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# Microfinance Institutions And Poverty Alleviation In Abia State, Nigeria

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**Abstract**

The quest to alleviate poverty in Nigeria has been the central plank of the three tiers of government in Nigeria. Nigeria is a country-nation blessed with abundant natural and human resources. Yet the country still wallows in abject poverty. We investigated the impact of Micro-Finance Institution in alleviating poverty in Abia State, Nigeria. Information and data generated were analysed using tables, actual respondents' perceptions and Ordinary Least Square Technique. The study saw no significant positive impact of Micro Finance Institution in reducing poverty. This could be as a result of the infancy of micro financing in Abia state, Nigeria. Recommendations were made.

## Introduction

The quest to alleviate poverty in Nigeria has been the central plank of the three tiers of government. Nigeria popularly called the giant of Africa is a country-nation blessed with abundant resources. Among others, the country is richly blessed with agriculture, gas, petroleum, solid mineral and human resources. Yet the country still wallows in abject poverty. Nwaobi (2003) posits that Nigeria presents a paradox. The country is rich but the people are poor. With the abundant resources in the country, Nigeria should rank among the richest countries that should not suffer poverty sting. Alas, the colossal increase in the level of poverty has made the socio-economic landscape brittle. Today, Nigeria is ranked among the poorest countries in the world (Oshewolo, 2011). A study at the majority of the people, describe widespread penny-pinching as the standard of living has gone down to low income, persistent common diseases and hunger. Only a few men can afford good education to themselves and their children, health care services, good roads and shelter. This has led to increase in crime, youth restiveness, child abandonment, free trade kidnapping, betrayal from all angles, reduction in life expectancy, closure of businesses and frustration. To arrest this situation, the government of Nigeria, initiated policies and structures which include, the Operation Feed the Nation (OFN), the Directorate of Food, Roads and Rural Infrastructure (DFFRI), Better Life Programme (BLP) National Directorate of Employment (NDE), Structural Adjustment Programme, Peoples Bank of Nigeria (PBN), Community Bank (CB), Family Support Programme (FSP), Family Economic Advancement Programme (FEAP), National Agency for Poverty Eradication Programme (NAPEP), National Economic Empowerment Development Strategy (NEEDS), State Economic Empowerment Development Strategy (SEEDS) and Local Economic Empowerment Development Strategy (LEEDS). Their aims are to ameliorate the suffering of the people by providing them employment opportunities and have access to credit facilities without stringent conditions to enable them establish their own businesses. This credit facility is referred to as microfinance.

The most important constraint that poor people face to come out of poverty is lack of access to credit to run their own businesses. The Millennium Development Goals document recognizes microfinance as a powerful instrument to alleviate poverty and empower the poor. Peoples Bank of Nigeria (PBN) was commissioned in 1989 to provide loans to prospective entrepreneurs on soft terms and without stringent requirements of collaterals. As an adjunct to the Peoples Bank, Community Banks (now called microfinance bank) were licensed in 1990 for the provision of non-sophisticated and low interest loan to the community to assist in their businesses and by extension improve the standard of living of the people (Okpara, 2010). Nzotta, 2003 posits that the overall philosophy of Micro-Finance Institutions in Nigeria is to serve as a panacea for poverty alleviation in the third world countries.

We intend to examine the impact of microfinance institutions in poverty alleviation in Nigeria. Following our introduction, the remaining sectors are as follows: While section two looks at prior literatures, section three discusses our model specification and scope of the study, section four discusses our result finding while section five is on conclusion and recommendations.

**Review of Relevant Literatures**

**Conceptual Framework**

Poverty is a state where an individual is not able to cater adequately for his/her basic needs of food, clothing and shelter, meet social and economic obligations; lacks gainful employment, skills, assets and self-esteem; and has limited access to social and economic infrastructures (Englama and Bamidele, 1997). Similar to Englama and Bamidele, 1997, Balogun, (1999) opinion that poverty is a situation where a population or a section of the population is able to meet only its bare subsistence, the essentials of food, clothing and shelter, in order to maintain a minimum standard of living. This suggests the poor lacks basic infrastructure such as education, health, potable water, and sanitation, and as a result has limited chance of advancing his/her welfare to the limit of his/her limited access to social and economic infrastructures. Eze (2009) explains that the level of poverty is geometrically increasing. Poverty is deep and pervasive, with about 70 percent of the population of Nigeria living in absolute poverty (Soludo and Muhtar, 2003). Gore (2002) posits that poverty is all-pervasive where the majority of the population lives at or below income levels sufficient to meet their basic needs, and the available resources even where equally distributed, are barely sufficient to meet the basic needs of the population. This leads to environmental degradation, as people have to eat into the environmental capital stock to survive. When this occurs, the productivity of key assets on which livelihood depends is greatly destabilized.

Egwuatu (2008) documents over 500 million of the world's population lives under very poor conditions, but they are economically active. They lack access to basic necessities of life: food, shelter and primary health care. Their means of livelihoods is by being self employed as micro entrepreneurs or by working in micro enterprises. This set of people has no hope for expansion of their enterprise as a result of inability of accessing commercial banks for credit due to stringent requirement of collateral security. Poverty reduction becomes the most difficult challenge facing the developing countries of the world, Nigeria in particular. The factors responsible for the poverty incidence are divided into two which are ever-present and in the mentality of the ruled and the rulers. While the ruled strive to escape the poverty circle, the rulers are conscious of sliding back to experience poverty; by this means promoting corruption, misrule, injustice and other social wrongs (Arogundade, Adebisi, and Ogunro, 2011).

