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THE EFFECT OF TEACHING ALGEBRA BY USING WORKSHEETS ON THE PROBLEM SOLVING SKILLS OF THE PRIMARY SCHOOL 8TH GRADE STUDENTS

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ABSTRACT
The purpose of this research is to explore the effects of teaching by using mathematics worksheets over the eighth grades students' algebraic problem solving skills. The research was carried out according to 'the experimentation model that requires pre-test and post-test with control group' and the answers were searched by applying correlation research techniques to sub problems which were determined according to purpose of the research. 63 students (30 control and 33 experiment group) that were attending to a primary school were forming the sample of the research. In order to gather data tests such as, algebraic problem solving skills test (ten open ended problems) was used. Mathematics worksheets were designed according to related field literature by the researcher. According to posttest results, the teaching with mathematics worksheets was more effective than the traditional method.

Keywords: Problem Solving, Learning Algebra, Algebraic Thinking Levels, Worksheets

Çalışma Yaprakları Kullanarak Yapılan Cebir Öğretimin İlköğretim 8. Sınıf Öğrencilerinin Problem Çözme Becerilerine Etkisi

ÖZET
Bu araştırmada, çalışma yaprakları kullanılarak yapılan öğretimin 8. sınıf öğrencilerinin cebir problemlerini çözme becerilerine etkisi araştırılmıştır. Araştırma, "öntest-sontest kontrol gruplu yarı deneme modeli"nde gerçekleştirilmiş, alt problemlere korelasyonel araştırma teknikleri kullanılarak cevap aranmıştır. Araştırmanın örneklemini bir ilköğretim okulunun 8. sınıfına devam eden 63 öğrenci (30 kontrol ve 33 deney grubu) oluşturmuştur. Veri toplama aracı olarak, cebirsel problem çözme beceri testi (10 açık uçlu problem) kullanılmıştır. Öğretim çalışmaları sonrasında, çalışma yaprakları ile yapılan öğretimin öğrencilerin cebirsel problem çözme becerilerine olumlu etki yaptığı görülmüştür. Bu etki cebirsel problem çözme becerisinde öğretmen merkezli düz anlatım yöntemine göre daha anlamlı bulunmuştur.

Anahtar Kelimeler: Problem Çözme, Cebir Öğrenme, Cebirsel Düşünme, Çalışma Yaprakları

INTRODUCTION
Algebra is a branch of mathematics which involves symbolising general numerical relations and operations on mathematical structures (Kieran, 1992). Algebraic sufficiency is

important both for professional life side of an adult's life and for the preparation of education after high school and later. The algebra skill is important for today's society for two reasons: The first one is completing algebra lessons successfully is compulsory for high school and college (Chamvers, 1994) and it is observed that it accepted as the reason of failure observed during university education. The second one is the fact that algebra level is important for most of the professional life. For example, distribution and communication networks, physics principles, population models and statistical results, all can be presented through an algebraic language (NCTM, 2000).

In the activities of primary school students for solving and formulating algebraic problems, it is difficult to solve problems by using algebra since they have less understanding about the idea underlying algebraic problem solving methods (Stacey & MacGregor, 2000). The problem solving activities used by primary school students in mathematics lessons are more concrete in accordance with the developmental stages stated by cognitive psychology. The students at this stage and who are just 7 and 11years old try to solve problems in accordance with arithmetic operations with numbers which is called as four operations. This experience of students about problem solving in arithmetic makes it difficult for middle school students (6^{th} – 8^{th} grades) to determine the unknown in a given equation, how the letters will be used, to interpret the definition of an equation and to select the methods for solving equations (Stacey & MacGregor, 2000). This difficulty is known since the middle school students faced frequently with the difficulty of presenting the given in mathematics problems by formulizing them as algebraic equations. As it is encountered even in each simple equation, it is difficult to learn ways of determining the symbols given for getting solutions. Many factors which are causing this difficulty were determined. For example, in some researches, it was determined that the content and grammar features of the algebraic problems affected the algebraic problem solving achievement of students (Bednarz & Janvier, 1996; Chiappini & Lemut, 1991; Kirshner, McDonald, Awtry, & Gray, 1991; Lewis & Mayer, 1987). Stacey and MacGregor (2000) thought the effect of students' previous experiences in arithmetic (numerical four operations) problem solving studies as a basic reason for the difficulty of not understanding the essential logic of problem solving with algebra. Besides, they stated that previous arithmetic problem solving experiences were effective while presenting the meaning of the 'unknown'; making interpretations and explanations given in the equation and thinking the methods that will be used in solving equations and they made solving algebraic problems difficult for students. Even students can canalise themselves to think arithmetic problem solving methods by going back to first phase even while finding solutions by using algebraic methods in any phase of solving an algebraic problem. The algebraic skills of students can be improved in a couple of ways. One way to increase algebraic information is to solve algebraic problems and have more experience in problem solving. For this reason, one purpose of teaching algebra is to help students in learning to solve algebraic problems (Mathews, 1997). It is seen as critically important by many educators to improve students' skill in algebra and solving algebraic problems (NCTM, 2000). This is because of the fact that algebra became a start up skill for many scientific and technical studies in various countries.

