

# Computational Thinking & Literasi Keuangan

Tanggal 10 April 2021  
Oleh : Inggriani Liem



<http://bebras.or.id>

Gerakan **PANDAI**

Supported by **Google.org**

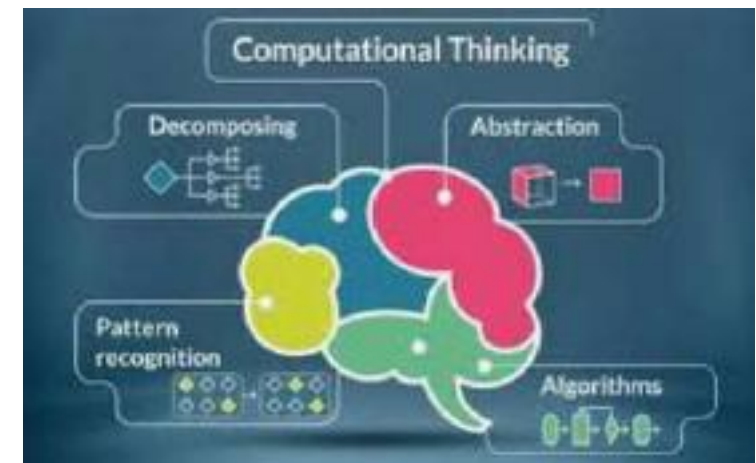
# Ringkasan

- Computational Thinking
- Literasi Finansial dan CT
- Contoh yang sudah dilakukan oleh Kemdikbud
- Literasi Finansial dalam Keluarga
- Contoh permainan, games
- Contoh soal-soal PISA terkait Literasi Keuangan
- Contoh yang dilakukan di negara lain (*Perlu disesuaikan untuk Indonesia*)
  - Materi ajar oleh pemerintah, dipaket dengan digital literasi
  - Oleh swasta : Contoh lesson plan, Teachers guide, student book dll



***Problem Solving secara efektif,  
efisien, dan optimal***

**Literasi Keuangan:  
Irit, Tidak Pelit,  
Siaga, tidak parno**



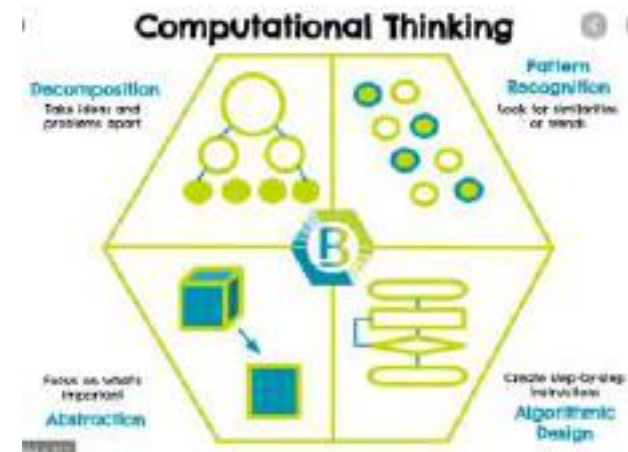
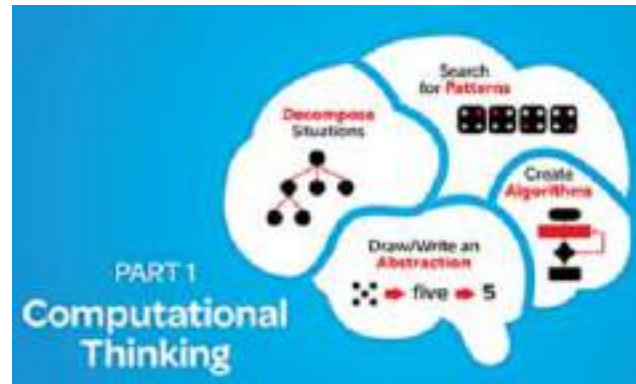
***Empat fondasi : A-A-D-P***

**Literasi Keuangan:  
Uang adalah salah satu sumber daya**

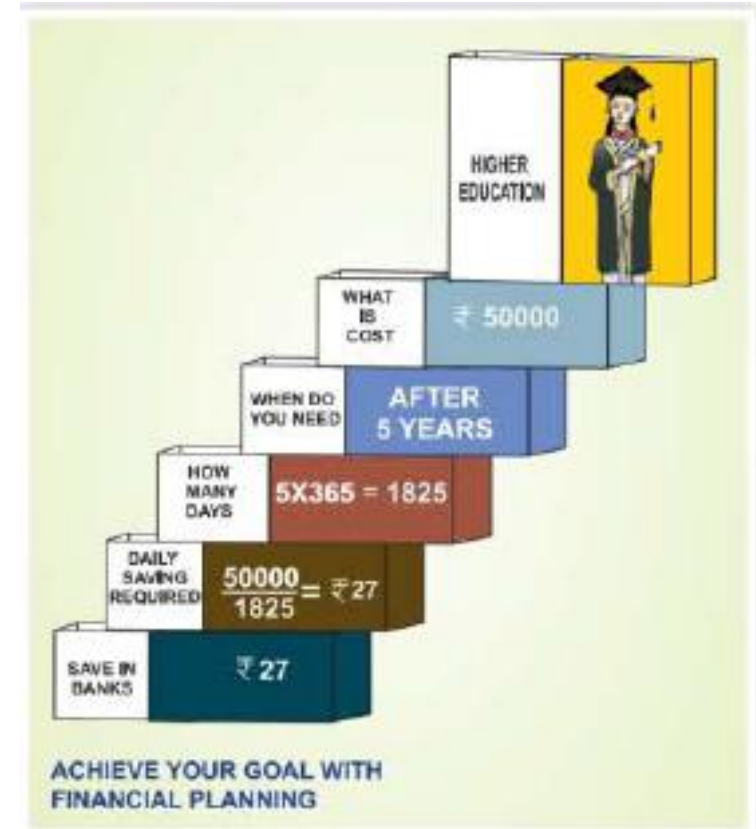
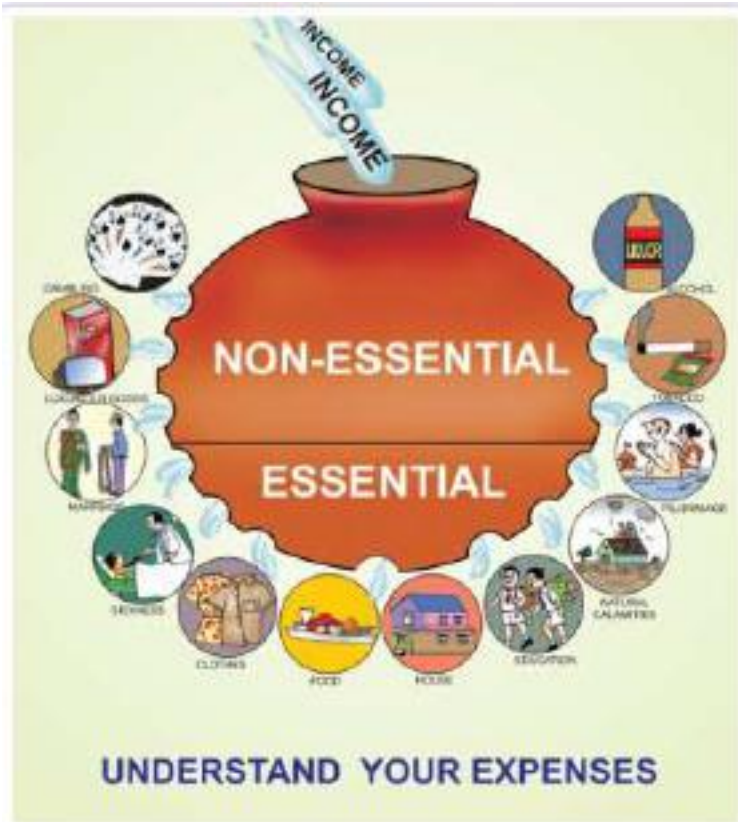
# Apa itu Computational Thinking ?

"Computational Thinking is the thought processes involved in formulating problems and their solutions so that the solutions are represented in a form that can be effectively carried out by an information-processing agent."

