

# An Analysis on Eight Grade Mathematics Textbook of New Indonesian Curriculum (K-13) Based on Pisa's Framework

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**Abstract.** *This study aims to analyze and describe the mathematics problems in the eighth grade mathematics textbook of new Indonesian curriculum (K-13) based on The Programme for International Student Assessment (PISA) frameworks. The object of this study was the the revised version textbooks of the eighth grade mathematics student's book published by The Ministry of Education and Culture (Kemendikbud) in 2014. The framework of the analysis in this study was the PISA components consisting of process, content, and context with its categories. The research method was descriptive quantitative. The data was collected by observing the contents of the textbook and interviewing the students and the teachers in SMP Negeri 2 Rembang. The analysis showed that the contents of the textbook were in accordance to the PISA components. The result also indicated that in both semester of the students' book, the problems involving the process of employing mathematical concepts, facts, procedures, and reasoning were more dominant than others. Moreover, in the contexts, the problems were dominated by the personal context. Furthermore, the first semester students' books were dominated by the change and relationships contents while the second semester books were dominated by the space and shape contents.*

**Keywords:** *Mathematics textbooks, Indonesian curriculum 2013, PISA.*

**Abstrak.** *Penelitian ini bertujuan untuk menganalisis dan mendiskripsikan soal-soal dalam buku matematika kelas VIII kurikulum 2013 ditinjau dari kerangka Program International Student Assesment (PISA). Objek penelitian ini adalah buku siswa matematika kurikulum 2013 kelas VIII semester 1 dan semester 2 edisi revisi yang diterbitkan oleh Kemendikbud (Kementerian Pendidikan dan Kebudayaan) tahun 2014. Kerangka kerja untuk menganalisis dalam penelitian ini adalah komponen PISA yang terdiri dari komponen proses, konten, dan konteks beserta kategori-kategorinya. Penelitian ini dilakukan dengan menggunakan metode kuantitatif deskriptif. Pengumpulan data dilakukan melalui observasi terhadap buku dan wawancara dengan siswa dan guru Sekolah Menengah Pertama Negeri 2 Rembang. Hasil penelitian menunjukkan bahwa penyajian materi pada buku mempunyai kesesuaian dengan komponen PISA. Pada buku siswa semester 1 dan semester 2 soal dengan proses pempekerjakan konsep, fakta, prosedur dan penalaran lebih mendominasi dari proses yang lain. Pada buku semester satu komponen konteks didominasi oleh konteks pribadi. Sedangkan untuk buku semester dua didominasi soal dengan konten ruang dan bentuk.*

**Kata kunci:** *Buku Siswa, Kurikulum 2013, PISA*

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## Introduction

Recent global competency era has compelled every nation including Indonesia to compete with other nations in the world. One indicator of the nation's capability to compete with other nations is its national education quality. Various types of international-scale tests such as PISA, TIMSS and PIRLS attended by Indonesian students can be a benchmark to reveal education in Indonesia. One particular test attended by the eighth grade students is *Programme for International Student Assessment* (PISA) carried out once in three years by *Organization for Economic Cooperation and Development* (OECD), an international center which assists the government in overcoming the challenges of economics, social, and global economic management. Survey of PISA in 2012 demonstrated the eighth grade students in Indonesia was ranked 64<sup>th</sup> from 65 countries that participated in the test. The countries involved in the 2012 PISA consisted of 34 countries as the members of OECD and 31 countries as partners that represented more than 80% of global economic forces (OECD, 2014).

Results of the 2012 PISA showed the mathematics skills of eighth grade students in Indonesia can be considered as low. There was a predisposition that the students in Indonesia were only capable to master the subject up to level three, in which the students have been eloquently capable in carrying out the procedure, such as an order in sequel. In fact, the students could select and implement simple problem solving strategies, interpret and provide the representation of diverse information sources and express the reason, as well as communicate the interpretation and its reason. Meanwhile, numbers of student from other countries were capable in reaching level six which means they could carry out conceptualization and generalizations using information based on modeling and evaluation in complex situations as well as correlate a variety of information sources in flexible and interpret it. At this level, the students are capable to develop their abilities to think and reason mathematically, implement in-depth understanding accompanied by technical ability of mathematical operations, develop new strategies and approaches to solve new situations, as well as formulate and communicate, interpret, and argue the solutions.

