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# The Order and Stages of Teaching Mathematics in the 6th Grade of General Secondary School

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**Abstract:** This article discusses a part of the curriculum and structure of teaching mathematics in the 6th grade of general secondary schools in two friendly countries. It examines the achievements and potential outcomes of the mathematics education systems in both countries.

**Keywords:** general secondary school, 6th grade mathematics textbook, first unit (chapter), second unit (chapter).

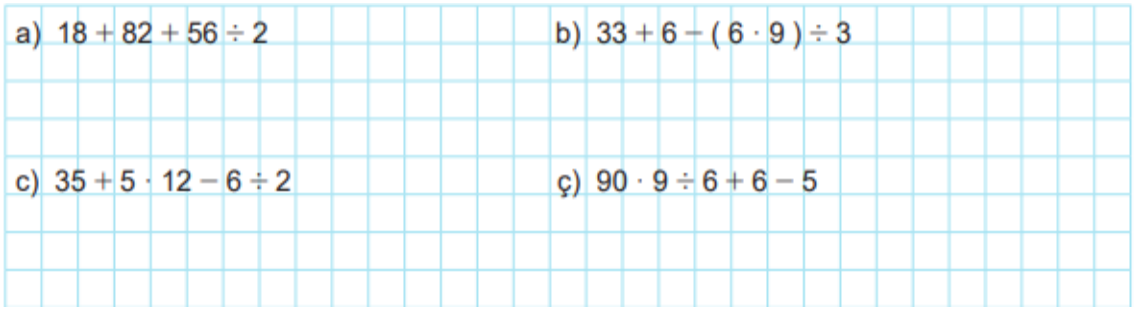


**Introduction:** We will answer the question of what topics are taught in mathematics in the 6th grade of general secondary schools, and we will consider the importance of these topics and the stages of their explanation to students, as well as the advantages of this procedure. We will conduct this comparison between the two countries of Turkey and Uzbekistan. First of all, we will start by analyzing the textbook written for 6th grade students of secondary schools in Turkey and its programmatic basis.

1) a) The book written for 6th grade students in Turkey consists of 6 chapters and each chapter consists of 2 or 3 parts. Each part is also divided into topics.

b) The mathematics book written for 6th grade students in Uzbekistan consists of 9 chapters and a total of 70 topics.

2) a) The Turkish 6th grade textbook primarily includes operations on natural numbers, including raising a number to a power, examples of four operations on numbers, examples of simple rules for opening parentheses and their analysis, and examples of logical thinking.

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**Bilgi Kutusu**

Toplam durumunda olan iki doğal sayının bir doğal sayı ile çarpımında, çarpım durumundaki doğal sayı, toplanan sayılarla ayrı ayrı çarpılır. Daha sonra bu çarpımlar toplanır. Buna **çarpma işleminin toplama işlemi üzerine dağılma özelliği** denir.

Örneğin $15 \cdot (20 + 5)$ işleminin sonucu

$15 \cdot (20 + 5) = 15 \cdot 20 + 15 \cdot 5 = 300 + 75 = 375$ şeklinde hesaplanabilir.

Fark durumunda olan iki doğal sayının bir doğal sayı ile çarpımında, çarpım durumundaki doğal sayı, eksilen ve çıkan sayılarla ayrı ayrı çarpılır. Daha sonra bu çarpımların farkı alınır. Buna **çarpma işleminin çıkarma işlemi üzerine dağılma özelliği** denir.

Örneğin $12 \cdot (20 - 11)$ işleminin sonucu

$12 \cdot (20 - 11) = 12 \cdot 20 - 12 \cdot 11 = 240 - 132 = 108$ şeklinde hesaplanabilir.

[2]

**ÇÖZÜM**

Dikdörtgensel bölgelerin farklı kenar uzunluklarını çarparak alanlarını bulabiliriz.

1. Yol:

Büyük parçanın uzun kenar uzunluğu = 22 cm − 9 cm,

Büyük parçanın kısa kenar uzunluğu = 8 cm,

Büyük parçanın alanı $= 8 \cdot (22 - 9) = 8 \cdot 13 = 104$ cm$^2$ olur.

2. Yol:


Büyük parçanın alanı = (kâğıdın kesilmeden önceki alanı) − (küçük parçanın alanı)

$= 22 \cdot 8 - 9 \cdot 8 = 176 - 72 = 104$ cm$^2$ olur.

1 ve 2. çözüm yollarını birlikte düşündüğümüzde

$8 \cdot (22 - 9) = 8 \cdot 22 - 8 \cdot 9 = 176 - 72 = 104$ cm$^2$ olduğu görülür.