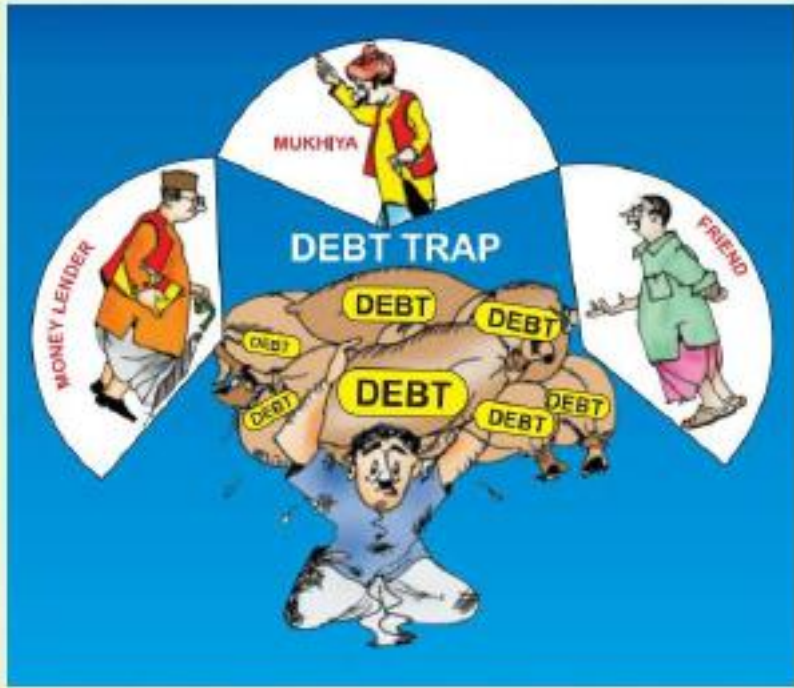
"CT involves **problem-solving skills** and particular **dispositions**, such as confidence and persistence, when confronting particular problems"  
"the ability to think with the computer-as-tool"







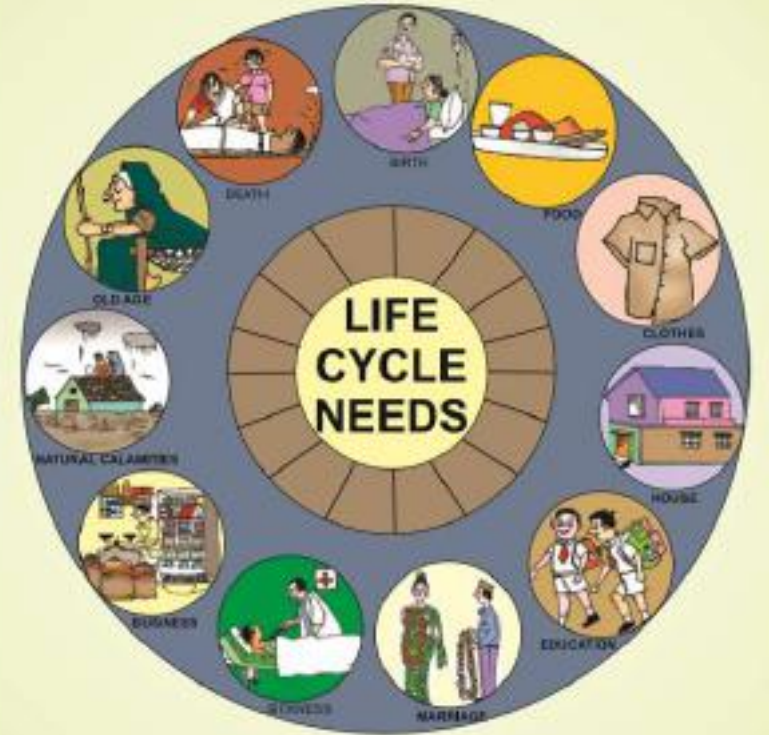
<https://powerinmoney.blogspot.com/2016/06/financial-literacy-see-why-it-is.html>



MANAGE YOUR DEBT OTHERWISE  
DEBT WILL DAMAGE YOU



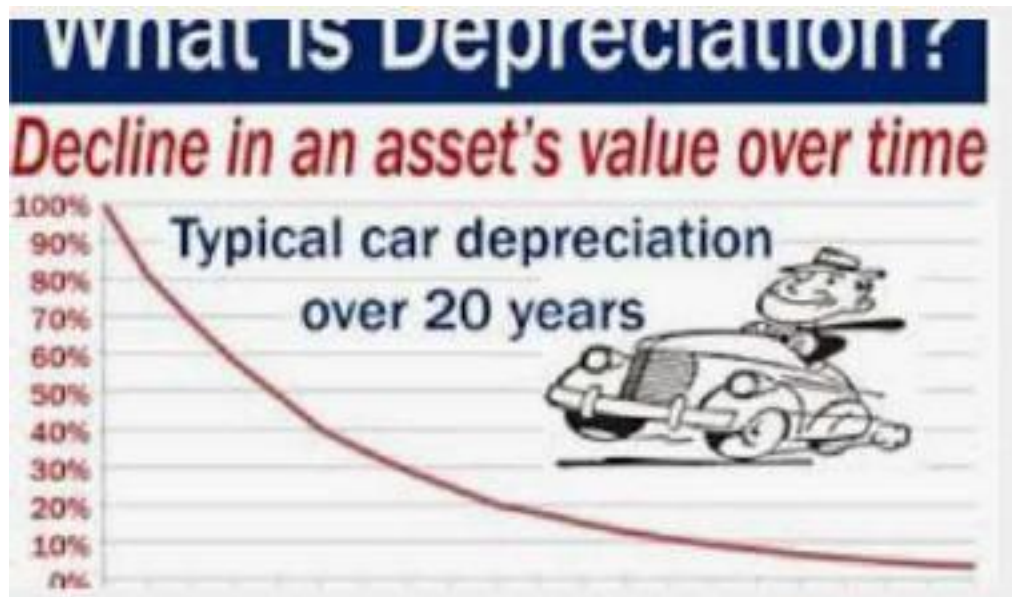
BORROW TO UNDERTAKE AN ACTIVITY  
WHICH ENHANCES YOUR INCOME



SAVE MONEY FOR LIFE CYCLE NEEDS

<https://powerinmoney.blogspot.com/2016/06/financial-literacy-see-why-it-is.html>





Business Model Depreciation: Why it's ...  
[denis-oakley.com](http://denis-oakley.com)



## Operational Definition of Computational Thinking for K–12 Education

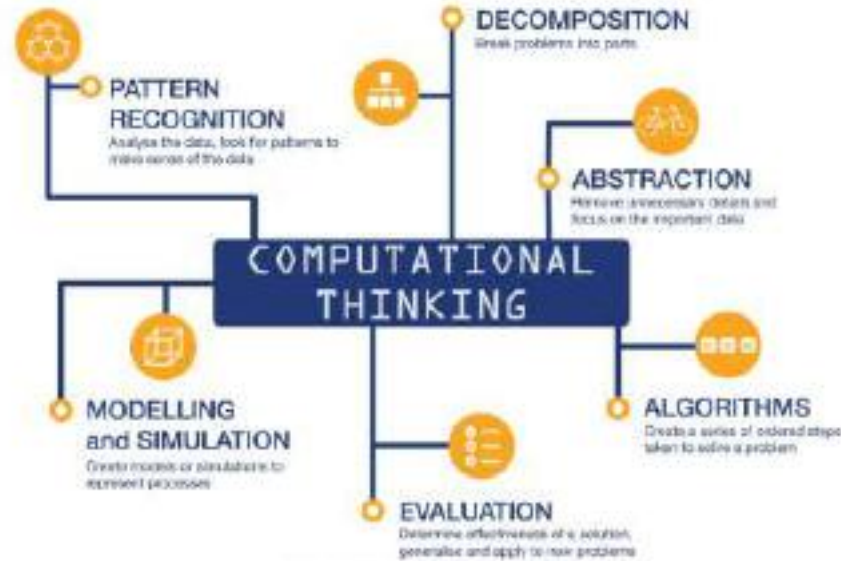
The International Society for Technology in Education (ISTE) and the Computer Science Teachers Association (CSTA) have collaborated with leaders from higher education, industry, and K–12 education to develop an operational definition of computational thinking. The operational definition provides a framework and vocabulary for computational thinking that will resonate with all K–12 educators. ISTE and CSTA gathered feedback by survey from nearly 700 computer science teachers, researchers, and practitioners who indicated overwhelming support for the operational definition.