PISA examines three components, namely, process, content, and context (OECD, 2013). Component of process comprises the process of formulating mathematical situations; the process of applying mathematics concepts, facts, procedures, and reasoning; the process of interpreting, employing, and evaluating the solutions. The components of content are the change and relationships, space and shape, quantity, and uncertainty and data. In addition, the components of context include personal, occupational, public, and scientific and technology.

The government of Indonesia, through The Ministry of Education and Culture has made several curriculum changes to provide solution against global challenges and requirements; one of them is PISA test result (Murtiyasa, 2015). Curriculum is assumed to be significant for the teachers' recognition on students' knowledge and skills. Currently, PISA has been widely recognized as an example of global trend in the establishment of education policies (Kanes, 2014). The updated curriculum affects the provided textbooks used by the students which must be adapted to the prevailing curriculum. Textbooks are scientific writings in the form of book that merely discuss or focus on a given field of science, it can be a student or teacher textbooks compiled by the expert or specialist of respective fields and legalized by regulatory agencies for instance the Ministry of Education and Culture with the objective to support the teaching program. According to the National Education's Ministry's regulation (*Permendiknas*) No. 11/2005, textbooks occupy a strategic position in the endeavors to improve the quality

of education, especially for primary and secondary education. Thus, the quality of textbooks for students absolutely has the effect on the students' learning quality.

A number of researchers have examined mathematics textbooks by applying a variety of approaches or variables. Widyaharti, *et al.* (2015) analyzed student mathematics textbook for eighth grade of curriculum 2013 with the formulation of curriculum 2013. The study indicated the suitability between the content of textbooks and competency was 80.49%, the materials suitability of 84.85%, the suitability of textbook with scientific approach of 95.83%, and the suitability of textbook with authentic approach of 88.80%. In addition, Munayati, *et al.* (2015) studied the questions in mathematics textbook for eighth grade of curriculum 2013 by using PISA framework and confirmed that total question based on PISA framework was only 44 questions (46.81%), which was lower than total question based on non-PISA framework that reached 50 questions (53.19%). In fact, in the questions based on PISA framework, the entire components of PISA were contained in the questions in textbooks. For content component, it was dominated by, respectively, shape and space, uncertainly and data, change and relationship, quantity. Subsequently, for context component, it was dominated by, respectively, science, occupational, personal, and societal. Meanwhile, for process component, it was dominated by, respectively, employing, interpreting, and formulating.

In this study, the researcher focused on the analysis of student textbooks for eighth grade curriculum 2013 with the subject of mathematics since PISA test is intended for students of fifteen-year-olds (OECD, 2014). In Indonesia, by the age of 15 year-olds, the students are commonly in eighth grade. This study aimed to analyze and describe the questions/tasks in mathematics textbooks for eighth grade Curriculum 2013 from the components of content, context, and process of PISA. Analysis was occupied mainly on exercises and competency test in each chapter of the textbooks.

### **Research Methods**

The study was qualitative descriptive where the objects of research were mathematics textbook for students in eighth grade junior high school (SMP) with curriculum 2013, particularly the revised edition of 1<sup>st</sup> and 2<sup>nd</sup> semester (Kemendikbud, 2014). The technique of data collection was interview and documentation. Documentation method was used to examine questions in exercises and competency tests in each chapter by applying PISA components. Furthermore, those questions were classified based on their category of content and the percentage was calculated. The textbook of 1<sup>st</sup> semester consisted of six chapters with total question of 246 questions. Meanwhile, the textbook of 2<sup>nd</sup> semester consisted of six chapters with total question of 239 questions. Interview was carried out to figure out the utilization of mathematic textbooks for eighth grade curriculum 2013 in the learning process and the absence or the presence of PISA components and PISA-like questions in the respective textbooks.

Interview was carried out by providing several questions from the Draft of PISA 2015 Mathematics Framework which had been translated in *Bahasa Indonesia* to be assigned to the students. Before working on the task, the questionnaire regarding with whether the students had found mathematics problems similar to PISA test in mathematics textbook for eighth grade curriculum 2013 was also distributed. The students were inquired to comment on each question to find out the obstacles in working on PISA test. Interview was also carried out with the mathematics teacher of eighth grade SMP N 2 Rembang to reveal the utilization of student textbook in the learning process as well as the presence of PISA components in the exercises of student textbook.