Ebimobowei, Sophia, and Wisdom (2012), note the identified constraints facing the poor is lack of access to formal sector funds to enable them to take advantage of economic opportunities to increase their level of output, hence move out of poverty. Traditional aid has not helped in solving this problem. According to Lindvert (2006) micro finance institution promotes financial sustainability for poor individuals in the society. It has proven to be an effective and powerful tool for poverty reduction (Morduch and Haley, 2001). The financial service rendered to the deprived group of the people and small entrepreneurs to help them in developing self-employment opportunities and various income generating activities is microfinance (Ebimobowei, Sophia, & Wisdom, 2012). According to Rajasekhar (2004), microfinance is the strategy for providing to the poor in rural and urban areas, especially women with savings and credit facilities to set up or expand business, invest in self-employment activities and increase household security. Schreiner and Colombet (2001) define microfinance as "the attempt to improve access to small deposits and small loans for poor households neglected by banks.

**Micro Institutions and Poverty Alleviation**

Ehigiamusoe (2008), notes that microfinance institutions assume the poor know what to do to enhance their economic condition, but they operate from a slim economic base which can be strengthened by funds borrowed on affordable terms. At the 60th high-level plenary meeting of the United Nations General Assembly which gathered 151 Heads of State from all over the world at the UN Headquarters for the purpose of getting the world leaders to review progress in reaching the targets of the Millennium Development Goals (MDG), with the primary aim of eradicating extreme poverty by the year 2015, microfinance was prominent on the agenda of this historic gathering (Okpara, 2010). The most significant recognition of its importance was made in the 2005 World Summit Outcome Document adopted by the gathering, which states, "We recognize the need for access to financial services, in particular for the poor, including microfinance and microcredit" (Egwuatu, 2008). Therefore, microfinance has emerged as a growing industry to provide financial services to the very poor people. It is premised on the fact of economic relations, that the poor remain poor because they are deprived of access to life transforming opportunities. Service users include artisans, small holder farmers, food processors, petty traders and other persons who operate micro-enterprises

Okpara (2010) examines the critical factors that cause poverty in Nigeria and the investigation of the extent to which microfinance institutions have helped in the alleviation of poverty. To identify the critical factors, the researcher adapted the data on reasons for poverty generated by National Bureau of Statistics and employed the method of factor analysis. For the purpose of investigating the contribution made by the microfinance institutions in poverty reduction, the researcher made use of regression analysis on a quadratic equation model. The result of the analysis identifies five factors: low profit, prices of commodities are too high, hard economic times, lack of finance to start or expend their business, and business not doing well, as critical factors causing poverty. The analysis also reveals that the impact of microfinance on poverty in Nigeria can be explained in two phases. The first phase, the take-off stage, sees poverty as increasing though at a decreasing rate as microfinance credit increases. In the second phase, persistent increase in microfinance credit reduces drastically the poverty index in Nigeria. The study reveals that microfinance credits have in recent times picked up momentum in the drastic reduction of poverty. The researcher advised that all necessary conditions and facilities that will enhance establishment of more microfinance banks in all of the communities in Nigeria should be put in place.

Arogundade, Adebisi, & Ogunro, (2011) examine the various government policies targeted towards poverty alleviation in Nigeria with a view to come up with policy recommendation for effective and efficient implementation of such policies. In the course of the archaeological survey, it was revealed that governments in power often seek to introduce their own policy and in the process, any other policy inherited from successors are gradually rendered impotent. Initially, it was first thought that lack of succession planning was responsible, but in the process, it was observed that some governments even watch their baby programme dying prematurely to give birth to another. From close observation, it was noted that each of these programmes have different orientation and strategic focus and as such it was recommended that all policies should henceforth be harmonised under the same umbrella, and each unit being accountable and responsible for their actions. Poverty Alleviation Agency for Nigerians (PAAFN) was suggested as the name to house other agencies and to be responsible directly to the presidency.

Ebimobowei, Sophia, and Wisdom (2012), study investigate the relationship between microfinance and poverty reduction in Bayelsa State. The target population for the study were all women involved in small scale business in Bayelsa State, Nigeria. A sample of 286 respondents was selected. The instrument for the study was a questionnaire titled microfinance and poverty reduction. Chi-sqaure, ANOVA and descriptive statistics were used to analyse the data generated. The analysis of the data revealed that there is a significant relationship between microfinance and poverty reduction in Bayelsa State. It was concluded that microfinance alone cannot reduce poverty in any society where basic infrastructures like good roads, steady power supply, and good transportation system are nearly not available for the women to benefits from the introduction of microfinance in Nigeria. The study recommended the governments in developing economies like Nigeria should as a matter of national priority provide the basic infrastructural facilities to enable small business owners grow; the National Agency for Poverty Alleviation Programme (NAPEP) should be well strengthened to reduce the level of political manipulation by political leaders in the country; and a reduction in the interest rate for microfinance institutions and other stringent issues about microfinance model of poverty reduction should be adequately and seriously addressed to minimize the level of poverty in Nigeria. Goldberg (2005) find that the poor no longer remained as poor as a result of microfinance in Bangladesh. Khandler (2003) observe that microfinance helped in poverty reduction and In Bangladesh, Zubair (2004) reports that microfinance has reduced vulnerability to domestic violence.

