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Resource Bank

Alternative Teaching Resources in Math



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Teacher's Notes

Grade: 4
Topic: Numbers over 1000: Subtraction with/without regrouping
Learning objectives: Students to be able to read and write numbers over 1000 correctly; be able to determine the meaning of digits depending on their place in the number; be able to represent a multi-digit number as a sum of units

The worksheet was designed by: Asociacia Dyslexia - Bulgaria

Level 1	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	1. Listen carefully to the teacher - he will dictate numbers. 2. Write down the numbers one after another. 3. Following the instructions, color the corresponding numbers. 4. Arrange the numbers from largest to smallest. Write the consecutive number in the star above each number.	• The student understands the condition and the given example. • Correctly writes down the digits one after another. • Correctly colours the units, tens, hundreds, thousands, etc. • Is able to check the result obtained.	The teacher observes: • Did the student understand the task correctly? • Did (s)he carefully examine and understand the given example. • Is (s)he able to maintain the necessary concentration. • Is (s)he able to work independently. • Can (s)he write the numbers one after the other • Does (s)he work at a good enough pace?	• A pencil or a pen • Coloured pencils or markers • An eraser • The worksheet	• Give the instructions one at a time – wait for the students to complete one action before giving the instruction for the next. • Look at the given examples together and then discuss them with the students. • Pay attention to how the numbers are written one after the other. • Provide enough time to complete the task. • Pay attention to the fact that it is important to check before moving on to the next task. • Help students who are having difficulty with guiding questions: Did he pay enough attention to the

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			• Does (s)he need additional explanations? • Can (s)he check?		example? If the unit is in the first place from right to left, then in which place is the thousands?

Level 2	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	1. A/ 2. A stargazer has entered the results of his observations of the starry sky on four consecutive nights into a table. On each line, he has noted how many stars he managed to count each night. 3. Examine the example. 4. Study the table carefully. Solve the numbers entered by the stargazer and write them down. 5. Write each of the resulting numbers as a sum of decimal places. 6. Write the same numbers in words. B/ 1. Read the given numbers	• The student has understood the condition of the task • Understands the meaning of the number depending on its place in the number. • Correctly determines units, tens, hundreds, thousands, ten thousand, hundred thousand, million • Able to correctly write the number as a sum of ordinal units. • Can correctly read and write the resulting number in words • Can compare multi-digit numbers • Can self-correct by	The teacher observes: • Does the student understand the instructions? • Can maintain the necessary concentration. • Can work independently. • Is the student aware of the meaning of the numbers depending on their place in the number. • Does the student understand the concepts of “units”, “tens”, “hundreds”, “thousands”, etc. • Can (s)he read and write multi-digit numbers • Can (s)he compare numbers correctly • Can (s)he check	• A pencil or a pen • An eraser • The worksheet	• Give the instructions one at a time – wait for the students to complete one action before giving the next one. • Recall the meaning of the concepts “units”, “tens” and “hundreds”, “thousands”, etc. and how the same digit can mean a different quantity depending on its place in the number. • Look at the given example together and discuss it with the students. • Pay attention to the concepts “units class”, “thousands class”, “millions class”, “billions class” • If the student has difficulty, you can present him with a table with: “units class”, “thousands class”, “millions class”, “billions class” • Provide enough time to complete the task.

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	carefully. 2. In the blank space, write a number that is between them so that the signs for comparison are correct. 3. Arrange the numbers you have written from smallest to largest.	recalling the example • Knows how to do a check	• Does the student's work pace slow down?		• If a student is having difficulty doing it on his own, you can look at the example again, then help him with guiding questions. • Give the students who are having difficulty the opportunity to seek "help from a friend".

Level 3	**Instruction for a student**	**Expected answer**	**Assessment / observation focus**	**Materials / Resources**	**Methodological recommendations**
	1. Read the task condition carefully. 2. Take on the role of a teacher. 3. Check the tests of the three girls: did they solve the tasks correctly? 4. After checking the first test, you can compare the answers with the other two. 5. Note how many correct answers each boy has and how many points he receives. 6. Check. 7. Write the name of the winner on the certificate.	• The student reads the text task independently; • Is able to extract information from the text and write it down correctly; • Is able to perform checks • Is able to correctly assess which answers are correct and which are not. • Is able to compare the results obtained	The teacher observes: • Does the student understand the instructions? • Is (s)he able to maintain the necessary concentration? • Is (s)he able to work independently.	• A pencil or a pen • An eraser • The worksheet	When working with this type of task, advise students to: • Solve the tasks from the first test independently and mark the correct answers • Compare the answers with the answers given in the other two tests. • Make a check

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Name: Grade: Date:

Star Math

Level 1	What do I need to do?	What can I use to solve this task?
	1. Listen carefully to the teacher - he will dictate numbers. 2. Write down the numbers one after the other. 3. Following the instructions, colour in the corresponding numbers. 4. Arrange the numbers from largest to smallest. Write the number in the star above each number.	• A pen or a pencil • Coloured pencils or markers • An eraser

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EXAMPLE:

1. Listen and write: **137 504 262, 344 098 261, ...**
2. Colour following instructions: „The digit of the units – in red, the digit of the thousands – in blue" **137 504 262, ...**
3. Arrange the numbers starting fro the largest::

344 098 261, 137 504 262, ...

1. Listen and write:

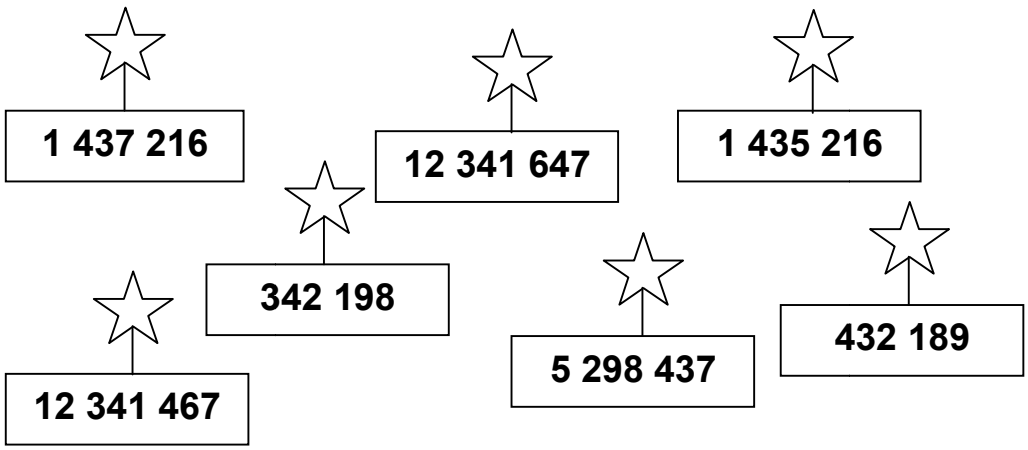
.....

.....

.....

2. - In the first number, colour the tens digit in yellow and the millions digit in green.
   - In the fourth number, colour the hundreds digit in blue and the thousands digit in orange.
   - In the seventh number, colour the tens digit in purple and the hundreds digit in red..

3. Arrange the numbers from largest to smallest. Write the number in the star above each number (from 1 to 7).



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Level 2	 **What do I need to do?**	 **What can I use to solve this task?**
	A/ 1. A stargazer has filled the results of his observations of the starry sky on four consecutive nights into a table. On each line, he has noted how many stars he managed to count each night 2. Look at the example. 3. Study the table carefully. Solve the numbers filled by the stargazer and write them down. 4. Write each of the resulting numbers as a sum of decimal places. Write the same numbers in words. B/ 1. Read the given numbers carefully. 2. In the blank space, write a number that is between them so that the signs for comparison are correct. 3. Arrange the numbers you have written from smallest to largest.	• A pencil • An eraser

EXAMPLE A:

1. Count the stars in each column and write the number:

milions	hundred-thousand	ten-thousand	thousands	hundreds	tens	units
★★★	★★		★★★	★	★	★★

⇨ **3 203 112**

2. Write each of the resulting numbers as a sum of decimal places:

3 203 112 = 3x1 000 000 + 2x100 000 + 0x10 000 + 3x1000 + 1x100 +1x10 + 2x1

3. Write the same numbers in words:

3 203 112 – three million, two hundred three thousand, one hundred twelve

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Night	hundred-million	ten-million	millions	hundred-thousand	ten-thousand	thousands	hundreds	tens	units
1	★	★★★	★	★★★★	★★★	★★★★★★	★		★★
2	★	★★		★★	★★★★	★★★			
3	★★★			★★★★★	★	★★★★★★★	★★★★	★★	★★★★★
4		★	★★	★	★★★★	★★★★★★★★	★★★★★	★★★	★★★★

1. **Count the stars and write:**

Night 1: ..... Night 2: .....

Night 3: ..... Night 4: .....

2. **Write the numbers as a sum of decimal places:**

Night 1: .....

.....

Night 2: .....

.....

Night 3: .....

.....

Night 4: .....

.....

3. **Write the same numbers in words:**

Night 1: .....

.....

Night 2: .....

.....

Night 3: .....

.....

Night 4: .....

.....

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EXAMPLE B/:

1. In the blank space, write a number so that the signs for comparison are correct:

132 645 < ? **< 134 823**

132 645 < 132 961 **< 134 823**

2. Arrange the numbers you have written from smallest to largest.

24 389 > ? > 24 169

24 389 > > 24 169

506 000 < ? < 506 004

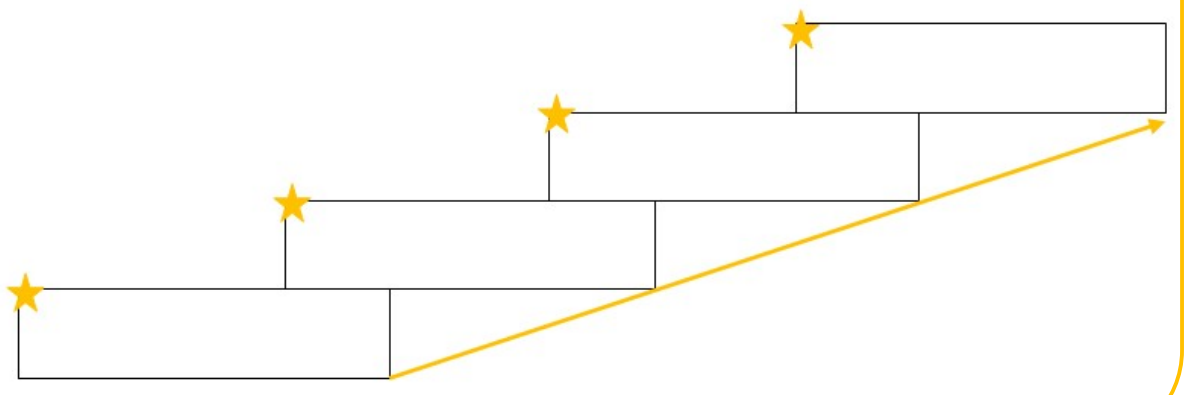
506 000 < < 506 004

1 987 251 > ? > 1 986 093

1 987 251 > > 1 986 093

14 102 648 < ? < 14 102 846

14 102 648 < < 14 102 846



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Level 3	 **What do I need to do?**	 **What can I use to solve this task?**
	1. Read the task condition carefully. 2. Take on the role of a teacher. 3. Check the tests of the three girls: did they solve the tasks correctly? 4. After checking the first test, you can compare the answers with the other two. 5. Note how many correct answers each boy has and how many points he receives. 6. Check. Write the name of the winner on the certificate.	• A pen or a pencil • An eraser

The school organized a star counting competition. Three girls: Stella, Star and Sky participated in it. Each of them solved the tasks independently and marked the answers that she considered correct. Your task is to check the tests of the three girls and mark which of their answers are correct. Each correct answer brings 1 point. Write the name of the winner on the certificate.

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TEST



Name: Stella

Task 1: Which of the following numbers has:
- Tens digit 3
- Hundreds digit 6
- Units digit 3
- Hundreds digit 0
- Tenths digit 2
- Thousands digit 9

a) 363039
✓b) 629033
c) 629303

Task 2: Which of the fillowing comparisons is correct:

a) 1 401 567 < 1 410 567
✓b) 3 678 412 > 3 778 412
c) 871 901 > 871 910

Task 3: How should be written the number:
thirty-four million, seventeen thousand, six hundred one.

a) 34 017 601
✓б) 34 107 601
в) 34 117 610

Number of the correct answers:.....

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TEST



Name: Star

Task 1: Which of the following numbers has:

- Tens digit 3
- Hundreds digit 6
- Units digit 3
- Hundreds digit 0
- Tenths digit 2
- Thousands digit 9

a) 363039
✓b) 629033
c) 629303

Task 2: Which of the fillowing comparisons is correct:

a) 1 401 567 < 1 410 567
b) 3 678 412 > 3 778 412
✓c) 871 901 > 871 910

Task 3: How should be written the number:
thirty-four million, seventeen thousand, six hundred one.

✓a) 34 017 601
б) 34 107 601
в) 34 117 610

Number of the correct answers:.....

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TEST



Name: Sky

Task 1: Which of the following numbers has:
- Tens digit 3
- Hundreds digit 6
- Units digit 3
- Hundreds digit 0
- Tenths digit 2
- Thousands digit 9

a) 363039
✓b) 629033
c) 629303

Task 2: Which of the fillowing comparisons is correct:

✓a) 1 401 567 < 1 410 567
b) 3 678 412 > 3 778 412
c) 871 901 > 871 910

Task 3: How should be written the number:
thirty-four million, seventeen thousand, six hundred one.

✓a) 34 017 601
б) 34 107 601
в) 34 117 610

Number of the correct answers:.....

The certificate

for "Excellent Star Counting" is awarded to

....

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LESSON PLAN

GRADE:4
CURRICULAR AREA: Arithmetic
SUBJECT: Mathematics
LESSON TOPIC: Numbers over 1000 – Addition with regrouping
LESSON TYPE: new knowledge
SPECIFIC SKILLS: revising the knowledge about the ordinality of numbers (units, tens, hundreds, etc.); transferring knowledge about adding two-digit and three-digit numbers to adding multi-digit numbers; applying new knowledge when solving word problems.

THE PURPOSE OF THE LESSON:

OPERATIONAL OBJECTIVES:
O1 review of the algorithm for performing an action of addition without and with passing numbers up to 1000
O2 transfer of knowledge to performing an action of addition of numbers over 1000 without and with passing
O3 skills for correctly performing an action of addition of multi-digit numbers;
O4 skills for applying new knowledge in real-life situations

TEACHING STRATEGY:
Methods and techniques: lecture, brainstorming, questions and answers; old knowledge - new knowledge; exercise, gamification
Teaching aids: worksheet, pen or pencil, eraser, colored pencils or markers
Organizational approaches: frontal, individual, group

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Lesson segments/ steps	Op .O b.	The scientific content of the lesson	Teaching strategy					Evaluation	Timing
			Methods	Teaching aids	Forms of organisation				
					F	G	I		
1. Organizational moment	**-**	- Checking students' readiness for the lesson, - Checking homework	-	-	F				3 – 4 min
2. Gaining attention	**-**	The teacher presents the following situation: “Hello, astronauts! We have an unforgettable space journey ahead of us and we need to prepare well for it. Preparation is difficult, lengthy and requires us to master a lot of new knowledge and skills. The distance to any point in space is huge, and therefore we will work with multi-digit numbers. To begin with, let's remember how we read multi-digit numbers.” The teacher writes several multi-digit numbers on the board (for example, 34 718 219 147) and offers the students to read them.	Brain storm	-	F				5 min
3. Announcing the topic and objectives of the lesson	**-**	Today we will work on adding multi-digit numbers over 1000 – how we write the numbers one under the other; in what order do we perform the addition step by step, when should we transfer “one in mind” to the next order; how do we	-	-	F				3 min

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		apply this skill when solving word problems.							
4. Updating one's knowledge	**O1**	Recalling the concepts of units, tens, hundreds, etc.; what each digit in the number means and what is the value of it depending on its place. The teacher writes down several tasks with the addition of three-digit numbers in sequence: first without crossing; then with crossing the tens. Invites different students to perform the actions on the board while simultaneously "sounding out" each step.	Explanation; Questions and answers; exercise	Interactive/ white board; A scheme showing the steps in adding without and with re-grouping;	F		**I**		7 min
5. Directing learning	O2; O3	Transfer of knowledge about adding three-digit numbers to the new topic - Adding multi-digit numbers. The teacher encourages students to recall and explain the concepts of ten thousand, hundred thousand, million, etc. Explains that adding multi-digit numbers follows the same steps as adding two-digit and three-digit numbers. When the sum of the digits in the corresponding order is less than 10, we write the result without adding "mentally". Students perform the Task from Level 1 of the worksheet (Addition without moving). When the sum of the digits in the	Old knowledge – new knowledge; Questions and answers; Exercise	Worksheet, Level 1 and Level 2	F		**I**		10 min

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		corresponding order is 10 or more, we write the digit of the units in the corresponding order and add “1 mentally” to the next larger order. The teacher explains that when adding multi-digit numbers, it is possible to move to a higher order more than once (from the units to the tens; from the tens to the hundreds, etc.); gives an example. Together with the students, they examine and discuss the proposed example. Students perform the task from Level 2 of the worksheet.							
6. Aiming for performance	O4	The teacher asks questions to remind students of the rule for finding the unknown reducible. Together they look at the proposed example. Students solve Problem A/ from Level 3 of the worksheet. Students work on Problems B/ and C/ from Level 3 of the worksheet, applying their new knowledge of adding multi-digit numbers when solving the word problems /individually or in pairs/.	Exercise; Applying the new knowledge in real situation	Worksheet, Level 3		**G**	**I**		7 min
7. Concluding the Activity/ Homework	O2, O3, O4	At the end of the lesson, the teacher can offer the students a competitive game to apply the new knowledge. The class is divided into “crews” of 4	Exercises; gamification	A list with additional tasks “Star Map”		**G**			5-6 min

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		students. Each “crew” receives a star map with a constellation drawn and 3 or 4 control points (stars) marked. To move from one star to another, the “crew” must sequentially calculate additions until it reaches the final point. The winner is the “crew” that first solves all the problems correctly and reaches the goal.							

F = frontal G = group I = individual

WORKSHEET Sample: Numbers over 1000 – Addition with regrouping

These worksheets are prepared in 3 levels according to the principle "From easy to difficult":

Level 1: Adding multi-digit numbers without crossing (Easy)
• Calculate the sum by following the algorithm.
• Find the hidden word.

Level 2: Adding multi-digit numbers with crossing (Intermediate level)
• Calculate the sum by following the algorithm.
• Find the distances between celestial bodies.

Level 3: Word problems with application of new knowledge (Difficult)
• Finding an unknown reducible (requiring addition of the difference and the reducible).
• Calculating the result by adding multi-digit numbers.

Additional task:
A competitive game, in groups, requiring application of new knowledge.

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Teacher's Notes

Grade: 4
Topic: Numbers over 1000: Subtraction with/without regrouping
Learning objectives: to review the algorithm for adding two-digit and three-digit numbers; to transfer knowledge to adding multi-digit numbers (over 1000) without and with transitions; to apply new knowledge in real-life situations

The worksheet was designed by: Asociacia Dyslexia - Bulgaria

Level 1	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	1. Study the example carefully. 2. Write the numbers one below the other, taking care to place the digits correctly - units under units, tens under tens, etc. 3. Perform the addition in the direction from the units to the tens and hundreds, writing the result in the appropriate column. 4. If you think it will be easier for you, mark the digits of the units, tens, hundreds, etc. in different colors, as shown in the example. 5. In the circle opposite	• The student understands the condition and the given example. • Correctly writes the numbers one under the other. • Correctly performs the addition operation by observing the direction from right to left and writes the result in the corresponding column. • Correctly colors the units, tens, hundreds, thousandths, etc. • Is able to check the	The teacher observes: • Did the student understand the task correctly? • Did (s)he carefully examine and understand the given example? • Is (s)he able to maintain the necessary concentration? • Is (s)he able to work independently? • Is he/she able to write the numbers one under the other? • Does (s)he work at a good enough	• A pencil or a pen • Coloured pencils or markers • An eraser • The worksheet	• Give the instructions one at a time – wait for the students to complete one action before giving instructions for the next. • Review the given examples together with the students and discuss them. • Pay attention to how the numbers are written one under the other, following the rule – units under units, tens under tens, hundreds under hundreds, etc. • Explain again the direction of the addition operation. • Provide enough time to complete the task. • Note that it is important to check before moving on to the next task.