Data analysis was done by data reduction, data presentation, and conclusion (Miles & Huberman, 1994). The phases of data analysis were as follows: *First*, data of exercises,

competency test, competency test in each chapter, and competency test in 1<sup>st</sup> and 2<sup>nd</sup> semester were scrutinized and classified based on the aspect of content, process, and context in accordance to PISA components. *Second*, analysis result was presented in checklist table and the percentage of questions contained PISA components was calculated. Furthermore, the produced data was described. *Third*, conclusion was withdrawn from the analysis results.

**Results and Discussion**

Based on the analysis on 246 questions in exercises and competency tests in 1<sup>st</sup> semester textbook and 239 questions in exercises and competency tests in 2<sup>nd</sup> semester, the percentage of questions enclosing PISA components was as follows:

**Table 1. Percentage of Mathematics Problems Suitability Based on PISA components**

PISA components	Percentage		
	1 <sup>st</sup> Semester	2 <sup>nd</sup> Semester	1 <sup>st</sup> and 2 <sup>nd</sup> Semester
1. Process			
a. Formulating mathematical situations	35.77%	17.57%	26.80%
b. Employing mathematical concepts, facts, procedures, and reasoning	63.01%	69.45%	66.18%
c. Interpreting, implementing and evaluating the solutions	15.04%	22.17%	18.55%
2. Content			
a. Change and relationships	55.28%	35.14%	45.36%
b. Space and shape	33.73%	41.42%	37.52%
c. Quantity	5.06%	18.41%	12.16%
d. Uncertainty and data	10.56%	15.48%	12.98%
3. Context			
a. Personal	8.9%	26.35%	17.52%
b. Occupational	4.87%	7.94%	6.39%
c. Public	8.13%	5.02%	6.59%
d. Scientific	2.43%	3.34%	2.88%
4. Percentage of total problems with a minimum of three PISA components	24.39%	42.47%	33.40%

Table 1 presents the percentages of process components of employing concepts, facts, procedures, and reasoning in the 1<sup>st</sup> and 2<sup>nd</sup> semester were dominant of, respectively, 63.01% and 69.45%. While, the percentages of process component of interpreting, implementing and evaluation the solutions in 1<sup>st</sup> semester was lower than the percentage of the other processes, which was 15.04%. The percentage of process component of formulating mathematical situations was the lowest in 2<sup>nd</sup> semester, of 17.57%. Furthermore, the content component in 1<sup>st</sup> semester was dominated by change and relationships of 55.28%. The content of quality had the lowest percentage of 5.06%. While in 2<sup>nd</sup> semester, content of space and shape dominated with the percentage of 41.42%. Content component of uncertainty and data had the lowest percentage of

15.48%. For context component, mathematics problems in the 1<sup>st</sup> and 2<sup>nd</sup> semester were dominated by personal context with the percentage of 8.9% and 26.3%. On the contrary, scientific mathematics problems in those textbooks had the lowest percentages of, respectively, 2.43% and 3.34%.

The process component of employing mathematical concepts, facts, procedures, and reasoning was dominated with the percentage of 66.18%. Meanwhile, the content component was dominated by change and relationships with the percentage of 45.36%. The context component was dominated by personal with the percentage of 17.52%. Table 1 also demonstrated the percentage of mathematics problems containing the three components of PISA in the 1<sup>st</sup> and 2<sup>nd</sup> semester could be considered as low, which were 24.39% and 42.47%. In overall, the percentage of questions enclosing the three PISA components was 33.4%. It indicated that mathematics problems in the 1<sup>st</sup> and 2<sup>nd</sup> semester of eighth grade student textbooks curriculum 2013 had not been entirely capable in accommodating the students to develop their skills in mathematics in accordance to PISA components.

The results confirmed the study carried out by Munayati, *et al.* (2015) that examined the mathematics problems in textbooks by using PISA framework. It concluded that the percentage of PISA-based questions in the textbooks for class X curriculum 2013 was lower than non-PISA-based questions. In addition, in textbooks for class VIII, only 33.4% of the questions were in accordance to PISA framework. Therefore, it can be concluded that the mathematics textbooks curriculum 2013, particularly for eighth and tenth grade, had not supported the development of students' ability and skills in mathematics as expected by PISA.

Furthermore, the examples of analysis on several mathematics problems in textbooks for 1<sup>st</sup> and 2<sup>nd</sup> semester of eighth grade is presented as follows.