In Ethiopia, Asemelash (2003) took a study on the impact of microfinance. Structured questionnaire using Descriptive statistics, Chi-Square test and ANOVA for the analysis and testing of hypothesis were adopted. The study find that the microfinance provided to the poor has brought a positive impact on the life of the clients as compared to those who do not get access to these microfinance services. He showed that microfinance has brought a positive impact on income, asset building, and access to schools and medical facilities in the study area. Also, in Ethiopia, Alemu (2006) work on "micro-finance & poverty education" took a sample of 500 households from five different zones in the Amhara Region. Chisquare, paired t-test, Anova and logistic regression were used. The study finds that the poor have smoothed their income in the study area. Rajendran and Raja (2010) with a sample of 180 randomly selected leaders of Self Help Groups in Vellore district, India. The study report that microfinance and self help groups are effective in reducing poverty, empowering women, creating awareness and ensure sustainability of environment which finally results in sustainable development of the nation. Imai, Arun and Annim (2010) study covered a sample of 20 Small Industries Development Bank of India partner microfinance institutions and 5260 households using descriptive statistics and Tobit regression model. The study show that loans for productive purposes were more important for poverty reduction in rural than urban areas and significant positive effect of Microfinance Institution productive loans on multi-dimensional welfare indicator. Green, Kirkpatrick & Murinde (2006) study on finance for small enterprise growth & poverty reduction in developing countries used secondary source of case studies and empirical work. The causal linkages among financial policy, enterprise development and poverty reduction remain a key challenge given the commitment to achieve the MDGs by 2015. Anyanwu, (2004) examines the outreach performance of microfinance institutions (MFIs) in Nigeria, based on a survey of ten major MFIs. The findings indicate that the operations of MFIs have grown phenomenally in the last ten years, driven largely by expanding informal sector activities and the reluctance of banks to fund the emerging micro enterprises. Therefore, microfinance institutions can be an effective way to provide low-cost financial services to poor individuals and families (Stephens & Tazi, 2006).

In the light of the above literatures we can therefore formulate our hypothesis in alternative form thus;

1. Micro-finance institution has significant effect on poverty alleviation.

**Research Methodology**

The design is a survey through administration of questionnaire structured in likert-scale form, open-ended questions. The population of the study is the seventeen (17) micro finance institutions operating in Abia state Nigeria, upon which 1/2 of the population constituted the sample size selected through convenient sampling; questionnaires were administered to 167 respondents made up of the staff and the customers of micro-finance institutions. Information and data generated were analysed using tables, actual respondents' perceptions and Ordinary Least Square Technique. The model for the study is thus specified:

$PA = \beta_0 + \beta_1 MFI + e_t$

Where:
$\beta_0$ = Intercept, PA = Poverty Alleviation, MFI = Micro-Finance Institutions, $e_t$ = Error Term

**Analysis of Data**

PA – Poverty Alleviation = Y: the dependent Variable

MFI – Micro Finance Institution =X: the independent Variable

MFI($X_i$), PA($Y_i$)

$\sum yi = n\,\beta_0 + \beta_1 \sum x_i$

$\sum y_i x_i = \beta_0 \sum x_i + \beta_1 \sum x_i^2$

$\sum y_i = 2137$, $\sum x_i = 3226$, $\sum yix_i = 41329$

$\sum x_i^2 = 63572$, n = 167

$\bar{Y} = 12.7964$, $\dot{X} = 19.3174$ then $\beta_1 = 0.038$ $\beta_0 = 12.1$ (see appendix II)

The predicted value of PA(Y) = 12.1 + 0.038MFI

Let $\alpha = 0.05$

For two tailed test $t(\alpha/2)(n\text{-}2) = t(0.025, 165) = 2.262$

Ho: MFI has no significant effect on PA

Hi: MFI has a significant effect on PA

$\beta_1 = 0.038$, $S\beta_1 = 0.05$, then $t_{cal} = 0.76$

Decision: Since $t_{cal} = 0.76 < t_{\alpha/2}(n\text{-}2) = 2.262$, we reject the alternative hypothesis and declare therefore that MFI has no significant effect on the PA

**Conclusion and recommendation**

Micro financing in Nigeria is still at its infancy. The country has in recent years taken steps to develop the sub-sector as a tool for economic empowerment and poverty alleviation for its over seventy million poor population.

Following the launching of the microfinance policy, regulatory and supervisory framework for Nigeria in December 2005, about 600 micro finance banks were licensed by the central bank of Nigeria. Key challenges inhibiting MFIs from achieving their goals include:

- High ratio of non-performing loans: loan losses affect the sustainability of microfinance institutions. This has an impact on long term viability of the banks and therefore the long term access to finance for poor people.

- Rapid growth of the sector and portfolio quality: In terms of number of institutions, capitalization and portfolio growth, the Nigerian micro-finance industry is among the fastest growing globally compared to other countries. The rapid growth put stress on the portfolio quality.

- Poor management and poor quality of microfinance operators arising from poor corporate governance.

- Weak and fragmented institutions: The Nigerian micro finance landscape is dotted with many small institutions with few of them reaching efficient scale of operations. Their outreach is also generally low leading to many un-served clients. Furthermore, there is a large concentration in urban areas, hence rural areas are disadvantaged by regulatory restrictions on geographic outreach.

**Ways Forward**

For microfinance banks in Nigeria, institutional strengthening is vital. Some areas for institutional strengthening are:

- Consolidation: one way to address some of the challenges and in particular the fragmentation, may be to consolidate and or forge alliance among institutions. This can be done by a merger between two or more similar or complementary MFIs. It can also be in the form of linkages for example the links between rural and urban MFIs to gain productivity and efficiency.