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	each answer, write the corresponding letter. 6. Then arrange the letters by writing each in the box with the corresponding color and read the word you get. 7. Do you know the name of what it is? Circle the correct answer.	obtained result.	pace? • Does (s)he need additional explanations? • Is (s)he able to check?		• Help students who are having difficulty with guiding questions or remind them again of the steps for performing the addition operation.

Level 2	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	1. Look carefully at the example. 2. Write the numbers in the table one below the other, taking care to place the digits correctly in the columns: units under units, tens under tens, etc. 3. When the sum of the units digits is a two-digit number, we write the units digit and carry the "1 mentally" to the tens place. We do the same when adding the tens, hundreds, etc. 4. If you do the steps	• The student correctly places the digits one below the other • Understands the meaning of the digit depending on its place in the number. • Correctly identifies units, tens, hundreds, thousands, etc. • Understands the meaning of the concept of "sum" • Able to correctly add by transferring the tens. Puts the units digit in the	The teacher observes: • Does the student understand the instructions. • Is (s)he able to maintain the necessary concentration. • Is (s)he able to work independently. • Is (s)he aware of the meaning of the digits depending on their place in the number. • Does (s)he understand the concepts of "units" and "tens" and "hundreds",	• A pencil or a pen • An eraser • The worksheet	• Give the instructions one at a time – wait for the students to complete one action before giving the instruction for the next. • Recall the meaning of the concepts of "units", "tens" and "hundreds", "thousands", etc. and how the same digit can mean a different quantity depending on its place in the number. • Review the given example together and discuss it with the students. • Provide enough time to complete the task. • If a student has difficulty doing it independently, you

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	correctly, you will find the actual distance in kilometres between some celestial bodies in the solar system	correct place and transfers "one mentally" to the next place. • Can self-correct by checking with the example • Copes with addition tasks with carrying the decimal. • Knows how to check	"thousands", etc. • Can (s)he correctly perform the addition operation if (s)he has to write down "one mentally" in the next row. • Does (s)he know how to check the result • Does the student's work pace slow down		can review the example again, then help him with guiding questions. What is the sum of the units? Is the resulting number greater than ten? If it is greater, what do we do in this case? "Where should we write down one in our mind? What should we do? • Give the students who are having difficulty the opportunity to seek "help from a friend".

Level 3	**Instruction for a student**	**Expected answer**	**Assessment / observation focus**	**Materials / Resources**	**Methodological recommendations**
	1. Consider the example and remember how we find the unknown reducible. When we transfer a number to the other side of the "=" sign, we change the sign ("+" becomes "-" and vice versa). 2. If it is easier for you, write the numbers one below the other. 3. Perform the action and enter the result in the table.	• The student reads the text task independently; • Is able to extract information from the text and write it down correctly; • When necessary, is able to create a diagram to help understand the task. • Correctly determines which arithmetic operation to use.	The teacher observes: • Does the student understand the instructions. • Is (s)he able to maintain the necessary concentration. • Can (s)he work independently? • Can (s)he extract key information important for solving the problem? • Can (s)he correctly determine which	• A pencil or a pen • An eraser • The worksheet	When working with text problems, advise students to: • Carefully read the problem • Determine what the key words in the text are. • Correctly record what is given and what (s)he needs to find • To make a diagram or drawing /to try to visualize the task/ • To correctly select the arithmetic operation or operations. • To make a check

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	B/ and C/ 4. Read the condition of the problems carefully. 5. Think about what arithmetic operations you will perform and in what sequence to find the answer. 6. If it is easier for you, write the numbers one below the other.	• Correctly performs the arithmetic operations and writes down the result	arithmetic operation to use to solve the problem? • Can (s)he make a diagram that will help him solve the problem?		

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Име: Клас: Дата:

Space Mission

Level 1	 **What do I need to do?**	 **What can I use to solve this task?**
	1. Study the example. 2. Write the numbers one under the other, making sure to place the digits correctly – units under units, tens under tens, etc. 3. Do the addition from the units to the tens and hundreds, writing the result in the appropriate column. 4. If you think it would be helpful, use colours - mark the digits of the units, tens, hundreds, etc. in different colours, as shown in the example. 5. In the circle after you calculate the answer, write the corresponding letter. 6. Arrange the letters by writing each in the box with the corresponding colour. 7. Read the word you get. 8. Do you know the name of what it is? Circle the correct answer.	• A pencil or a pen • An eraser • Coloured pencils or markers

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EXAMPLE: Calculate

142 507 + 1 220 421 = _1 362 928_

	millions	hundred-thousand	ten-thousand	thousands	hundreds	tens	units
		1	4	2	5	0	7
+	1	2	2	0	4	2	1
	1	3	6	2	9	2	8

848 597 → S	776 768 → A	599 889 → R	689 796 → M

356 218 + 243 671 =

= _____

	millions	hundred-thousand	ten-thousand	thousands	hundreds	tens	units
+							

612 443 + 164 325 =

= _____

	millions	hundred-thousand	ten-thousand	thousands	hundreds	tens	units
+							

528 264 + 320 333 =

= _____

	millions	hundred-thousand	ten-thousand	thousands	hundreds	tens	units
+							

253 706 + 436 090 =

= _____

	millions	hundred-thousand	ten-thousand	thousands	hundreds	tens	units
+							

a) waterfowl
b) planet of the solar system
c) god of the Sun

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Level 2	 **What do I need to do?**	 **What can I use to solve this task?**
	1. Study carefully the example. 2. Write the numbers in the table one below the other, taking care to place the digits correctly in the columns. – units under units, tens under tens, etc. 3. When the sum of the digits of the units is a two-digit number, we write the digit of the units and carry the “1 mentally” to the tens place. We do the same when adding the digits of the tens, hundreds, etc. 4. If you do the steps correctly, you will find the actual distance in kilometres between some celestial bodies in the solar system.	• A pencil or a pen • An eraser

EXAMPLE: Calculate

654 817 + 1 382 594 = _2 037 411_

	милиони	стохиляди	десето-хиляди	хиляди	стотици	десетици	единици
	(1)	(1)		(1)	(1)	(1)	
		6	5	4	8	1	7
+	1	3	8	2	5	9	4
	2	**0**	**3**	**7**	**4**	**1**	**1**

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45 962 586 + 23 854 493 =

= _____ km

/distance from Mercury
to the Sun/



95 684 852 + 12 256 997 =

= _____ km

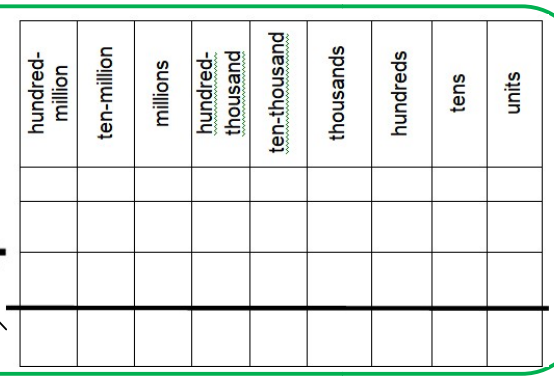
/distance from Venus
to the Sun/



68 178 856 + 83 918 845 =

= _____ km

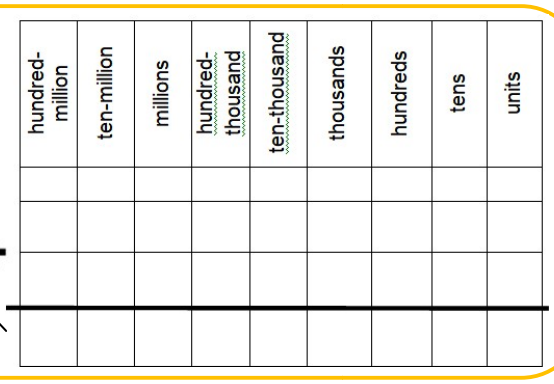
/distance from Earth
to the Sun/



163 459 395 + 85 769 335 =

= _____ km

/distance from Mars
to the Sun/



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Level 3	 **What do I need to do?**	 **What can I use to solve this task?**
	A/ 1. Consider the example and remember how we find the unknown minuend. When we transfer a number to the other side of the "=" sign, we change the sign ("+" becomes "-" and vice versa). 2. If it is easier for you, write the numbers one below the other. 3. Perform the action and enter the result in the table. B/ and C/ 1. Read the tasks carefully. 2. Think about what arithmetic operations you will perform and in what sequence to find the answer. 3. If it is easier for you, write the numbers one below the other.	• A pencil or a pen • Eraser • Additional sheet of paper if needed to make calculations

ПРИПОМНИ СИ:

$$x - 27 = 15 \Rightarrow x = 15 + 27 \Rightarrow x = 42$$

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A/ Find the unknown. Enter the result in the table. If you worked correctly, you will learn on what date the crew of the Artemis 2 mission returned to Earth after a 10-day tour around the Moon.

x – 1 517 099 = 8 524 927

x = _____

x = _____

d	d	m	m	y	y	y	y

B/ The Apollo mission reached the Moon in 3 days. On the first day it covered 123,945 km, on the second day - 32,329 km more, and on the third day - the remaining 104,181 km. Find the distance from the Earth to the Moon.

_____

_____

_____

_____

C/ Galatea, a satellite of the planet Neptune, is located 61,950 km from it, which is 292,810 km less than the distance between Neptune and its other satellite, Triton. Calculate the distance between Triton and the planet Neptune?

_____

_____

_____

_____

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LESSON PLAN

- **GRADE:** 4th Grade
- **LEARNING AREA:** Arithmetic (Numbers and Operations)
- **SUBJECT:** Mathematics
- **TOPIC:** Written subtraction of multi-digit numbers with regrouping / borrowing
- **LESSON TYPE:** Knowledge Acquisition, Consolidation, and Application
- **DURATION:** 40 + 40 minutes (2 lesson periods)

Part I: Learning Objectives and Competences

Lesson Goal: Students learn to reliably calculate large multi-digit numbers (up to 100,000) using the standardized written subtraction method (take-away or comparison/complementary method). They utilize the strategy of "regrouping" (borrowing) when a digit in the minuend is smaller than the corresponding digit in the subtrahend, and they systematically apply this algorithm to larger number ranges.

Operationalized Learning Objectives (Learning Outcomes):

- **LO1:** Students enter multi-digit numbers into the written calculation grid according to their place value (ones under ones, tens under tens, etc.).
- **LO2:** Students execute the written subtraction algorithm with regrouping step-by-step (from right to left) without errors and record the carry-over digit correctly.
- **LO3:** Students identify potential sources of errors when calculating with multiple zeros (subtracting across zeros) and apply place value logic confidently.
- **LO4:** Students solve complex, real-world word problems and mathematical number riddles by independently structuring the learned subtraction algorithm.

Part II: Didactic-Methodical Framework

- **Methods and Techniques:** Teacher explanation/lecture, guided classroom discussion (question-and-answer), cognitive modeling (working with the "Place Value Change Model"), Gamification (The Game: "The Detective Code Breakers").

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- **Teaching Materials and Media:** Magnetic place value cards for the blackboard, colored markers to mark the carry-over/regrouping, a structured calculation template on the Smartboard, differentiated worksheets.
- **Social Forms:** Whole-class instruction (Plenary for demonstrating the calculation steps), partner work (collaborative error analysis), and individual work.

Part III: Lesson Progression (Table Model)

Phase	Objective	Content	Method	Media	Social Form	Duration
1. Introduction & Organization	—	Ensuring classroom order. Students prepare their math notebooks, pencils, rulers, and colored pencils.	Discussion	—	WC	5 min
2. Motivation & Lead-in	—	The teacher shows a picture of a stadium scoreboard: "There are 43,250 fans in the stadium. 18,162 fans are supporting the away team. How many home fans are there? This is too large for mental math!"	Problem Statement / Impulse	Image card on Smartboard	WC	5 min
3. Goal Orientation	—	Announcement of today's mission: We will become masters of written subtraction with huge numbers. We will learn the trick of "regrouping" to crack every minus problem without mistakes.	Teacher Explanation	—	WC	5 min
4. Activating Prior Knowledge	LO1	Quick-fire math in the plenary: The teacher reviews simple 3rd-grade written subtraction without regrouping (e.g., 458 - 123) to reinforce aligning	Mental Math / Place Value Quiz	Tens and Hundreds cards	WC	5 min

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Phase	Objective	Content	Method	Media	Social Form	Duration
		numbers by place value.				
5. Acquisition Phase	LO1, LO2, LO3	1. Multi-digit subtraction (4,325 - 1,816): We line up the numbers vertically. 5 ones minus 6 ones does not work. We regroup 1 ten into 10 ones. 15 - 6 = 9. We note the carry-over 1 in the tens column. 2. Subtraction across zeros (50,004 - 12,345): Systematic regrouping across multiple place values. The teacher models the exact written and thinking process on the board.	Demonstration & Step-by-Step Practice	Magnetic place value board	WC / PW (Partner)	30 min
6. Consolidation / Application	LO3, LO4	Students work on the prepared worksheet "Written Subtraction: Calculating Multi-Digit Numbers with Unbundling". The exercises are tiered from easy to difficult.	Independent Application	Worksheets	IW	20 min
7. Wrap-up & Homework	—	Summary: The teacher writes a problem on the board (8,431 - 2,512). A student explains the first regrouping step at the ones place out loud. Homework: Solve the problems in the calculation template.	Summary	Blackboard	WC	10 min

Abbreviations for Social Forms: WC: Whole Class (Plenary), IW: Individual Work, PW: Partner Work, GW: Group Work

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Part IV: Template for Accompanying Material (Assessment & Evaluation)

Worksheet Draft: "Written Subtraction: Calculating Multi-Digit Numbers with Unbundling"

This worksheet is structured into three tiers based on the principle of "from easy to difficult":

TIER 1: Clever Regrouping (Easiest)

- **Task:** Look closely at the place values. At which step do you need to regroup a ten, hundred, or thousand? Check the box!
- **Problem A:** 5,672 - 1,234 -> Do we need to regroup at the ones place?

  [ ] YES or [ ] NO

- **Problem B:** 8,345 - 2,512 -> Do we need to regroup at the hundreds place?

  [ ] YES or [ ] NO

- **Problem C:** 4,005 - 1,234 -> Do we need to regroup across the zeros?

  [ ] YES or [ ] NO

TIER 2: Written Calculation with Template (Intermediate)

- **Task:** Write the numbers vertically into the template according to their place value and calculate the result. Do not forget the carry-over digits!
- **Calculate:** 73,452 - 28,165 = _____

Plaintext

```
[ TTh ]  [ Th ]  [ H ]  [ T ]  [ O ]
   7       3      4      5      2
-  2       8      1      6      5
---------------------------------------
```

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💻 Thinking Box (Carry): [ ][ ][ ][ ]

[ ] [ ] [ ] [ ] [ ]
(Note: TTh = Ten Thousands, Th = Thousands, H = Hundreds, T = Tens, O = Ones)

- **Calculate:** 50,004 - 13,456 = _____

TIER 3: Create and Solve (Difficult)

- **Task:** Solve the tricky mathematical factory riddle and draw your very own Subtraction Monster!
- **Number Riddle:** A large logistics center has 85,400 packages in stock in the morning. By noon, exactly 27,150 packages are loaded into delivery vans. How many packages are left in the warehouse?

  (Tip: Write the numbers neatly beneath each other and remember to subtract across zeros!)

  Answer: There are still _____ packages left in the warehouse.

- **Creative Part:** In the empty space next to it, draw your own personal "Subtraction Monster" based on the following conditions:
  1. The monster has as many eyes as the result of the equation: 62 - 54 = _____ eyes.
  2. Draw a number of arms for the monster that corresponds exactly to the result of: 35 - 29 = _____ arms.

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Teacher's Notes

- Class: 4th Grade
- Topic: Written Subtraction – Calculating Multi-Digit Numbers with Regrouping
- Learning Objectives:

 Students identify where regrouping is necessary and explain exchanges using the place value system.

 Students align numbers by place value, subtract from right to left, and record regrouping steps, including regrouping across zeros.

 Students solve a subtraction word problem, check their answer using addition, and reflect on their work.

- Worksheet Created By: GEDONSOFT GMBH

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TASK 1: Clever Regrouping (Checking the Exchanges)	**Instruction for the Student**	**Expected Answer**	Focus of Assessment / Observation	Materials / Resources	Methodological Recommendations
	"Check the place values. Do you need to regroup at the indicated positions? Tick YES or NO and explain the exchange."	• a) YES: 2 < 4. Exchange one ten for 10 ones. 5,672 − 1,234 = 4,438. • b) YES: 3 < 5. Exchange one thousand for 10 hundreds. 8,345 − 2,512 = 5,833. • c) YES: Regroup across the zeros. Represent 4,005 as 3 thousands, 9 hundreds, 10 tens and 5 ones. 4,005 − 1,234 = 2,771.	Does the student identify when regrouping is required? Can they explain that 1 ten equals 10 ones and 1 thousand equals 10 hundreds? In c), do they recognize that the ones column does not require an exchange?	Student worksheet, colored pencils; place value materials if needed.	□ Easier: Model each exchange with place value materials and highlight the affected digits. □ Challenging: Complete the calculations and check the answers using addition. □ Note: The commas in the worksheet are English thousands separators, not decimal commas.

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TASK 2: Written Calculation Using the Place Value Template	Instruction for the Student	Expected Answer	Focus of Assessment / Observation	Materials / Resources	Methodological Recommendations
	"Write the numbers underneath each other, aligned by place value. Subtract from right to left. Record each regrouping step in the thinking box."	The templates show 73,452 and 50,004. The numbers to subtract are missing, so no unique numerical answer can be given. Once these are supplied, expect correct place value alignment, clearly recorded regrouping steps and an addition check.	Does the student align ones with ones, tens with tens, and so on? Do they adjust the column that supplies the exchange? Can they regroup across zeros while preserving the value of the original number?	Student worksheet, pencil, eraser; place value chart and place value materials.	□ Before use: Supply the missing subtrahends and remove the placeholder □text□. Use clear headings: TTh | Th | H | T | O. The worksheet uses T twice. □ Easier: Demonstrate a calculation requiring only one exchange. □ Challenging: Provide a subtraction from 50,004 that requires regrouping across several zeros and ask students to explain each step.

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TASK 3: Tricky Factory Riddle and Your Subtraction Monster	Instruction for the Student	Expected Answer	Focus of Assessment / Observation	Materials / Resources	Methodological Recommendations
	"Calculate how many packages remain in the warehouse. Set out the subtraction clearly and check your answer. Then draw your monster according to the given rules."	**85,400 − 27,150 = 58,250. Answer: There are 58,250 packages left in the warehouse. Check: 58,250 + 27,150 = 85,400. Monster: The rules specifying the numbers of eyes and arms are blank in the worksheet. No fixed drawing requirements can be determined until these are supplied.**	Does the student select subtraction to find the remaining quantity? Do they regroup correctly in the tens and thousands columns? Do they write an answer sentence and check by addition? Does their drawing follow the completed rules?	Student worksheet, pencil, eraser and colored pencils.	**• Easier: Illustrate "starting stock − dispatched packages = remaining stock" with a simple diagram and highlight place values. • Before use: Complete the missing monster rules. Optional suggestion: Eyes = the thousands digit of the answer (8); arms = the hundreds digit (2). These suggested rules are not in the original worksheet. • Challenging: Ask students to create their own warehouse problem and check the solution using addition.**

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Name: Class: Date:

Written Subtraction: Calculating Multi-Digit Numbers with Unbundling

TASK 1: Clever Unbundling (Controlling Regrouping)	What do I need to do?	What materials do I need?
	Before we subtract large numbers from one another, we check the place values. Look closely at the minuends and subtrahends: When do we have to unbundle a ten, hundred, or thousand from the neighbor? Check the box!	Colored pencils

- **a) Task A:** 5,672 - 1,234 □□ Do we need to unbundle at the ones place (because 2 is smaller than 4)?
  - [ ] YES, we must unbundle!
  - [ ] NO, no swap needed.
- **b) Task B:** 8,345 - 2,512 □□ Do we need to unbundle at the hundreds place (because 3 is smaller than 5)?
  - [ ] YES, we must unbundle!
  - [ ] NO, no swap needed.
- **c) Task C:** 4,005 - 1,234 □□ Do we need to unbundle across the zeros?
  - [ ] YES, we must unbundle!
  - [ ] NO, no swap needed.