### **Exercise 5.3 Semester 1**

#### Question Number 1:

The height of a window on the second floor of a building is approximately 8 meters. In front of the building, there is a park of 6 meters in width. Find the minimum length of ladder which shall be provided to keep the ladder legs from damaging the park?

*Contents: Space and Shape*

- In correlation with the “flat” geometry of a right triangle, namely the ability to calculate one side of a shape resembling a right triangle by using the Pythagorean Theorem.
- Students have the ability to represent the object: ladder, wall, and park area as an object resembling a right triangle, thus, its one side is calculated by using the Pythagorean Theorem.

*Process: Employing mathematical concepts, facts, procedures, and reasoning*

- Modeling and implementing strategies to solve the problems.
- Implementing mathematical facts, rules, logarithmic, structures in finding the solutions.
- Manipulating geometric numbers, data, and representation.
- Finding information and establishing mathematical constructions.
- Applying and switching various representations in the process of finding a solution.
- Creating a generalization based on the implementation of mathematical procedure to finding a solution.

*Context: Public*

- The context is relevant by using public setting, which is a park.

### Competency Test 6

#### Question Number 3:

The pie chart below shows the car sales in some major cities:  
a. If all cars sold over 41 300, determine how cars are sold every big city  
b. What is your conclusion about the number of cars sold from big cities such



**Figure 1. Car sell**

The pie chart below shows automobiles sales. in major cities.

- If total sold car is 41.300, specify how many cars were sold in each city?
- What is your opinion regarding with total sold car in major cities?

*Content: Uncertainty and Data*

- Related with statistics (Data of automobile sales in several major cities).
- Data presentation in a pie chart.

*Process: Employing mathematical concepts, facts, procedures, and reasoning*

- Implementing mathematical facts to find a solution.
- Manipulating numbers, data, and information of graphics and statistics.
- Finding information from mathematics diagram.
- Creating generalization based on the results of mathematical procedure implementation to find a solution.
- Reflecting mathematical arguments and explaining a solution.

*Context: Occupational (Data of sale)*

- Related with the data of automobile sales in several areas.

Measuring and calculating total unit sold.

## Competency Test Semester 1

### Question Number 22:

Torik and Mamad are discussing a graph below.

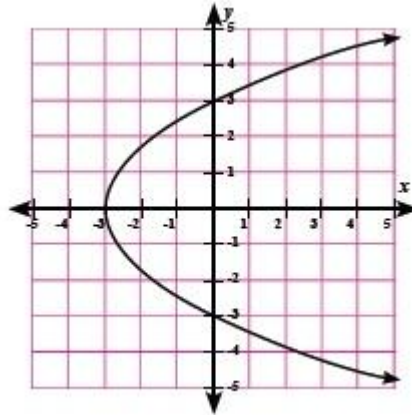


Figure 2. Graph of Function

Torik assumes that the graph above is a graph of a function. Nevertheless, Mamad disagrees with Torik's perspective. He considers the graph is not a function graph. What do you think, whose assumption is correct? Explain your reason.

*Contents: Change and Relationships (Graph)*

- Mathematics relationship in graph.

*Process: Interpreting, implementing, and evaluating mathematics solution*

- Interpreting mathematics solution in the real world context.
- Evaluating the equity of mathematics solution in the real world/problem.
- Explaining why the final result is reasonable or unreasonable regarding with the problem context.
- Understanding the levels and limits of mathematical concepts and solution.
- Criticizing and identifying model limits used to solve a problem.

*Context: Personal*

- Personal context focusing on individual or peer activity.
- Related with opinions among peer.

## Competency Test Chapter 6 Semester 2

### Question Number 14:

You are the manager of U-16 Indonesia National Football Team. Once Indonesia National Football Team competes in the Final of ASIA Cup against MALAYSIA. During the match, at minute 89, Indonesia National Football Team obtains penalty kick. While scores is 2-2. Players who are ready for penalty are Evan Dimas, Ilham, Maldini, and Muchlis. If you have to determine the penalty taker, whom would you assign for winning the match? The following is the data of the players' penalty kick.

**Table 2. Data of Player;s Pinalty Kick**

Name	Penalty (frequency)	Goal	Blocked by Keeper	Failed
Evan Dimas	20	16	2	2
Ilham	18	14	2	2
Maldini	17	12	4	1
Muchlis	15	11	3	1

*Content: Uncertainty and Data*

- Data presentation of the achievement of National Football Team in table.
- Related with mathematical statistics.