Also according to many studies carried out in our country, students have difficulties in understanding algebra although it constitutes a basis for the advanced subjects of the mathematics and for this reason their achievements in mathematics is decreasing (Ersoy and Erbaş, 2003). Different studies carried out on this issue ascertained that some of the students have some certain difficulties in understanding algebraic expressions and they could not find the solutions of simple equations although they solved problems involving algebraic expressions by using arithmetic operations (Dede and Argün, 2003; Dede, Yalın and Argün, 2002; Dede and Peker, 2007). The middle school students should learn algebra subject both for gaining competencies about the representations of the quantitative relations and for having mathematical thinking skills about patterns, functions and generalizations. Students deal with algebraic symbols more in 7th and 8th grade level than other grade levels. It is necessary for students to be feel free about the algebra symbols subject regarding graphic, table and verbal representations of numerical and quantitative relations; to learn preliminary meanings regarding the various meanings and usages of variables; to learn to make connections between linear functions and ratio/proportion with the help of their experiences and to discriminate non-linear functions from linear ones. In addition to that students at this level should recognize equilibrium expressions and they should generalize them, solve linear equations and be able to use simple formulas. In order to cope with the difficulties stated above about algebra and solving algebraic problems and to improve the algebra competencies which are very important for middle school student and stated in the primary schools program, the activities can be supported by four different types of studies (NCTM, 2000):

1. The studies for understanding patterns, correlations and functions,
2. The studies for analyzing and presenting mathematical situations and structures by using algebraic symbols,
3. The studies for using mathematical models to understand and display quantitative relations,
4. The studies for analyzing the changes in different contexts by drawing graphics and using technology based programs or worksheets.

As a result of the previous studies it is stated that the worksheets; help teachers to determine the effectiveness of teaching and learning levels of students and to transfer the concept to students (Ev, 2003); increase students' interests and make them responsible from their own learning, realize effective conceptual teaching by establishing necessary connections and structuring concepts in their minds, remove misconceptions and increase achievement; provide students not to forget the rules that they set rather than rote learning (Ardahan and Ersoy, 2000); ensure evaluation at the end of teaching process (Ceylan, Türnüklü and Moralı, 2000); make learning enjoyable and convert inferences into habits (Kurt and Akdeniz, 2002); would ensure students to develop a positive attitude towards mathematics if it included materials that could be made from simple and cheap materials and improve students' cognitive process skills (Coştu, Karataş and Ayas, 2003). The thought among students that problem solving in mathematics is difficult cause them to develop negative attitudes towards mathematics and problem solving. It is thought that worksheets have an important role in changing these attitudes. It is because, the subjects are planned in a simple, understandable, plain level and in an enjoyable way in worksheets and they are presented in a simple and understandable way so that learning becomes enjoyable.