- Improve transparency: key to improving performance of MFIs is to improve transparency in their financial and social performances. Transparency attracts funders; accurate standardized information allows private investors and public donors to make informed funding decisions. Increased participation of investor in turn provides the resources to fund more rapid growth of financial services for the poor.

- Transparency also better inform clients which could lead to increased competition among financial service providers as clients gain knowledge and comparison. This competition, driven by better informed clients could eventually drive prices down as service providers attempt to attract clients with more favourable interest rate.

- Strengthened risk management: Obviously, financial institutions are in the business of managing risk. They have the responsibility for clients' money and assess risk in lending. In microfinance, it is important to understand the nature of the risks, how probable they are and how to mitigate them is the key. Therefore MFIs should have a solid risk management plan with dedicated staff and systems in place.

- Reduce transaction costs: this is another area to focus on in institutional strengthening. It is more costly to give small loans and take small deposits. So particular efforts needs to be put into it to be as efficient as possible. It is therefore important to: Improve and streamline business processes, Increase scale of operations in a well managed manner, Leverage other institutions strength, outsource part of delivery of service for instance repayment of loans at commercial banks, agents for cash handling, making use of new technology among other things

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**Appendix I**

Questionnaire on Poverty Alleviation (PA)

| S/N | | RESPONSES / PERCENTAGES | | | | | |
|---|---|---|---|---|---|---|---|
| | | SD (%) | D (%) | UN (%) | A (%) | SA (%) | TOTAL (%) |
| 1 | The introduction of micro-finance institution was linked to failure of past programmes to alleviate the poor | | | | | | |
| 2 | Micro-finance institution is structured to reduce poverty | | | | | | |
| 3 | Micro-finance institution has significant effect on poverty alleviation | | | | | | |

Questionnaire on Micro-Finance Institutions (MFIs)

| S/N | | RESPONSES / PERCENTAGES | | | | | |
|---|---|---|---|---|---|---|---|
| | | SD (%) | D (%) | UN (%) | A (%) | SA (%) | TOTAL (%) |
| 1 | Low income earners have difficulties of raising funds from the Micro-finance institution | | | | | | |
| 2 | Micro-finance institution was introduced to remove bottleneck of sourcing funds in the formal institution by small scale businesses | | | | | | |
| 3 | Micro-finance institution is aimed at bringing sustainable development by reaching the grass root people | | | | | | |
| 4 | Micro-finance institution has assisted most unemployed women and men to set businesses of their own | | | | | | |
| 5 | Credit facilities from micro finance institutions tend to be too low support the poor | | | | | | |

**Appendix II**

| MFI($x_i$) | PA ($y_i$) | $x_i^2$ | $y_i^2$ | $x_iy_i$ | y^ | $y_i$-y^ | ($y_i$-y^)$^2$ | $\beta_0$ | $\beta_1$ | $\beta_1 x_i$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 18 | 14 | 324 | 196 | 252 | 12.784 | 1.216 | 1.478656 | 12.1 | 0.038 | 0.684 |
| 16 | 13 | 256 | 169 | 208 | 12.708 | 0.292 | 0.085264 | 12.1 | 0.038 | 0.608 |
| 23 | 10 | 529 | 100 | 230 | 12.974 | -2.974 | 8.844676 | 12.1 | 0.038 | 0.874 |
| 23 | 14 | 529 | 196 | 322 | 12.974 | 1.026 | 1.052676 | 12.1 | 0.038 | 0.874 |
| 18 | 14 | 324 | 196 | 252 | 12.784 | 1.216 | 1.478656 | 12.1 | 0.038 | 0.684 |
| 19 | 13 | 361 | 169 | 247 | 12.822 | 0.178 | 0.031684 | 12.1 | 0.038 | 0.722 |
| 16 | 12 | 256 | 144 | 192 | 12.708 | -0.708 | 0.501264 | 12.1 | 0.038 | 0.608 |
| 18 | 12 | 324 | 144 | 216 | 12.784 | -0.784 | 0.614656 | 12.1 | 0.038 | 0.684 |
| 16 | 14 | 256 | 196 | 224 | 12.708 | 1.292 | 1.669264 | 12.1 | 0.038 | 0.608 |
| 11 | 13 | 121 | 169 | 143 | 12.518 | 0.482 | 0.232324 | 12.1 | 0.038 | 0.418 |
| 19 | 14 | 361 | 196 | 266 | 12.822 | 1.178 | 1.387684 | 12.1 | 0.038 | 0.722 |
| 17 | 11 | 289 | 121 | 187 | 12.746 | -1.746 | 3.048516 | 12.1 | 0.038 | 0.646 |
| 22 | 13 | 484 | 169 | 286 | 12.936 | 0.064 | 0.004096 | 12.1 | 0.038 | 0.836 |
| 19 | 13 | 361 | 169 | 247 | 12.822 | 0.178 | 0.031684 | 12.1 | 0.038 | 0.722 |

 