Self-Assessment	Teacher's Comments
[ ] I finished the task.	
[ ] I checked my work.	

How did I do? (Please circle):





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TASK 2: Written Calculation with the Place Value Template	 **What do I need to do?**	 **What materials do I need?**
	Write the large numbers under one another correctly aligned by place value into the template (ones under ones, tens under tens...). Subtract the numbers from right to left and enter the carries neatly into the thinking box!	**Pencil.**

Multi-Digit Subtraction

FAMILY 1: Enter the partial steps neatly into the template:

1. 73,452 − 28,165 = _____

[TT] [T] [H] [T] [O]
7 3 4 5 2
− 2 8 1 6 5

Thinking Box (Borrow): [ ][ ][ ][ ]

[ ] [ ] [ ] [ ] [ ]

---

2. 50,004 − 13,456 = _____

[TT] [T] [H] [T] [O]
5 0 0 0 4
− 1 3 4 5 6

Thinking Box (Borrow): [ ][ ][ ][ ]

[ ] [ ] [ ] [ ] [ ]

Note:

TT = Ten Thousands T = Thousands H = Hundreds T = Tens O = Ones

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Self-Assessment	Teacher's Comments
[ ] I finished the task.	
[ ] I checked my work.	

How did I do? (Please circle):





TASK 3: Tricky Factory Riddle and Your Subtraction Monster	**What do I need to do?** First, solve the tricky mathematical word riddle from the logistics center. Next, use the large free space to draw your very own Subtraction Monster according to the exact 4th-grade math rules!	**What materials do I need?** Pencil, eraser, and colored pencils.

1. Word Problem

A large logistics center has **85,400** packages in stock in the morning.

By noon, exactly **27,150** packages are loaded into delivery vans.

How many packages are still left in the warehouse after that?

(Hint: Write the numbers neatly under one another and remember zero-subtraction!)

Answer: There are still _____ packages left in the warehouse.

[Large free space for drawing your Subtraction Monster]

Rules for your monster:

- **Number of EYES:** Solve the written subtraction: 62−54. Your monster has exactly _____ eyes.
- **Number of ARMS:** Draw a number of arms that corresponds exactly to the result of 35−29. Your monster has exactly _____ arms.

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Self-Assessment	Teacher's Comments
[ ] I finished the task.	
[ ] I checked my work.	

How did I do? (Please circle):





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Lesson Plan

- **COURSE:** Mathematics
- **GRADE:** 4th Grade
- **UNIT: Numbers and Operations / Multiplication**
- **TOPIC: Multi-digit multiplication — 3-digit × 1-digit, 2-digit × 2-digit, 3-digit × 2-digit (Blue Room, Green Room, Control Tower)**
- **DURATION:** 40 Minutes (1 Lesson Hour)

PART I: OPERATIONAL OBJECTIVES (Student Outcomes)

- **O1: Multiplies a 3-digit natural number by a 1-digit number with correct place-value alignment and regrouping (456 × 6, 708 × 7).**
- **O2: Multiplies two 2-digit numbers by splitting tens and ones and adding the partial products (36 × 24, 48 × 15).**
- **O3: Multiplies a 3-digit number by a 2-digit number and checks the product with the split method (125 × 16 = 125×10 + 125×6).**
- **O4: Explains the multiplication steps in the story context (castle doors, product codes) orally and in writing.**

PART II: TEACHING STRATEGY

- **Methods and Techniques: Lecture, Question-Answer, Guided practice, Story-based discovery, Educational game (Unlock the Door).**
- **Teaching Tools: Multiplication Castle worksheet, place-value columns (Th, H, T, O), chalkboard, coloured pencils, highlighters.**
- **Organizational Approaches: Frontal (F), Pair work, and Individual (I) work.**

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PART III: LESSON FLOW TABLE

A guide on how the teacher will implement each step in the classroom:

Lesson Stages	Op. Ob	Scientific Content & Implementation Guide	Teaching Strategy	Duration
1. Organization & Intro	-	Enter the classroom with an energetic greeting. While taking attendance, ask students to take out their math notebooks and pencils.	Conversation (F)	3 min
2. Engagement	-	Show the Blue Room door on the board with 456 × 6. Teacher: "Last year you multiplied smaller numbers. Today the castle opens only if we find the product codes. Who can say what 456 × 6 might be close to?"	Question-Answer (F)	5 min
3. Topic & Aim	-	Write the title "Multiplication Castle" on the board. Goal: "By the end of this lesson you can multiply 3-digit × 1-digit and 2-digit × 2-digit, and check a 3-digit × 2-digit product."	Lecture (F)	2 min
4. Activating Prior Knowledge	O1	Review 3-digit × 1-digit with a short example on the board: 123 × 4. Recall ones first, then carry, then tens and hundreds. Teacher: "What happens if there is a 0 in the tens, like 708?"	Brainstorming (F)	5 min
5. Learning Process & Guidance	O1, O2, O3, O4	**Task 1 Blue Room: 456 × 6 = 2736. Model the column layout (Th H T O). Green Room: 708 × 7 = 4956. Stress the zero in the tens. Task 2: split 24 = 20+4 and 15 = 10+5. 36×24=864, 48×15=720. Task 3 Control Tower: 125×16 = 125×10 + 125×6 = 1250+750=2000. No division in this lesson**	Demonstration (F)	15 min
6. Performance Assessment / Game	O1, O2	**Game — Unlock the Door: pairs get a product code (2736, 4956, 864, 720 or 2000). They must name the matching castle operation. First correct pair scores a point.**	Application (Group Work)	7 min
7. Closure & Homework	O3, O4	Summarise: ones first, carry, tens+ones split, check with 10+ones. Exit ticket: write 456 × 6 and the product in words (two thousand seven hundred thirty-six).	Summary (F / Individual)	3 min

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2. WORKSHEET — Multiplication Castle

Student sheet: Blue Room, Green Room, Control Tower

Task: Unlock the rooms. Multiplication only.

TASK 1: Blue Room and Green Room (3-digit × 1-digit)

Door 1 Blue Room: 456 × 6. Hint: 6×6=36, write 6 carry 3.

- **Blue Room Product: _____ Expected: 2736**
- **Door 2 Green Room: 708 × 7. Hint: 7×8=56, write 6 carry 5. Do not skip the 0.**
- **Green Room Product: _____ Expected: 4956**

TASK 2: Green Room (2-digit × 2-digit)

Split tens and ones. Add the two partial products.

Operation A: 36 × 24 (36 guards × 24 hours)

36 × 20 = _____ 36 × 4 = _____ Product = _____ Expected: 864

Operation B: 48 × 15 (48 tables × 15 lanterns)

48 × 10 = _____ 48 × 5 = _____ Product = _____ Expected: 720

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TASK 3: Control Tower (3-digit × 2-digit)

- **The machine needs 2000 power. Check with the split: product = (number × tens) + (number × ones).**
  - **125 × 16**

    125 × 10 = _____

    125 × 6 = _____

    Product = _____ + _____ = _____ Expected: 2000

  -

Use the Multiplication Castle student worksheet and the matching teacher's notes.

Abbreviations: F: Frontal (Whole Class), I: Individual (Individual Work)

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Teacher's Notes

Grade: 4th Grade
Topic: Multiplication Castle — Blue Room, Green Room, Control Tower (3-digit × 1-digit, 2-digit × 2-digit, 3-digit × 2-digit). Multiplication only.
Learning objective(s): 1) Multiply a 3-digit number by a 1-digit number with correct regrouping. 2) Multiply two 2-digit numbers using tens + ones partial products. 3) Multiply a 3-digit number by a 2-digit number and check with the split 10 + ones.
The worksheet was designed by: CTA

Level 1 Blue / Green Room	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Unlock Door 1 and Door 2. Multiply ones first, carry, then tens and hundreds.	Door 1 Blue: 456 × 6 = 2736 Door 2 Green: 708 × 7 = 4956	Correct carry. Zero in the tens of 708 is not skipped.	Student worksheet, pencil, coloured pencils.	Support: colour Th / H / T / O columns. Challenge: write 2736 and 4956 in expanded form.

Level 2 Green Room	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Split the second factor into tens and ones. Find two partial products. Add them.	A: 36 × 24 = 864 (36×20=720, 36×4=144) B: 48 × 15 = 720 (48×10=480, 48×5=240)	Student writes 36×20 as 720, not 72. Both partial products are added.	Worksheet, highlighters, pencil.	Support: area model. Challenge: estimate 40×20=800, compare with 864.

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Level 3 Control Tower	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Find 125 × 16. Check with 125×10 + 125×6. The machine needs 2000 power.	125 × 10 = 1250 125 × 6 = 750 1250 + 750 = 2000	Both parts of the split are used. Product is 2000.	Worksheet, pencil, ruler.	Support: 16 = 10 + 6. Challenge: also try (100+25)×16.

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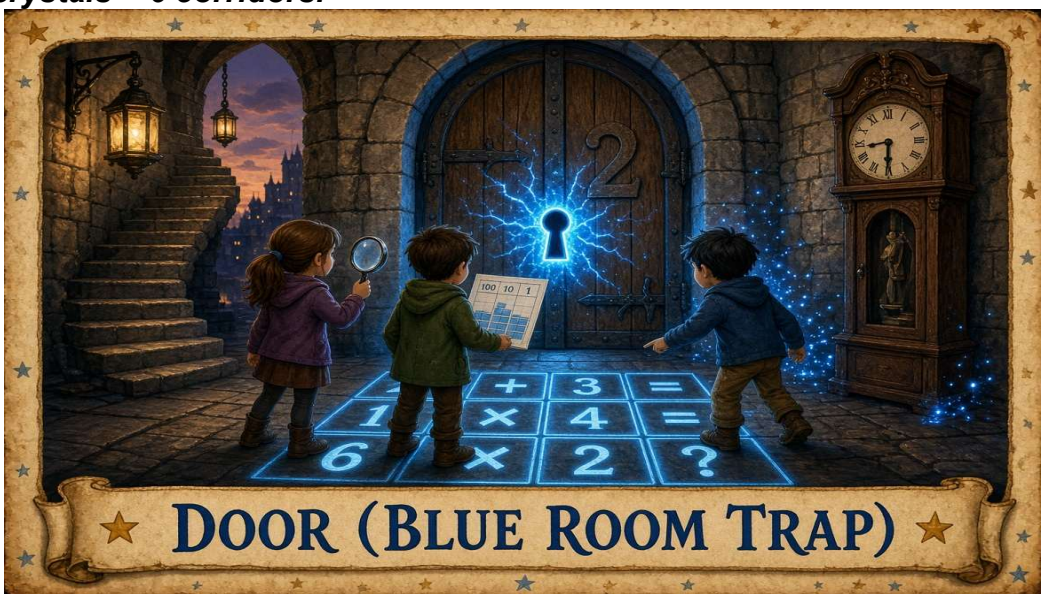
Name: Grade: Date:

Multiplication Castle — Blue and Green Room (3-digit × 1-digit)

TASK 1: Blue Room — 3-digit × 1-digit	What do I need to do?	Materials Needed?
	The castle lights are out. Keep hundreds, tens and ones in the boxes. Multiply ones first, carry, then tens and hundreds.	Your favorite colored pencils and a pencil.

Door 1 (Blue Room): 456 × 6 = ?

Hint: 6 × 6 = 36. Write 6 in the ones and carry 3. Then 6 × 5 plus the carry. 456 crystals × 6 corridors.



Th	H	T	O
	4	5	6
×			6

____ ____ ____ ____

Blue Room Product: _____

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Door 2 (Green Room): 708 × 7 = ?



Hint: Secret safe 708 × 7. 7 × 8 = 56. Write 6, carry 5. Do not skip the 0 in the tens.

	Th	H	T	O
		7	0	8
×				7

Green Room Product: _____

Self-Evaluation	Teacher's Comments
I finished the task.	
I checked my work.	

How did I do? (Circle one):





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TASK 2: Green Room — two-digit × two-digit	 **What do I need to do?**	 **Materials Needed?**
	36 guards × 24 hours. Split 24 = 20 + 4. Two partial products. Add them.	**Highlighters and a pencil.**

Operation A: 36 × 24 = ?

Hint: 24 = 20 + 4. First 36 × 20, then 36 × 4. Add.

Your Work Area:

36 × 20 = _____ 36 × 4 = _____ Product = _____

Operation B: 48 × 15 = ?

Hint: 48 tables, 15 lanterns. 15 = 10 + 5. First 48 × 10, then 48 × 5.

Your Work Area:

48 × 10 = _____ 48 × 5 = _____ Product = _____

Self-Evaluation	Teacher's Comments
I finished the task.	
I checked my work.	

How did I do? (Circle one):





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TASK 3: Control Tower — 125 × 16	What do I need to do?	Materials Needed?
	The machine needs 2000 power. Multiply, then check with the split: Product = (number × tens) + (number × ones).	**A pencil and a ruler to draw straight lines.**



The Big Challenge: 125 × 16 = ?

Hint: 125 energy cells × 16 power. 16 = 10 + 6.

Your Work Area:

Product: _____ Check: _____

Magic Check Machine:

125 × 10 = _____

125 × 6 = _____

_____ + _____ = _____

If the product is 2000, the tower lights green. The castle is on!

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Self-Evaluation	Teacher's Comments
I finished the task.	
I checked my work.	

How did I do? (Circle one):





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Lesson Plan

- **GRADE:** 4th Grade
- **CURRICULUM AREA:** Mathematics
- **COURSE:** Mathematics
- **LESSON TOPIC:** Division with Multi-Digit Numbers
- **LESSON TYPE:** New Knowledge Acquisition and Application
- **SPECIAL SKILLS:** Algorithmic thinking, numerical processing skills, and interpreting remainders.
- **LESSON AIM:** To enable students to comprehend the division algorithm (with and without remainders) for dividing three-digit numbers by one- and two-digit numbers.

OPERATIONAL OBJECTIVES:

- **O1:** Performs the operation of dividing three-digit numbers by one-digit numbers.
- **O2:** Performs the operation of dividing three-digit numbers by two-digit numbers.
- **O3:** Explains the relationship between "dividend, divisor, quotient, and remainder" in a division operation.
- **O4:** Estimates the result of a division operation and compares it with the actual result.

TEACHING STRATEGY:

- **Methods and techniques:** Lecture, Question-Answer, Demonstration-Performance, Discovery Learning.
- **Teaching tools:** Division operation charts, place value charts, worksheets.
- **Organizational approaches:** Frontal (F) and Individual (I) work.

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Lesson Flow Table

Lesson Stages	Op. Ob	Scientific Content	Teaching Strategy	Evaluation	Duration
1. Organization	-	Classroom setup and lesson preparation.	Conversation (F)	-	5 min
2. Engagement	-	Starts with the question: "How do we share 450 hazelnuts among 15 friends?"	Question-Answer (F)	-	5 min
3. Topic & Aim	-	Students are told that they will learn how to divide with multi-digit numbers.	Lecture (F)	-	5 min
4. Activating Prior Knowledge	O1	Short-cut division and the relationship between multiplication and division are recalled.	Brainstorming (F)	Board Activity	5 min
5. Learning Process	O1, O2, O3	The long division algorithm, the order of checking place columns, and the rule that the remainder must be smaller than the divisor are shown.	Demonstration (F)	Operation Tracking	30 min
6. Performance	O3, O4	"Division Detectives" worksheet activity is conducted.	Application (I)	Worksheet	20 min
7. Closure / Homework	-	Calculation steps and the verification method are summarized.	Summary (F)	Verbal Feedback	10 min

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WORKSHEET TEMPLATE

STAGE 1: Warming Up with a One-Digit Divisor (Easiest)

- **Task:** Solve the following division operations by following the place value steps in order. Use the colorful walls between the numbers to keep them separated!

1. **Mysterious Mission (Blue Room):** 456 \ 4 = ?

   (Hint: First, look for the 4 inside the hundreds place. Write each number you find underneath and subtract!)

   - Quotient (Result): _____
2. **Mysterious Mission (Green Room):** 805 \ 5 = ?

   (Hint: How many times does 5 go into 8? Do not forget to bring down the 0 from above next to your leftover number!)

   - Quotient (Result): _____

[VISUAL PLACEHOLDER: Here, you can insert large division layout templates divided by vertical colored strips to make it easier for dyslexic children to align the columns correctly.]

STAGE 2: Two-Digit Divisors and Long Division (Intermediate)

- **Task:** Use "Estimation and Rounding" strategies when looking for a two-digit divisor inside the dividend. After performing the subtraction, make sure like a detective that the Remainder is always SMALLER than the divisor!

1. **Suspect Operation 1:** 360 \ 12 = ?

   (Detective Hint: How many times does 12 go into 36? Dividing numbers that end in zero is very satisfying!)

   - Quotient: _____ | Remainder: _____
2. **Suspect Operation 2:** 525 \ 25 = ?

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(Detective Hint: Remember to count by 25s! If there are two 25s in 50, how many are there in 52?)

- Quotient: _____ | Remainder: _____

[VISUAL PLACEHOLDER: Here, you can add a picture of a cute detective holding a magnifying glass along with hint boxes where numbers are written.]

STAGE 3: Division with Remainders and Checking Your Work (Challenging)

- **Task:** Complete the challenging calculation below. Once your operation is finished, turn on your detective device and prove the correctness of your result using the magic formula: Dividend = Divisor x Quotient + Remainder!
- **The Grand Challenge:** 742 \ 15 = ?
  - Quotient: _____ | Remainder: _____
- **Detective Verification (Formula Check):**
  - [Divisor] x [Quotient] = _____
  - _____ + [Remainder] = DIVIDEND NUMBER *(If you found the initial number, you have successfully completed the mission!)*

Free Creative Space: The Grocer's Sugar Sacks

- **Task:** A grocer distributes 600 kilograms of sugar into small sacks of 20 kilograms each. Find out how many sacks the grocer needs! *(Remember the Zero Hunter tactic: You can do this operation at lightning speed by erasing one zero from both 600 and 20!)*
- **Calculation Space:**
- **Drawing Space:** Draw and color the number of sacks you found and the grocer's cheerful distribution below using your imagination!

[Wide Blank Space to Draw Colorful Sugar Sacks]

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Teacher's Notes

Grade: 4th Grade

Topic: Division with Natural Numbers - Digit Alignment, Two-Digit Divisors, Verification, and Shortcut Division (Division Agents)

Learning objective(s):

- To ensure correct vertical alignment on a grid when dividing three-digit natural numbers by one-digit numbers, so that place values are maintained correctly.
- To use rounding and skip-counting strategies when dividing three-digit natural numbers by two-digit numbers, and to check that the remainder is always smaller than the divisor.
- To verify division with remainders using the checking device and the formula:
- Dividend = (Divisor × Quotient) + Remainder
- To apply the zero-cancellation (shortcut division) strategy when dividing numbers ending in zero by 10 and by multiples of 10.

The worksheet was designed by: CTA

Level 1:	**Instruction for a student**	**Expected answer**	**Assessment / observation focus**	**Materials / Resources**	**Methodological recommendations**
	"Solve the digit steps in sequence to help Agent Ro escape from the locked rooms! Use the vertical	Door 1 (Blue Laser Trap): 456 ÷ 4 → Blue	Whether the student correctly aligns the digits along a vertical axis within	Student worksheet, lead pencil, and your favorite colored highlighters.	**Support:** For students experiencing shifts in digit alignment, the hundreds, tens, and ones column lines can be

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	laser lines and digit windows so that the numbers do not lose their way while dropping down vertically!"	Room Escape Code: 114 Door 2 (Green Elevator Trap): 805 ÷ 5 → Green Room Escape Code: 161	the division algorithm; specifically, whether they skip the step of writing "0" in the quotient when bringing down the tens place "0" in the Green Elevator Trap task.		made distinct using different colored highlighters. □ **Challenge:** The instruction "Create a new secret code for the agent by rounding the codes you found (114 and 161) to the nearest ten" can be added.