**Computational thinking (CT) is a problem-solving process that includes (but is not limited to) the following characteristics:**

- Formulating problems in a way that enables us to use a computer and other tools to help solve them.
- Logically organizing and analyzing data
- Representing data through abstractions such as models and simulations
- Automating solutions through algorithmic thinking (a series of ordered steps)
- Identifying, analyzing, and implementing possible solutions with the goal of achieving the most efficient and effective combination of steps and resources
- Generalizing and transferring this problem solving process to a wide variety of problems

**These skills are supported and enhanced by a number of dispositions or attitudes that are essential dimensions of CT. These dispositions or attitudes include:**

- Confidence in dealing with complexity
- Persistence in working with difficult problems
- Tolerance for ambiguity
- The ability to deal with open ended problems
- The ability to communicate and work with others to achieve a common goal or solution



Note: Data is part of every step in computational thinking.

acara

Developed by MOET Digital Technologies in Focus project  
Australian Government Department of Education (CC BY 4.0)





# Computational Thinking

## Optimasi

## Pengambilan Keputusan

Untuk Semua!

CT untuk siapa?

CS - Non CS

Computational - X



Beaver has a laundry with two separate machines for washing and drying. Both machines have an half hour operating cycle, so each customer needs 60 minutes.



Two beavers arrive in a hurry. They need to wash and dry their clothes as quickly as possible.  
How many minutes it is going to take to wash and dry clothes for two beavers?



Beaverland money – beuro coins. Beaver is buying a fish using beuro coins. The fish costs 10 beuros. He has these coins:



In how many different ways can he pay for it?



Data Practices	Modeling & Simulation Practices	Computational Problem Solving Practices	Systems Thinking Practices
Collecting Data	Using Computational Models to Understand a Concept	Preparing Problems for Computational Solutions	Investigating a Complex System as a Whole
Creating Data	Using Computational Models to Find and Test Solutions	Programme	Understanding the Relationships within a System
Manipulating Data	Assessing Computational Models	Choosing Effective Computational Tools	Thinking in Levels
Analyzing Data	Designing Computational Models	Assessing Different Approaches/Solutions to a Problem	Communicating Information about a System
Visualizing Data	Constructing Computational Models	Developing Modular Computational Solutions	Defining Systems and Managing Complexity
		Creating Computational Abstractions	
		Troubleshooting and Debugging	

Contoh soal Bebras terkait literasi keuangan dan Optimasi

# Bagaimana melatih CT?

- Bebras Challenge – Latihan
- Analisis Data– lihat soal-soal PISA, AKM
- Modeling & simulation – lab virtual
- Programming – bukan *Coding*



## TEMA/ KONTEN LITERASI KEUANGAN



### Understanding Taxes in America in 7 Visualizations

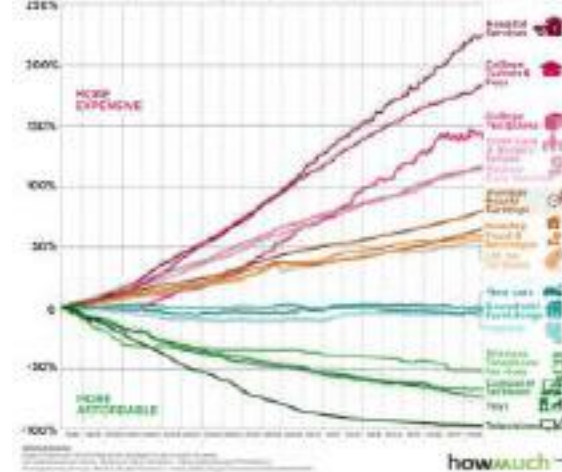


### Top 10 Data Visualizations of 2019



We covered lots of different topics in 2019, from the cost of a comfortable retirement to the looming government debt bubble and the world's gold reserves. Here's what we deemed the 10 best visualizations for the year:

### 20 Years of Price Changes in The United States



### Gold Reserves Around the World



<https://howmuch.net/articles/top-10-data-visualizations-2019>



Dari kurikulum

<https://www.curriculumonline.ie/Primary/>



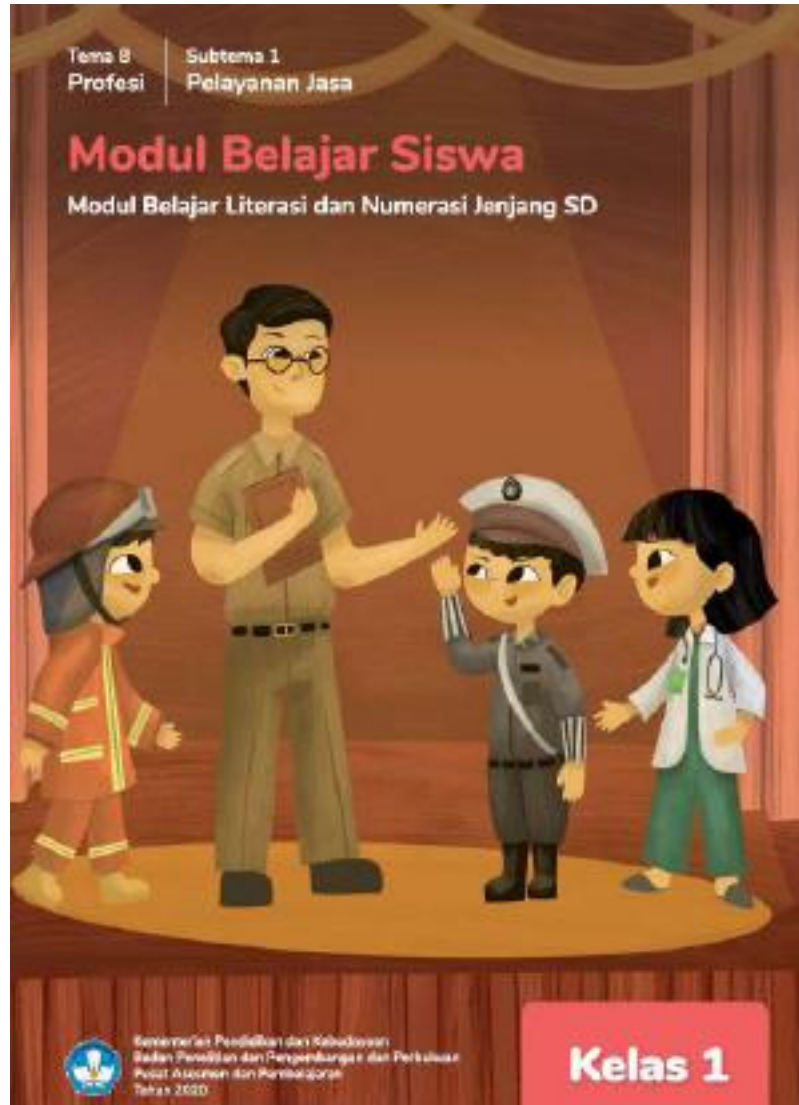
Di sekolah Indonesia :

1. Warung sekolah
2. Simulasi toko swalayan
3. Bermain peran
4. Latihan transaksi
5. Koperasi sekolah



# Demo dari Buku Literasi dan Numerasi

<https://bersamahadapikorona.kemdikbud.go.id/tingkat-sd-modul-belajar-literasi-numerisasi/>