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 19 | 15 | 361 | 225 | 285 | 12.822 | 2.178 | 4.743684 | 12.1 | 0.038 | 0.722 |
| 18 | 15 | 324 | 225 | 270 | 12.784 | 2.216 | 4.910656 | 12.1 | 0.038 | 0.684 |
| 21 | 15 | 441 | 225 | 315 | 12.898 | 2.102 | 4.418404 | 12.1 | 0.038 | 0.798 |
| 21 | 9 | 441 | 81 | 189 | 12.898 | -3.898 | 15.1944 | 12.1 | 0.038 | 0.798 |
| 18 | 8 | 324 | 64 | 144 | 12.784 | -4.784 | 22.88666 | 12.1 | 0.038 | 0.684 |
| 21 | 15 | 441 | 225 | 315 | 12.898 | 2.102 | 4.418404 | 12.1 | 0.038 | 0.798 |
| 24 | 13 | 576 | 169 | 312 | 13.012 | -0.012 | 0.000144 | 12.1 | 0.038 | 0.912 |
| 20 | 9 | 400 | 81 | 180 | 12.86 | -3.86 | 14.8996 | 12.1 | 0.038 | 0.76 |
| 19 | 9 | 361 | 81 | 171 | 12.822 | -3.822 | 14.60768 | 12.1 | 0.038 | 0.722 |
| 18 | 11 | 324 | 121 | 198 | 12.784 | -1.784 | 3.182656 | 12.1 | 0.038 | 0.684 |
| 20 | 12 | 400 | 144 | 240 | 12.86 | -0.86 | 0.7396 | 12.1 | 0.038 | 0.76 |
| 20 | 15 | 400 | 225 | 300 | 12.86 | 2.14 | 4.5796 | 12.1 | 0.038 | 0.76 |
| 22 | 13 | 484 | 169 | 286 | 12.936 | 0.064 | 0.004096 | 12.1 | 0.038 | 0.836 |
| 21 | 14 | 441 | 196 | 294 | 12.898 | 1.102 | 1.214404 | 12.1 | 0.038 | 0.798 |
| 22 | 14 | 484 | 196 | 308 | 12.936 | 1.064 | 1.132096 | 12.1 | 0.038 | 0.836 |
| 25 | 15 | 625 | 225 | 375 | 13.05 | 1.95 | 3.8025 | 12.1 | 0.038 | 0.95 |
| 23 | 14 | 529 | 196 | 322 | 12.974 | 1.026 | 1.052676 | 12.1 | 0.038 | 0.874 |
| 23 | 12 | 529 | 144 | 276 | 12.974 | -0.974 | 0.948676 | 12.1 | 0.038 | 0.874 |
| 20 | 12 | 400 | 144 | 240 | 12.86 | -0.86 | 0.7396 | 12.1 | 0.038 | 0.76 |
| 20 | 14 | 400 | 196 | 280 | 12.86 | 1.14 | 1.2996 | 12.1 | 0.038 | 0.76 |
| 20 | 12 | 400 | 144 | 240 | 12.86 | -0.86 | 0.7396 | 12.1 | 0.038 | 0.76 |
| 22 | 13 | 484 | 169 | 286 | 12.936 | 0.064 | 0.004096 | 12.1 | 0.038 | 0.836 |
| 21 | 12 | 441 | 144 | 252 | 12.898 | -0.898 | 0.806404 | 12.1 | 0.038 | 0.798 |
| 18 | 11 | 324 | 121 | 198 | 12.784 | -1.784 | 3.182656 | 12.1 | 0.038 | 0.684 |
| 18 | 14 | 324 | 196 | 252 | 12.784 | 1.216 | 1.478656 | 12.1 | 0.038 | 0.684 |
| 16 | 13 | 256 | 169 | 208 | 12.708 | 0.292 | 0.085264 | 12.1 | 0.038 | 0.608 |
| 23 | 10 | 529 | 100 | 230 | 12.974 | -2.974 | 8.844676 | 12.1 | 0.038 | 0.874 |
| 23 | 14 | 529 | 196 | 322 | 12.974 | 1.026 | 1.052676 | 12.1 | 0.038 | 0.874 |
| 18 | 14 | 324 | 196 | 252 | 12.784 | 1.216 | 1.478656 | 12.1 | 0.038 | 0.684 |
| 19 | 13 | 361 | 169 | 247 | 12.822 | 0.178 | 0.031684 | 12.1 | 0.038 | 0.722 |
| 16 | 12 | 256 | 144 | 192 | 12.708 | -0.708 | 0.501264 | 12.1 | 0.038 | 0.608 |
| 18 | 12 | 324 | 144 | 216 | 12.784 | -0.784 | 0.614656 | 12.1 | 0.038 | 0.684 |
| 16 | 14 | 256 | 196 | 224 | 12.708 | 1.292 | 1.669264 | 12.1 | 0.038 | 0.608 |
| 11 | 13 | 121 | 169 | 143 | 12.518 | 0.482 | 0.232324 | 12.1 | 0.038 | 0.418 |
| 19 | 14 | 361 | 196 | 266 | 12.822 | 1.178 | 1.387684 | 12.1 | 0.038 | 0.722 |
| 17 | 11 | 289 | 121 | 187 | 12.746 | -1.746 | 3.048516 | 12.1 | 0.038 | 0.646 |
| 22 | 13 | 484 | 169 | 286 | 12.936 | 0.064 | 0.004096 | 12.1 | 0.038 | 0.836 |
| 19 | 13 | 361 | 169 | 247 | 12.822 | 0.178 | 0.031684 | 12.1 | 0.038 | 0.722 |
| 19 | 15 | 361 | 225 | 285 | 12.822 | 2.178 | 4.743684 | 12.1 | 0.038 | 0.722 |
| 18 | 14 | 324 | 196 | 252 | 12.784 | 1.216 | 1.478656 | 12.1 | 0.038 | 0.684 |
| 19 | 13 | 361 | 169 | 247 | 12.822 | 0.178 | 0.031684 | 12.1 | 0.038 | 0.722 |
| 16 | 12 | 256 | 144 | 192 | 12.708 | -0.708 | 0.501264 | 12.1 | 0.038 | 0.608 |
| 18 | 12 | 324 | 144 | 216 | 12.784 | -0.784 | 0.614656 | 12.1 | 0.038 | 0.684 |
| 16 | 14 | 256 | 196 | 224 | 12.708 | 1.292 | 1.669264 | 12.1 | 0.038 | 0.608 |
