



## A WAY TO WORK CREATIVELY ON MULTIPLE SOLUTIONS USING INFORMATION TECHNOLOGIES

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Article history:	Abstract:
<b>Received:</b> October 20 <sup>th</sup> 2021 <b>Accepted:</b> November 20 <sup>th</sup> 2021 <b>Published:</b> December 28 <sup>th</sup> 2021	This article discusses ways to create a problem that has a single solution by changing the context of a problem using information technology to solve many problems.
<b>Keywords:</b> Multi-solution problem, problem with a single solution, problem condition, problem question, change the condition of the problem, change the problem question, create a new problem from the problem.	

As you know, problem solving is one of the most important parts of an elementary math course. By solving problems, students form and develop the properties of arithmetic operations, different relationships between numbers, the essence of geometric concepts, different quantities, their units of measurement, the relationships between quantities.

In elementary school, a great deal of attention is paid to teaching problem-solving and problem-solving in elementary school. This is because in the future, students will be able to create a problem based on the information provided and prepare it for solution.

Here are some suggestions on how to look or get an appointment for hair extensions:

Change the problem question, problem condition, numerical data in the problem, create a similar problem (mathematical model is the same), create an inverse problem, create a problem based on the illustration (picture and diagram), solve the problem according to the given solution (according to the numerical expression ),

Giving students an initial understanding of multi-problem (non-single-solution) problems, especially in the elementary school, will help students gain new knowledge in mathematics in the future.

In this article, we will focus on some of the ways to create a single solution from multiple solutions by changing the problem condition and the question. First, we'll give examples of how to create a problem by changing the question and the condition of the problem.

**Task 1.** Karim has 6 notebooks and Salim has 2 less. How many notebooks does Salim have?

Solution:  $6 - 2 = 4$  Answer: 4

**We'll change the terms.**

**Task 1 (a).** Karim has 6 notebooks and Salim has 2 more. How many notebooks does Salim have?

Solution:  $6 + 2 = 8$  Answer: 8

Let's change the question.

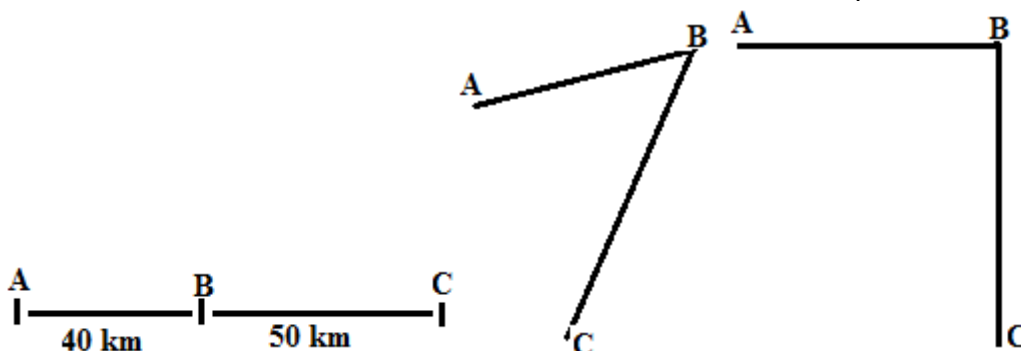
**Task 1 (b).** Karim has 6 notebooks and Salim has 2 less. How many notebooks do they have in total?

Solution:  $6 - 2 = 4$ ,  $6 + 4 = 10$  Answer: 10

Now let's look at a few ways to turn a problem with multiple solutions into a problem with a single solution. We explain this by the following issues:

**Task 2.** If the distance between cities A and B is 40 km and the distance between cities B and C is 50 km, find the distance between cities A and C.

There is no single solution to this problem, as cities A and C may be located differently.





We will change the terms of the issue so that this issue has a unique solution.

**Task 2 (a).** The distance between cities A and B is 40 km and the distance between cities B and C is 50 km. If you go to city C through city B, what is the distance between cities A and C?