Level 2:	**Instruction for a student**	**Expected answer**	**Assessment / observation focus**	**Materials / Resources**	**Methodological recommendations**
	"The numbers have grown! Use your 'Number Rounding' spells when searching for two-digit monster divisors. When the subtraction is finished, check with your magnifying glass that the Remainder number is smaller than the divisor!"	Suspect Operation A: 360 ÷ 12 → Quotient: 30 | Remainder: 0 Suspect Operation B: 525 ÷ 25 → Quotient: 21 | Remainder: 0	Whether the student effectively uses mental rounding or rhythmic counting strategies (e.g., 12, 24, 36) when dividing by two-digit numbers; whether they comprehend the logic of remainder verification at the end of the operation.	Student worksheet, lead pencil for calculations, and neon highlighters.	□ **Support:** For students struggling with Suspect Operation B, the "coin (25-50 cents)" analogy mentioned in the prompt can be enriched and supported with concrete models (e.g., play money). □ **Challenge:** Students can be asked to write a short "detective note" in their own words regarding the remainder verification rule.

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Level 3:	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	"Here is the toughest galactic phase! Perform the division operation and find the remainder. Then, test the accuracy of your result by writing it into the magic verification device! Solve the grocer problem in the free area using the zero-hunter tactic and draw the cheerful story!"	The Grand Challenge: 742 ÷ 15 → Quotient: 49 | Remainder: 7 Magic Verification Device: 15 (Divisor) × 49 (Quotient) = 735 735 + 7 (Remainder) = 742 (Dividend number) The Grocer's Sweet Share Puzzle (Brain Teaser): 600 ÷ 20 → 60 ÷ 2 = 30 sacks **Drawing Area: An original drawing and coloring activity showing 30 colored candy sacks and the scene where the friendly grocer is happily distributing candy.**	Whether the student pays attention to the order of operations (multiplication first, then addition) when verifying a division with a remainder; whether they adhere to the rule of deleting an equal number of zeros from both numbers in shortcut division.	Student worksheet, lead pencil, a ruler to draw straight lines, and colored pencils	**Support:** For students getting stuck at the step of counting by 15s, they can be allowed to note down the rhythmic counting sequence up to 75 ($15, 30, 45, 60, 75$) vertically on the blank edge of the paper. **Challenge:** An additional problem can be prompted verbally: "If the grocer's candy sacks were 30 kg instead of 20 kg, how many sacks would you find using the 'Zero Hunter' tactic?"

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Name: Grade : Date:

DIVISION AGENTS: SECRET AGENT RO AND THE LASER LABYRINTH MISSION

TASK 1:	What do I need to do?	Materials Needed?
	Solve the steps to help Agent Ro escape from the locked rooms! Use the vertical laser lines and grid boxes to keep the numbers organized so they do not lose their way!	Your favorite neon highlighters and a pencil.

Door 1 (Blue Laser Trap): 456 \4 = ?

(Secret Agent Hint: How many 4s are in the first 4? Write the numbers exactly inside the grid boxes!)

Hundreds | Tens | Ones

```
  4      5      6   |   4  (Divisor)
- 4                 |------
---------           | [ ][ ][ ] (Escape Code)

  0      5
     -   4
     ---------
         1      6
     -   1      6
     ---------

                 0
```

Blue Room Escape Code: _____

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Door 2 (Green Elevator Trap): 805 \ 5 = ?

(Secret Agent Hint: First find 5 inside 8. Then, use the green elevator arrow to bring the zero (0) straight down!)

Hundreds | Tens | Ones

8 0 5 | 5 (Divisor)

\- |------
--------- | [ ][ ][ ] (Escape Code)

Green Room Escape Code: _____

Self-Evaluation	Teacher's Comments
[ ] I finished the task.	
[ ] I checked my work.	

How did I do ?





TASK 2: Time Thieves and the Remainder Monster Detective Work (2-Digit Divisors)	**What do I need to do?**	**Materials Needed?**
	The numbers are bigger now! Use the "Rounding Numbers" trick to help you find the two-digit monster divisors. Check with a magnifying glass that your Remainder is smaller than the Divisor!	**Neon highlighters and a pencil.**

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Operation A: 360 \ 12 = ?

(Detective Hint: How many 12s are in 36? Count by 12s: 12, 24, 36... It is exactly 3 times! What about the zero at the end? Slide it to the end of your answer before the thieves take it!)

Your Secret Work Area:

Quotient (Answer): _____ | Remainder: _____

Operation B: 525 \25 = ?

(Detective Hint: Think about the coins in your pocket! Two 25-cent coins make 50 cents. So, how many 25s are inside 52?)

Your Secret Work Area:

Quotient (Answer): _____ | Remainder: _____

Self-Evaluation	Teacher's Comments
[ ] I finished the task.	
[ ] I checked my work.	

How did I do ?





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TASK 3: Fighting the Cosmic Monster and the Check Machine	What do I need to do?	Materials Needed?
	This is the hardest galactic stage! Solve the division problem and find the remainder. Then test your answer by entering your numbers into the Magic Check Machine and using the formula: Divided Number = (Divisor × Quotient) + Remainder.	A pencil and a ruler to draw straight lines.

The Big Challenge:

742 ÷ 15 = ?

(Tip: Count by 15s — 15, 30, 45, 60, 75... Which multiple of 15 gets closest to 74 without going over? Use this to help solve the problem.)

Your Rocket Launch Area:

Quotient (Answer): _____ | Remainder: _____

Use the Magic Check Machine (Check Your Answer):

Put your numbers into the boxes below. Can you reach the starting number 742?

[Divisor] × [Quotient] = [.....]

[.....] + [Remainder] = [TOTAL NUMBER]

(If your result is exactly 742, the machine lights up green! You have tamed the monster!)

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Self-Evaluation	Teacher's Comments
[ ] I finished the task.	
[ ] I checked my work.	

How did I do ?





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Teacher's Notes

Grade: 4
Topic: Order of operations: calculations involving more than one operation
Learning outcome: Performs calculations with arithmetic expressions, following the correct order of operations.
The worksheets were designed by: LSpecPA cooperation partner, Rezekne Primary School – Development Centre

Level 1	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological notes
	1. Calculate the value of each expression, following the order of operations. Do multiplication and division first, then addition and subtraction. 2. If an expression contains brackets, calculate what is inside the brackets first. 3. Write the solution as a sequence of calculations, showing every step. 4. Read each expression and choose the correct answer. 5. Read the word problem, identify the information given and what you	**1.** $8 + 3 \times 5 = 8 + 15 = 23$ $20 - 2 \times 4 = 20 - 8 = 12$ $9 + 6 : 2 = 9 + 3 = 12$ $30 - 12 : 3 = 30 - 4 = 26$ $7 \times 2 + 5 = 14 + 5 = 19$ **2.** $(8 - 3) \times 4 = 5 \times 4 = 20$ $3 \times (6 + 2) = 3 \times 8 = 24$ $(12 + 4) : 2 = 16 : 2 = 8$ **3.** $18 - 2 \times 5 = 18 - 10$	Does the pupil follow the correct order of operations in expressions without brackets? Does the pupil calculate expressions with brackets correctly? Can the pupil show the calculation steps in the correct order? Does the pupil understand the difference between expressions with and without brackets? Can the pupil write a mathematical expression based on a word problem? Can the pupil	Worksheets, pencils/pens, erasers, order of operations reminder cards, number chart/columns (if needed), interactive whiteboard or visual examples on the board, electronic calculators.	**Support for pupils who need help:** Provide a visual reminder of the order of operations: **"Brackets first → multiplication/division → addition/subtraction."** Use colour coding to highlight different operations. Let pupils complete the calculation one step at a time, covering the rest of the expression. For word problems, use guiding questions: **"How many packs?", "How many in each?", "What should you do first?"** **Additional challenge** Provide expressions with several operations and more than one set of brackets. Ask pupils to create their own

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	need to find. Write the calculation (expression) and the answer. *If necessary, use an electronic calculator to check your work.*	= 8 ☑ (18 − 2) × 5 = 16 × 5 = 80 ☑ **4.** 3 × 8 + 5 = 24 + 5 = 29 **Answer:** Lote bought 29 crayons altogether.	explain and justify their solution?		expressions with a given value. Use word problems in which pupils have to choose the correct expression from several options. **Inclusive education support** For pupils with ADHD, divide the work into shorter stages and use a checklist of completed tasks. For pupils with learning difficulties, provide an order of operations reminder card on their desk. For pupils with intellectual disabilities, reduce the number of examples to be solved at one time and use concrete visual materials. Encourage pair work in which pupils explain the order of calculation steps to each other.

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Level 2	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological notes
	1. Read the reminder about the order of operations. Use it to help you complete the tasks if needed. 2. Calculate the value of each expression, following the correct order of operations. Do the calculations in brackets first, then multiplication or division, and finally addition or subtraction. 3. If an expression contains brackets, calculate what is inside the brackets first. 4. Write the calculations as a sequence, showing every step. 5. Choose and write the correct operation sign to make the equation correct. 6. Read the word	**1.** $45 - 4 \times 7 = 45 - 28 = 17$ $72 : 8 + 15 = 9 + 15 = 24$ $36 + 24 : 6 = 36 + 4 = 40$ $50 - 18 : 3 = 50 - 6 = 44$ $8 \times 6 - 12 = 48 - 12 = 36$ **2.** $4 \times (15 - 8) = 4 \times 7 = 28$ $(36 - 12) : 6 = 24 : 6 = 4$ $8 \times (9 + 3) = 8 \times 12 = 96$ $(45 + 15) : 10 = 60 : 10 = 6$ **3.** $18 + 3 \times 2 = 24$ $40 : 5 + 6 = 14$ $30 - 6 \times 4 = 6$ $42 : 7 + 8 = 14$ **4.**	Does the pupil follow the correct order of operations in expressions? Does the pupil correctly perform multiplication and division before addition and subtraction? Can the pupil calculate expressions with brackets? Can the pupil justify the calculation process using a clear sequence of steps? Can the pupil choose the correct operation sign? Does the pupil understand the situation in a word problem and create an appropriate mathematical expression?	Worksheets, pencils/pens, erasers, order of operations reminder cards in the classroom or on pupils' desks, interactive whiteboard or presentation with examples, coloured markers for highlighting operations.	**Support** Provide a visual guide showing the order of operations. Highlight multiplication and division in colour. Provide a worked example before pupils begin independent work. Allow pupils with learning difficulties to use a multiplication table. For pupils with ADHD, divide the work into smaller parts and use a checklist to mark completed steps. For pupils with intellectual disabilities, reduce the number of calculations in each task and use clear, concrete explanations. **Additional challenge** Provide expressions with several operations and more than one set of brackets. Encourage pupils to create their own word problem involving the order of operations and explain why the operations must be carried out in that particular order.

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	problem, write an expression, calculate the result and write the answer. 7. Put the operations in the correct order and show the steps of your solution.	$6 \times 15 + 28 = 90 + 28 = 118$ Atbilde: Bibliotēkā pavisam ir 118 grāmatas. **5.** $76 - 3 \times 12 = 76 - 36 = 40$ $3 \times 12 = 36$ $76 - 36 = 40$	Can the pupil explain the calculation steps orally or in writing?		

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Level 3	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological notes
	1.Calculate the value of each expression, following the correct order of operations. Use the reminder. Carry out the operations in the correct order. 2.Show your calculation steps in a clear sequence. Calculate expressions with brackets by doing the operations inside the brackets first. Use the reminder and electronic calculators to check your work. 3.Decide whether each statement is true or false by checking it — calculate the value of the expression. 4.Solve the word problem by writing the question, calculation and answer. 5.Study the task carefully. Add brackets to make the equation correct.	**Task 1:** $100 - 24 : 6 \times 3 = 88$ $18 \times 4 - 25 = 47$ $96 : 8 + 45 - 12 = 45$ $9 \times 7 + 36 : 4 = 72$ $120 - 5 \times 8 + 15 = 95$ **Task 2:** $6 \times (24 : 4) = 36$ $(80 - 20) : 5 + 7 = 19$ $9 \times (12 - 5) - 8 = 55$ $(72 : 8 + 4) \times 3 = 39$ **Task 3:** $24 + 6 \times 4 = 48$ → **False** $(24 + 6) \times 4 = 120$ → **True** $48 - 16 : 4 = 44$ → **False** $(48 - 16) : 4 = 8$ → **True** **Task 4:** **Question:** How many pupils took part in the sports day altogether? $24 \times 8 + 35 = 227$ **Answer:** Altogether, 227 pupils took part in the sports day. **Task 5:** $(24 + 6) \times 4 = 120$ $(36 - 12) : 3 = 8$ $(18 + 6) \times 5 = 120$ $72 : (8 + 4) = 6$	**The teacher observes whether the pupil:** Understands and correctly follows the order of operations in expressions. Can calculate expressions involving several operations. Can use brackets correctly and understands their role in calculations. Can justify whether a mathematical statement is true or false. Understands the information in a word problem and chooses an appropriate combination of operations. Uses logical reasoning to find different solutions to tasks involving brackets.	Worksheets, pencils/pens, erasers, order of operations reminder cards, exercise books for calculations, interactive whiteboard or presentation with examples of the order of operations.	**Before starting the work, revise the rules for the order of operations:** brackets first, then multiplication and division, and finally addition and subtraction. Encourage pupils to show their calculations as a clear sequence of steps so that their reasoning can be followed. Draw attention to the most common mistakes that occur when the order of operations is not followed. For pupils with learning difficulties, provide a visual order of operations guide on the desk or worksheet. For pupils with ADHD, divide tasks into smaller steps and allow them to tick off completed work. For pupils with intellectual disabilities, begin with simpler expressions involving fewer operations. Encourage pupils to compare their solutions and analyse errors together, paying particular attention to how

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					brackets affect the result.

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Name: Grade: Date:

Order of Operations Challenge

Level 1	What do I need to do?	What can I use to solve this task?
	Follow the order, show each step and solve the word problem. Use the reminder when you need help!	Order of operations reminder card, multiplication table (if needed), pencil/pen, eraser, squared paper, electronic calculator for self-checking.

1. Calculate the value! **Follow** the order of operations! **Do the operations in order** – write them as a **sequence of calculations**!

REMEMBER THE ORDER OF OPERATIONS!

□ **1** **First** → brackets ( )
□ **2** **Then** → multiplication and division from left to right × ÷
□ **3** **Finally** → addition and subtractionfrom left to right + −

Example: *15 + 4 × 2 = 15 + 8 = 23*

1. $8 + 3 \times 5 =$ _____
2. $20 - 2 \times 4 =$ _____
3. $9 + 6 : 2 =$ _____
4. $30 - 12 : 3 =$ _____
5. $7 \times 2 + 5 =$ _____

2. Calculate the value! **Follow** the order of operations! **Do the operations in order** – write them as a **sequence of calculations**!

Example: $(10 + 5) \times 2 = 15 \times 2 = 30$

1. $(8 - 3) \times 4 =$ _____
2. $3 \times (6 + 2) =$ _____
3. $(12 + 4) : 2 =$ _____

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3. Calculate! **Tick** the correct answer!

18 − 2 × 5

□ 80
□ 8
□ 70

(18 − 2) × 5

□ 80
□ 16
□ 70

4. Read! Solve the word problem!

REMEMBER!
Identify **what is given**.
Identify **what you need to calculate**.
Write the **calculation** (expression).
Write the **answer**.

Lote **bought 3 packs** of crayons. **There are 8 crayons in each pack.**
She also bought 5 individual crayons.
How many crayons did Lote **buy altogether**?

1) _____

Answer: _____

Self - check	Teacher's comments
I finished the task.	
I checked my work.	

How did I do (circle):





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Name: Grade: Date:

Order of Operations Challenge

Level 2	What do I need to do?	What can I use to solve this task?
	Follow the order of operations, show each calculation step clearly and solve the word problem. Use the reminder when you need help!	Order of operations reminder card, multiplication table (if needed), pencil/pen, eraser, squared paper, electronic calculator for self-checking.

REMEMBER!

If an expression has more than one operation:

- first, do the **operations in brackets**;
- then, do **multiplication and division**;
- finally, do **addition and subtraction**.

---

1. **Calculate** the value of the expression and write it as a **sequence of calculations!** Follow the **order of operations!**

REMEMBER THE ORDER OF OPERATIONS!

□ **1** **First** → brackets ( )
□ **2** **Then** → multiplication and division from left to right × ÷
□ **3** **Finally** → addition and subtractionfrom left to right + −

Example: *24 + 6 × 5 = 24 + 30 = 54*

---

1. $45 - 4 \times 7 =$ _____
2. $72 : 8 + 15 =$ _____
3. $36 + 24 : 6 =$ _____
4. $50 - 18 : 3 =$ _____
5. $8 \times 6 - 12 =$ _____

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2. **Calculate the value!** Follow the **order of operations** when there are **brackets! Do the operations** step by step – write them as **a sequence of calculations!**

Example: *(28 + 12) : 5 = 40 : 5 = 8*

1. $4 \times (15 - 8) =$ _____
2. $(36 - 12) : 6 =$ _____
3. $8 \times (9 + 3) =$ _____
4. $(45 + 15) : 10 =$ _____

3. **Write the correct operation sign in the circle ◯(+, −, ×, ÷)!**

1. 18 ◯3 × 2 = 24
2. 40 ◯5 + 6 = 14
3. 30 ◯6 × 4 = 6
4. 42 ◯7 + 8 = 14

4. Read! Solve the word problem!

There are **6 shelves** in the library. There are **15 books on each** shelf. There are **28 more** books **on the table**.

How many books are there **altogether**?

1) _____

Answer: _____

5. Put the operations in the **correct order**! **Write** the steps!

Example: *48 − 4 × 7 = 20*

1. $4 \times 7 = 28$
2. $48 - 28 = 20$
3. Answer: 20

$76 - 3 \times 12 =$ _____

1. _____
2. _____

Answer: _____

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Self - check	Teacher's comments
I finished the task.	
I checked my work.	

How did I do (circle):





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Name: Grade: Date:

Order of Operations Challenge

Level 3	What do I need to do?	What can I use to solve this task?
	Put your order-of-operations skills to the test! Calculate step by step, use brackets correctly, check whether statements are true, solve the word problem and complete the challenge.	Order of operations reminder card, multiplication table (if needed), pencil/pen, eraser, squared paper, electronic calculator for self-checking.

REMEMBER!
Order of operations

1. Brackets
2. Multiplication and division
3. Addition and subtraction

If operations have the same priority, work from left to right.

1. Calculate the value of the expression and write it as a **sequence of calculations!**

Example: *84 − 6 × 8 + 12 = 84 - 48 +12 = 36 +12 = 48*

1. 100 − 24 : 6 × 3 = _____
2. 18 × 4 − 25 = _____
3. 96 : 8 + 45 − 12 = _____
4. 9 × 7 + 36 : 4 = _____
5. 120 − 5 × 8 + 15 = _____

2. Write the solution as a **sequence of calculations**! **Calculate** the value! Follow the **order of operations** when there are **brackets**!

Example: *(45 − 15) × 3 = 30 x 3 = 90*

1. 6 × (24 : 4) = _____
2. (80 − 20) : 5 + 7 = _____
3. 9 × (12 − 5) − 8 = _____
4. (72 : 8 + 4) × 3 = _____

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3. Calculate! Decide whether each statement is true! **Tick (✓)** the correct box!

Expression	Result	Correct	Incorrect
24 + 6 × 4	120		
(24 + 6) × 4	120		
48 − 16 : 4	8		
(48 − 16) : 4	8		

4. Read! Solve the word problem and show your calculation steps! Write the question, calculation and answer!

8 classes took part in the sports day. There were **24 pupils in each** class. Then **35 more pupils joined** from other schools.

1) _____

_____

Answer: _____

5.* "Challenge". **Add brackets** to make each **equation correct**!

1. 24 + 6 × 4 = 120
2. 36 − 12 : 3 = 8
3. 18 + 6 × 5 = 120
4. 72 : 8 + 4 = 36

Self - check	Teacher's comments
I finished the task.	
I checked my work.	