As a result of the previously conducted studies, the positive sides of the worksheets are as in the following:

1- They help students to reach the concept and teachers to determine learning level and the effectiveness of the education (Ev, 2003).
2- They increase students' interests towards the lessons and make them responsible from their own learning; ensure effective conceptual learning by establishing necessary connections and by structuring concepts in their minds, remove misconceptions and increase the achievement (Yiğit et all., 2000; Saka and Akdeniz,

2001; Harrison and Treagust, 2001; Hand and Treagust, 1991; cited in: Coştu and Ünal, 2005, Coştu, Karataş, Ayas, 2003).

3- They enable students not to forget the rules that they set themselves by getting rid of rote learning (Ardahan and Ersoy, 2000).
4- They ensure evaluation at the end of the teaching process (Ceylan, Türnüklü and Moralı, 2000).
5- They make learning enjoyable and convert inferences into habits (Kurt and Akdeniz, 2002).
6- If it included materials that could be made from simple and cheap materials, they would ensure students to develop positive attitudes towards mathematics and they improve students' cognitive skills (Coştu, Karataş, Ayas, 2003). It can be said under the light of the findings obtained in the studies and the definitions stated above that worksheets improve students' cognitive, affective and psychomotor skills. In other words, it can be said that worksheets provide students to think, decide and find solution ways by using their knowledge and skills.

Within the perspective of the above discussions, the unknown case whether activities designed by using worksheets have an effect on students' problem solving skills in solving algebra problems is the problem of this study.

Research Problem;

Does teaching carried out by using worksheets have an effect on the primary 8th grade students' problem solving skills?

Is there a significant difference between the pre-test and post-test achievement scores of the primary 8th grade experimental group students?

Is there a significant difference between 8th grade experimental and control group students' algebra problem solving skills after implementation?

METHOD

Model

In order to analyze the effect of teaching carried out with worksheets in this study on the solving algebraic problems in primary school mathematics lessons, 'Quasi-experimental model with Pre-test/Post-test Control group' was used. The experimental and control groups in the study were composed of two groups which were randomly selected from 8th grades in the implementation school and in the control group the teaching was carried out with traditional methods and in the experimental group the teaching was carried out with worksheets. It is aimed to remove the disadvantage of students from having a new teacher and to save time through carrying out the teaching activities by mathematics teacher of the primary school in all experimental and control groups. The worksheets that would be used in experimental group was prepared by the researcher and submitted to the course teacher.

The Sample of the Study

The purpose in the selection of students who were composing the sample of the study is to meet with the implementation teacher frequently for minimizing the probable problems and to provide easiness in the transportation of the researcher to the implementation school. For this reason, it decided to have implementation school in the city of Yalova.

63 students participated in this study. 34 of these students are male (54%) and 29 of them are female (46%). In addition to that it can be said that the numeric distribution of the students in the experimental (33 students) and control (30 students) groups is equal.

Data Collection Instruments

Solving Algebra Problems Aptitude Test

Solving algebra problems aptitude test was carried out as pre-test before implementation and post-test after implementation with the experimental and control groups of the study. The test questions were selected from a test which was conducted by Ministry of Education for selecting students to the secondary schools by the researcher and the reliability and validity studies were conducted.

In accordance with the research topic, a test was prepared for testing the problem solving skills about ‘algebraic expressions’, ‘equations’ and ‘inequalities’ stated in attainments and sub-learning fields of the primary 8th grade algebra learning fields. In order to ensure the order in the problem expressions and statements of the test, a problem pool was created among selected questions from related literature and student selection examination for secondary school conducted by the Ministry of Education. While creating this pool, 225 questions of the nine examinations conducted by Ministry of Education between 2000 and 2008 as Student Selection Examinations for Secondary Schools (OKS) and 5 problems stated in the article of Lannin, Barker and Townsend (2006) which was written for analyzing the algebraic understanding of students and called as “Recursive and explicit rules: How can we build student algebraic understanding?” were considered. The basic feature of the problems stated in this article is the fact they ensure saving a lot of time by using variables instead of numerical data for solution and constituting equations in reaching a solution. The five problems under discussion are about generalization skills which constitutes the essential purpose of the algebra lessons and algebraic thinking. 225 mathematics questions asked in student selection examination between 2000-2008 years were analyzed in accordance with the topic of the study. It was determined that 29 of those questions are related with the study topic after conducting interviews with 2 expert tutors and 3 teachers. The primary criteria in determining the questions was learning-sub learning fields and attainments of the Primary School Mathematics Teaching Program (MEB, 2007) and 34- question pool was created including 5 questions stated in the article. Since implementing 34 questions at the same time would be difficult, the questions were divided into 5 parts for solving them in one lesson; in the1st and 2nd examinations were prepared as including 8 questions, 7 questions for 3rd examination, 6 questions for the 4th examination and 5 questions for the 5th examination.
5 examinations including 34 questions in total were conducted with 8th grade questions who are studying in 5 different primary schools in Kadıköy, Üsküdar and Ümraniye districts of Istanbul.