| 11 | 13 | 121 | 169 | 143 | 12.518 | 0.482 | 0.232324 | 12.1 | 0.038 | 0.418 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 19 | 14 | 361 | 196 | 266 | 12.822 | 1.178 | 1.387684 | 12.1 | 0.038 | 0.722 |
| 17 | 11 | 289 | 121 | 187 | 12.746 | -1.746 | 3.048516 | 12.1 | 0.038 | 0.646 |
| 22 | 13 | 484 | 169 | 286 | 12.936 | 0.064 | 0.004096 | 12.1 | 0.038 | 0.836 |
| 19 | 13 | 361 | 169 | 247 | 12.822 | 0.178 | 0.031684 | 12.1 | 0.038 | 0.722 |
| 19 | 15 | 361 | 225 | 285 | 12.822 | 2.178 | 4.743684 | 12.1 | 0.038 | 0.722 |
| 18 | 15 | 324 | 225 | 270 | 12.784 | 2.216 | 4.910656 | 12.1 | 0.038 | 0.684 |
| 21 | 15 | 441 | 225 | 315 | 12.898 | 2.102 | 4.418404 | 12.1 | 0.038 | 0.798 |
| 21 | 9 | 441 | 81 | 189 | 12.898 | -3.898 | 15.1944 | 12.1 | 0.038 | 0.798 |
| 18 | 8 | 324 | 64 | 144 | 12.784 | -4.784 | 22.88666 | 12.1 | 0.038 | 0.684 |
| 21 | 15 | 441 | 225 | 315 | 12.898 | 2.102 | 4.418404 | 12.1 | 0.038 | 0.798 |
| 24 | 13 | 576 | 169 | 312 | 13.012 | -0.012 | 0.000144 | 12.1 | 0.038 | 0.912 |
| 20 | 9 | 400 | 81 | 180 | 12.86 | -3.86 | 14.8996 | 12.1 | 0.038 | 0.76 |
| 19 | 9 | 361 | 81 | 171 | 12.822 | -3.822 | 14.60768 | 12.1 | 0.038 | 0.722 |
| 18 | 11 | 324 | 121 | 198 | 12.784 | -1.784 | 3.182656 | 12.1 | 0.038 | 0.684 |
| 20 | 12 | 400 | 144 | 240 | 12.86 | -0.86 | 0.7396 | 12.1 | 0.038 | 0.76 |
| 20 | 15 | 400 | 225 | 300 | 12.86 | 2.14 | 4.5796 | 12.1 | 0.038 | 0.76 |
| 22 | 13 | 484 | 169 | 286 | 12.936 | 0.064 | 0.004096 | 12.1 | 0.038 | 0.836 |
| 21 | 14 | 441 | 196 | 294 | 12.898 | 1.102 | 1.214404 | 12.1 | 0.038 | 0.798 |
| 22 | 14 | 484 | 196 | 308 | 12.936 | 1.064 | 1.132096 | 12.1 | 0.038 | 0.836 |
| 25 | 15 | 625 | 225 | 375 | 13.05 | 1.95 | 3.8025 | 12.1 | 0.038 | 0.95 |
| 23 | 14 | 529 | 196 | 322 | 12.974 | 1.026 | 1.052676 | 12.1 | 0.038 | 0.874 |
| 23 | 12 | 529 | 144 | 276 | 12.974 | -0.974 | 0.948676 | 12.1 | 0.038 | 0.874 |
| 20 | 12 | 400 | 144 | 240 | 12.86 | -0.86 | 0.7396 | 12.1 | 0.038 | 0.76 |
| 20 | 14 | 400 | 196 | 280 | 12.86 | 1.14 | 1.2996 | 12.1 | 0.038 | 0.76 |
| 20 | 12 | 400 | 144 | 240 | 12.86 | -0.86 | 0.7396 | 12.1 | 0.038 | 0.76 |
| 22 | 13 | 484 | 169 | 286 | 12.936 | 0.064 | 0.004096 | 12.1 | 0.038 | 0.836 |
| 21 | 12 | 441 | 144 | 252 | 12.898 | -0.898 | 0.806404 | 12.1 | 0.038 | 0.798 |
| 18 | 11 | 324 | 121 | 198 | 12.784 | -1.784 | 3.182656 | 12.1 | 0.038 | 0.684 |
| 18 | 14 | 324 | 196 | 252 | 12.784 | 1.216 | 1.478656 | 12.1 | 0.038 | 0.684 |
| 16 | 13 | 256 | 169 | 208 | 12.708 | 0.292 | 0.085264 | 12.1 | 0.038 | 0.608 |
| 23 | 10 | 529 | 100 | 230 | 12.974 | -2.974 | 8.844676 | 12.1 | 0.038 | 0.874 |
| 23 | 14 | 529 | 196 | 322 | 12.974 | 1.026 | 1.052676 | 12.1 | 0.038 | 0.874 |
| 18 | 14 | 324 | 196 | 252 | 12.784 | 1.216 | 1.478656 | 12.1 | 0.038 | 0.684 |
| 18 | 14 | 324 | 196 | 252 | 12.784 | 1.216 | 1.478656 | 12.1 | 0.038 | 0.684 |
| 16 | 13 | 256 | 169 | 208 | 12.708 | 0.292 | 0.085264 | 12.1 | 0.038 | 0.608 |
| 23 | 10 | 529 | 100 | 230 | 12.974 | -2.974 | 8.844676 | 12.1 | 0.038 | 0.874 |
| 23 | 14 | 529 | 196 | 322 | 12.974 | 1.026 | 1.052676 | 12.1 | 0.038 | 0.874 |
| 18 | 14 | 324 | 196 | 252 | 12.784 | 1.216 | 1.478656 | 12.1 | 0.038 | 0.684 |
| 19 | 13 | 361 | 169 | 247 | 12.822 | 0.178 | 0.031684 | 12.1 | 0.038 | 0.722 |
| 16 | 12 | 256 | 144 | 192 | 12.708 | -0.708 | 0.501264 | 12.1 | 0.038 | 0.608 |
| 18 | 12 | 324 | 144 | 216 | 12.784 | -0.784 | 0.614656 | 12.1 | 0.038 | 0.684 |
| 16 | 14 | 256 | 196 | 224 | 12.708 | 1.292 | 1.669264 | 12.1 | 0.038 | 0.608 |
| 11 | 13 | 121 | 169 | 143 | 12.518 | 0.482 | 0.232324 | 12.1 | 0.038 | 0.418 |
| 19 | 14 | 361 | 196 | 266 | 12.822 | 1.178 | 1.387684 | 12.1 | 0.038 | 0.722 |
| 17 | 11 | 289 | 121 | 187 | 12.746 | -1.746 | 3.048516 | 12.1 | 0.038 | 0.646 |