*Process: Formulating a situations in mathematics*

- Identifying mathematical aspects in a problem in the context of real world and significant variables related with it.
- Simplifying a situation or problem to make it acceptable in mathematical analysis.
- Representing a problem by using different way, including organizing it into mathematical concept and establishing appropriate assumptions.
- Recognizing the aspects of a problem in accordance with similar problem from mathematical concepts, facts, or procedures.

*Context: Occupation (Manager of National Football Team)*

- Illustrating student as the manager of National Football Team to select players in for performing a penalty kick.
- Calculating the highest score to select the players to win the match.

In addition to the questions above, the researcher also found out several questions that require the students to perform reasoning similar to the questions in PISA. An example of those questions is in Exercise 5.3 question number 2 as follows:

*“An earthquake has caused damage on a power pole. If the pole is broken at a height of 16 meters above the ground and the broken part forms an angle of  $60^{\circ}$  from the ground. Find the actual length of the pole?”*

The question above is related with Pythagoras. Based on the interview, the teacher mentioned that this kind of problem becomes an obstacle for students as they hardly implement Pythagoras standard formula to solve it. Students must possess the reasoning abilities to solve this question. In addition, they have to recognize that the actual height of the pole is the sum of the length of remaining pole and broken part. The remaining pole meeting the ground forms a right angle of  $90^{\circ}$  as they are perpendicular. Calculating the length of the broken part can be done by a comparison between the two angles and the length of the pole in front of each angle. It results the length of broken pole of 24 meters. By using such reasoning, it will obtain the length of pole of 40 meters.

Based on the interview with the students, they affirmed there was similarity between mathematics problems of their previous exercise (PISA questions) and questions in the textbooks. In their opinions, PISA questions are more difficult than questions in the textbooks. The failure in understanding the meaning of the task and in understanding particular instruction and keywords, as well as the difficulty in using



correct information could be the reasons of students' fault in solving the mathematics problems (Wijaya, 2016). PISA questions insisting the students to explore reasoning deeper than common situation, thus, students are regularly confused to answer even though they have solved several similar questions. It is mainly due to students rarely find the kind of PISA-based questions, hence, they failed to solve several questions based on the Draft of PISA 2015 Mathematics Framework (Appendix A).

Furthermore, the result of interview with the students also obtained information that PISA questions demand reasoning ability in which students tend to get confused to solve the question even though they have solved several similar questions. In the Draft PISA 2015 Mathematics Framework, such as question number 6 to 10, students were puzzled with these questions. In addition, based on the interview with the teacher, it can be concluded that the entire aspect or category of each PISA component have been presented in student textbooks for eighth grade curriculum 2013. However, in accordance to observation, both of teacher and student have not maximized the utilization of the textbooks in the learning process.

Students' mathematics textbooks for eighth grade SMP/MTS curriculum 2013 depict government's endeavor to develop the education quality in Indonesia in general and to improve the education achievement of Indonesia on particular. It is in accordance to Kamaliyah, *et al.* (2013) that Indonesia's involvement in PISA is one of the attempts to assess the development of education program in Indonesia compared to other countries in the world.

Wardhani (2005) stated that the mathematical problems in PISA test impose the abilities of reasoning and problem solving. According to Novita (2012), questions regarding with problem solving are closely correlated to intellectual challenges to enhance mathematics understanding, while question dealing with contextual matters would likely inflict students to relate their mathematics knowledge into daily problems. Students' understanding on the meaning of words in the question significantly affects problem solving abilities, students should be able to implement their knowledge in solving realistic problems where mathematics reasoning is extensively required (Wyndamn, 1997). In fact, questions in PISA have fulfilled the criteria of problem solving.