Literasi Finansial menjadi bagian dari Numerasi

## Contoh Buku kelas 1, Tema 8

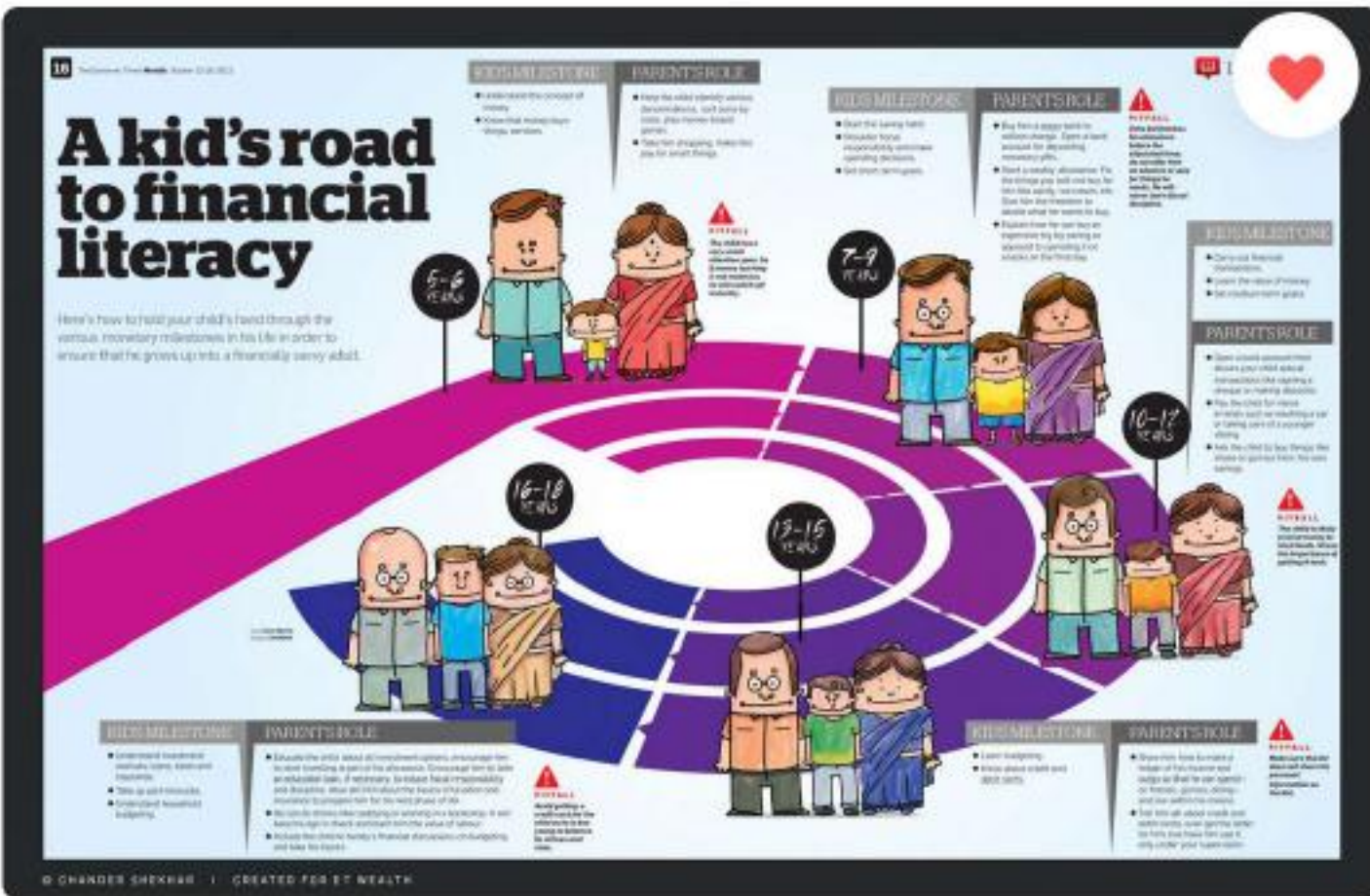
Mengenal uang logam, uang kertas  
Melakukan transaksi

**Buku Literasi dan Numerasi Untuk Belajar di rumah**

Selama 9 bulan

Setiap bulan, ada 4 minggu

Setiap minggu ada 1 tema – 5 hari belajar, 1 hari proyek



### 7 – 9 YEARS PITFALL

- If the kid finishes his allowance before the stipulated time, do not offer him an advance or pay for things he needs. He will never learn fiscal discipline

### 5-6 YEARS

- Understand the concept of money,
- Know that money buys things, services.

### PARENT'S ROLE

- Help the child identify various denominations, sort coins by sizes, play money-based games
- Take him shopping, make him pay for small things.

### PITFALL

- The child has a very small attention span.
- So if money learning is not made fun, he will switch off instantly.

### 7-9 YEARS

- Start the saving habit.
- Shoulder fiscal responsibility and make spending decisions.
- Set short-term goals.

### PARENT'S ROLE

- Buy him a piggy bank to collect change. Open a bank account for depositing monetary gifts.
- Start a weekly allowance. Fix the things you will not buy for him like candy, ice cream, etc. Give him the freedom to decide what he wants to buy.
- Explain how he can buy an expensive toy by saving as opposed to spending it on snacks on the first day.

## INDIA

### 10-12 YEARS

- Carry out financial transactions.
- Learn the value of money.
- Set medium-term goals.

### PARENT'S ROLE

- Open a bank account that allows your child actual transactions like signing a cheque or making deposits.
- Pay the child for minor errands such as washing a car or taking care of a younger sibling.
- Ask the child to buy things like shoes or gizmos from his own savings.

### PITFALL

- The child is likely to lend money to his friends. Stress the importance of getting it back.

### 13-15 YEARS

- Learn budgeting.
- Know about credit and debit cards.

### PARENTS ROLE

- Show him how to make a ledger of his income and outgo so that he can spend on friends, gizmos, dining— and live within his means.
- Tell him all about credit and debit cards, even get the latter for him, but have him use it only under your supervision.

### PITFALL

- Make sure the kid does not share his personal information on the Net.



### **16-18 YEARS**

- Understand investment, avenues, loans, taxes and insurance.
- Take up part-time jobs.
- Understand household budgeting.

### **PARENT'S ROLE**

- Educate the child about all investment options, encourage him to start investing a part of his allowance. Encourage him to take an education loan, if necessary, to induce fiscal responsibility and discipline. Also tell him about the basics of taxation and insurance to prepare him for his next phase of life.
- He can do chores like caddying or working in a bookshop. It will keep his ego in check and teach him the value of labour.
- Include the child in family's financial discussions on budgeting and take his inputs.

### **PITFALL**

- Avoid getting a credit card for the child as he is too young to balance its virtues and risks.

## PERMAINAN KEUANGAN



**Games Puzzle Tabunganku**

Putra-putri Anda akan lebih mengenal manfaat menabung dengan game ini...



**Games Ayo Menabung**

Permainan ini mengandalkan kecepatan memindahkan uang-uang koin...



**Games Temukan Produknya**

Ayo Temukan nama Produk-Produk Keuangan yang tersembunyi...



# *Board games*

Search Google: “permainan keuangan”



***Anda bisa menciptakan permainan board game yang menarik dengan konteks riil!***



<http://www.jumpgapsoftware.com/allowance/index.html>



<http://renegadebuggies.familieslearning.org/about.html>



GET THE GAME!  
Now available on:



RENEGADE  
RESOURCES

ABOUT

About The Game

Renegade Buggies is a dynamic endless runner game with a financial literacy curriculum at its core. Ride through the urban terrain on your supercharged buggy, grabbing items from your shopping list and collecting coins and coupons every chance you get. But beware of obstacles, because they're all around you! After crossing the finish line, you'll check out, making sure to choose the item with the best bang for its buck. Choose carefully, because the goal is to save as much money as you can. Then reward yourself with a trip to the Virtual Auto Body Shop where you can power up your buggy and rider with some epic glow lights, a flashy stunt suit, or a kickin' cowboy hat!

Grab a family member and learn to be financially responsible by using smart consumer strategies. Compare unit sizes, buy in bulk, and use coupons and promos along the way. Become a checkout hero by increasing your Overall Money Saved, all while racing down a high-speed track as groceries, coins, and even moving tires come your way! Start your engines!