How did I do (circle):





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Teacher's Notes

Grade: 4
Topic: Area and perimeter: calculating the area and perimeter of rectangles and squares
Learning outcome: Calculates the area and perimeter of rectangles and squares.
The worksheets were designed by: LSpecPA cooperation partner, Rezekne Primary School – Development Centre

Level 1	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological notes
	1. Read the given side length of the square. Use the formula: **P = side × 4**. Calculate the perimeter of each square and write the calculation. **2.** Read the side length of the square. Use the formula: **A = side × side**. Calculate the area of each square. **3.** Read the length and width. Remember and use the formula: **P = (length × 2) + (width × 2)**. Calculate the perimeter of	**1. Perimeter of a square** a) P = 4 × 4 = 16 cm b) P = 6 × 4 = 24 cm c) P = 8 × 4 = 32 cm d) P = 10 × 4 = 40 cm **2. Area of a square** a) A = 4 × 4 = 16 cm² b) A = 6 × 6 = 36 cm² c) A = 8 × 8 = 64 cm² d) A = 10 × 10 = 100 cm² **3. Perimeter of a rectangle** a) P = 4 × 2 + 2 × 2 = 12 cm b) P = 6 × 2 + 3 × 2 = 18 cm	Can the pupil distinguish between the concepts of perimeter and area? Does the pupil choose the correct formula for a square and a rectangle? Does the pupil perform multiplication correctly? Does the pupil use the correct units (cm, cm²)? Can the pupil write the calculation steps clearly and in the correct order? Does the pupil understand the relationship between	Pencils/pens and erasers, rulers, reminder cards with the formulas **P = a × 4, A = a × a, P = 2a + 2b, A = a × b**, models or pictures of squares and rectangles, interactive whiteboard or presentation (if available).	**Support for pupils who need help** ● Provide a visual formula card on the desk. ● Use colour coding: highlight the perimeter around the edge of the shape and shade the area inside the shape. ● Provide one worked example for each type of task. ● Allow pupils to use a multiplication table. **For pupils with ADHD** ● Divide the work into four smaller parts, completing one task at a time. ● Use a checklist to tick off completed tasks. ● Offer short movement breaks between tasks. **For pupils with learning difficulties**

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	the rectangle. **4.** Read the side lengths. Use the formula: **A = length × width**. Calculate the area and write the answer in **cm²**.	c) P = 8 × 2 + 2 × 2 = 20 cm d) P = 10 × 2 + 5 × 2 = 30 cm **4. Area of a rectangle** a) A = 4 × 2 = 8 cm² b) A = 6 × 3 = 18 cm² c) A = 8 × 2 = 16 cm² d) A = 10 × 5 = 50 cm²	side length and the perimeter or area of a shape?		● Begin with smaller numbers. ● Demonstrate together how to apply each formula. ● Allow pupils to use concrete materials for calculations, such as square grids or blocks. **Additional challenge** ● Provide shapes with an unknown side length when the perimeter or area is given. ● Ask pupils to create their own shapes with a given perimeter or area. ● Include multi-step word problems about perimeter and area in practical contexts.

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Level 2	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological notes
	1. Read the given side length of the square. Calculate the perimeter of the square using the formula **P = 4 × a**. Calculate the area of the square using the formula **A = a × a**. 2. Write the missing number using the appropriate formula for calculating the perimeter or area of a square or rectangle. 3. Read the statements and choose the correct answer. 4. Calculate the area of the square and compare it with the given area of the rectangle. Write the correct comparison sign.	**1.** **Perimeter:** a) 8 cm b) 12 cm c) 20 cm d) 28 cm **Area:** a) 4 cm² b) 9 cm² c) 25 cm² d) 49 cm² **2.** Square side 9 cm → P = 36 cm Square side 11 cm → A = 121 cm² Rectangle 12 cm × 5 cm → P = 34 cm Rectangle 12 cm × 5 cm → A = 60 cm² **3.** ✓ The area of a square is calculated by multiplying the side length by itself. ✓ The perimeter of	**The teacher pays attention to whether the pupil:** Can distinguish between the concepts of area and perimeter. Chooses the correct formula for each task. Performs multiplication and addition correctly. Uses the correct units (cm, cm²). Can justify their choice in the statements task. Can compare areas and use the correct mathematical comparison signs.	Worksheets, pencils/pens, eraser, rulers, formula reminder card, pictures or models of squares and rectangles, squared paper for modelling area, interactive whiteboard or presentation (if needed).	**During the learning process** Revise the concepts of **perimeter** and **area** using practical examples. Demonstrate how to apply the formulas to specific shapes. Encourage pupils to explain: **"Why did I choose this formula?"** **Support for pupils with learning difficulties** Provide visual reminder cards with the formulas. Use colour coding: highlight the perimeter around the edge of the shape and shade the area inside the shape. Provide a worked example as a model. **Support for pupils with ADHD** Divide the tasks into small stages. Use a checklist to tick off completed work. Provide short movement breaks after each task. **Additional challenge** Ask pupils to calculate an unknown side length when the perimeter or area is given. Create word problems about the length of a fence (perimeter) and the area of a piece of land. Compare several shapes and justify

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		a rectangle is calculated by adding all its sides. **4.** A(ABCD) = 6 × 6 = 36 cm² 36 cm² > 32 cm² A(ABCD) > MNOL (S)			the result.

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Level 3	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological notes
	1. Measure the side lengths of the rectangle with a ruler. Calculate the perimeter (P) and area (A) of the shape. **2.** Read the given information. Use the formula for the perimeter of a rectangle to calculate the unknown width. Show your calculation steps. **3.** Read the word problem. Decide what you need to calculate. Calculate the perimeter and area of the sports field. Write the answer in a full sentence. **4. ("Challenge")** Calculate the area of the first rectangle.	**1.** The answer depends on the side lengths measured in the image. **2.** P = 30 cm 2 × (10 + AB) = 30 10 + AB = 15 AB = 5 cm **3.** P = (28 + 15) × 2 = 86 m A = 28 × 15 = 420 m² **Answer:** a) 86 m of fencing is needed. b) The area of the sports field is 420 m². **4.** Area of the first rectangle: 12 × 6 = 72 cm² 72 : 9 = 8 cm Height of the second rectangle = 8 cm. **5.** AB = 48 : 4 = 12 cm A = 12 × 12 = 144 cm²	**The teacher monitors whether the pupil:** Uses a ruler correctly to take measurements. Can distinguish between the formulas for calculating perimeter and area. Can calculate an unknown side length from a given perimeter. Can apply the area formula in practical tasks. Can analyse the information in a word problem and choose an appropriate solution strategy. Can use logical reasoning in more challenging ("Challenge") tasks. Uses the correct units (cm, m, cm², m²).	Worksheets, rulers, pencils/pens and erasers, formula reminder cards (**P = 2(a + b), A = a × b, P = 4a, A = a × a**), squared paper for modelling shapes, interactive whiteboard or presentation, practical models of squares and rectangles.	**Teacher Action Plan** 1. Revise the concepts of **perimeter** and **area**. 2. Demonstrate how to measure using a ruler. 3. Solve one example task together. 4. Remind pupils how to choose the correct formula. 5. Organise independent work. 6. Discuss the results and carry out self-checking. **Success Criteria for the Pupil** ✓ I measure the sides of shapes correctly. ✓ I choose the correct formula. ✓ I calculate perimeter and area correctly. ✓ I write the answer using the correct unit.

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	Use the information that both rectangles have the same area. Calculate the height of the second rectangle. **5. ("Challenge")** Use the perimeter of the square to find its side length. Calculate the area of the square.				✓ I can find an unknown side length. **Support for Pupils with Learning Difficulties** Provide formula cards and visual step-by-step guides. Use colour coding: perimeter – the sides of the shape; area – the inside of the shape. Provide a step-by-step solution template to complete. **Support for Pupils with ADHD** Divide tasks into smaller stages. Use a checklist to tick off completed work. Offer short movement breaks after each task. **Additional Challenge** Provide shapes with an unknown side length and a given area. Create practical tasks involving calculations of room dimensions, area or fence length. Encourage pupils to create similar word problems themselves and exchange them with a partner.

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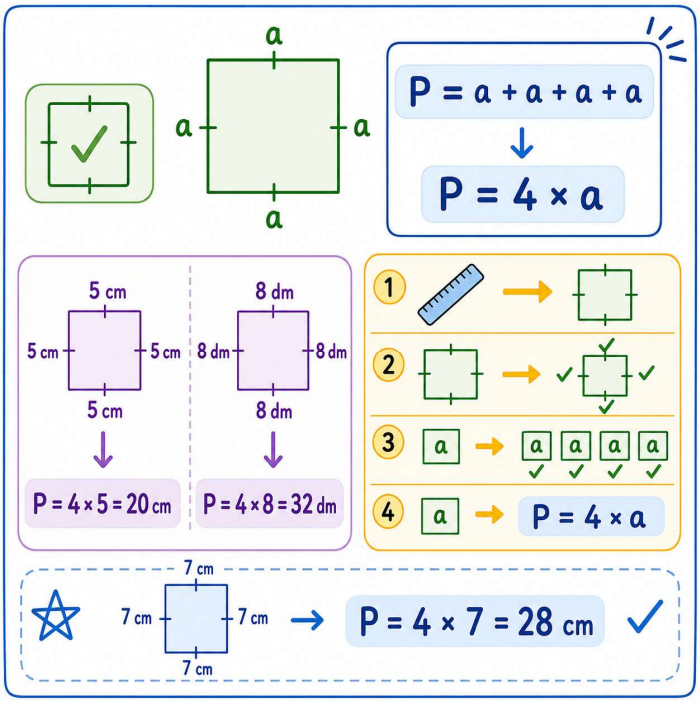
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Name: Grade: Date:

Perimeter and Area Power

Level 1	What do I need to do?	What can I use to solve this task?
	Explore squares and rectangles! Calculate their perimeter and area, choose the correct formula and remember to use the correct units. Use the reminders when you need help.	Perimeter and area reminder cards, multiplication table (if needed), pencil/pen, eraser, squared paper.

1. Calculate the **perimeter of the square!**



REMEMBER!

- A square has **4 equal sides**.
- **Perimeter** is the **total length** around the square.
- Find the length of **one side**.
- **Multiply** the side length **by 4**.
- **P = 4 × a**
- Write the answer using the **same unit** as the side length.

Given:

1) Side length of square ABCD: 4 cm
2) Side length of square MNOL: 6 cm
3) Side length of square PBDT: 8 cm
4) Side length of square EFGH: 10 cm

Solve it!

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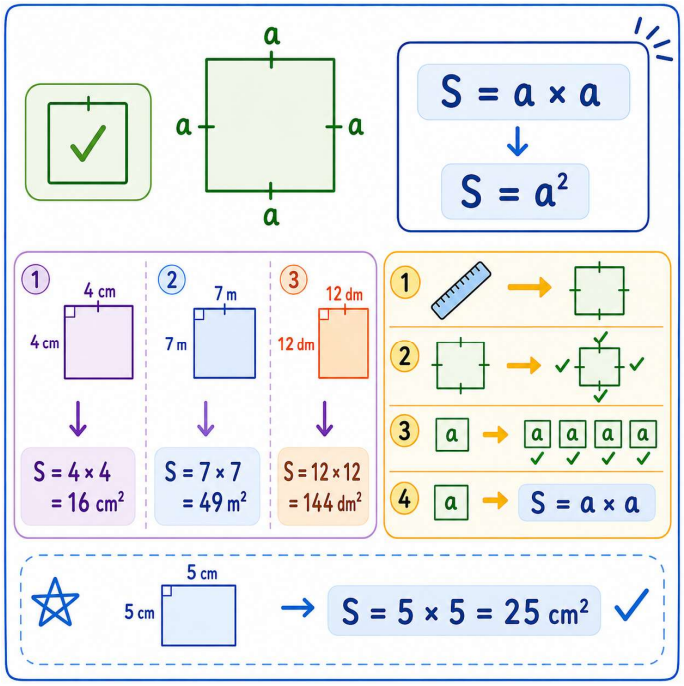
***Example**: The side length of the square IJAO is 2 cm*
P = 2 cm × 4 = 8 cm

a)_____

b) _____

c) _____

d) _____



2. Calculate the **area of the square!**

REMEMBER!

- A square has **4 equal sides** and **4 right angles (90°)**.
- **Area** tells us **how much space** is inside the square.
- Find the **length of one side** (a).
- **Multiply** the side length **by itself**.
- **A = a × a**
- Write the answer in square units: **cm², dm², m²**, etc.

Example:
a = 4 cm
A = 4 × 4 = 16 cm²

Given:

1) Side length of square ABCD: 4 cm
2) Side length of square MNOL: 6 cm
3) Side length of square PBDT: 8 cm
4) Side length of square EFGH: 10 cm

Solve it!

***Example**: The side length of the square IJAO is 2 cm*
S = 2 cm × 2 cm= 4 cm²

a)_____

b) _____

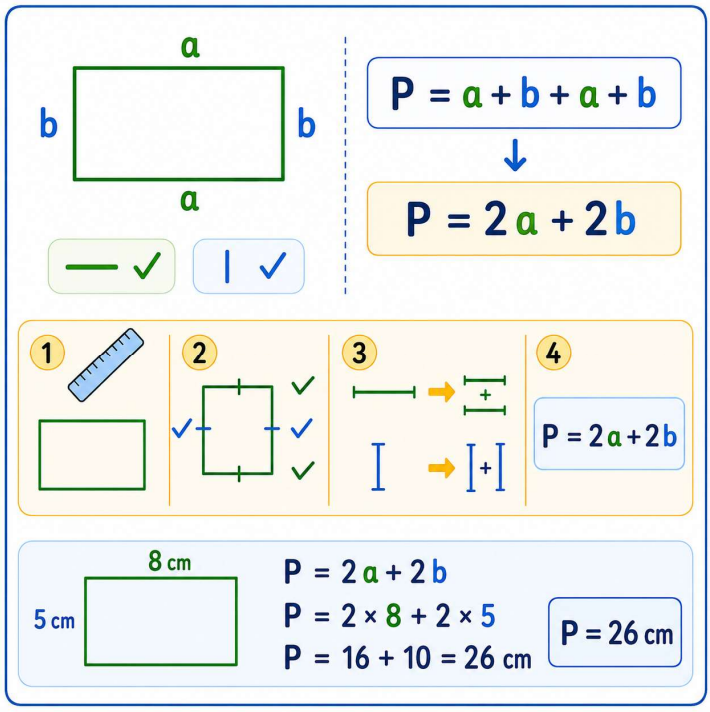
c) _____

d) _____

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3. Calculate the **perimeter of the rectangle!**



REMEMBER!

- **Perimeter** is the **total length of all the sides**.
- A **rectangle** has **two equal longer sides** (a) and **two equal shorter sides** (b).

a – **length** of the rectangle
b – **width** of the rectangle
P – **perimeter** of the rectangle

- **Formula**

P = a + b + a + b
or
P = 2a + 2b

- Add the equal sides together to make the calculation easier.

Example
a = 8 cm, b = 5 cm
P = 2a + 2b
P = 2 × 8 + 2 × 5
P = 16 + 10 = 26 cm

Answer: P = 26 cm

Given:

1) The side lengths of rectangle ABCD are AB = 4 cm, BC = 2 cm
2) The lengths of the sides of the rectangle MNOL MN = 6 cm, NO = 3 cm
3) The lengths of the sides of the rectangle PBDT PB = 8 cm, BD = 2 cm
4) The lengths of the sides of the rectangle EFGH EF = 10 cm, FG = 5 cm

Solve it!

Example*: The lengths of the sides of the rectangle IJAO IJ = 2 cm, JA = 5 cm*
W = 2 cm × 2 + 5 cm × 2 = 14 cm

a)_____

b) _____

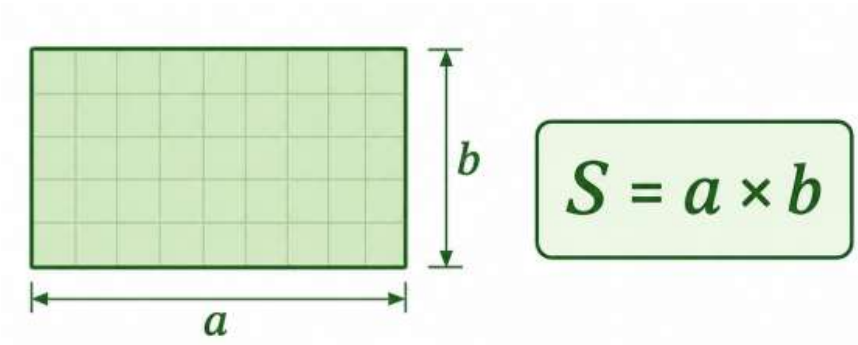
c) _____

d) _____

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4. Calculate the **area of the rectangle!**



REMEMBER!

- To calculate the **area of a rectangle**, **multiply** its **length** by its **width**.
- **A = a × b**
- A – area of the rectangle
- a – length
- b – width
- Write the answer in **square units**, for example **m²**.

Given:

1) The side length of rectangle ABCD is AB = 4 cm, BC = 2 cm
2) The side length of rectangle MNOL is MN = 6 cm, NO = 3 cm
3) The side length of rectangle PBDT PB = 8 cm, BD = 2 cm
4) The length of the side of the rectangle EFGH EF = 10 cm, FG = 5 cm

Solve it!

Example*: The side length of rectangle IJAO IJ = 2 cm, JA = 5 cm*
S = 2 cm × 5 cm = 10 cm 2

a)_____

b) _____

c) _____

d) _____

Self - check	Teacher's comments
I finished the task.	
I checked my work.	

How did I do (circle):





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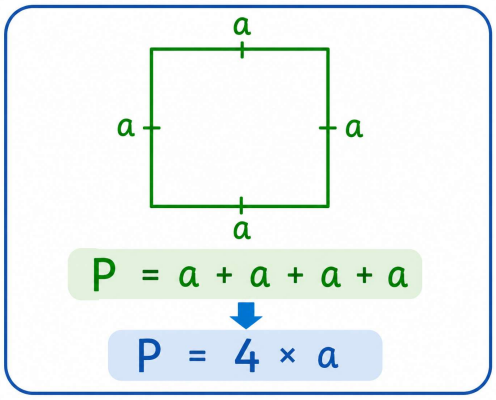
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Name: Grade: Date:

Perimeter and Area Power

Level 2	What do I need to do?	What can I use to solve this task?
	Use what you know about perimeter and area! Calculate, complete the missing values, choose the correct statements and compare areas. Use the reminders when you need help.	Perimeter and area reminder cards, multiplication table (if needed), pencil/pen, eraser, squared paper.

1. Calculate the **area** (A = ?) and **perimeter** (P = ?) of the **square**!



REMEMBER!

Perimeter of a square (P):

P = a + a + a + a

or

P = 4 × a

where **a** – the side length of the square

Given:

1) The side length of square ABCD is 2 cm.
2) The side length of square MNOL is 3 cm.
3) The side length of square PBDT is 5 cm.
4) The side length of square EFGH is 7 cm.

Calculate P = ?

a) _____

b) _____

c) _____

d) _____

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Calculate A = ?

a) _____

b) _____

c) _____

d) _____

2. **Write** the correct number.

1. The side length of the square is 9 cm.

P = _____ cm

2. The side length of the square is 11 cm.

A = _____ cm^2

3. The length of the rectangle is 12 cm and the width is 5 cm.

P = _____ cm

4. The length of the rectangle is 12 cm and the width is 5 cm.

A = _____ cm^2

3. **Read**! **Tick** the correct statement!

The area of a square is calculated by:

□ adding all the sides

□ multiplying the side length by itself

□ multiplying the length by the width

The perimeter of a rectangle is calculated by:

□ adding all the sides

□ multiplying the length by the width

□ multiplying the side length by itself

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4. Compare!

The side length of square ABCD is 6 cm.

The area of rectangle MNOL is **32 cm²**.

Which shape has the greater area?

ABCD (S) = _____

ABCD (S) ◯ MNOL (S)

Self - check	Teacher's comments
I finished the task.	
I checked my work.	

