbles and Nela 17 pebbles.

**insert-before demonstration**

*Blah, blah, blah...*

## 11 (2) Problem – Sides of rectangles

*Piotr Nieżurawski, update: 2016-07-30, id: en-rectangles-0001000, diff: 1*

Calculate the length of:

- a side of the square with area  $100 \text{ m}^2$ .
- a side of the rectangle with area  $60 \text{ m}^2$ , and with the second side of length 10 m.
- a side of the square with perimeter equal to 24 m.
- a side of the rectangle with perimeter equal to 48 m, and with the second side of length 6 m.

**Hint:**

- $A = aa = a^2$
- $A = ab$
- $L = 4a$
- $L = 2(a + b)$

**Answer:**

- 10 m.
- 6 m.

- c) 6 m.
- d) 18 m.

## 12 (5) Problem – Cycling speed

*Piotr Nieżurawski, update: 2016-07-30, id: en-speed-distance-time-0004000-dpc, diff: 3*

Max went by bike from the starting line and rode at the average speed 3.2 m/s. Ann started from the same line 15 s after Max and she finished the race 15 s before Max. Both, Ann and Max, travelled the same distance. What was the Ann's average speed if the total time of her ride was equal to 480 s?

A problem with `-dpc` at the end of its id has control of the maximal number of decimal places (set it in the 4th line in the `.gzm` file for the whole set)

**Hint:** How much time was Max biking? Answer: 510 s.

**Hint:** What was the length of the route? (Max...) Answer: 1632 m.

**Answer:** Ann was cycling with speed 3.4 m/s.

## 13 (2) Problem – Accelerating airplane

*Piotr Nieżurawski, update: 2016-07-30, id: en-kinematics-0000500-dpc, diff: 1*

An airplane, initially at rest in the airport, started to move along a runway with the constant acceleration equal to  $7.9 \text{ m/s}^2$ . Calculate the airplane's speed after the time of 8 s.

**Problems can be repeated.**

**Hint:**  $v = at$

**Answer:** 63.2 m/s

*Again the same problem.*

## 14 (2) Problem – Accelerating airplane

*Piotr Nieżurawski, update: 2016-07-30, id: en-kinematics-0000500-dpc, diff: 1*

An airplane, initially at rest in the airport, started to move along a runway with the constant acceleration equal to  $5.7 \text{ m/s}^2$ . Calculate the airplane's speed after the time of 5 s.

**Hint:**  $v = at$

**Answer:** 28.5 m/s

*And again the same problem.*

**15 (2) Problem – Accelerating airplane**

*Piotr Niezurawski, update: 2016-07-30, id: en-kinematics-0000500-dpc, diff: 1*

An airplane, initially at rest in the airport, started to move along a runway with the constant acceleration equal to  $4.8 \text{ m/s}^2$ . Calculate the airplane's speed after the time of 9 s.

**Hint:**  $v = at$

**Answer:** 43.2 m/s