# Pisa Test Financial Literacy

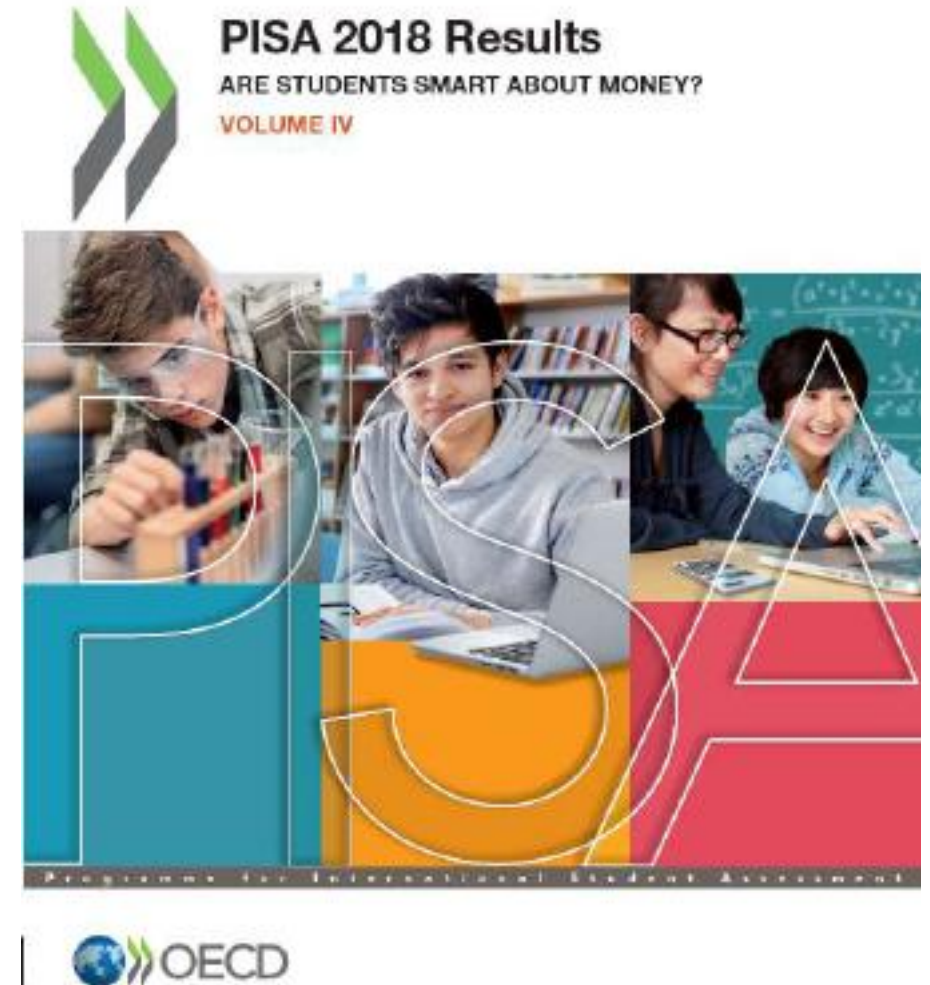
Penjelasan lengkap, dan contoh soal

## PISA 2021 FINANCIAL LITERACY ANALYTICAL AND ASSESSMENT FRAMEWORK

April 2019

OECD member countries and Associates decided to postpone the PISA 2021 assessment to 2022 to reflect post-Covid difficulties. This draft vision was created before the crisis. The final version will reflect the new name of the cycle "PISA 2022".

<https://www.oecd.org/pisa/sitedocument/PI-SA-2021-Financial-Literacy-Framework.pdf>



<https://www.oecd.org/pisa/publications/pisa-2018-results.htm>



# Revised definition (OECD 2021)

- Financial literacy is knowledge and understanding of financial concepts and risks, as well as the skills and attitudes to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life.
- *Versus definisi Indonesia*
- Literasi finansial (keuangan) adalah pengetahuan dan kecakapan untuk mengaplikasikan pemahaman tentang **konsep dan risiko**, keterampilan agar dapat **membuat keputusan** yang **efektif** dalam **konteks finansial** untuk meningkatkan **kesejahteraan finansial**, baik **individu maupun sosial**, dan dapat berpartisipasi dalam lingkungan masyarakat.

# Contents

- Money and transaction;
- Planning and managing finances (including saving and spending; credit and debt; financial decision making);
- Risk and rewards;
- Financial landscape

# Process

- The process categories relate to cognitive processes. They describe students' ability to recognise and apply concepts relevant to the domain, and to understand, analyse, reason about, evaluate and suggest solutions.
- Four process categories have been defined in no particular hierarchical order: **identify** financial information; **analyse** information in a financial context; **evaluate** financial issues; and **apply** financial knowledge and understanding.

# Context

- Refer to the situations in which the financial knowledge, skills and understandings are applied, **ranging from the personal to the global.**
- The focus maybe individual, family or peer group, the community, or even on a global scale

### Example 1: PAY SLIP

PAY SLIP is an example of an item in the content category **money and transactions**. This multiple-choice question asks students to identify financial information on a pay slip. While a pay slip is a common financial document, it may be unfamiliar to 15-year-old students. Students need to understand the difference between gross and net pay, that is, the difference between pay before and after any deductions have been made (such as deductions for health care or tax). Numeracy skills are not required to perform this task. This question is located at Level 4 (See Chapter 2 for the description of the proficiency levels).

### PAY SLIP

Each month, Jane's salary is paid into her bank account. This is Jane's pay slip for July.

#### EMPLOYEE PAY SLIP: Jane Citizen

Position: Manager	1 July to 31 July
Gross salary	2 800 zeds
Deductions	300 zeds
Net salary	2 500 zeds
Gross salary to date this year	19 600 zeds

**GSOFT INDONESIA**  
JL. BANGKA 123 JEMBER 12345  
TELP. 0331-123456

**SLIP GAJI**

Tanggal : 28/01/2011  
No. Referensi : GJ201101201  
Kode Karyawan : hendra

Nama : HENDRA KURNIAWAN  
Jabatan : KEUANGAN  
Alamat : JL. RAYA DARMO REJO 123 SURABAYA  
Telepon : 031-1234567

NO	KETERANGAN	JUMLAH
1	Gaji pokok	2.800.000
2	Bonus Teknisi	0
3	Bonus Sales	0
4	Lain lain	200.000
		<b>2.200.000 (+)</b>
5	Sisa hutang yang lalu	150.000
6	Hutang bulan ini	50.000
		<b>200.000 (+)</b>
7	Potongan gaji untuk bayar hutang	150.000
8	Sisa hutang yang belum terbayar	50.000
		<b>200.000 (+)</b>
	Dua juta Lima puluh ribu rupiah	<b>TOTAL DITERIMA : 2.850.000</b>

Penerima,  
HENDRA KURNIAWAN

17 Februari 2011  
GSOFT INDONESIA

### PAY SLIP – QUESTION 1

How much money did Jane's employer pay into her bank account on 31 July?

- ☐ 300 zeds
- ☐ 2 500 zeds
- ☐ 2 800 zeds
- ☐ 19 600 zeds

Question type: Multiple choice

Description: Identify the net salary on a pay slip

Content: Money and transactions

Process: Identify financial information

Context: Education and work

Difficulty: Level 4

**PT Arian Trikusuma**  
Jalan Gading Gajah No. 42, Kelapa Gading, Jakarta Utara Telepon 021271144

**SLIP GAJI KARYAWAN**  
Periode 1 Juni 2020 – 30 Juni 2020

NIK : AT-1243  
Nama : Sulistawati Ningrum  
Jabatan : Pramuniaga  
Status : Karyawan Kontrak

<b>Penghasilan</b>			<b>Potongan</b>		
Gaji Pokok	=	2.500.000	PPh 21	=	250.000
Tj. Jabatan	=	500.000	Asuransi	=	-
Tj. Konsumsi	=	355.000			
Tj. Harian	=	520.000			
Bonus Target	=	800.000			
<b>Total (A)</b>		<b>4.675.000</b>	<b>Total (B)</b>		<b>250.000</b>

**Penerimaan Bersih (A-B) = Rp 4.425.000**  
Terbilang: Empat juta empat ratus dua puluh lima ribu rupiah

Jakarta Utara, 30 Juni 2020  
Manajer Operasional  
Joko Sumarno, S.E.



## Example 2: INVOICE

INVOICE Question 3 assesses the process of applying financial knowledge and understanding. It asks students to find the correct total amount on an invoice that has been incorrectly prepared, taking into account the sales tax as a percentage of purchase and the delivery charge.

### INVOICE

Sarah receives this invoice in the mail.



Breezy Clothing

Sarah Johanson  
24 Worthill Rd  
Kensington  
Zedland 3122

Product code	Description	Quantity	Unit cost	Total (excluding tax)
T011	T-shirt	3	20	60 zeds
J023	jeans	1	60	60 zeds
S002	scarf	1	10	10 zeds

Invoice

Invoice Number: 2034  
Date issued: 28 February

Breezy Clothing  
498 Maple Lane  
Brightwell  
Zedland 2090

Product code	NAMA BARANG	Harga Satuan	Jumlah
T011	T-shirt	20	3
J023	Jeans (1 pair)	60	1
S002	Scarf	10	1
Total (excluding tax)			130
Tax 10%			13
Postage			10
Total including Tax			153

Total Excluding Tax	130 zeds
Tax 10%	13 zeds
Postage	10 zeds
Total including Tax	153 zeds
Already Paid:	0 zeds
Total due:	153 zeds
Date due:	31 March

### INVOICE – QUESTION 3

Sarah notices that Breezy Clothing made a mistake on the invoice.  
Sarah ordered and received two T-shirts, not three.  
The postage fee is a fixed charge.  
What will be the total on the new invoice?

**Question type:** Constructed response

**Description:** Find a new total on an invoice, taking into account several factors (or demonstrate process required)

**Content:** Money and transactions

**Process:** Apply financial knowledge and understanding

**Context:** Individual

**Difficulty:** Full credit: 660 (Level 5); Partial credit: 547 (Level 3)

■ Figure VL1.9 ■  
**AT THE MARKET**

You can buy tomatoes by the kilogram or by the box.



2.75 zeds per kg



22 zeds for a 10 kg box

#### AT THE MARKET – QUESTION 2



The box of tomatoes is better value for money than the loose tomatoes.