How did I do (circle):





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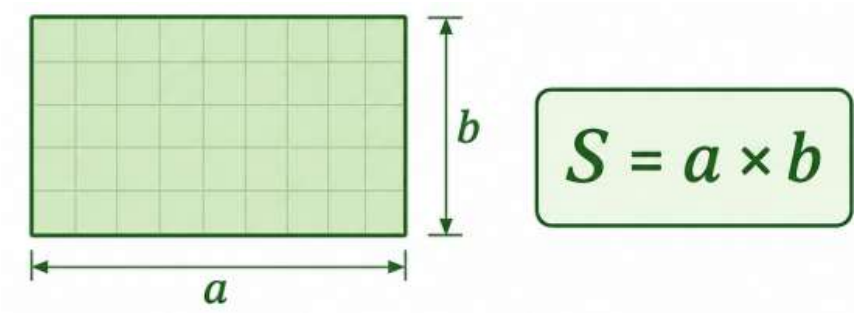
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Name: Grade: Date:

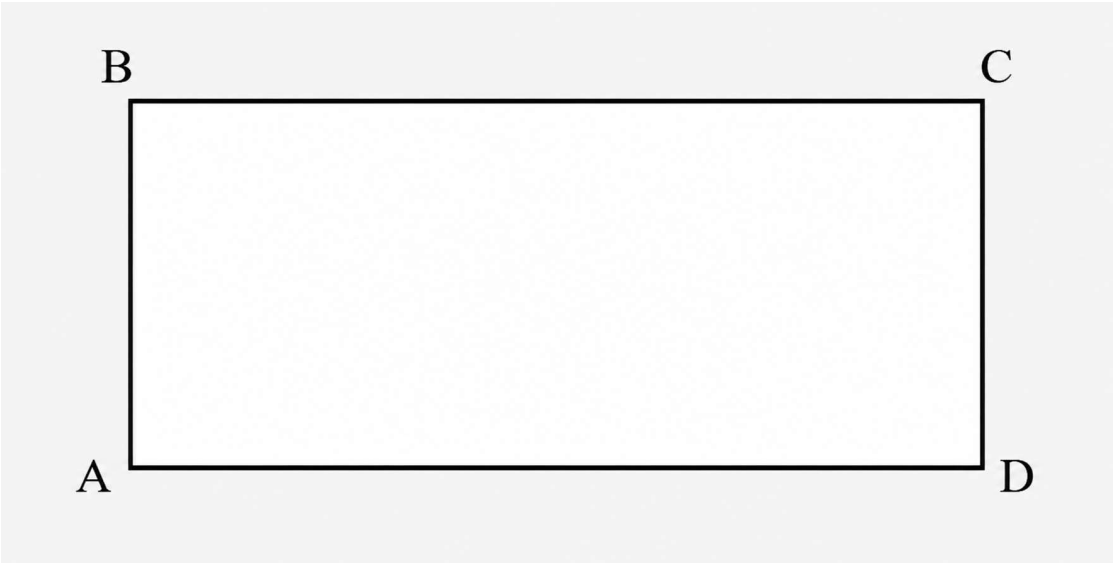
Perimeter and Area Power

Level 3	What do I need to do?	What can I use to solve this task?
	Put your perimeter and area skills to work! Measure, calculate, find missing side lengths and solve practical problems. Use the reminders when you need help.	Ruler, perimeter and area reminder cards, multiplication table (if needed), pencil/pen, eraser, squared paper, electronic calculator for self-checking.

1. Measure the side lengths of shape ABCD! **Calculate** S = ?, P = ?



$$P = a + b + a + b$$
$$\downarrow$$
$$P = 2a + 2b$$



S = _____

P = _____

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2. Read! Solve!

NOTE!

Given: P = 36 cm, A = 10 cm

$$b = \frac{36 - 2 \cdot 10}{2} = \frac{36 - 20}{2} = \frac{16}{2} = 8 \text{ cm}$$

Answer: The width of the rectangle is 8 cm.

The perimeter of the rectangle ABCD is 30 cm (**P = 30 cm**).

The length is 10 cm (**BC = 10 cm**).

Calculate the width (**AB = _____ cm**).

Do calculations here.

3. Read! Solve!

The **rectangular** sports field is **28 m long** and **15 m wide**.

A fence needs to be put up around the field.

a) **How many metres** of fencing are **needed**? (**P = _____ m**)

b) What is the **area of the sports field**? (**S = _____ m²**)

a) _____

b) _____

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Answer: a) _____

b) _____

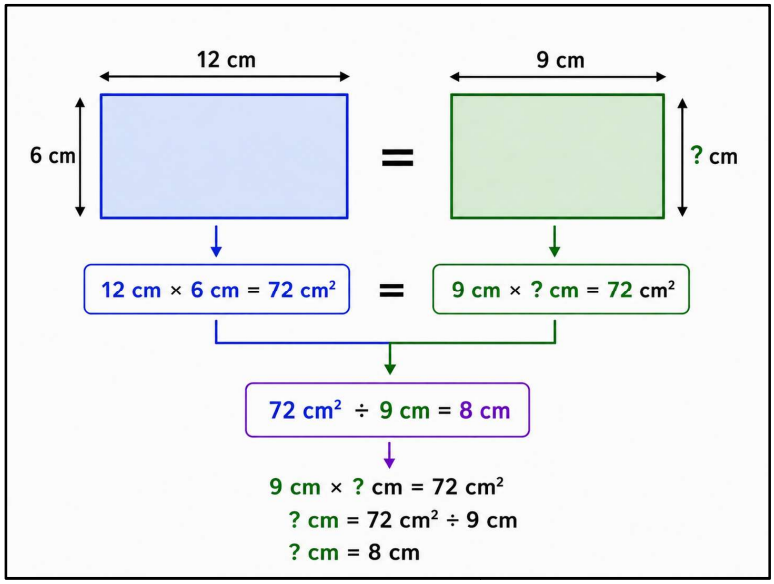
4.* "Challenge" **Look! Read! Solve!**

Two rectangles have the **same area**.

First rectangle:
length = 12 cm
height = 6 cm

Second rectangle:
length = 9 cm
height = _____ cm

Calculate the height of the second rectangle.
NOTE!



- The two rectangles have the **same area**.
- First, calculate the area of the **first rectangle**:

12 × 6 = 72 cm²

- The second rectangle must also have an area of **72 cm²**.
- Its length is **9 cm**, so divide the area by the length:

72 ÷ 9 = 8 cm

The height of the second rectangle is **8 cm**.

Do calculations here.

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5.* "Challenge" **Look! Read! Solve!**

The perimeter of square ABCD is 48 cm **(P = 48 cm).**

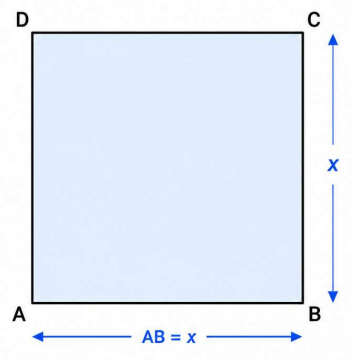
Calculate:

a) **the length of side AB** (AB = _____ cm)

b) the area **(S = _____ cm²)**

NOTE!

The perimeter of square ABCD is 48 cm (**P = 48 cm**).



AB = 12 cm
Perimeter of a square: **P = 4 × a**
48 = 4 × a
a = 48 ÷ 4
a = 12 cm

Do calculations here.

Self - check	Teacher's comments
I finished the task.	
I checked my work.	

How did I do (circle):





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LESSON PLAN

Grade: 4
Topic: Area and Perimeter: Calculating the Area and Perimeter of Rectangles and Squares
Lesson duration: 40 minutes

Learning outcomes. By the end of the lesson, the pupil will be able to:
• understand the concepts of **area and perimeter** and determine which measurement needs to be calculated in a given situation;
• calculate the **perimeter and area of squares and rectangles** using the appropriate formula;
• use the appropriate units of measurement: **cm, m, cm² and m²**;
• solve practical problems involving **area and perimeter**;
• according to their learning level, measure sides, find an unknown side length and compare areas;
• check and explain their solution.

Introduction (8 min)

Lesson stage	**Time**	**Teacher's actions (what the teacher says and does)**	**Expected pupil activity / responses**	**Materials**	**Formative assessment / observation focus**	**Differentiation, individualisation / methodological notes**
Organisation	2 min	The teacher welcomes the pupils and invites them to prepare for the lesson. "Today we will **find out what area and perimeter are and how to calculate them for a square and a rectangle**."	Pupils prepare their workspace, ruler, pencil and worksheet.	Worksheets, ruler, pencil.	Whether the pupil **follows the instructions and prepares for the lesson**.	If necessary, use a **visual sequence of lesson activities**.
Activation of prior knowledge	3 min	The teacher shows a **square and a rectangle** and asks: "What is a side? How can we	Pupils **name the shapes and their sides**.	Models of a square and rectangle, string,	Whether pupils can **distinguish between /**	Perimeter can be demonstrated using **string**

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		calculate the total length of all the sides of a rectangle or square? What is the surface inside / the coloured part of the shape?" The teacher introduces the notation **P** and **S**.	They recall that **perimeter is the total length of all the sides**, while **area is the surface covered by a shape**.	square grid.	**understand perimeter and area**.	**placed around the edge of a shape**, and area using **a covering of squares**.
Formulating the lesson aim and setting the learning outcome	3 min	"Today we will learn to calculate the area and perimeter of a square and a rectangle. We will also learn to choose **the correct formula and unit of measurement.**" The teacher shows the formulas: square P = 4 × a, S = a × a; rectangle P = 2 × a + 2 × b, S = a × b. The teacher encourages pupils to formulate the learning outcome together – I know what P and S mean and can calculate perimeter and area	In their own words, pupils **explain what they will learn during the lesson; connect P with perimeter and S with area**. With the teacher's support, they **formulate the learning outcome**.	Learning outcome and formula reminder cards.	Whether pupils **understand the intended learning outcome of the lesson**.	**Keep the formulas visible throughout the lesson; supplement the symbols with pictures of the shapes.**

Practical Work (22 min)

Lesson stage	Teacher's actions (what the teacher says and does)	Level 1	Level 2	Level 3	Materials	Formative assessment / observation focus	Methodological notes
Distributing worksheets (2 min)	The teacher distributes worksheets at three levels. "First, **look at the reminder**	Receives a **worksheet with formulas, worked examples**	Receives a **worksheet where P and S need to be calculated and the**	Receives a **worksheet with measuring tasks and problem-**	Differentiated worksheets, formula reminder cards.	Whether the pupil **understands the sequence of steps and begins the task**.	Individual support.

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	card. Determine whether you need to calculate P or S. Then **choose** the formula, **calculate** and **write down** the unit of measurement."	**and given side lengths**.	**correct statement selected**.	**solving tasks**.			
Task 1 (5 min)	**Reminds pupils:** "All sides of a square are equal. Perimeter is the total length of all the sides. Area is calculated by multiplying the length by the width." **Demonstrates an example.**	**Calculates P for squares.**	**Calculates P and S for squares.**	**Works independently, measures and completes calculations.**	Worksheets, square formula reminder card.	Whether the pupil **chooses the correct formula**; whether they **use cm and cm² correctly**; whether they **understand the relationships**.	At Level 1, provide a **formula and worked example**. At Level 3, the **teacher asks guiding questions**, for example: "If the four sides have a total length of 48 cm, how long is one side?"
Task 2 (5 min)	**Reminds pupils:** "The opposite sides of a rectangle are equal. P = 2 × a + 2 × b; S = a × b." **Demonstrates**	**Calculates S for squares.**	**Calculates P and S for rectangles and squares.**	Using the given information, **independently calculates the width of a rectangle**.	Worksheets, ruler, rectangle formula reminder card.	Whether the pupil **knows the formulas for P and S**; whether they **can measure**; whether they can **find an unknown**	**Break the task down into steps:** 1) given; 2) find; 3) formula; 4) calculation; 5) unit of measurement.

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	one example.					**side length**.	
Task 3 (5 min)	Asks: "How can we tell whether we need to calculate area or perimeter in a problem?" **Encourages pupils to justify their choice.**	**Calculates P of a rectangle.**	**Reads and selects the correct statement.**	**Determines how many metres of fencing are needed and calculates the area of a sports field.**	Worksheets, visual **"P" and "S"** cards.	Whether the pupil **chooses P or S correctly in a given situation and justifies their choice**.	**Connect the concepts to real-life situations:** fence → P; surface covering / lawn → S.
Task 4 (5 min)	"First, identify what is known. Then identify what we need to find. Choose the **formula** and check whether the answer is logical."	**Calculates S of a rectangle.**	**Solves and compares independentl y.**	**Challenge:** two rectangles have the same area. **Calculates the height of the second rectangle.**	Worksheets, **formula and step-by-step reminder card**.	**Whether the pupil uses the known information, chooses a strategy and checks the result.**	At Level 3, **emphasise understandin g of relationships**; use a square grid model if necessary.
Task 5 (for pupils who work at a faster pace)	The teacher provides **individual support and guidance** if necessary.			**Challenge: independent ly calculates** the side length and perimeter of a square.	Worksheets	Whether the pupil **uses the known information, chooses a strategy and checks the result.**	At Level 3, **emphasise understandin g of relationships**.

Lesson Conclusion (10 min)

Lesson stage	Time	Teacher's actions (what the teacher says and does)	Expected pupil activity / responses	Materials	Formative assessment / observation focus	Differentiation, individualisatio n / methodological notes

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Checking work and correcting errors	4 min	**The teacher checks selected solutions together with the pupils.** Asks: "Why did we calculate P here? Why S here? Which unit of measurement should we use?" **Encourages pupils to identify and correct errors independently.**	Pupils **compare answers, correct errors and explain their choice of formula and unit of measurement.**	Board, worksheets.	Whether pupils **identify an error in a calculation or unit of measurement and can explain their reasoning**.	Use errors as **learning opportunities**; give pupils time to identify the error themselves if one has been made.
Self-assessment	2 min	**The teacher offers the following options:** □ "I can distinguish between area and perimeter and calculate them." □ "I can do this with a reminder card." □ "I still need support."	Pupils **assess their own performance and identify** one skill they were successful with.	Self-assessment cards.	Whether pupils can **assess their own performance**.	Individual questions can be used, for example: "When do we use cm²?" "What do we calculate for a fence?"
Feedback	2 min	**The teacher writes a task on the board:** rectangle 6 cm × 4 cm. "Calculate the area. If you can, also calculate the perimeter. **Write the units of measurement.**"	Pupils calculate **S = 24 cm²**; additionally, **P = 20 cm**.	Small piece of paper / edge of the worksheet.	Whether pupils can independently calculate the area and perimeter and use the correct units of measurement.	The main **assessment focus** is understanding the concepts and choosing the appropriate formula.
Lesson conclusion	2 min	**The teacher summarises:** "Area tells us how much surface a shape covers. Perimeter is the total length of all its sides." Invites pupils to name one real-life situation in which area needs to be calculated.	Pupils give an example and tidy their workspace.	Worksheets.	Whether pupils can connect the concepts of area and perimeter with a practical situation.	Positively emphasise **individual progress**.

Formative Assessment Summary

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Skill assessed	Observation indicators	Achieved	Partially achieved	Support needed
Understands the concepts of area and perimeter	Correctly determines from the situation whether **S or P** needs to be calculated.	☐	☐	☐
Calculates the area of a square	Uses **S = a × a** and calculates correctly.	☐	☐	☐
Calculates the area of a rectangle	Uses **S = a × b** and calculates correctly.	☐	☐	☐
Calculates the perimeter of a rectangle / square	Chooses and uses the appropriate formula for a square or rectangle.	☐	☐	☐
Uses appropriate units for P and S	Uses **cm²/m² for area** and **cm/m for perimeter**.	☐	☐	☐
Solves a practical problem	Identifies the **given information and what needs to be found**, chooses the appropriate formula and formulates the answer.	☐	☐	☐
Finds an unknown side length	Uses the known **P or S** to determine the length of a side.	☐	☐	☐
Explains the solution	Explains the choice of formula and calculation method.	☐	☐	☐

Teacher's Reflection After the Lesson

What went well?

- Do the pupils understand the difference between **area and perimeter**?
- Can they **choose the appropriate area formula independently**?
- Which visual and practical support strategies were the most effective?

What difficulties did the pupils experience?

- Did pupils confuse the **P and S formulas**?

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- Did they use the **correct units of measurement**?
- Did they find it difficult to **find an unknown side length** or solve the **word problem**?

What should be developed further in the next lesson?

- Which pupils still need a **formula reminder card**?
- Which pupils need more **practical measuring and area-modelling tasks**?
- Which pupils are ready for more challenging tasks involving an **unknown side length and equal areas**?

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LESSON PLAN

Date:

Grade: IVth

Curricular area: Mathematics and Natural Sciences

Subject: Mathematics

Unit: *Play and Learning Workshop*

Lesson topic: Comparing and ordering sub-unit fractions with the same denominator

Lesson type: Acquiring new knowledge

Duration: 50 minutes

Specific skills:

2.2. Comparing natural numbers in the range 0–10,000, and sub-unit or unit fractions with the same denominator, less than or equal to 10

2.3. Ordering natural numbers in the range 0–10,000 and fractions (both proper and mixed) with the same denominator, where the denominator is less than or equal to 10

Operational objectives:

O1 – to identify how sub-unit fractions with the same denominator can be compared;

O2 – to compare at least 8 sub-unit fractions with the same denominator;

O3 – to arrange sub-unit fractions with the same denominator in ascending and descending order;

O4 – to represent at least two fractions graphically;

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O5 – to fill in the appropriate denominator or numerator to obtain true relationships.

Elements of Teaching Strategy

Methods: conversation, explanation, exercise, didactic game/ play, learning through discovery

Means: smart board, computer, whiteboard, worksheets, marker, chocolate

Organizational forms: whole-class activity, individual activity.

References:

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Moș, I., 2016, *Repere în educația matematică primară*, Editura Universității de Vest, Timișoara.

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Grigore, A., Costache, S., Tănase, I., Raicu, M., 2018, *Exerciții și probleme – Culegere de matematică clasa a III-a,* Editura Ars Libri, Costești.

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www.wordwall.com

https://learningapps.org/

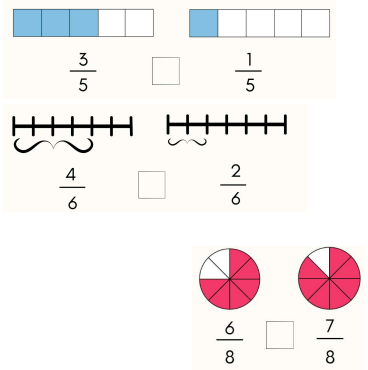
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Lesson sequences	Opob	Time	The Scientific Content of Learning	Teaching strategies			Evaluation
				Methods	Means	Organization	
1. Organizational Moment		1 min	The necessary conditions are ensured for the lesson to run smoothly, and the worksheets on the topic are collected for marking later.	Conversation		Frontal	
2. Refreshing the knowledge previously acquired		7 min	Knowledge is refreshed using a WordWall game. For each task, a pupil is chosen to come to the blackboard and select the correct answer.	Didactic game	Smart board Wordwall	Frontal	Verbal appreciations
3. Attention-grabbing moment		5 min	Each pupil is given a Kinder Country chocolate bar. I divide the class into two groups and ask one pupil from each group to come to the front. One of the groups, together with their representative, eats one piece of the chocolate bar, which consists of 10 pieces, whilst the other group, together with their representative, eats two pieces out of the 10. Then I will ask them: "Who ate more?" (I use the names of the two pupils at the front) I conclude by telling them: "If ..... ate more, that means two parts out of 10 are more than one part out of 10."	Conversation	Real life material (chocolate)	Frontal	

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4. Announcing the topic and the objectives		1 min	Today, in maths, we're going to learn how to compare sub-unit fractions with the same denominator and arrange them in ascending and descending order.	Conversation		Frontal	
5. Guiding Learning	**O 1** **O 2**	15 min	I launch the Canva presentation and explain to them what they need to learn by the end of the lesson. I ask the pupils to recall the 'magic words' (whole number, denominator, numerator) from the world of fractions and what they mean. Using the story of the two chocolates, the pupils discover how to identify which fraction is larger when dealing with sub-unit fractions with the same denominator. I write the date, the title and the rule they have discovered on the board: 'Of two fractions with equal denominators, the fraction with the larger numerator is larger.' The pupils determine whether the comparison presented is true or false and justify their answer. We check whether they were correct. I call on one pupil at a time to solve each exercise on the slides, whilst we write the examples in our exercise books.	Conversația Învățarea prin descoperire	Smart board Prezentation Pupils' notebooks	Frontal	Verbal appreciations Observing the pupils' behaviour Verbal appreciations

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6. Working on improving the performance	**O2 O5 O2 O3 O2 O4 O2**	15 min	The pupils are given a worksheet (Appendix 1). I ask a pupil to read out the instructions for the first exercise and come to the blackboard to write the first two fractions, then to compare them. I ask different pupils to continue working through the exercise. The tasks on the worksheets are in the annexes to this project. They will complete Worksheet No. 4 independently, and we will check it together.	Exercice	Smart board Worksheets	Frontal Independent	Verbal appreciations

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7. Ensuring Retention And Transfer	**O1O2O3**	5 min	Pupils are given a worksheet containing the exercises that also appear in the Learning Apps presentation, to assess the concepts they have learnt. (Appendix 2) I allow them 2 minutes to complete the exercises individually; then, one by one, I call on pupils to come to the smartboard to solve the exercises in front of the class, thereby assessing their understanding. The pupils will swap exercise books and mark each other's work.	Didactic game	The Platform Learning Apps Worksheet	Frontal Independent	Verbal appreciations Peer marking
8. Concluding the activity		1 min	I praise the pupils for the way they've worked and set them their homework.	Conversation		Frontal	Verbal assessment