Solution:  $40 + 50 = 90$  km Answer: 90 km.

There is only one solution by changing the question...

**Task 3.** Anwar, Sarwar and Akmal have pigeons. If Sarwar's pigeon is 7 and Akmal's pigeon is 5 more than his, what is the total number of Anwar, Sarwar and Akmal's pigeons?

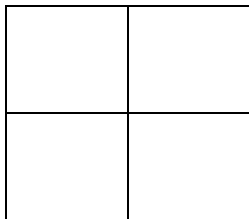
This issue does not have a single solution. Because there is no information about Anwar's pigeons.

We will change the question so that this issue has a unique solution.

**Task 3 (a).** Anwar, Sarwar and Akmal have pigeons. If Sarwar's pigeons are 7 and Akmal's pigeons are 5 more than his, how many Sarwar and Akmal's pigeons are there?

Solution:  $7 + 5 = 12$ ,  $7 + 12 = 19$  Answer: 19

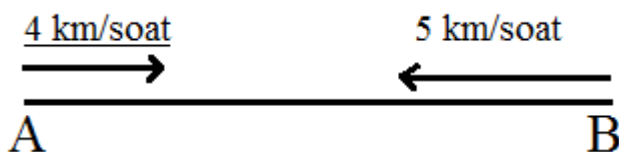
In some cases, it is possible to create a problem with a single solution by changing both the condition and the question.



**Task 4.** Two passengers walked at the same time from two villages with a distance of 25 km between them. If the speed of the first passenger is 4 km / h and the speed of the second passenger is 5 km / h, what is the distance between them in 2 hours?

The solution to this problem will be 4 depending on the direction of passenger traffic.

a) If the passengers are moving towards each other, then the solution is as follows:



Solution: 1) How long will the first passenger travel in 2 hours?  $4 \times 2 = 8$  km;

2) How many trips does the second passenger take in 2 hours?  $5 \times 2 = 10$  km;

By changing both the above condition and the conditional question, we create a problem that has a unique solution.

**Task 3 (b).** Anwar, Sarwar and Akmal have pigeons. If Anwar has 6 more pigeons, Sarwar has 7 more pigeons, and Akmal has 5 more pigeons than Sarwar, how many pigeons are there in all?

**Solution:** How many pigeons are Akmal?  $7 + 5 = 12$ ,  $6 + 7 + 12 = 25$  Answer: 25

From the above problem, it can be seen that in some cases it is possible to create problems with a single solution by changing the condition of the multi-solution problem or by changing the problem question or by changing the condition and question at the same time ekan.

It is not possible to specify the number of solutions to the above multi-problem.

In some cases, it is possible to list the number of solutions to a multidisciplinary problem. Here are some examples of such issues.

**Task 4.** You can make a rectangle out of 4 squares with a roof of 1 cm.

The solutions to this problem are 2.

3) How far did both passengers cover in 2 hours?

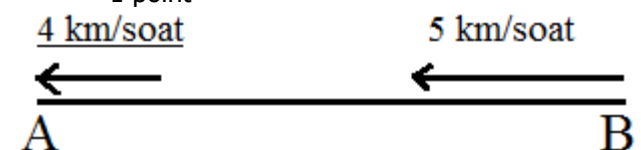
$8 + 10 = 18$  km

4) distance between passengers  $25 - 18 = 7$  km

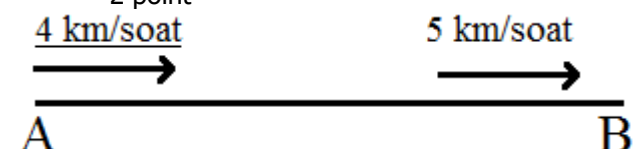
Answer: 7 km

a) If the passengers are traveling in the same direction, then the solution is as follows:

1 point



2 point





1 point:

1) How many trips does the first passenger take in 2 hours?  $4 \cdot 2 = 8$  km;

2) How many trips does the second passenger take in 2 hours?  $5 \cdot 2 = 10$  km;