Give a reason to support this statement.

.....

.....

**Question type:** Constructed response

**Descriptions:** Recognise value by comparing prices per unit

**Content:** Money and transactions

**Process:** Analyse information in a financial context

**Context:** Home and family

**Difficulty:** 459 (Level 2)

**Scoring**

#### Scoring

##### Full Credit

Explicitly or implicitly recognises that the price per kilogram of boxed tomatoes is less than the price per kilogram for loose tomatoes.

- It is 2.75 zeds per kg for the loose tomatoes but only 2.20 zeds per kg for the boxed tomatoes.
- It is only 2.20 per kg for the box.
- Because 10kg of loose tomatoes would cost 27.50 zeds.
- There are more kilograms for every 1 zed you pay.
- Loose tomatoes cost 2.75 per kg but tomatoes in the box cost 2.2 per kg.
- It is cheaper per kilogram. *[Accept generalisation.]*
- It is cheaper per tomato. *[Accept assumption that tomatoes are the same size.]*
- You get more tomato per zed. *[Accept generalisation.]*

##### No Credit:

Other responses.

- The box is always better value. *[No explanation.]*
- You get more for less. *[Vague.]*
- Bulk buying is better.
- The price per kilogram is different. *[Does not indicate that the box price is lower.]*

Missing.

#### Comment

This question requires students to apply the concept of value for money in a context familiar to 15-year-old students. Students are asked to make a logical comparison between boxed and loose tomatoes and to explain which option provides the best value for money. In order to support their argument, students can provide their answer in words or explain their idea with quantitative information by using the price ("Zed") and weight (kilogram).

In this question, the unit of currency is the imaginary Zed. PISA questions often refer to situations that take place in the fictional country of Zedland, where the Zed is the unit of currency. This artificial currency has been introduced to enhance comparability across countries and is explained to the students before the test begins.

Using the context of shopping for groceries, which is a familiar, everyday context to 15-year-old students, this item assesses whether students can interpret and use financial and numeric information and explain their judgment based on proportional reasoning and single basic numerical operations (multiplication and division). Questions about the buying of goods are generally categorised as being in the content area of money and transactions. To gain credit for this item, students have to demonstrate that they have compared the two ways of buying tomatoes using a common point of comparison. The question is located at level 2.



### AT THE MARKET – QUESTION 3

Buying a box of tomatoes may be a bad financial decision for some people.  
Explain why.

**Question type:** Open-constructed response

**Description:** Recognise value by comparing prices per unit

**Content:** Money and transactions

**Process:** Evaluate financial issues

**Context:** Home and family

**Difficulty:** 398 (Level 1)

#### Scoring

##### Full Credit

Refers to wastage if a larger amount of tomatoes is not needed.

- The tomatoes might rot before you use them all.
- Because you may not need 10 kg of tomatoes.
- The ones at the bottom of the box might be bad so you are wasting money.

OR

Refers to the idea that some people cannot afford the higher absolute cost of buying in bulk.

- You may not be able to afford a whole box.
- You have to spend 22 zeds (rather than 2.75 or 5.50 for 1 or 2 kg) and you might not have that amount to spend.
- You might have to go without something else that you need to pay for the box of tomatoes.

##### No Credit

Other responses.

- It is a bad idea.
- Some people don't like tomatoes [irrelevant.]

Missing.

#### Comment

This question asks students to evaluate financial information for decision making in shopping, which is a situation familiar to 15-year-old students. The question examines whether students can recognise that buying things in bulk may be wasteful if a large amount is not needed, and it may be unaffordable to bear the higher absolute cost of buying in bulk in the short term. Students are required to evaluate a financial issue in the situation presented and describe their conclusion in this constructed response question. Students can provide their answers either by using words, without

quantitative information, or by using numbers, with quantitative information of the price and weight. Full credit will be given if students can explain that buying more tomatoes at a cheaper price may not always be a good decision for some people. The question is located at Level 1.

### Di Indonesia :

1. Beli minyak : 2 kg, 1 kg, 1/4kg; minyak curah ?
2. Beli shampoo 1 botol atau 1 sachet ?
3. Beli deterjen, 1 kg atau per sachet kecil ?





### NEW OFFER

Mrs Jones has a loan of 8 000 zeds with FirstZed Finance. The annual interest rate on the loan is 15%. Her repayments each month are 150 zeds.

After one year Mrs Jones still owes 7 400 zeds.

Another finance company called Zedbest will give Mrs Jones a loan of 10 000 zeds with an annual interest rate of 13%. Her repayments each month would also be 150 zeds.

### NEW OFFER – QUESTION 1

If she takes the Zedbest loan, Mrs Jones will immediately pay off her existing loan.

What are two other financial benefits for Mrs Jones if she takes the Zedbest loan?

1. ....

2. ....

**Question type:** Constructed response

**Description:** Recognise positive consequences of transferring a loan to a lower interest rate

**Content:** Planning and managing finances

**Process:** Analyse information in a financial context

**Context:** Individual

**Difficulty:** Full credit: 663 (level 5); Partial credit: 510 (level 3)

### Comment

This item asks students to reflect on and evaluate the consequences of changing from one set of loan conditions to another. While having a loan from a financial institution may be unfamiliar to 15-year-old students, this question is relevant to them since many of them will borrow money from financial institutions once they become adults. While all of the necessary information is provided in the question, in order to gain credit, students need to identify what is relevant and reflect on the consequences of taking a particular financial action. Therefore, the question belongs to the content category of planning and managing finances. Students need to interpret financial and numeric information, reason about the effect that different financial actions (i.e. borrowing money from different loan providers) and variables have on financial well-being. No numerical operations are required. In this task, full credit is given for the responses including reference to both having extra money to use and getting a lower interest rate. Partial credit is given to responses that explain one of those. The partial-credit score is located at Level 3 while the full-credit score is located at Level 5.

### Scoring

#### Full Credit

Refers to BOTH having extra money to use AND getting a lower interest rate.

- She will be paying 13% interest instead of 15%.
- She has an extra 2 600 zeds.
- She has extra money to spend.
- The interest rate is lower.

#### Partial Credit

Refers to only one of the above.

- She will only be paying 13% interest rate.
- [Blank]
- She has extra money to spend.
- [Blank]
- The interest rate is 2% less.
- She will pay off her loan to FirstZed. [2nd benefit is a restatement of stem.]

#### No Credit

Other responses.

- She will pay off her debt. [Repeats stem.]

Missing.

### Bunga Mandiri Tabungan Rencana

No	Masa Kontrak	Suku Bunga	SBMT = 2.25%
1	Jangka Waktu 12 – 47 bulan	SBMT + 0.50%	2.75%
2	Jangka Waktu 48 – 119 bulan	SBMT + 0.75%	3.00%
3	Jangka Waktu 120 – 179 bulan	SBMT + 1.00%	3.25%
4	Jangka Waktu ≥ 180 bulan	SBMT + 1.25%	3.50%

No	Kontrak	Suku Bunga
1	2 tahun	6.50%
2	3 tahun	6.75%
3	5 tahun	7.00%
4	10 tahun	7.20%

**COSTS OF RUNNING A CAR**

Mr Davies takes out a loan to buy a car for his family. The interest rate on the loan is fixed. One cost Mr Davies will have is monthly loan repayments. There are also other costs of running a car, such as petrol costs, and repair and maintenance costs.

**Question**

Some costs will increase if the family uses the car more, but other costs will stay the same. For each cost in the table, put a circle around "Increases" or "Stays the same" to show what is likely to happen if the family uses the car more.

Cost	What is likely to happen to the cost if the family uses the car more?
Monthly loan repayments	Increases / Stays the same
Petrol costs	Increases / Stays the same
Repair and maintenance costs	Increases / Stays the same

This question asks students to distinguish between the fixed and variable costs associated with running a car. Understanding fixed and variable costs is an important component of planning finances for an individual or a family. The question belongs to the process category of analysing information in a financial context because students should recognise something that is not explicit and understand the implications that using the car more has on different types of costs. The correct answers are *Stays the same*, *Increases*, *Increases*, in that order.

Unit name	Costs of Running a Car
Content	Planning and managing finances
Process	Analysing information in a financial context
Context	Home and family
Item format	Complex multiple choice - Computer scored
Level estimated from the PISA 2018 field trial	3

**Are Students Smart about Money?**

The OECD Programme for International Student Assessment (PISA) examines what students know in reading, mathematics and science, and what they can do with what they know. It provides the most comprehensive and rigorous international assessment of student learning outcomes to date. Results from PISA indicate the quality and equity of learning outcomes attained around the world, and allow educators and policy makers to learn from the policies and practices applied in other countries. This is one of six volumes that present the results of the PISA 2018 survey, the seventh round of the triennial assessment. Volume IV, *Are Students Smart about Money?*, examines 15-year-old students' understanding about money matters in the 20 countries and economies that participated in this optional assessment.