PILOT STUDY SCHOOLS	NUMBER of EXAMINATIONS	NUMBER of STUDENTS in the PILOT STUDY
Üsküdar İcadiye Primary School	1-3-4	93
Üsküdar Hafize Özal Primary School	2-4-5	91
Üsküdar Selimiye Primary School	2-3-5	56
Kadıköy Faik Reşit Unat Primary School	1-3-5	93
Ümraniye Mebruke Salih	1-2-4	77
Koçak Primary School		
TOTAL		410

Table 1: *Pilot study schools*

FINDINGS

Before the teaching activities carried out with experimental group students by using ‘worksheets’ and with control group students by using traditional teaching method, the algebra problem solving skills of these students were determined and whether there is a difference between the achievement levels of control and experimental group students were examined. For this purpose, first the compliance of the pre-test scores of control and experimental groups to normal distribution was tested. Kolmogorov-Simirnov and Shapiro-Wilk tests which can be used when the measurement number of the group is less than 40 were used for testing normal distribution and the results of the test were displayed in Table 2.

		Kolmogorov.simirnov			Shapiro.wilk		
Grade Level	Group	N	T	P	N	T	p
8D	Experimental	33	0.82	0.12	33	1,16	0,21
8C	Control	30	0,70	0,08	30	0,92	0,13

Table 2: *Kolmogorov-Simirnov and Shapiro-Wilk Tests’ results regarding pre-test scores of experimental and control groups that they obtained from Algebra Problem Solving Skills Test*

When the test results displayed in Table 2 are analyzed, it is seen that p significance value of the problem solving skill test scores of the students in 8-D and 8-C groups before implementation are bigger than 0,05 significance level . According to these results, it can be said that control and experimental groups’ pre-test scores of algebra problem solving test show a normal distribution [for experimental group t(33)=0,82 p=0,12>0,05 and for control group t(33)=0,70 p=0,08>0,05 (kolmogorov-simirnov)]. This result shows that the normality hypothesis which is necessary for using t and F statistics obtained from pre-tests was ensured. Before teaching activities, independent groups t-test was used for analyzing the differentiation between problem solving skill test of control and experimental group students and test results were displayed in Table 3.

Grade Level	Group	N	X	ss	t	p
8D	Experimental	33	66,06	11,97	1,62	0,10
8C	Control	30	61,00	11,97		

Table 3: *Independent Samples t-test Results regarding Pre-test Scores of Control and Experimental Groups obtained from Algebra Problem Solving Skill Test*

About the equality of the experimental and control groups' variances, Levene Test statistics was calculated as (F) 0,21 (0,21>0,05) and p significance level as 0,64 (0,64>0,05). These results show that it can be talked about a variance equation. In addition to that, by looking at the values displayed in table 3, although there is a significant difference between the 'Algebra Problem Solving Skill Test' average scores of 8-D and 8-C grade students (Xexperimental=66,06>Xcontrol=61,00), this difference was not accepted as statistically significant (t(61)=1,62 ve p=0,10>0,05). These results show that there is not a significant difference between problem solving skills of control and experimental group students before implementation. For this reason, 8-D and 8-C classes were determined as sample group of the implementation school for comparing the effects of worksheets conducted in experimental group and traditional teaching in control group.