## Conclusions

The study indicated several findings. *First*, the mathematics problems in mathematics textbooks for eighth grade curriculum of 2013 were established based on PISA components as follows: 1) Process includes the process of formulating mathematical situations; employing mathematical concepts, facts. Procedures and reasoning; and interpreting, implementing, and evaluating the solution, 2) Content includes the content of change and relationships, space and shape, quantity, and uncertainty and data, 3) Context includes personal, occupational, public, and scientific. *Second*, the percentage of suitability between questions in student textbooks and PISA components was considerably low. It is demonstrated by the percentage of respective component as follows: 1) the process component of formulating mathematical situations of 26.80%; employing mathematical concepts, facts, procedures, and reasoning of 66.18%; and interpreting, implementing, and evaluating the solution of 18.55%. Subsequently, the percentage of questions regarding with content were as follows: change and relationships of 45.36%, space and shape of 37.52%, quantity of 12.16%, and uncertainty and data of 12.98%. In addition, the percentages of questions related with contexts were as follows: personal of 17.52%, occupational of 6.39%, public of 6.59%, and scientific of 2.88%. *Third*, the suitability between mathematics problems in 2<sup>nd</sup>

semester textbook and PISA components was 42.47% which was higher compared to the percentage of those in 1<sup>st</sup> semester of 24.39%.

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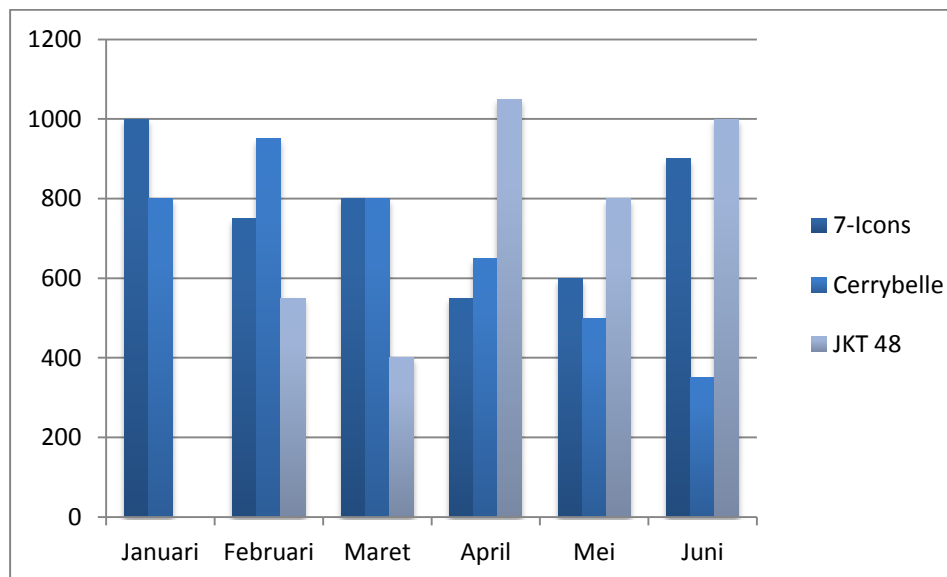
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## Appendix

Instrumen Soal – soal serupa ilustrasi PISA produk yang terdapat pada *Draft PISA 2015 Mathematics Framework*

Pada bulan Januari girl band 7-Icons dan Cerrybelle mengeluarkan album dari lagu – lagu mereka dalam bentuk CD. Kemudian pada bulan berikutnya JKT 48 juga ikut mengeluarkan album. Grafik berikut ini menunjukkan jumlah penjualan keping CD dari ketiga girl band tersebut dari bulan Januari hingga Juni.



**Grafik penjualan CD**

Berdasarkan grafik diatas jawablah pertanyaan soal no.1 – no.3

1. Berapa banyak CD dari girl band 7-Icons yang telah terjual pada bulan April?
  - a. 650
  - b. 450
  - c. 500
  - d. 550
2. Pada bulan apa untuk pertama kalinya JKT 48 menjual CD lebih banyak daripada yang telah dijual 7-Icons?
  - a. April
  - b. Mei
  - c. Juni
  - d. Tidak ada jawaban