## BANK STATEMENT

Each week, Mrs Citizen transfers 130 zeds into her son's bank account. In Zedland, banks charge a fee for each transfer. Mrs Citizen received this statement from her bank in November 2011.

ZEDBANK				
Statement for: Mrs Citizen		Account type: Current		
Month: November 2015		Account number: Z0005689		
Date	Transaction details	Credit	Debit	Balance
1-Nov	Opening balance			1780.25
5-Nov	Wages	575.00		2355.25
5-Nov	Transfer		130.00	2225.25
5-Nov	Transfer fee		1.50	2223.75
12-Nov	Wages	575.00		2798.75
12-Nov	Transfer		130.00	2668.75
12-Nov	Transfer fee		1.50	2667.25
13-Nov	Withdrawal		165.00	2502.25
19-Nov	Wages	575.00		3077.25
19-Nov	Transfer		130.00	2947.25
19-Nov	Transfer fee		1.50	2945.75
26-Nov	Wages	575.00		3520.75
26-Nov	Transfer		130.00	3390.75
26-Nov	Transfer fee		1.50	3389.25
27-Nov	Withdrawal		180.00	3209.25
27-Nov	Withdrawal (Rent)		1200.00	2009.25
30-Nov	Interest	6.10		2015.35



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## MUSIC SYSTEM

Ben lives in Zedland and has a mobile phone. In Zedland, there are two different kinds of phone plan available:

### Plan 1

- You pay the phone bill at the end of the month.
- The bill is the cost of the calls you make **plus** a monthly fee.

### Plan 2

- You buy credit for the phone in advance.
- The credit lasts for a maximum of one month or until all credit has been used.

### Question 1

What is one possible **financial** advantage of using phone plans like **Plan 2**?

.....

.....

The unit PHONE PLANS asks students to analyse information in the context of mobile phone plans, a situation that many 15-year-old students may have already encountered or will soon encounter. The first question asks students to explain a possible financial advantage of a pre-paid phone plan. Students should recognise that the pre-paid plan does not entail a monthly fee or that it may help the user not go beyond a certain spending limit.

Unit name	Phone Plans (Question 1)
Content	Planning and managing finances
Process	Analysing information in a financial context
Context	Individual
Item format	Open response – Human coded
Level estimated from the PISA 2018 field trial	

## Stimulus update

Ben decides to use Plan 1. He must now choose which phone company to use.

The table below shows the details of the four different phone companies that offer Plan 1. All costs are shown in zeds.

	Company 1	Company 2	Company 3	Company 4
Monthly fee (zeds)	20	20	30	30
Cost of call per minute (zeds)	0.27	0.25	0.30	0.25
Number of free minutes per month	90	90	60	60
Cost per text message (zeds)	0.02	0.02	Free	0.01
Number of free text messages per month	200	100	Unlimited	200



Ben

I speak on the phone for about an hour each day, but I very rarely send text messages.

The second question in the unit PHONE PLANS looks at students' ability to select the most suitable telephone plan for a particular individual. Students are required to compare the conditions offered by different mobile phone companies by looking at multiple dimensions, such as flat fees, the cost of calls and the cost of messages, select the ones that are most relevant, and find the best offer for a given need. To get full credit, students should indicate that Company 2 offers the best deal for Ben's needs.

Unit name	Phone Plans (Question 2)
Content	Planning and managing finances
Process	Analysing information in a financial context
Context	Individual
Item format	Simple multiple choice – Computer scored
Level estimated from the PISA 2018 field trial	3

### RINGTONES

Colin sees this advertisement in a magazine for teenagers.

Get Cheeky Monkey™ ringtones for your phone.  
Your phone will make a monkey noise  
when your friends call you.

Get one NOW for only 3 zeds\*



Text the word MONK to 13 45 67

\* Each ring-tone costs 3 zeds. By texting MONK to 13 45 67, customer agrees to receive a different Cheeky Monkey™ ring-tone every day. Customer can cancel contract at any time by texting STOP to 13 45 67. Cancellation fee is 5 zeds.

Which phone company offers the best financial deal for Ben?

- A. Company 1
- B. Company 2
- C. Company 3
- D. Company 4

## CHARITABLE GIVING

PISA 2018

**Charitable Giving**  
Question 1/1

Refer to "Charitable Giving" on the right. Type your answer to the question.

Explain why Lisa has taken a financial risk by making this donation.

**CHARITABLE GIVING**

Edward: Lisa, did you decide what to do with your birthday money?

Lisa: Actually, I donated most of it to the WellBabies charity yesterday.

Edward: Oh really? I've never heard of WellBabies.

Lisa: No, I hadn't either, but they called me and asked for money, so I gave them a donation with my bank card.



PISA 2018

### ZCycle introduction

A new bike-sharing program called ZCycle was just introduced in Zedtown. Riders can pick up bikes at one bike station and then drop them off at another when they are finished riding.

In order to use ZCycle you must become a member and pay a membership fee.

Membership for ZCycle is handled through a smartphone app, as shown on the right.

To see the different prices for each plan:

- Click on "Annual" to see the annual membership fee.
- Click on "Monthly" to see the monthly membership fee.
- Select "1" ride at 61-120 minutes and "1" at 121 minutes or more to see those fees.
- Click on "Calculate Total" to see the total charge.
- Click on new selections and "Calculate Total" to see different options.

Membership Fee		Zeds
<input type="radio"/> Annual		
<input type="radio"/> Monthly		
	<input type="text"/> Number of Months	
Number of Rides	Length of Rides (minutes)	
Unlimited	Up to 60	FREE
<input type="text"/>	61 - 120	
<input type="text"/>	121 or more	
TOTAL		

Calculate Total

## Question 1

PISA 2018

### ZCycle

Question 1 / 4

#### How to Use the ZCycle App

Refer to the ZCycle app on the right. Using the number keys, type your answer to the question.

Julie would like to use ZCycle to commute to and from work during the week. It will take her 45 minutes to ride to work and the same to ride home.

She would also like to use the bike twice a month on the weekends for bike rides that will be more than three hours long.

What would be Julie's total cost for a one-month membership?

zeds

Membership Fee		Zeds
<input type="radio"/> Annual		
<input type="radio"/> Monthly		
	<input type="text"/> Number of Months	
Number of Rides	Length of Rides (minutes)	
Unlimited	Up to 60	FREE
<input type="text"/>	61 - 120	
<input type="text"/>	121 or more	
TOTAL		

Calculate Total

In this unit, students are first introduced to a text explaining how the bike sharing scheme works and how the membership fee in the scheme is managed through a hypothetical smartphone application. Prospective bike users should understand that there is an annual or monthly membership fee, and that they may be asked to pay additional costs for each ride, depending on the ride duration. This is an example of a relatively common fee structure, combining fixed and variable costs, that students may encounter not only in bike sharing schemes but also in some mobile phone plans. Students have an opportunity to try the app to see how different uses of the bike scheme would affect the final cost.

Unit name	ZCycle (Question 1)
Content	Planning and managing finances
Process	Applying financial knowledge and understanding
Context	Individual
Item format	Open response – Computer scored
Level estimated from the PISA 2018 field trial	4

## Question 2

PISA 2018

**ZCycle**  
Question 2 / 4

**How to Use the ZCycle App**

Refer to the ZCycle app on the right. Click on a choice and then use the number keys to type your answer to the question.

Julie wants to know if it would be cheaper for her to purchase six monthly memberships or one annual membership if she is only going to use ZCycle for six months.

Remember that Julie wants to ride a bike to and from work every day (45 minutes each way) and twice a month for more than 3 hours.

Which membership is less expensive?

☐ Annual Membership  
☐ 6 Monthly Memberships

How much would the less expensive membership save Julie in six months?

zeds

**ZCycle Bike-Sharing**

**Membership Fee**

☐ Annual  
☐ Monthly

Number of Months

**Number of Rides** **Length of Rides (minutes)**

Unlimited	Up to 60	FREE
<input type="text"/>	61 - 120	<input type="text"/>
<input type="text"/>	121 or more	<input type="text"/>

**TOTAL**

## Question 3

PISA 2018

**ZCycle**  
Question 3 / 4

Refer to Julie's bill on the right. Click on a choice and then use the number keys to type your answer to the question.