		Kolmogorov.simirnov			Shapiro.wilk		
Grade Level	**Groups**	**N**	**T**	**P**	**N**	**T**	**p**
8D	**Experimental**	**33**	**0.73**	**0.08**	**33**	**1,01**	**0,16**
8C	**Control**	**30**	**0,65**	**0,07**	**30**	**0,87**	**0,09**

Table 4: *Kolmogorov-Simirnov and Shapiro-Wilk Test Results regarding Post-test Scores of Experimental and Control Groups from Algebra Problem Solving Skill Test*

When the test results displayed in Table 4 are analyzed, it is seen that p significance value of the problem solving skill test scores of experimental and control students after implementation are bigger than 0,05 significance level [for experimental group t(33)=0,73 p=0,08>0,05 and for control group t(33)=0,65 p=0,07>0,05 (kolmogorov-simirnov)] and [for experimental group t(33)=1,01 p=0,16>0,05 and for control group t(33)=0,87 p=0,09>0,05 (shapiro-wilk)]. It can be stated according to these results that problem solving skill post-test scores of experimental and control groups show a normal distribution. This result shows that the necessary normality hypothesis was ensured for using t and F statistics in the analysis of the data collected from post-tests.

After teaching activities, dependent group t-test was used for determining the effect of traditional teaching method on problem solving skills of control group students and test results were displayed in Table 5.

Groups	Tests	N	X	ss	t	p
Control	Pre-test	30	61,00	12,68	-3,97	0,00
Control	Post-test	30	70,00	16,60		

Table 5: *Dependent Sample t-test Results regarding Pre-test and Post-test scores which Control Group Students obtained from Algebra Problem Solving Skill Test*

By looking at the data displayed in Table 5, it is seen that there is a 9-point difference between the pre-test and post-test scores of the control group students in 'Algebra Problem Solving Skill Test' (Xpos-test=70,00>pre-test=61,00) and the results show that this difference is statistically significant (t(29)=-3,97 ve p=0,00<0,05). These results indicate that there is a significant difference between problem solving skills of control group students before and after implementation and this difference has a tendency to increase. It can be said for this reason that the traditional teaching implemented in control group increased problem solving skills of students. It was found that a significant difference occurred between problem solving skills of control group students before and after implementation and this difference had a tendency to increase.

After teaching activities, dependent groups t-test was used for determining the effect of teaching with worksheets on the problem solving skills of experimental group students and the results were displayed in Table 6. These results became an answer for the question 'Is there a significant difference between the pre-test and post-test scores of primary school 8th grade experimental group students?' which was expressed for finding an answer for the first research problem of the post graduate study.

Groups	Tests	N	X	ss	t	p
Experimental	Pre-test	33	66,06	11,97	-9,14	0,00
Experimental	Post-test	33	85,75	12,75		

Table 6: *Dependent Samples t-test Results regarding the Pre-test and Post-test scores of Experimental Group Students from Problem Solving Skills Test*

By looking at the values displayed in Table 6, it is seen that a 19, 69-point difference occurred between 'Algebra Problem Solving Skills' pre-test and post-test average scores of experimental group students (Xpost-test=85,75>Xpre-test=66,06) and these results indicate that this difference is statistically significant (t(32)=-9,14 and p=0,00<0,05). These results indicate that a significant difference occurred between problem solving skills of experimental group students before and after implementation and this difference has a tendency to increase. For this reason, there is a significant difference between pre-test and post-test achievement scores of primary school 8th grade experimental group students, in other words, it can be said that the teaching activities which are supported by worksheets increased the algebraic problem solving skills of experimental group students.

In order to find an answer for the first research problem about the problem solving skills, the answer of the 'Is there a significant difference between the post-test achievement scores of the control group and experimental group primary school 8th grade students?' question was searched. For this reason, the post-test scores of experimental and control group students which they obtained from ‘algebra problem solving skills’ test were compared. Independent group t-test was used for this purpose and test results were displayed in Table 7.