[2]

b) In the 6th grade textbook of Uzbekistan, the first topics are equal fractions, reducing fractions, reducing fractions to a common denominator, and performing operations on fractions with different denominators. It can be seen that in Uzbek mathematics, the topics of natural numbers and operations on them are included in the 5th grade mathematics textbook. In addition, it can be seen from the above Turkish mathematics book that the largest operations on natural numbers are performed on three- or four-digit numbers, these examples show that the largest numbers in Uzbek 5th grade mathematics are eight- and nine-digit numbers. This situation may reduce the interest of the schoolchild in science and lead to the conclusion that it is difficult to master the science. However, it may help students to calculate quickly, work with large numbers, and increase their economic literacy.

**1.** Bo'sh kataklarni to'ldiring.

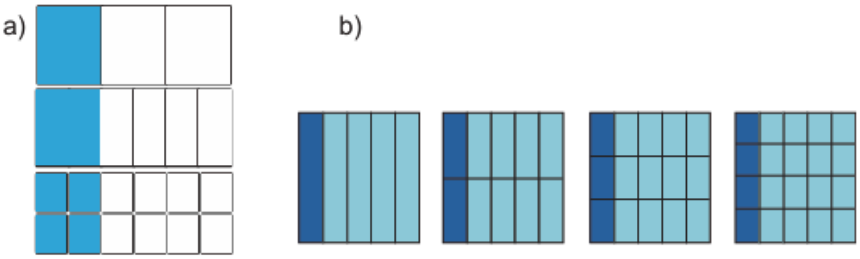
$\frac{2}{3} = \frac{4}{6} = \frac{\square}{9} = \frac{8}{\square} = \frac{\square}{\square} = \ldots$ $\quad\quad$ $\frac{3}{4} = \frac{\square}{\square} = \frac{\square}{\square} = \frac{\square}{\square} = \frac{\square}{\square} = \ldots$

**2.** Noma'lum sonlarni toping.

a) $\frac{3}{4} = \frac{x}{20}$ $\quad$ b) $\frac{2}{3} = \frac{8}{x}$ $\quad$ c) $\frac{5}{9} = \frac{x}{36}$ $\quad$ d) $\frac{9}{11} = \frac{45}{x}$

**3.** Bo'yalgan sohalarni teng kasrlarda ifodalang.

a) b)



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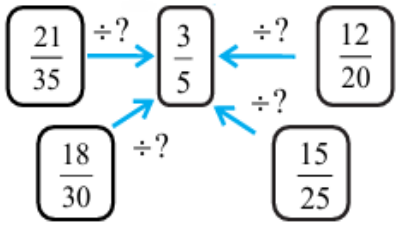
**6.** Qisqartiring.

a) 4 ga: $\frac{4}{8}; \frac{12}{16}; \frac{20}{24}; \frac{28}{32}; \frac{36}{40}$.

b) 6 ga: $\frac{18}{30}; \frac{42}{48}; \frac{54}{66}; \frac{90}{126}$.

**7.** Umumiy bo'luvchilarni toping.




**8.** Kasrlardan qaysi biri $\frac{48}{60}$ ga va qaysi biri $\frac{36}{84}$ ga teng?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $\frac{3}{7}$ | $\frac{8}{10}$ | $\frac{12}{10}$ | $\frac{24}{30}$ | $\frac{12}{28}$ | $\frac{12}{15}$ | $\frac{9}{15}$ | $\frac{16}{20}$ | $\frac{9}{21}$ | $\frac{6}{14}$ | $\frac{18}{42}$ | $\frac{4}{5}$ |

**9*.** Tenglamalarni yeching.

a) $\frac{28}{42} = \frac{x+1}{6}$ $\quad$ b) $\frac{55}{75} = \frac{11}{x+8}$ $\quad$ c) $\frac{63}{84} = \frac{3}{8-x}$ $\quad$ d) $\frac{120}{140} = \frac{9-x}{7}$

[1]

3) a) If we analyze the second part of the Turkish 6th grade textbook, the second part first of all presents a number of topics and simple rules and properties related to the topics, such as the concept of positive and negative integers, their representation on the number line, the concept of simple fractions, their representation on the number line, operations on simple fractions. In addition, examples related to the topic and their analysis, as well as examples related to logical thinking, are considered.

**Birlikte Öğrenelim**

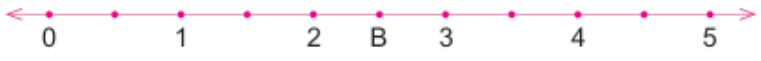

Yukarıda yol olarak tasarlanan sayı doğrusu modelinde, mavi aracın ön kısmı −4, sarı aracın ön kısmı 2 ve kırmızı aracın ön kısmı ise 4 noktasındadır. Verilen araçların ön kısımlarının varış noktası olan sıfıra uzaklıklarını bulalım.