 

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|---|---|---|---|---|---|---|---|---|---|---|
| 22 | 13 | 484 | 169 | 286 | 12.936 | 0.064 | 0.004096 | 12.1 | 0.038 | 0.836 |
| 19 | 13 | 361 | 169 | 247 | 12.822 | 0.178 | 0.031684 | 12.1 | 0.038 | 0.722 |
| 19 | 15 | 361 | 225 | 285 | 12.822 | 2.178 | 4.743684 | 12.1 | 0.038 | 0.722 |
| 18 | 15 | 324 | 225 | 270 | 12.784 | 2.216 | 4.910656 | 12.1 | 0.038 | 0.684 |
| 21 | 15 | 441 | 225 | 315 | 12.898 | 2.102 | 4.418404 | 12.1 | 0.038 | 0.798 |
| 21 | 9 | 441 | 81 | 189 | 12.898 | -3.898 | 15.1944 | 12.1 | 0.038 | 0.798 |
| 18 | 8 | 324 | 64 | 144 | 12.784 | -4.784 | 22.88666 | 12.1 | 0.038 | 0.684 |
| 21 | 15 | 441 | 225 | 315 | 12.898 | 2.102 | 4.418404 | 12.1 | 0.038 | 0.798 |
| 24 | 13 | 576 | 169 | 312 | 13.012 | -0.012 | 0.000144 | 12.1 | 0.038 | 0.912 |
| 20 | 9 | 400 | 81 | 180 | 12.86 | -3.86 | 14.8996 | 12.1 | 0.038 | 0.76 |
| 19 | 9 | 361 | 81 | 171 | 12.822 | -3.822 | 14.60768 | 12.1 | 0.038 | 0.722 |
| 18 | 11 | 324 | 121 | 198 | 12.784 | -1.784 | 3.182656 | 12.1 | 0.038 | 0.684 |
| 20 | 12 | 400 | 144 | 240 | 12.86 | -0.86 | 0.7396 | 12.1 | 0.038 | 0.76 |
| 20 | 15 | 400 | 225 | 300 | 12.86 | 2.14 | 4.5796 | 12.1 | 0.038 | 0.76 |
| 22 | 13 | 484 | 169 | 286 | 12.936 | 0.064 | 0.004096 | 12.1 | 0.038 | 0.836 |
| 21 | 14 | 441 | 196 | 294 | 12.898 | 1.102 | 1.214404 | 12.1 | 0.038 | 0.798 |
| 22 | 14 | 484 | 196 | 308 | 12.936 | 1.064 | 1.132096 | 12.1 | 0.038 | 0.836 |
| 25 | 15 | 625 | 225 | 375 | 13.05 | 1.95 | 3.8025 | 12.1 | 0.038 | 0.95 |
| 23 | 14 | 529 | 196 | 322 | 12.974 | 1.026 | 1.052676 | 12.1 | 0.038 | 0.874 |
| 23 | 12 | 529 | 144 | 276 | 12.974 | -0.974 | 0.948676 | 12.1 | 0.038 | 0.874 |
| 20 | 12 | 400 | 144 | 240 | 12.86 | -0.86 | 0.7396 | 12.1 | 0.038 | 0.76 |
| 20 | 14 | 400 | 196 | 280 | 12.86 | 1.14 | 1.2996 | 12.1 | 0.038 | 0.76 |
| 20 | 12 | 400 | 144 | 240 | 12.86 | -0.86 | 0.7396 | 12.1 | 0.038 | 0.76 |
| 22 | 13 | 484 | 169 | 286 | 12.936 | 0.064 | 0.004096 | 12.1 | 0.038 | 0.836 |
| 21 | 12 | 441 | 144 | 252 | 12.898 | -0.898 | 0.806404 | 12.1 | 0.038 | 0.798 |
| 18 | 11 | 324 | 121 | 198 | 12.784 | -1.784 | 3.182656 | 12.1 | 0.038 | 0.684 |
| 18 | 14 | 324 | 196 | 252 | 12.784 | 1.216 | 1.478656 | 12.1 | 0.038 | 0.684 |
| 16 | 13 | 256 | 169 | 208 | 12.708 | 0.292 | 0.085264 | 12.1 | 0.038 | 0.608 |
| 23 | 10 | 529 | 100 | 230 | 12.974 | -2.974 | 8.844676 | 12.1 | 0.038 | 0.874 |
| 23 | 14 | 529 | 196 | 322 | 12.974 | 1.026 | 1.052676 | 12.1 | 0.038 | 0.874 |
| 18 | 14 | 324 | 196 | 252 | 12.784 | 1.216 | 1.478656 | 12.1 | 0.038 | 0.684 |
| 19 | 13 | 361 | 169 | 247 | 12.822 | 0.178 | 0.031684 | 12.1 | 0.038 | 0.722 |