Groups	Tests	N	X	ss	t	p
8-D	Experimental	33	85,75	12,75	4,24	0,00
8-C	Control	30	70,00	16,60		

Table 7: Independent Samples t-test Results regarding Post-test scores that Control and Experimental Group Students obtained from Algebra Problem Solving Skill Test

About the equality of the experimental and control groups’ variances, Levene Test statistics was calculated as (F) 1,72 and p significance level as 00,19. These results show that it can be talked about the equation of the group variances. In addition to that, by looking at the values displayed in table 7, it can be said that there is a 15, 75-point difference between ‘Algebra Problem Solving Skill’ post-test average scores of the experimental and control group students (Xexperimental=85,75>Xcontrol=70,00) and this difference is statistically significant (t(61)=4,24 ve p=0,00<0,05). These results show that a significant difference occurred in favour of experimental group between problem solving skills of control and experimental group students after implementation. It can be said that the change in favour of experimental group in the algebra problem solving skills of control and experimental group students which were at equal level before teaching activities is due to the teaching activities used in experimental group. In conclusion, it is seen that the teaching which is based on worksheets affected algebra problem solving skills of students more positively than traditional teaching approach.

CONCLUSION and DISCUSSION

In order to test whether the difference occurred between Algebra Problem Solving Achievement Post-Test scores of experimental and control group students is statistically significant or not, the results of the t-test were analyzed. According to these results p significance level occurred as 0,00.

It was seen after implementations that a significant difference occurred in favour of experimental group students between problem solving skills. The change in algebra problem solving skills of experimental and control group students which are at equal level before implementation made us think that this difference was due to teaching activities used in experimental group. The teaching which carried out with worksheets affected algebra problem solving skills of 8th grade students more positively than traditional teaching approach. When the findings obtained in this study are considered, it is seen that the teaching carried out with worksheets significantly increased algebra problem solving skills of 8th grade students. This result obtained in this study; shows parallelisms with results obtained in other studies which were carried out with worksheets. As a result of the previous studies, it is stated that worksheets; help teachers to transfer concepts to the students and to determine the learning levels of students and the effectiveness of teaching (Ev, 2003); increase the interests of students towards lessons, make students responsible from their own learning, realize effective conceptual learning by establishing necessary connections and structuring concepts in their minds and increase achievements; ensure students not to forget the rules that they set themselves rather than rote learning (Ardahan and Ersoy, 2000); provide evaluation at the end of teaching process (Ceylan, Türnüklü ve Moralı, 2000); make learning enjoyable and convert making inferences a habit (Kurt ve Akdeniz, 2002); ensure students to develop positive attitudes towards mathematics when involves materials that can be made of simple and cheap supplies and improve cognitive process skills of students (Coştu, Karataş ve Ayas, 2003).

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ATTACHMENTS

ÇALIŞMA YAPRAĞI-1 DENKLEMİMİ DENKLEŞTİR - ÇÖZÜMÜ

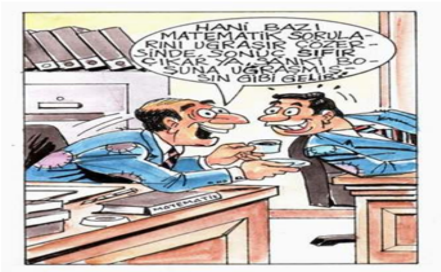
Mert'e babası, yeni taşındıkları apartmandaki komşularını tanıtmaktadır. Babası bir takım ipuçları vererek yardımcı oluyor. Mert aşağıdaki tabloyu oluşturarak komşularını tanımaya çalışıyor. Bizde ona yardımcı olalım. Sizden istenen denklemleri oluşturmak. Denklem çözümlerini de bırakalım Mert yapsın değil mi?

Esma Hanım'ın kişi sayısı, Ahmet Bey'in çocuk sayısı ve Cengiz Bey'in daire numarası tabloda verilmiştir. Ayrıca size örnek olarak Ahmet Bey'in ailesindeki kişi sayısını veren denklem yazılmış... Buna göre verilen bilgileri kullanarak komşuların kişi ve çocuk sayısı ile daire numaralarını veren **denklemleri** tabloya yazın... Hadi bakalım kolay gelsin...

