

CHECK YOUR BILLS!

Discover the numeracy secrets of invoices and bills

The bill at the supermarket, at the restaurant or in a DIY store - sometimes it seems like a closed book: Where do all those numbers come from? Did they really deduct the discount? Is the quantity on the invoice identical to the quantity in my shopping cart? Is the change correct? Which extra charges was I charged? And of course: Where does this horrendous sum at the bottom of the bill come from?

Let's open this closes book together and discover all kinds of secrets...

Overview "INVOICE CHECK"

How to understand
numbers and
calculations on invoices
and bills

Context
Everyday life
Finances

Cognitive processes
Managing situations
Analysing situations
Problem solving
Critical thinking

Content
Quantity and number
Using digital skills
Pattern, relationship and
change

Target group (incl. necessary prior skills and competences)

Adults and young adults with basic numeracy competences (addition, multiplication) and willing to analyse, overthink and change their numeric behaviour

Dispositions
Self-confidence
Math difficulties

Outcomes and results

Learners do / simulate a reflective purchase.
Learners understand numeracy information on bills and invoices.



Main information	
Content	Basic arithmetic operations (focus on addition and multiplication) Decimals Percentages
Target group	Adults and young adults with basic numeracy competences (addition, multiplication) and willing to analyse, overthink and change their numeric behaviour
Learning intention	What is the intention of adults to face this problem? – Numeracy for personal and private purposes – Numeracy to understand society
Duration	2 to 4 lessons
Material and resources	Pictures and photos for real-life-situations in shops and restaurants (appendix 1) Exemplary bills (appendix 2) Worksheet or app to calculate change (appendix 3) Exemplary shopping list (appendix 4)
Group size	Range from 5 to 12 learners
Problem statement	Understanding bills from places like supermarkets, restaurants, or DIY stores can be confusing. You might wonder where the numbers come from, if discounts are right, or if the quantities match your cart. This session will simplify and clarify these financial transactions for you.
Working questions	What kind of information do we find on bills and invoices and how to interpret this information? How can we easily and quickly check our change? How to decide on the best offer of a product?
Learning outcomes and results	Learners do / simulate a reflective purchase. Learners understand numeracy information on bills and invoices.
Reference to National Qualification Frame	Optional (country's decision)



Working plan

Time (lessons)	Description of content/activities	Material	Methodical and didactic information ¹
15 min	<p>Activation: Story telling</p> <p>To place the learners in the situation, show pictures of shopping situations or restaurant visits and ask them to tell stories about them. This not only encourages creativity, but also offers the opportunity to use vocabulary and expressions in a real-life context.</p>	<p>Pictures and photos of real-life-situations in shops or restaurants</p> <p>(see appendix 1)</p>	<p>Metacognitive strategies, Questioning, Collaborative learning</p>
30 min	<p>Activity 1: Discover your bills</p> <p>Guide learners through an open exploration and analysis of invoices and bills: Show them different bills from everyday life (supermarket, hotel, restaurant, gas station, hardware store,...) or ask them in advance to collect their own bills and bring them along. The learners can be guided through this analysis with guiding questions of varying complexity.</p> <p>Possible questions in this phase:</p> <ul style="list-style-type: none"> • What do you see first on an invoice? • What's on the right and what's on the left? • Where do you see the number of items purchased? Where do you see the unit price? 	<p>Exemplary bills either via beamer / smartboard or on copies</p> <p>(see appendix 2)</p>	<p>Questioning</p> <p>Putting learners in a mathematical situation</p>

¹ for description and explanation of kinds of tasks, HITs and other background information please consult the teacher's/user's guide



	<ul style="list-style-type: none"> • Which calculation do you think of first when you see this? • Is there anything on the calculation that you can't understand? • What is a discount or price reduction? How do you recognize it? 		
15 min	<p>Activity 2: Check your change One of the most challenging moments when shopping or consuming is paying and checking the change. Help your learners to deal with these stressful moments by practicing and training them - from abstract to concrete.</p> <p>There are various activities and exercises to do so, for example in pair work practicing with play money (should be as realistic as possible), by paper-and-pen calculations or by doing online exercises or using learning apps.</p>	Depending on the chosen activities: worksheet, play money, computer and internet to use app (see appendix 3)	<p>Hands on learning</p> <p>Problem solving</p> <p>pair work or small group work</p>
Indiv.	<p>Transfer: Get the practice! A small team challenge should support the transfer to everyday life once again: The learners are given a shopping list and, in small groups, try to buy these products in a store of their choice at the lowest possible price. This can either take place online, with brochures or ideally - if budget permits - in real life. If the exercise takes place online or with brochures, the learners are required to write a corresponding invoice themselves. The winning team is the one that was able to complete the entire shopping list at the lowest price.</p>	Exemplary shopping list (see appendix 4)	<p>Hands on learning</p> <p>Putting learners in a mathematical situation</p>



Suggestions for the teacher

The example presented here should be considered as exemplary and inspirational material presenting a guideline with a high range of possibilities of adapting those suggestions to a specific group of learners or an individual learner with his or her very personal requirements.

In concrete terms, the example CHECK YOUR BILLS could be adapted these ways:

- **Duration:** Depending on the level of numeracy knowledge of the learners, it can be useful to plan a longer duration for the activities, especially the training on how to check your change.