3. Manajer dari Cerrybelle menghawatirkan penurunan penjualan CD pada bulan Februari hingga Juni. Berapa jumlah penjualan bulan Juli jika penurunan selalu tetap?
  - a. 350 keping CD
  - b. 300 keping CD
  - c. 250 keping CD
  - d. 200 keping CD
4. Gunung Fuji adalah gunung berapi aktif yang terkenal di Jepang. Gunung Fuji hanya terbuka untuk umum dari 1 Juli – 27 Agustus setiap tahunnya. Ada sekitar 200.000 orang yang telah melakukan pendakian di Gunung Fuji selama ini. Berapakah rata – rata orang yang melakukan pendakian di Gunung Fuji setiap harinya?
  - a. 340
  - b. 710
  - c. 3400
  - d. 7100
5. Robert menggunakan sebuah alat untuk menghitung langkah- langkahnya sepanjang tanjakan Gotemba yang ada di Gunung Fuji. Alat tersebut menunjukkan bahwa dia telah berjalan 22.500 langkah ke atas. Perkirakan rata – rata panjang langkah Robert untuk menuju tanjakan Gotemba yang panjang tanjakannya 9 km. Berikan jawaban anda dalam satuan sentimeter!  
Jawaban: ..... cm
6. Sebuah restoran menjual dua jenis pizza yang memiliki ketebalan yang sama. Pizza pertama berdiameter 30 cm dan harganya Rp 300.000. Pizza yang lebih besar memiliki diameter 40 cm dengan harga Rp 400.000. Menurut anda pizza manakah yang lebih murah? Berikan alasannya!
7. Dalam sebuah konser rock, panitia konser menyediakan sebuah lapangan dengan ukuran panjang 100 m dan lebar 50 m untuk penonton. Konser ini mampu menjual keseluruhan tiket yang tersedia dan membuat semua penonton berdiri karena kondisi lapangan yang penuh. Berapa jumlah perkiraan banyaknya orang yang masuk untuk menghadiri konser?
  - a. 2.000
  - b. 5.000
  - c. 20.000
  - d. 50.000
  - e. 1.000.000

8. Untuk tugas pekerjaan rumah terhadap lingkungan, siswa mengumpulkan tentang waktu dekomposisi dari beberapa jenis sampah yang dibuang oleh seseorang.

Tabel dekomposisi sampah

Jenis sampah	Waktu penguraian (dekomposisi)
Kulit pisang	1 – 3 tahun
Kulit jeruk	1 – 3 tahun
Karton kotak	0,5 tahun
Permen karet	20 – 25 tahun
Koran	Beberapa hari
Polystyrene cangkir	Lebih dari 100 tahun

Seorang siswa berpikir menampilkan tabel di atas dalam bentuk grafik batang. Berikan satu alasan mengapa grafik batang tidak cocok untuk menampilkan data tersebut!

9. Perhatikan gambar berikut ini!  
Berjalan



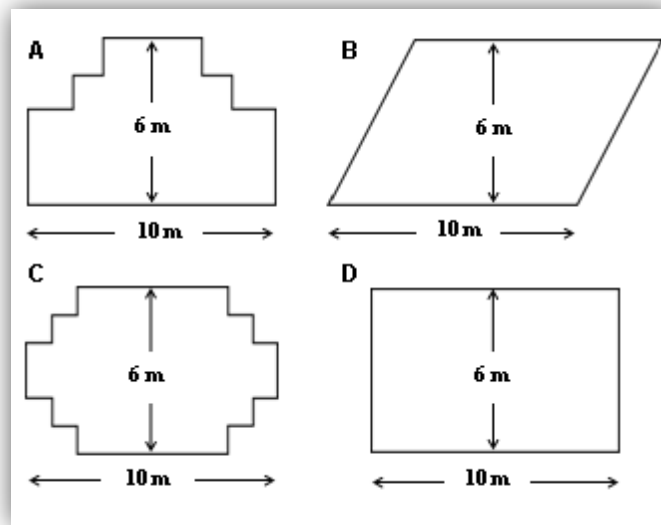
Gambar di atas menunjukkan jejak kaki seorang pria. Jarak langkah diukur sebagai jarak antara dua bekas tumit yang berurutan ( $P$ ).  $\frac{n}{P} = 140$  adalah rumus untuk hubungan antara  $n$  dan  $P$ .

$n$  = jumlah langkah per menit, dan

$P$  = jarak langkah dalam meter

Jika Heiko melangkah 70 kali dalam satu menit, berapakah jarak langkah Heiko?

10. Seorang tukang kayu mempunyai pagar sepanjang 32 meter dan akan menggunakannya untuk memagari bunga – bunga di taman. Dia memepertimbangkan beberapa desain untuk memagari taman sebagai berikut.



Lingkariilah “ya” atau “tidak” pada jawaban yang anda anggap tepat.

	Dapatkan pagar sepanjang 32 meter persegi dibuat sesuai dengan desain berikut?
Desain A	Ya / tidak
Desain B	Ya / tidak
Desain C	Ya / tidak
Desain D	Ya / tidak