Komşular	Kişi Sayısı	Çocuk Sayısı	Daire No
Esma	a		
Büşra			
Cengiz			c
Ahmet	$\frac{a+3}{2}$	b	

- Esma Hanım 5 kişilik bir ailede yaşamaktadır. Ahmet Bey'in ailesinin kişi sayısı bu sayının 3 fazlasının yarısı iken Büşra Hanım'ın ailesinin kişi sayısı bu sayının 2 katından 4 eksiktir. Cengiz Bey'in ailesinin kişi sayısı da Esma Hanım 'ın ailesinin sayısının bir eksiğidir.
- Ahmet Bey'in çocuk sayısı en küçük pozitif asal sayıdır. Esma Hanım'ın çocuk sayısı bu sayının 4 fazlasının yarısıdır. Büşra Hanım'ın da, Ahmet Bey'in çocuk sayısının 2 katı kadar çocuğu vardır. Cengiz Bey de Büşra Hanım'ın çocuk sayısının 2 katının 6 eksiği kadar çocuğa sahiptir.
- Cengiz Bey'in daire no'su 4'tür. Esma Hanım'ın daire no'su bu sayının yarısından 1 eksiktir. Ahmet Bey'in daire no'su ise Cengiz Bey'in daire no'sunun 1 eksiğinin 2 katıdır. Büşra Hanım da Ahmet Bey'in daire no'sunun 2 katından 2 eksik olan dairede oturmaktadır.

ÇALIŞMA YAPRAĞI-2 BASKET NUMARASI



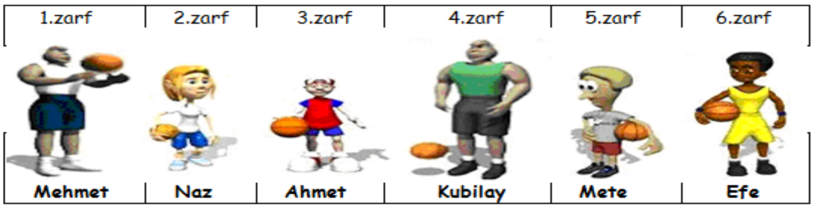
Basketbol takımı kuran 6 arkadaş forma numaraları için, 6 zarftan birini seçiyorlar. Bu zarfların içinde çözülmesi gereken denklemler bulunuyor. Denklemlerin çözüm kümesi ise forma numaralarını gösteriyor. Buna göre 6 kişinin hangi forma numaralarına sahip olduklarını bulun…

4. Zarf: $\frac{1}{r} + \frac{2}{r-3} = 0$

5. Zarf: $3x + \frac{1}{2}(5x - 3) = \frac{19}{2}$

6. Zarf: $\frac{x+2}{2} - \frac{x-3}{3} = 4$

Mehmet	Naz	Ahmet	Kubilay	Mete	Efe



1. Zarf: $\frac{1}{x}(x + 12) = 3$

2. Zarf: $5 + \frac{3}{x} = \frac{5x+3}{2x-8}$

3. Zarf: $\frac{5x-4}{2x} - \frac{4}{x} = 1$

ÇALIŞMA YAPRAĞI-3 ŞAİRİM, ŞAHANEYİM

DENKLEMİN KIYAFETLERİ

Pantolonum kareli
Gömleğim boyuna çizgili
Pantolonla gömlek fiyatım belli
İkisini de alsan ödersin yüzeli

Gel vatandaş gel
İkisini de alsan olmam engel
Kazaktan 20L fazladır ceket
Al ikisini yüze, parana gelsin bereket

Kalite ve ucuzluk burada
İki mont alana bir mont bedava
Üç montu veririm doksan liraya
Bunu da beğenmezsen derim sana elveda...

Yukarıdaki şiirde denklemleri bulup yazınız. Varsa çözümlerini yapınız...