Kırmızı arabanın varış noktasına olan uzaklığı 4 birim, sarı arabanın varış noktasına olan uzaklığı 2 birim ve mavi arabanın varış noktasına uzaklığı 4 birimdir. Kırmızı ve mavi araba farklı taraflarda olmalarına rağmen varış noktasına uzaklıkları aynıdır.

4 Aşağıdaki sayı doğrularında ardışık tam sayılar arası eş parçalara ayrılmıştır.
**Buna göre A, B, C ve Ç harflerine karşılık gelen kesirleri bulunuz.**

a) 

A =

b) 

B =

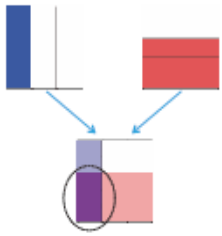
[2]

These and similar easy examples are given, and in addition, a number of examples and problems on the practical applications and practical application of fractions are given. This is designed to make the student think that the purpose of studying science is practical application and at the same time to prevent students from getting bored, and at the same time, it is known that in each class there are students with different levels of mastery. That is, in each class there are fast-learning, medium-learning and slow-learning students, and the teaching method of these examples and problems and topics does not create difficulties for each student to master and analyze the content and does not allow students to get bored.

Now we will analyze the second chapter of the 6th grade mathematics textbook written for schoolchildren in Uzbekistan.

b) Chapter 2 of the mathematics textbook for 6th grade students in Uzbekistan consists of topics such as multiplying fractions, multiplying mixed numbers, finding a part of a number, calculating in convenient ways, reciprocals, dividing fractions, dividing mixed numbers, finding a number by its part, and tasks on operations on fractions. In addition, examples and problems of varying difficulty are presented on a number of topics.

**1.** Model yordamida kasrlarni hosil qiling va ularni ko'paytiring.



$\frac{1}{3}\times\frac{3}{5}=?$

**2.** Hisoblang.

a) $\frac{1}{2}\times\frac{1}{3}$ b) $\frac{2}{3}\times\frac{5}{7}$ c) $\frac{2}{5}\times\frac{1}{3}$ d) $\frac{35}{40}\times\frac{4}{7}$ e) $\frac{12}{13}\times\frac{5}{6}$

**3.** Bog'bon ikki kunda jami necha ar yerni shudgor qildi?

Birinchi kuni: $\frac{8}{9}$ ar

Ikkinchi kuni: ?, $\frac{3}{2}$ marta ko'p

[1]

**10.** Amallarni bajaring.

a) $12\frac{5}{6}+2\frac{7}{9}\times\left(15\frac{9}{10}-12\frac{9}{10}\right)$ b) $13\frac{3}{8}+4\frac{5}{7}\times\left(19\frac{3}{17}-5\frac{3}{17}\right);$

c) $3\frac{4}{17}\times5\frac{2}{3}+3\frac{4}{17}\times11\frac{1}{3};$ d) $5\frac{7}{16}\times1\frac{3}{29}+2\frac{5}{16}\times2\frac{2}{7}$

[1]

d) $\frac{1}{2\times3}+\frac{1}{3\times4}+\frac{1}{4\times5}+\frac{1}{5\times6}+\frac{1}{6\times7}+\frac{1}{7\times8}+\frac{1}{8\times9}+\frac{1}{9\times10}+\frac{1}{10\times11}+\frac{1}{11\times12}$

e) $\frac{1\times2\times3+3\times6\times9+5\times10\times15}{2\times4\times6+6\times12\times18+10\times20\times30}$

f) $\frac{2}{1+\frac{1}{1+\frac{1}{2}}}-\frac{2}{1+\frac{1}{1-\frac{1}{2}}}$

[1]

1. A number of interesting examples and problems of this kind are presented, some of which are considered to be of high difficulty.
2. As we have noted above, there are students with different levels of mastery in each class, and examples with a high level of difficulty can bore students with low mastery.
3. The following conclusion can be drawn about the two textbooks above. The mathematics textbook written for the 6th grade of Turkish general secondary schools is somewhat easier than the textbook written for the 6th grade of Uzbek general secondary schools, and its topics

are relatively earlier, that is, they start with the topics that 5th grade students of general secondary schools in Uzbekistan study, which is convenient for students to master in relation to their age. The Uzbek mathematics textbook is written higher in terms of the scope of some topics. This will give students the opportunity to master more topics, which will later be the first step in mastering difficult and scientific subjects of science. But another important aspect of this situation is that it can lead to low-learning students not being able to master and getting bored with science.

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