3) How far is the second passenger from A?  $25 - 10 = 15$  km

4) distance between passengers  $15 + 8 = 23$  km

Answer: 23 km

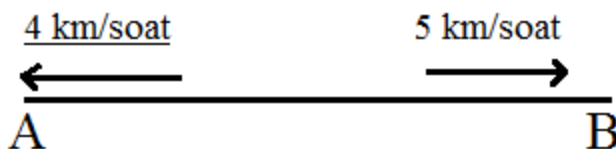
2 points:

1) How far was the first passenger B from the village?  $25 - 8 = 17$  km

2) What is the distance between them?  $10 + 17 = 27$  km

3) Answer: 27 km

c) if the passengers are traveling in the opposite direction, then the solution is:



1) How far did the first passenger travel?  $4 \cdot 2 = 8$  km

2) How far did the second passenger travel?  $5 \cdot 2 = 10$  km;

3) What is the distance between them?  $25 + 10 + 8 = 43$  km

Answer: 43 km

From the above, there are 4 possible solutions.

This means that in order to turn issue 4 into a single solution, it is necessary to indicate the directions of movement of passengers.

From the above considerations, it follows that while many of the problems to be solved can be infinitely many, it is possible to specify the number of solutions to some.

In short, creative work on multifaceted issues prepares students to find solutions to a variety of problems that arise in life in a market economy.

The following questions may be suggested to students:

Which of the following problems has multiple solutions or a single solution? Turn multiple problems into single problems.

**Task 1.** Two passengers from cities A and B set off in opposite directions at the same time at speeds of 15 km / h and 14 km / h, respectively. What is the distance between them in 4 hours?

**Task 2.** How many rectangles can be made from 7 squares with side 1 cm?

**Task 3.** Ali, Vali va Soli maktab bog'iga mevali ko'chat ekishdi. Agar Soli Validan 5 tup ko'p ko'chat ekan bo'lsa, Soli va Vali qancha ko'chat ekishgan?

**Task 4.** Ali, Vali va Soli maktab bog'iga mevaliko'chat ekdilar. Agar Soli Validan 5 tup ortiq ko'chat ekan, Ali esa Validan 3 tup kam ko'chat ekan bo'lsa, uchala o'quvchi hammasi bo'lib qancha ko'chat ekishgan?

**Task 5.** Ali, Vali and Soli planted fruit trees in the school garden. If Vali planted 8 seedlings and Soli planted 5 more seedlings, how many seedlings did Vali and Soli plant in total?

**Task 6.** In the morning, Salim brought to the market 6 bags of carrots, each weighing 50 kg. If he sold all the products in the evening, how much did he sell for?

**Task 7.** Entrepreneur has 2000 chickens. If chickens lay an average of 1,500 eggs a day, how much does an entrepreneur sell eggs for in a month (30 days)?

**Task 8.** Entrepreneur has 2000 chickens. One chicken eats an average of 100 g of grain per day. If all the hens lay 1,500 eggs a day, how much will the entrepreneur earn in 1 month (30 days)?

## REFERENCES

1. B.S.Abdullayeva, A.V.Sadikova, N.A.Xamedova, N.M.Muxitdinova, M.I.Toshpulatova "Matematika" Toshkent" Tafakkur bo'stoni" 2018 y
2. A.Asimov, M.Mamasaidova "Muammoli vaziytlardan foydalanib o'quvchilarni masala yechishga o'rgatish" NamDU 2019-yil 8-son.
3. Asimov A, Mamasaidova M.A. A way to work creatively on multiple solutions using information technologies // Academia An International Multisiplinary Research Journal.-Vol.10, Issue 6, June 2020. 301-305.
4. Asimov A, Mamasaidova M.A. Using problems and training students to problem // Scientific Bulletin of Namangan State University. Vol.8, 348-352
5. Asimov A, Mamasaidova M.A., Application of much mutual instructions for preparing teachers to test disciplines // Scientific Bulletin of Namangan State University. Vol.4, 255-258.