<u>Denklemler ve Çözümleri:</u>

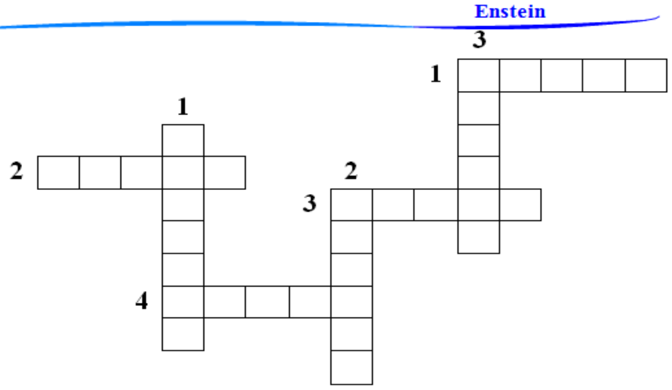
Sizin şiirinizde kaç tane denklem olacak? Yazalım bulalım...

ÇALIŞMA YAPRAĞI-4 DENKBUL

Ben bir problemi en az 1 saatte çözerim. İlk 45 dakikada düşünürüm, 14 dakika beklerim.

Son dakikada da birden ve tam olarak çözümü sunarım.

Enstein



SOLDAN SAĞA

1. Elif'in cevizlerinin yarısının 6 fazlası, ceviz sayısının iki katıdır. Elif'in kaç cevizi vardır?
2. Biri diğerinin iki katına eşit olan iki sayının toplamı 6 ise küçük sayı kaçtır?
3. Kazağın fiyatı 2 TL daha ucuz olsaydı gömlekle aynı fiyatta olacaktı. Kazak ve gömleğin fiyatları toplamı 18 TL ise gömlek kaç TL'dir?
4. Berabere biten bir maçta bir gol daha atılsaydı, maçta atılan toplam gol sayısı 3 olacaktı. Buna göre takımlar kaç gol atmıştır?

YUKARIDAN AŞAĞIYA

1. Çocuğundan 21 yaş büyük olan anne çocuğunun 4 katı yaşındadır. Çocuk kaç yaşındadır?
2. Hangi sayının 3 fazlasının $\frac{2}{3}$ ü 8 eder?
3. Hangi sayının 2 eksiğinin 3 katı, aynı sayının iki katına eşittir?

1	2	3	4	5	6	7	8	9

Bilinmeyen değere karşılık gelen meyvelerin isimlerini bulmacada, kuralına göre yerine yazın...

ÇALIŞMA YAPRAĞI-5 SEN NE DERSİN?

1. Bir mağaza sahibi, mağazadaki malların sayımını yaptığında eteklerin sayısı pantolonların sayısının 3 katından 25 eksiktir. Mağazada etek ve pantolonların toplam sayısı 35' tir. Pantolon sayısı nedir?

2. İki sayının toplamı 170'tir.Büyük sayı, küçük sayının 3 katından 30 eksiktir. Küçük sayı kaçtır?

3. Bir sınıfın $\frac{3}{5}$'i kızdır. Sınıftaki erkeklerin sayısı 24 ise sınıfta kaç öğrenci vardır?

4. Bir top kumaşın önce $\frac{2}{9}$'u ,sonra kalanın $\frac{3}{4}$'ü satılıyor. Geriye 14 metre kumaş kaldığına göre kumaşın tamamı kaç metredir?

5. Bir babanın yaşı, oğlunun yaşının 3 katıdır.10 yıl önce, babanın yaşı oğlunun yaşının 7 katı idi.Babanın yaşı nedir?

1: $y+(3y-30)=170$

3: $\frac{2x}{9}+\left(\frac{7x}{9}\cdot\frac{3}{4}\right)+14=x$

11: $(24+x)\cdot\frac{3}{5}$

4: $3y+(y-30)=170$

13: $2x-25=35$

5: $7(x-10)=(3x-10)$

2: $\frac{2x}{5}=24$

1: $x+(3x-25)=35$

8: $\frac{3x}{5}=24$

7: $7(3x-10)=x-10$

9: $\frac{2x}{9}+\left(\frac{3x}{4}\right)=x-14$

1	2	3	4	5

Denklemlerin çözümü olarak düşündüğünüz sayıların numaralarını yazın ve sayılar arasındaki bağıntıyı bulun.