| 16 | 12 | 256 | 144 | 192 | 12.708 | -0.708 | 0.501264 | 12.1 | 0.038 | 0.608 |
| 18 | 12 | 324 | 144 | 216 | 12.784 | -0.784 | 0.614656 | 12.1 | 0.038 | 0.684 |
| 16 | 14 | 256 | 196 | 224 | 12.708 | 1.292 | 1.669264 | 12.1 | 0.038 | 0.608 |
| 11 | 13 | 121 | 169 | 143 | 12.518 | 0.482 | 0.232324 | 12.1 | 0.038 | 0.418 |
| 19 | 14 | 361 | 196 | 266 | 12.822 | 1.178 | 1.387684 | 12.1 | 0.038 | 0.722 |
| 17 | 11 | 289 | 121 | 187 | 12.746 | -1.746 | 3.048516 | 12.1 | 0.038 | 0.646 |
| 22 | 13 | 484 | 169 | 286 | 12.936 | 0.064 | 0.004096 | 12.1 | 0.038 | 0.836 |
| 19 | 13 | 361 | 169 | 247 | 12.822 | 0.178 | 0.031684 | 12.1 | 0.038 | 0.722 |
| 19 | 15 | 361 | 225 | 285 | 12.822 | 2.178 | 4.743684 | 12.1 | 0.038 | 0.722 |
| 18 | 14 | 324 | 196 | 252 | 12.784 | 1.216 | 1.478656 | 12.1 | 0.038 | 0.684 |
| 19 | 13 | 361 | 169 | 247 | 12.822 | 0.178 | 0.031684 | 12.1 | 0.038 | 0.722 |
| 16 | 12 | 256 | 144 | 192 | 12.708 | -0.708 | 0.501264 | 12.1 | 0.038 | 0.608 |
| 18 | 12 | 324 | 144 | 216 | 12.784 | -0.784 | 0.614656 | 12.1 | 0.038 | 0.684 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 14 | 256 | 196 | 224 | 12.708 | 1.292 | 1.669264 | 12.1 | 0.038 | 0.608 |
| 11 | 13 | 121 | 169 | 143 | 12.518 | 0.482 | 0.232324 | 12.1 | 0.038 | 0.418 |
| 19 | 14 | 361 | 196 | 266 | 12.822 | 1.178 | 1.387684 | 12.1 | 0.038 | 0.722 |
| 17 | 11 | 289 | 121 | 187 | 12.746 | -1.746 | 3.048516 | 12.1 | 0.038 | 0.646 |
| 22 | 13 | 484 | 169 | 286 | 12.936 | 0.064 | 0.004096 | 12.1 | 0.038 | 0.836 |
| 19 | 13 | 361 | 169 | 247 | 12.822 | 0.178 | 0.031684 | 12.1 | 0.038 | 0.722 |
| 19 | 15 | 361 | 225 | 285 | 12.822 | 2.178 | 4.743684 | 12.1 | 0.038 | 0.722 |
| 18 | 15 | 324 | 225 | 270 | 12.784 | 2.216 | 4.910656 | 12.1 | 0.038 | 0.684 |
| 21 | 15 | 441 | 225 | 315 | 12.898 | 2.102 | 4.418404 | 12.1 | 0.038 | 0.798 |
| 21 | 9 | 441 | 81 | 189 | 12.898 | -3.898 | 15.1944 | 12.1 | 0.038 | 0.798 |
| 18 | 8 | 324 | 64 | 144 | 12.784 | -4.784 | 22.88666 | 12.1 | 0.038 | 0.684 |
| 19 | 14 | 361 | 196 | 266 | 12.822 | 1.178 | 1.387684 | 12.1 | 0.038 | 0.722 |
| 17 | 11 | 289 | 121 | 187 | 12.746 | -1.746 | 3.048516 | 12.1 | 0.038 | 0.646 |
| 22 | 13 | 484 | 169 | 286 | 12.936 | 0.064 | 0.004096 | 12.1 | 0.038 | 0.836 |
| 19 | 13 | 361 | 169 | 247 | 12.822 | 0.178 | 0.031684 | 12.1 | 0.038 | 0.722 |
| 19 | 15 | 361 | 225 | 285 | 12.822 | 2.178 | 4.743684 | 12.1 | 0.038 | 0.722 |
| 18 | 15 | 324 | 225 | 270 | 12.784 | 2.216 | 4.910656 | 12.1 | 0.038 | 0.684 |
| 21 | 15 | 441 | 225 | 315 | 12.898 | 2.102 | 4.418404 | 12.1 | 0.038 | 0.798 |
| **3226** | **2137** | **63572** | **27869** | **41329** | **2143.288** | | **521.4936** | | | |