Julie decides to try the ZCycle bike-sharing program for one month. At the end of the month she receives the bill shown on the right from ZCycle on her smartphone.

She has kept careful records of the number of rides she has taken and how long each lasted. Therefore, she's sure that there is a mistake in the fees that she has been charged.

Which fee is incorrect?

☐ 1 Month Membership - 20 zeds  
☐ 10 Rides Up to 60 Minutes - 10 zeds  
☐ 8 Rides 61 - 120 minutes - 8 zeds  
☐ 2 Rides 121 or more minutes - 12 zeds

What is the correct total amount due?

zeds

**ZCycle Bike-Sharing**

**ACCOUNT NUMBER 271 828**

**Membership Fee**

1 Month	20
---------	----

**Rides**

10 Up to 60 minutes	10
8 61 - 120 minutes	8
2 121 or more minutes	12

**TOTAL AMOUNT DUE** 42

## Question 4

PISA 2018

**ZCycle**  
Question 4 / 4

**How to Use the ZCycle App**

Refer to the ZCycle app on the right. Click on a choice and then type your explanation to answer the question.

Julie's family plan is starting a temporary job that will last for 6 months. He has enrolled in ZCycle with an annual membership so he can ride to and from work. The ride takes between 60 to 120 minutes depending on traffic conditions.

What is your financial choice for Alex to select the annual membership?

☐ Yes  
☐ No

Explain your answer.

**ZCycle Bike-Sharing**

**Membership Fee**

☐ Annual  
☐ Monthly

Number of Months

**Number of Rides** **Length of Rides (minutes)**

Unlimited	60 to 90	FREE
<input type="text"/>	91 - 120	<input type="text"/>
<input type="text"/>	121 or more	<input type="text"/>

**TOTAL**

Unit name	ZCycle (Question 2)
Content	Money and transactions
Process	Analysing information in a financial context
Context	Individual
Item format	Open response - Computer scored
Level estimated from the PISA 2018 field trial	5 - full credit 5 - partial credit

Unit name	ZCycle (Question 4)
Content	Planning and managing finances
Process	Evaluating financial issues
Context	Individual
Item format	Open response - Human coded
Level estimated from the PISA 2018 field trial	5



## Literasi Keuangan dikemas dalam literasi digital – Kanada

### Lesson 1

#### My Email Persona



### Lesson 2

#### Scamblock



### Lesson 3

#### Phonewise



### Lesson 4

#### Banking Online



### Lesson 5

#### Spacebooked



### Lesson 6

#### Read My Mind



### Lesson 7

#### Keep Your PIN Safe





[https://www.practicalmoneyskills.com/teach/lesson\\_plans/grades\\_3\\_6](https://www.practicalmoneyskills.com/teach/lesson_plans/grades_3_6)

- Lesson 1: Allowances and Spending Plans
- Lesson 2: Money Responsibility
- Lesson 3: Saving and Investing
- Lesson 4: Comparison Shopping

## Practical Money Matters

Visa's Practical Money Matters column delivers expert personal finance tips to consumers of all ages in English and Spanish. The article series has been syndicated nationwide in 500 U.S. newspapers and a Huffington Post blog. Topics include saving, budgeting, credit & debt, life events, taxes, retirement, insurance and more.

## Recognition

For the past 21 years, Practical Money Skills has equipped people of all ages worldwide with money management tools and resources. The flagship program offers curriculum, educational games, mobile apps, videos and financial calculators, as well as financial literacy theater roadshows, radio series, storytelling sessions and personal finance research. The global award-winning Practical Money Skills program has received a wide array of recognition for its work.

Disediakan materi-materi dapat diunduh:

- Panduan Guru
- Aktivitas siswa (LKS)
- Bahan Presentasi



### 2009 CTA State Gold Award

The California Teachers Association Board of Directors named Practical Money Skills for Life as a recipient for this award for its support of teachers, students and public education.

[https://www.practicalmoneyskills.com/teach/lesson\\_plans/grades\\_7\\_8](https://www.practicalmoneyskills.com/teach/lesson_plans/grades_7_8)

- Lesson 1: Making Decisions
- Lesson 2: Making Money
- Lesson 3: The Art of Budgeting
- Lesson 4: Living on your Own
- Lesson 5: Buying a Home
- Lesson 6: Banking Services
- Lesson 7: Credit
- Lesson 8: Credit Cards
- Lesson 9: Cars and Loans
- Lesson 10: The Influence of Advertising
- Lesson 11: Consumer Awareness
- Lesson 12: Saving and Investing
- Lesson 13: In Trouble
- Lesson 14: Consumer Privacy

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- Lesson 1: Money Matters: Why It Pays to Be Financially Responsible
- Lesson 2: Dream Big: Money and Goals
- Lesson 3: Road Rules: Researching and Buying a Car
- Lesson 4: The Cost of College: Financing Your Education
- Lesson 5: A Perfect Fit: Finding the Right Career for You
- Lesson 6: Keeping Score: Why Credit Matters
- Lesson 7: Privacy Please: Protecting Your Identity
- Lesson 8: Making it Work Together: Money and Roommates
- Lesson 9: A Plan for the Future: Making a Budget
- Lesson 10: Make It Happen: Saving for a Rainy Day
- Lesson 11: Savvy Spending: Sharpening Money Decisions
- Lesson 12: Bank or Bust: Selecting a Banking Partner
- Lesson 13: Nothing But Net: Understanding Your Take Home Pay
- Lesson 14: Using Credit Wisely
- Lesson 15: The Danger of Debt: Avoiding Financial Pitfalls
- Lesson 16: Home Sweet Home: Purchasing a Place
- Lesson 17: Smooth Sailing: Exploring Insurance and Estate Planning
- Lesson 18: A Way to Wealth: Understanding Interest and Investments
- Lesson 19: Financial Forces: Understanding Taxes and Inflation
- Lesson 20: The Tools to Build Your Financial Dream
- Lesson 21: Buy, Sell or Hold?: An Overview of Investing
- Lesson 22: Kindness Counts: Understanding Charitable Giving



# Ontario Canada

<https://www.rcmp-grc.gc.ca/cycp-cpcj/is-si/osf-efel-eng.htm>

- **Youth:**
- Most online shopping sites will contain a step by step procedure to illustrate safe payment methods. Look for it and be sure to use it. If you do not find it on the website, be sure to check out the website's credibility at [Canadian Anti-Fraud Centre](#).
- Make sure the webpage you are using is official and trusted.
- Always check your bank statements to ensure that all the spending that is being done on your card is being done by you.
- If you have any doubts about an organization, contact the [Better Business Bureau](#).
- Be watchful of contests that offer highly valued items at a significantly low price.
- Be wary of contests that only offer the prize for a “couple of hours.” Contact the [Canadian Anti-fraud Centre](#) to verify the credibility of organizations.

<https://www.rcmp-grc.gc.ca/cycp-cpcj/is-si/osf-efel-eng.htm>

**Here are some helpful tips for youth and adults to stay safe and protect their hard earned money:**

- 1. Use strong passwords:** Use a combination of capital letters, lower cases, special characters and numbers. This method makes it difficult for people to figure out your password. Change your passwords frequently.
- 2. Secure your computer:** activate your anti-virus and block spyware software to ensure safer connections.
- 3. Be social media savvy:** keep your social media profiles on private and don't provide any information that is not required.
- 4. Secure your mobile device:** your cellphone, laptops and tablets can be vulnerable to viruses and hackers. Only download applications from trusted sources.
- 5. Install the latest operation system:** always download and install the latest version of available software as it is much safer, and less convenient for hackers as it fixes "bugs" that allow hackers access.
- 6. Protect your data:** use encryption (protective security) for your sensitive files and back up all your important documents.
- 7. Secure your wireless network:** lock your home Wi-Fi and avoid conducting financial transactions on these networks.
- 8. Protect your E-Identity:** don't give out your private information on the Internet.

- If you suspect that you or someone else is a victim of identity theft or fraud, or if you **unwillingly provided personal information or financial information, make sure to:**
- **Step 1** - Contact your local police force and file a report.
- **Step 2** - Contact your bank/financial institution and credit card company.
- **Step 3** - Contact the two national credit bureaus and place a fraud alert on your credit reports.
  - [Equifax Canada](#)  
Toll free: 1 800 465-7166
  - [TransUnion Canada](#)  
Toll free: 1 877 525-3823
- **Step 4** - Always report identity theft and fraud. Contact the [Canadian Anti-Fraud Centre](#)



# Terima Kasih

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