Furthermore, the duration of the last activity in the working plan (transfer) depends a lot on the way it is driven (in a real-life shopping situation or by using prospects resp. online information)

- **Level of difficulty:** Depending on the prior knowledge of the learners or subgroups of learners, different levels of difficulty can be selected for the tasks. For example, the exemplary bills and invoices can be limited to simple additions and multiplications, but can also include discounts or cash discounts (percentages).
- **Learning setting:** Learners who are practiced in reflective and analytical activities can also carry out the activation phase in small groups and finally bring them together in plenary.

Our educational activities aim at numeracy skills being not only memorized, but first of all being practiced and functionally used by the learners in daily life or/and vocational situations. It is therefore recommended to implement the idea of HITS² (higher impacts of teaching skills) as far and often as possible: ...

- ... work with concrete and authentic material that learners will recognize from everyday life situations. When working with this example, learners can collect bills and invoices from their everyday life and bring them along.
- ... ask the learners questions and let them raise questions themselves. It can be crucial to discuss numeracy themes, contexts and numbers.
- ... think of possible ways of transfer: For this concrete example, you can think of combining the learning situation with the example “Can a shopping list help me save money?”

² For general information and explanation on HITS please consult the teacher’s/user’s guide



Appendix

Appendix 1: Pictures and photos for activation



Source: www.pixabay.com [19.11.2023]



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Appendix 2: Bills and invoices (exemplary material)

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BONNUMMER: 784808 013/01 10.07.2023
09:42

01301

640 1157565	Malen nach Zahlen Junior Katze	16,99	16,99
1 Stk			
Mge: 1	GESAMT €		16,99
	ZAHLBETRAG €		16,99
Zahlungsmittel:			
	KARTE €		16,99
	SUMME €		16,99
=====			
NETTO	14,16	MWST 20,0%	2,83

Kassier:
Anna



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Zahlung
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Trx-Id: 2322364
AID: A00000004101
Trx Seg-Nr: 9612
Trx Ref. Nr: 2726038407
Autorisierungs-Nr: 60951
Acq-Id: 99910020
Betrag EUR: 16,9

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1849857	47,00 €
HX 3673/13 SONICARE SERIE 31	
610 ZAHNBUERSTE ELEKTRISCH	
1485774 (2 x 45,99)=	91,96 €
HX 5322/04 SONICARE KIDS CON	
610 ZAHNBUERSTE ELEKTRISCH	
1784555	119,99 €
VAC 485 VAKUUMIERER 15L SCHW	
670 FOLIENSCHNEISSGERAET	

Total	258,97
CENTER GUTSCHEIN	200,00
Attendant-Id:	29020
ECR-Id:	104
ECR-Seq:	138
EFT Ref-No:	00622927
Buchung	
Debit Mastercard Contactless	
XXXXXXXXXXXX6834	
30.05.2023	15:57
Trx-Id:	31430164
Trx. Seq-Cnt:	00622927
Auth. Code:	733794
Acq-Id:	00999100200
Total-TT EUR:	58,97
MASTERCARD	58,97
incl. 20,00% Mwst (b)	43,17
Netto-Warenwert: (b)	215,80

Vielen Dank für Ihren Einkauf!

49015 A018 104 29020 30.05.2023 15:57



4901500677104202305301557




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SPAR BITO APFEL 0,75L	1,39 B
VIPPY MULTI	1,25 B
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1301

640 155 06	4,17	EGO Technic Kipplaster	9,99
	1 Stk		9,99
640 1158110		Johny Joe Grenade Popping +LoI	1,49
	1 Stk		1,49
Mge: 2		GESAMT €	11,48
		ZAHLBETRAG €	11,48
Zahlungsmittel:		BAR €	20,00
		SUMME €	20,00
		RÜCKGABE €	8,52
NETTO	8,32	MWST 20,0%	1,67
NETTO	1,35	MWST 10,0%	0,14

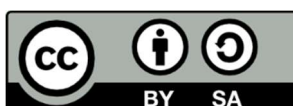
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Source: own photos



Appendix 3: Check your change


Training online: www.matheretter.de/mathe-spiele/kasse


Level: Einfach - Kunde 1 von 32


10,00 €


richtig: 0 | falsch: 0 | Fehler: 0,00 €

Kunde muss zahlen: **64.05 €**

Der Kunde gibt dir: 

Lege das Rückgeld hier hin: 

Dein Kassengeld: 






Zurückgeben

Source: Screenshot from www.matheretter.de/mathe-spiele/kasse [19.11.2023]

Training online: https://online-lernen.levrai.de/mathematik/klasse_5/euro_cent/202_euro_cent_wechselgeld.htm

Dein Einkauf kostet 2,35 Euro. Du zahlst mit einem 5-Euro-Schein. Wie viel Münzen (möglichst wenig) bekommst du zurück?

	<input type="text"/>		<input type="text"/>
	<input type="text"/>		<input type="text"/>
	<input type="text"/>		<input type="text"/>
	<input type="text"/>		<input type="text"/>

Aufgabe überprüfen | Hilfe

Source: Screenshot from <https://online-lernen.levrai.de> [19.11.2023]

Appendix 4: Exemplary shopping list

Shopping list

Amount	Product	Department	PRICE
1 kilo	apples	Fruit and vegetable	
5	bananas	Fruit and vegetable	
2	Cucumbers	Fruit and vegetable	
200 g	Cheese	Dairy products	
1 liter	Milk	Dairy products	
10 bottles	Sparkling water	Beverages	
1 packet	Toast	Bread products	
0,5 kilo	Bread	Bread products	
10 rolls	Toilet paper	Hygiene and household	
2 tubes	Hair shampoo	Hygiene and household	
1 tube	Toothpaste	Hygiene and household	

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