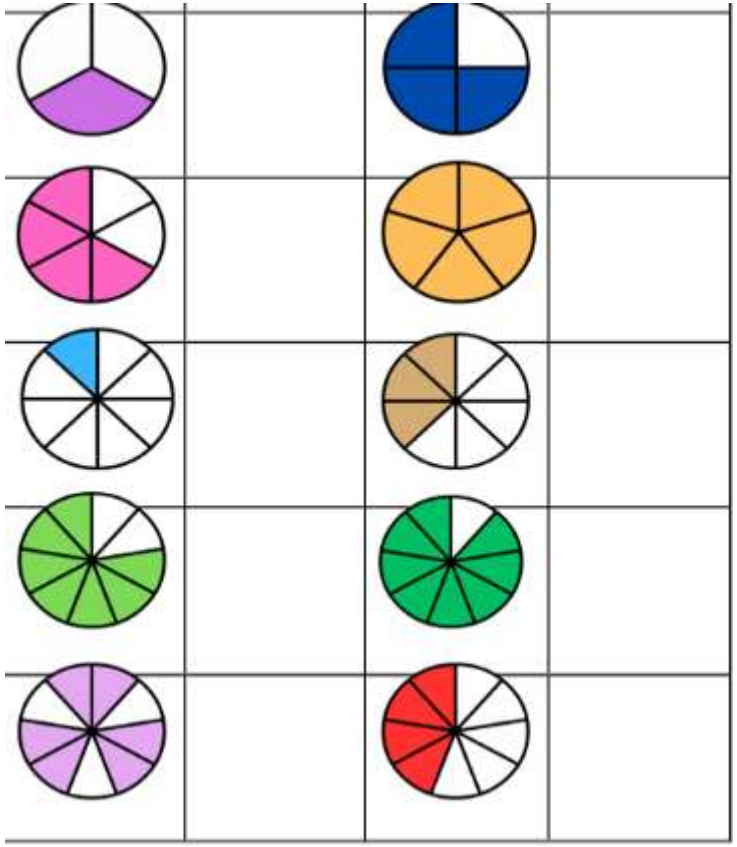
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ANNEX 1

Worksheet 1

1. Write the fraction corresponding to the following graphic representations:

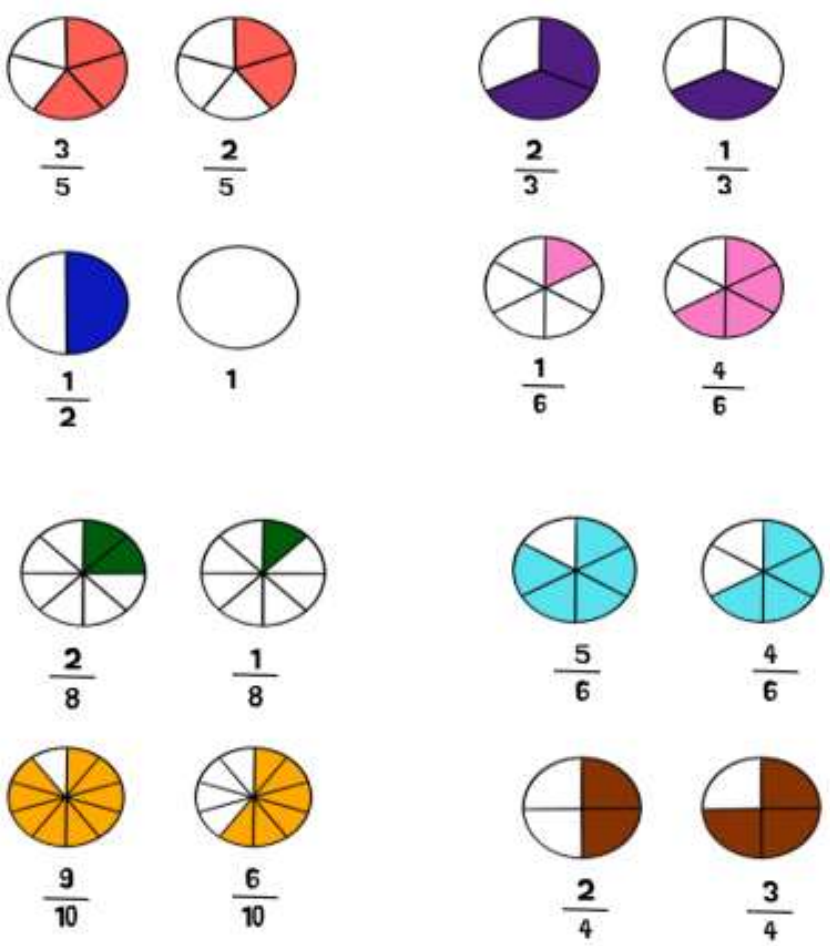


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Worksheet 2

1. Compare the following fractions:



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Worksheet 3

1. Fill in the boxes so that the relationship is correct:

$\frac{3}{4} > \frac{\square}{4}$; $\frac{5}{6} > \frac{\square}{\square}$; $\frac{7}{\square} < \frac{\square}{8}$; $\frac{\square}{3} > \frac{\square}{3}$; $\frac{\square}{5} = \frac{5}{\square}$

2. Write T (True) or F (False) for each relationship, correspondingly:

$\frac{4}{6} < \frac{2}{6}$ ☐ $\frac{1}{10} > \frac{4}{10}$ ☐ $\frac{2}{7} < \frac{5}{7}$ ☐ $\frac{2}{8} < \frac{3}{8}$ ☐ $\frac{5}{9} = \frac{5}{9}$ ☐

3. Arrange the following fractions in ascending order:

$\frac{1}{7}$; $\frac{6}{7}$; $\frac{7}{7}$; $\frac{5}{7}$; $\frac{2}{7}$

4. Arrange the following fractions in descending order:

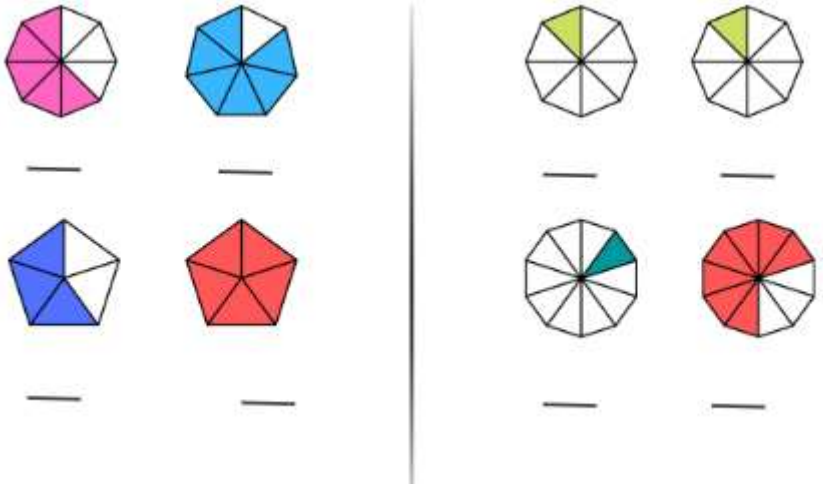
$\frac{3}{5}$; $\frac{5}{5}$; $\frac{1}{5}$; $\frac{2}{5}$; $\frac{4}{5}$

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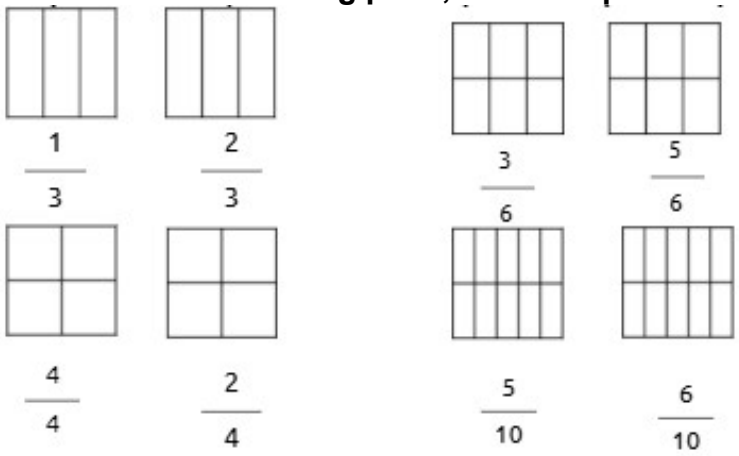
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Worksheet 4

1. Write the corresponding fraction and compare the following graphic representations:



2. Make the graphic representation of the following pairs, then compare them:



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ANNEX 2

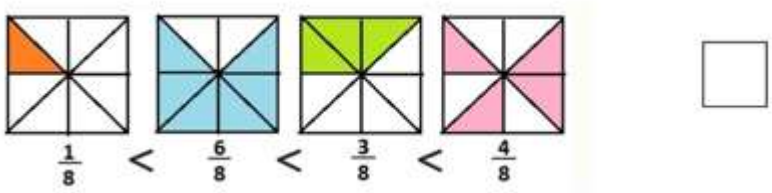
Decide if the following affirmations are True or False:

1. The fraction 3/8 is bigger than the fraction 6/8.

2. Sub-unit fractions have a numerator smaller than the denominator.

3. When comparing fractions with the same denominator, the fraction with the larger numerator is greater.

4.



5. The following fractions $\frac{7}{7}\ \frac{4}{7}\ \frac{3}{7}\ \frac{1}{7}$ are arranged in descending order.

Congratulations!

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Teacher's notes

Grade: IV

Topic: Sub-unit, equal-unit and over-unit fractions: recognising, representing, comparing and ordering.

Learning objective(s):

- To identify the denominator and numerator of a fraction using visual aids (circles, grids of squares, pizza).
- To represent fractions graphically by colouring in parts of a given whole.
- Compare fractions with the same denominator or the same numerator using mathematical symbols ().
- Order sequences of fractions in ascending and descending order.

The worksheet was designed by: LTGM

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	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
Level 1	*Focused on recognising and writing simple fractions intuitively.* 1. Observe and write: Look at the pictures of circles divided into slices and write the fraction that corresponds to the coloured part under each one (e.g. count how many parts there are in total and how many are coloured). 2. Compare: Look at the given pairs of fractions and place the correct comparison symbol between them 3. Draw: You are given a circle or a rectangle; colour exactly as many parts as indicated by the numerator of the fraction written next to it.	1. Correctly identifying fractions such as . 2. Comparing fractions 3. Colouring the segments correctly (e.g. 2 parts out of 8).	The ability to understand that the denominator shows into how many equal parts the whole has been divided, and the numerator shows how many of these parts have been taken or coloured.	Worksheet Level 1, coloured pencils, tokens with fraction circles. Interactive whiteboard The app https://phet.colorado.edu/sims/html/fractions-intro/latest/fractions-intro_all.html?locale=ro Or https://toytheater.com/equivalent-fraction-circles/	Give the pupils circles that have already been divided, where they just need to colour them in. *Challenge*: Ask them to say what the 'remainder' of the uncoloured fraction is, to make it a whole.

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	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
Level 2	*Focused on applying concepts to real-life situations (pizza problems) and graphical comparisons.* 1. The real world: Imagine that the circles are pizzas. Write the fraction that corresponds to the slices of pizza missing from the whole. 2. Colour analysis: Identify and write the fraction that represents only the part coloured green in a set of shapes. 3. Complete the drawing: Colour in as shown 4. Comparing fractions	1. Correctly identifying the missing parts (e.g. a slice of pizza). 2. Correctly extracting the 'green' fraction from the total number of segments. 3. Writing pairs of fractions and the correct equality sign..	Attention to detail (distinguishing between what is coloured and what is missing) and accuracy in writing the fraction symbolically.	Worksheet level 2, cut-out pictures of 'pizza slices'. Coloured pencils Interactive whiteboard The app https://phet.colorado.edu/sims/html/fractions-intro/latest/fractions-intro_all.html?locale=ro or https://toytheater.com/equivalent-fraction-circles/	Examples of objects from the classroom (e.g. 'What fraction of the pupils wear glasses?') can be used to reinforce the concept of a part of a whole.

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Level 3	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Focused on abstraction, logic and ordering sequences of fractions. 1. Grid representation: Use the grid of squares to colour an area representing the given fraction 2. Logic: Fill in the empty boxes with the correct digits so that the inequalities are true. 3. Ordering: Arrange the fractions in the given sequence in ascending order (from smallest to largest) and then in descending order.	Pupils represent fractions graphically and compare them. Complete the fractions so that the relationships are true. Pupils arrange the given fractions in ascending or descending order.	Pupils' understanding of the rule for comparing fractions with the same numerator (where a smaller denominator indicates a larger fraction) is assessed.	Level 3 worksheet, graph paper, ruler for plotting graphs. Interactive whiteboard The app https://phet.colorado.edu/sims/html/fractions-intro/latest/fractions-intro_all.html?locale=ro or https://toytheater.com/equivalent-fraction-circles/	**Challenge:** Students can be asked to create their own inequalities with missing terms and give them to their classmates to solve.

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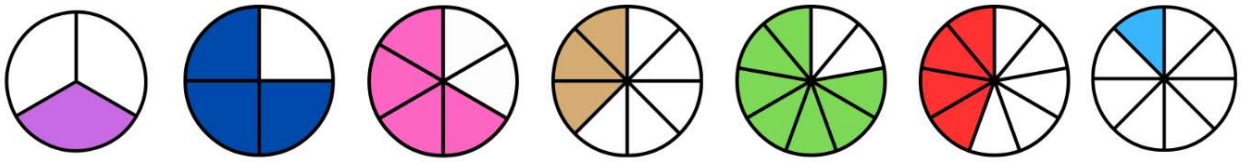
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Name: Grade: Date:

Fractions: recognising, comparing and calculating with proper, improper and mixed fractions

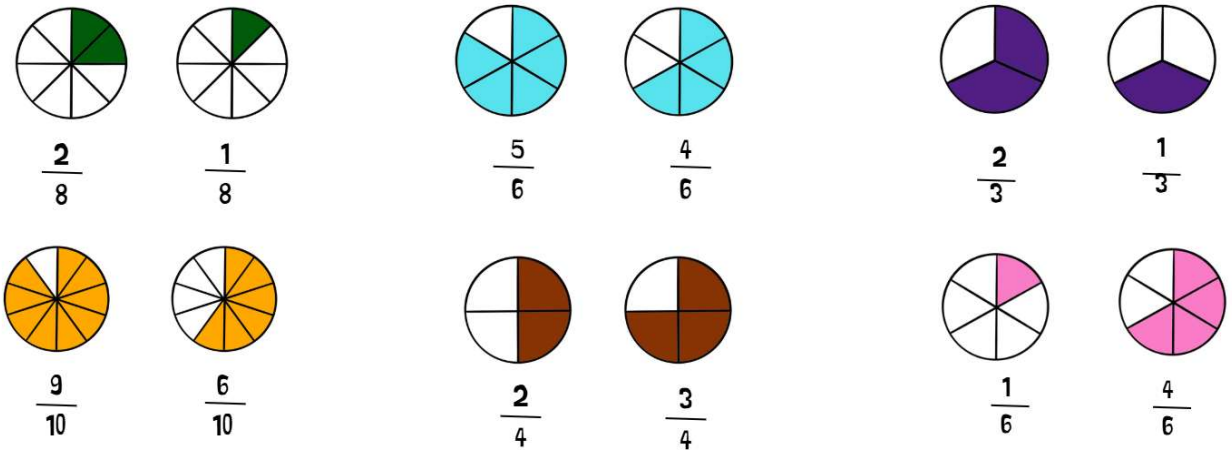
Level 1	What do I need to do?	What can I solve this use to task?
	1. Remember what you know about different types of fractions. 2. Look carefully at the images and try to understand what they represent. 3. Solve the operations and write down the results. 4. Check the results before going to the next exercise.	● A pencil or a pen ● An eraser

1. Write the fraction corresponding to the coloured parts:

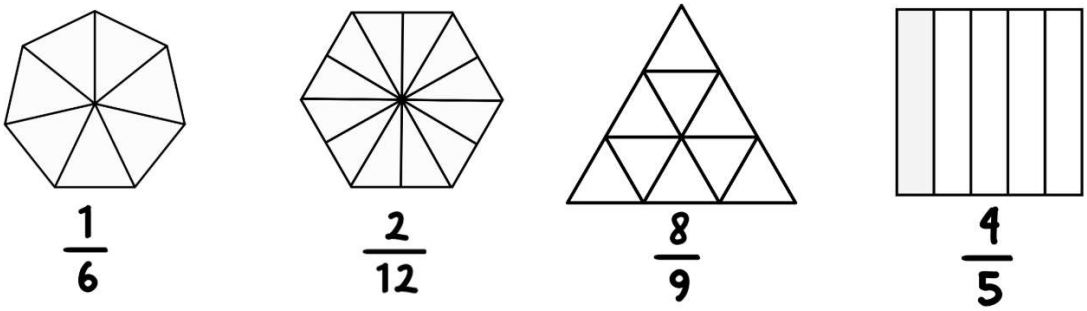


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2. Compare the fractions:



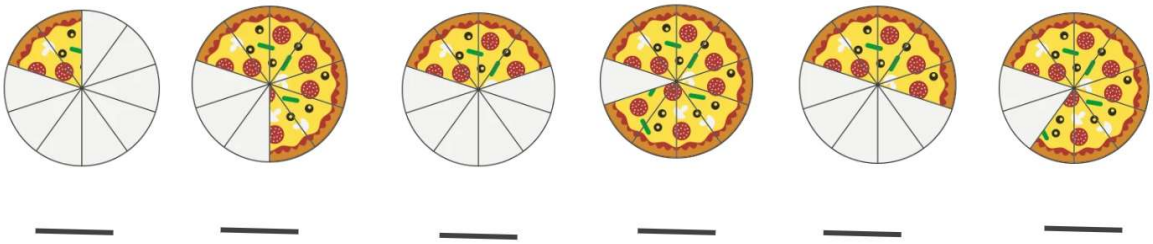
3. Colour so as to represent the corresponding fraction:



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Level 2	What do I  need to do?	What can I use to solve this task? 
	1. Remember what you know about the whole/ a part. 2. Read the tasks of each problem carefully. 3. Write down the solutions. 4. Check the answers	● A pencil or a pen ● An eraser

1. Write the fraction corresponding to the slices of pizza missing from the whole:



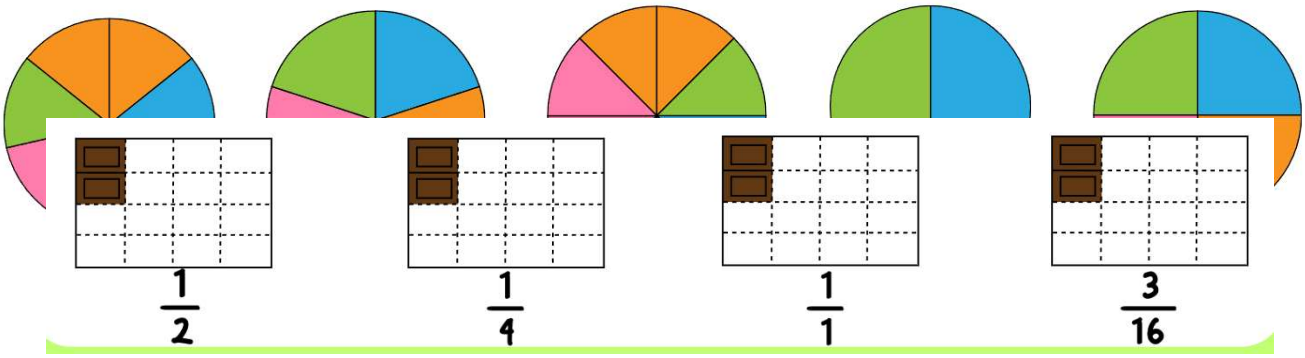




2. Write the corresponding fraction and compare the following graphic representations:

3. Write the fraction that corresponds to the part coloured in green:

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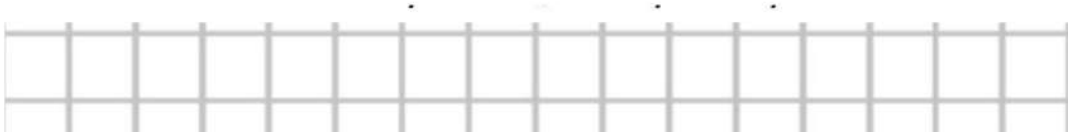
4. Colour so as to represent the indicated fraction:

Level 3	**What do I need to do?**	**What can I use this to solve task?**
	1. Remember what you know about comparing fractions. 2. Read the tasks carefully, so as to understand what you have to do. 3. Solve the problems. 4. Check the results.	● A pencil or a pen ● An eraser

1. Graphically represent the following pairs, then compare them.

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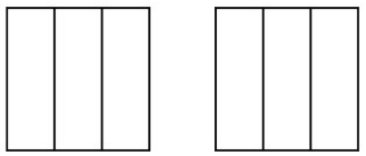
$\frac{17}{8}$ $\frac{8}{8}$ $\frac{12}{8}$ $\frac{1}{8}$ $\frac{19}{8}$ $\frac{14}{8}$



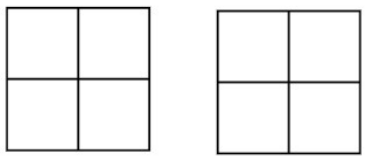
$\frac{3}{4} > \frac{\square}{4}$; $\frac{5}{6} > \frac{\square}{\square}$; $\frac{7}{\square} < \frac{\square}{8}$; $\frac{\square}{3} > \frac{\square}{3}$; $\frac{\square}{5} = \frac{5}{\square}$

2. Fill in the boxes, so as the following relationship be true:

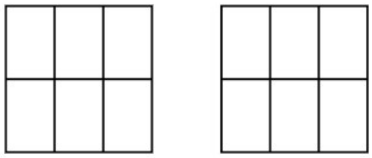
3. Arrange the fractions in ascending order:



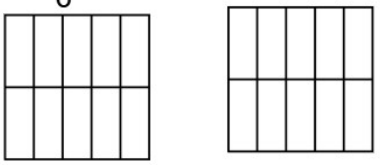
$\frac{1}{3}$ $\frac{2}{3}$



$\frac{4}{4}$ $\frac{2}{4}$



$\frac{3}{6}$ $\frac{5}{6}$



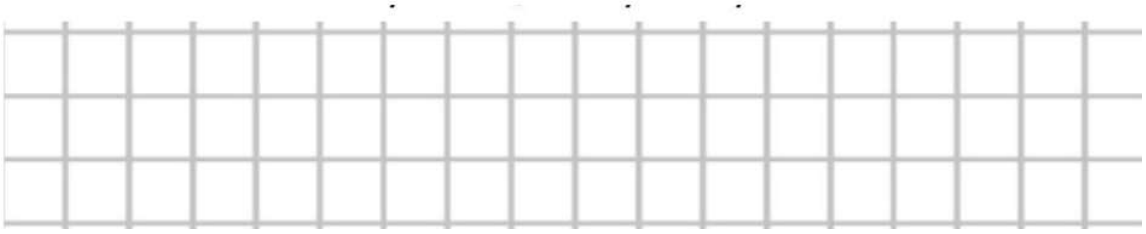
$\frac{5}{10}$ $\frac{6}{10}$

4. Arrange the fractions in descending order:

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$\frac{1}{6}$ $\frac{1}{3}$ $\frac{1}{2}$ $\frac{1}{4}$ $\frac{1}{5}$ $\frac{1}{9}$



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LESSON PLAN

- **GRADE:** 4th Grade
- **LEARNING AREA:** Arithmetic (Numbers and Operations)
- **SUBJECT:** Mathematics
- **TOPIC:** Introduction to decimal numbers: Tenths, hundredths, and the connection with fractions
- **LESSON TYPE:** Knowledge Acquisition, Consolidation, and Application
- **DURATION:** 40 + 40 minutes (2 lesson periods)

Part I: Learning Objectives and Competences

Lesson Goal: Students extend their understanding of the place value system to include the first two decimal places after the comma (tenths and hundredths). They understand decimal numbers as an alternative way of writing fractions with denominators of 10 and 100, and they can flexibly convert between these representations (visual grids, fraction notation, and decimal numbers).

Operationalized Learning Objectives (Learning Outcomes):

- **LO1:** Students recognize tenths (0.1 or 1/10) and hundredths (0.01 or 1/100) in visual grids (10-strips and 100-grids) and color them correctly.
- **LO2:** Students enter decimal numbers into an extended place value chart (with Ones [O], comma, tenths [t], and hundredths [h]) according to their correct place value.
- **LO3:** Students convert fractions with denominators of 10 and 100 into decimal numbers and vice versa without errors.
- **LO4:** Students solve real-world mathematical riddles (e.g., using Euro/Cent or measurements of length) while correctly applying decimal notation.

Part II: Didactic-Methodical Framework

- **Methods and Techniques:** Teacher explanation/lecture, guided classroom discussion (question-and-answer), cognitive modeling (working with the "Euro-Cent Model" and the 100-grid), Gamification (The Game: "The Secret Comma Riddle").

- **Teaching Materials and Media:** Magnetic place value chart for the blackboard (extended to include the comma, t, and h), play money (1-Euro coins, 10-Cent coins, 1-Cent coins), transparent 100-grid sheets, differentiated worksheets.
- **Social Forms:** Whole-class instruction (Plenary for introducing the decimal comma), partner work (representing monetary amounts with coins), and individual work.

Part III: Lesson Progression (Table Model)

Phase	Objective	Content	Method	Media	Social Form	Duration
1. Introduction & Organization	—	Ensuring classroom order. Students prepare their math notebooks, pencils, rulers, and colored pencils.	Discussion	—	WC	5 Min
2. Motivation & Lead-in	—	The teacher shows a price tag from a supermarket: "A chocolate bar costs 1.45 Euro. We know the 1 stands for the Euro. But what do the numbers after the comma mean exactly? How do they divide the Euro?"	Problem Statement / Real-world context	Price tag / Play money	WC	5 Min
3. Goal Orientation	—	Announcement of today's mission: We are crossing the border of the ones! We will unlock the secret of the decimal comma and discover the world of tenths and hundredths.	Teacher Explanation	—	WC	5 Min
4. Activating Prior Knowledge	LO1	Short review of fractions in the plenary: The teacher shows a strip divided into 10 equal parts. 3 parts are colored. "What is this fraction called?" The class answers in unison:	Impulse / Fraction Review	Image cards (Fractions)	WC	5 Min

Phase	Objective	Content	Method	Media	Social Form	Duration
		"Three tenths!" (3/10).				
5. Acquisition Phase	LO1, LO2, LO3	1. The Tenth (t): When we divide a whole into 10 parts, one part is 1/10. In the place value chart, we write this behind a comma in the tenths column: 0.1. (10 Cents = 1/10 of 1 Euro). 2. The Hundredth (h): If we divide the whole into 100 parts (100-grid), one square is 1/100 or 0.01 (1 Cent = 1/100 of 1 Euro). The teacher demonstrates how to write 0.45 (45/100) in the place value chart.	Demonstration & Visualization	Extended place value chart, 100-grid	WC / PW (Partner)	30 Min
6. Consolidation / Application	LO3, LO4	Students work on the prepared worksheet "The Decimal Headquarters". The exercises are tiered from easy to difficult.	Independent Application	Worksheets	IW	20 Min
7. Wrap-up & Homework	—	Summary: The teacher calls out a fraction ("7/10"), and a student says the matching decimal number ("0.7"). Homework: Solve the problems in the place value template on the worksheet.	Summary	Blackboard	WC	10 Min

Abbreviations for Social Forms: WC: Whole Class (Plenary), IW: Individual Work, PW: Partner Work, GW: Group Work

Part IV: Template for Accompanying Material (Assessment & Evaluation)

Worksheet Draft: "The Decimal Headquarters"

This worksheet is structured into three tiers based on the principle of "from easy to difficult":

TIER 1: Connecting Fractions and Decimals (Easiest)

- **Task:** Look closely at the fractions. Which fraction matches which decimal number? Draw a line to connect the matching pairs using different colored pencils!

Plaintext
[Fraction Notation] [Decimal Number]

3 / 10 (Three Tenths) 0.03

3 / 100 (Three Hundredths) 0.3

45 / 100 (Forty-Five) 0.45

TIER 2: Entering into the Place Value Grid (Intermediate)

- **Task:** Convert the fractions into decimal numbers and enter them correctly into the grid template. Pay very close attention to the comma!
- **a)** Convert: 7 / 10 = _____
- **b)** Convert: 25 / 100 = _____
- **c)** Convert: 4 / 100 = _____ *(Careful: There are no tenths!)*

Plaintext
[O] , [t] [h]
a) __ , __ __
b) __ , __ __
c) __ , __ __
(Note: O = Ones, t = tenths, h = hundredths)

TIER 3: Create and Solve (Difficult)

- **Task:** Solve the tricky mathematical detective riddle and draw your very own Decimal Monster!
- **Number Riddle:** A mysterious amount of money is locked inside a treasure chest. It consists of exactly 4 one-Euro coins, 3 ten-Cent coins, and 7 one-Cent coins. What is the decimal number that shows this exact amount?

  (Tip: Think about which coins represent the tenths and which represent the hundredths!)

  Answer: There are _____ Euro inside the chest.

- **Creative Part:** In the empty space next to it, draw your own personal "Decimal Monster" based on the following conditions:
  1. The monster has a number of eyes that corresponds exactly to the tenths value of the number 0.62.

     The monster has exactly _____ eyes.

  2. Draw a number of arms for the monster that corresponds exactly to the hundredths value of the number 0.58.

     The monster has exactly _____ arms.

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Teacher's Notes – 4th Grade Worksheet (Decimals)

 Class: 4th Grade

 Topic: Introduction to Decimal Fractions and Decimals – Representation of Tenths and Hundredths in the Place Value Chart (The Decimal Headquarters: Discovering Fractions and Decimals)

 Learning Objectives:

- Decimal fractions (e.g., 3/10, 3/100, 45/100) are correctly assigned visually and conceptually to the corresponding decimal numbers (decimals).

- Fractions with denominators of 10 and 100 are systematically entered into a place value chart for decimal numbers (ones, tenths, hundredths), with the position of the decimal point correctly taken into account.

- Everyday situations (e.g., monetary amounts in Euros and Cents) are interpreted as decimal numbers. Place values are systematically analyzed to serve as the basis for a creative product.

 Worksheet Created By: GEDONSOFT GMBH

TASK 1: Connecting Fractions and Decimals	**Instruction for the Student**	**Expected Answer**	Focus of Assessment / Observation	Materials / Resources	Methodological Recommendations
	"Look closely at the fractions. Which fraction matches which decimal number? Connect the matching pairs with different colored pencils using a straight line!"	3/10 (Three tenths) ➔ 0.3 3/100 (Three hundredths) ➔ 0.03	Does the student recognize the structural difference between tenths (one place after the decimal point) and hundredths (two places after the	Student worksheet, colored pencils	• **Easier:** Students can be shown a hundredth-square grid model where 3 out of 10 strips (3/10) compared to 3 out of 100 small squares (3/100) are highlighted in color to visualize the

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		□ 45/100 (Forty-five hundredths) ➔ 0.45	decimal point) during direct assignment?		difference in quantity. • **Challenging:** Students can be asked to write a fourth line themselves with the fraction 5/10 and place the matching decimal number next to it

TASK 2: Entering Data into the Place Value Template	**Instruction for the Student**	**Expected Answer**	**Focus of Assessment / Observation**	**Materials / Resources**	**Methodological Recommendations**
	"Convert the fractions into decimal numbers and enter them into the template correctly aligned by place value. Pay very close attention to ensure that the decimal point is in the right place!"	□ a) 7/10 = 0.7 ➔ [0] , [7] [ ] □ b) 25/100 = 0.25 ➔ [0] , [2] [5] □ c) 4/100 = 0.04 ➔ [0] , [0] [4] *(Note: The tenths place remains zero.)*	Has the student mastered entering data into the decimal place value chart? Is the placeholder zero in the tenths place correctly set in task c so as not to distort the value?	Student worksheet, pencil	• **Easier:** The abbreviations of the place value chart can be broken down in large format on the chalkboard once again: [E] = Ones (Wholes), [z] = Tenths, [h] = Hundredths. • **Challenging:** Students can try to enter a mixed number like 1 34/100 into an expanded template

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TASK 3: Tricky Detective Riddle and Your Decimal Monster	Instruction for the Student	Expected Answer	Focus of Assessment / Observation	Materials / Resources	Methodological Recommendations
	"First, solve the tricky mathematical treasure riddle with the Euro and Cent coins. Then, use the large free space to draw your very own Decimal Monster according to the exact calculation rules!"	**Treasure Riddle:** 4 one-Euro coins (4 ones), 3 ten-Cent coins (3 tenths), and 7 one-Cent coins (7 hundredths) yield exactly 4.37 Euros. **Monster Rules:** Eyes: The value in the tenths place of 0.62 is 6 ➔ The monster has exactly 6 eyes. Arms: The value in the hundredths place of 0.58 is 8 ➔ The monster has exactly 8 arms. **Drawing:** A creative monster drawing inside the frame that features exactly 6 eyes and exactly 8 arms.	Does the student understand the analogy between our decimal system and the currency system (10 Cents = 1 tenth of a Euro, 1 Cent = 1 hundredth of a Euro)? Can they specifically isolate certain place values (z and h) from a decimal number and apply them in practice?	Student worksheet, pencil, eraser, and colored pencils	**Easier:** Real play money coins (1 Euro, 10 Cents, 1 Cent) can be placed on the table for the student to physically set up the amount of 4.37 Euros before writing it down. **Challenging:** Add an optional bonus rule: "Calculate the number of legs: Look at the number 2.45 and multiply the value of the ones place by 2. Draw the legs into your picture!"

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Name: Class: Date:

The Decimal Headquarters: Discovering Fractions and Decimals

TASK 1: Connecting Fractions and Decimals	What do I need to do?	What materials do I need?
	Look closely at the fractions. Which fraction matches which decimal number? Connect the matching pairs with different colored pencils using a straight line!	Colored pencils

Task Design Area

Fraction Notation		Decimal Number
3 / 10 (Three tenths)	.....	0.03
3 / 100 (Three hundredths)	.....	0.3
45 / 100 (Forty-five hundredths)	.....	0.45

Self-Assessment	Teacher's Comments
[ ] I finished the task.	
[ ] I checked my work..	

How did I do? (Please circle):

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TASK 2: Entering Data into the Place Value Template	 **What do I need to do?**	 **What materials do I need?**
	Convert the fractions below into decimal numbers. Then write each number correctly into the place-value template. Pay attention: Put the decimal point in the right place!	Pencil

Task Design Area

FAMILY 1: Enter the partial steps neatly into the template:

- **a)** Convert: 7 / 10 = _____
- **b)** Convert: 25 / 100 = _____
- **c)** Convert: 4 / 100 = _____ *(Note: There are no tenths here!)*

E = Ones (whole number part)
z = Tenths
h = Hundredths

[E] , [z] [h]

a) __ , __ __

b) __ , __ __

c) __ , __ __

Self-Assessment	**Teacher's Comments**
[ ] I finished the task.	
[ ] I checked my work	

How did I do? (Please circle):





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TASK 3: Tricky Detective Riddle and Your Decimal Monster	 **What do I need to do?**	 **What materials do I need?**
	First, solve the tricky mathematical treasure riddle with the Euro and Cent coins. Then, use the large free space to draw your very own Decimal Monster according to the exact calculation rules!	Pencil, eraser, and colored pencils.

Task Design Area

1. A mysterious amount of money lies in a treasure chest. It consists of exactly 4 one-Euro coins, 3 ten-Cent coins, and 7 one-Cent coins. What is the decimal number that shows this exact amount?

   (Hint: Think about which coins represent the tenths [z] and which represent the hundredths [h]!)

   Answer: There are _____ Euros in the chest.

[Large free space for drawing your Decimal Monster]

Rules for your monster:

- **Calculate the number of EYES:** Look at the number 0.62. The monster has as many eyes as the value in the tenths place [t] indicates.

  Your monster has exactly _____ eyes.

- **Calculate the number of ARMS:** Look at the number 0.58. Draw a number of arms for the monster that corresponds exactly to the value in the hundredths place [h].

  Your monster has exactly _____ arms.

Self-Assessment	Teacher's Comments
[ ] I finished the task.	
[ ] I checked my work.	

How did I do? (Please circle):





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Teacher's Notes

Grade: 4th

Topic: Geometry: recognizing plane figures and geometric shapes, symmetry, and perimeters.

Learning objective(s):

- Identify and name two-dimensional shapes (triangle, square, rectangle, circle) and three-dimensional shapes (cube, sphere, cylinder, rectangular prism, cone).
- Distinguish between two-dimensional geometric shapes and three-dimensional geometric shapes.
- Match three-dimensional shapes with their two-dimensional net diagrams.
- Calculate the perimeter of given geometric shapes.
- Identify the axes of symmetry of given shapes.
- Solve problems involving spatial orientation and spatial awareness.

The worksheet was designed by: LTGM

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	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
Level 1	1. Label: Write the name of the corresponding geometric shape under each picture. 2. Colour in as instructed: Use red for triangles, green for circles, blue for squares and yellow for rectangles. 3. Classify: Colour the (flat) geometric shapes green and the (three-dimensional) geometric solids yellow. 4. Divide: Draw lines inside the given squares to form two triangles, two rectangles or one rectangle and two squares.	1. Correct identification (e.g. triangle, square, circle). 2. Applying colours in accordance with the established code. 3. Correctly distinguishing between 2D and 3D shapes. 4. Correctly drawn lines (e.g. diagonals for triangles).	The aim is to assess the pupil's ability to distinguish between basic geometric shapes and to understand how a shape can be made up of smaller ones. We observe whether the pupil confuses geometric shapes and solids, and whether they correctly distinguish between a plane (2D) shape and a solid (3D).	Worksheet (Level 1), coloured pencils (red, green, blue, yellow). Ruler for drawing lines within a square Plastic geometric solids and shapes (geometry set) Interactive display The Geogebra app	The task can be made easier by providing cut-out templates for the square-division exercise.

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Level 2	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Focusing on geometric shapes in space, projections and basic perimeter calculations. 1. Identify 3D shapes: Write the correct names of the geometric shapes shown (cube, cuboid, etc.). 2. Colour coding: Colour the cube red, the sphere green, the cylinder blue, the cuboid yellow and the cone pink. 3. Match: Draw lines to connect each geometric shape with the image representing its net. 4. Analyse: Look at the Rubik's cube and work out how many small cubes it is made up of. 5. Calculate: Work out the perimeter of the marked geometric shapes.	1. Correct names for the shapes. 2. Colours applied in accordance with the instructions. 3. Correct correspondence between the shape and its net (e.g. the cylinder with a net consisting of a rectangle and two circles). .	The ability to visualise objects in space and to make the connection between a 3D object and its flat representation.	Worksheet (Level 2), ruler, real-life models of geometric shapes (cube, cone, sphere), writing tools the GeoGebra app,	Pupils can use objects in the classroom (a box, a ball) to identify the geometric shapes they have studied before completing the worksheet. The GeoGebra app can also be used to construct geometric shapes.

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Level 3	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Focused on symmetry, complex geometric analysis and logical reasoning. 1. Write the name of the complex shape and draw a line (the axis of symmetry) that divides it into two identical parts, as in a mirror. 2. Triangle hunt: Count all the triangles you can find in the given shapes. Note: some triangles are made up of several smaller triangles! 3. Complex perimeters: Calculate P for shapes with varying side lengths (e.g. 3 cm, 2 cm, 4 cm 4. The Missing Pieces Problem: Look at the large cube made up of white pieces. If the 3 red pieces have been removed, work out by deduction how many white pieces remain in total in the structure.	1. Correct labels and axes of symmetry that divide the shape into mirror images. 2. Identification of all triangles (including those made up of several pieces). 3. The correct sum of the sides (e.g. P = 2+3+4+...). 4. . The correct difference between the total number of cubes and those removed.	The precision in drawing the axes of symmetry and the ability to solve spatial logic problems requiring attention to detail are evident. The focus is on how to identify triangles.	Worksheet (Level 3), a ruler with graduations, possibly unit cubes for physically reconstructing the problem, a writing implement.	Challenge the pupils to explain 'why' a particular line is an axis of symmetry. For the exercise with the cubes, ask them to work out the total volume before removing any pieces.

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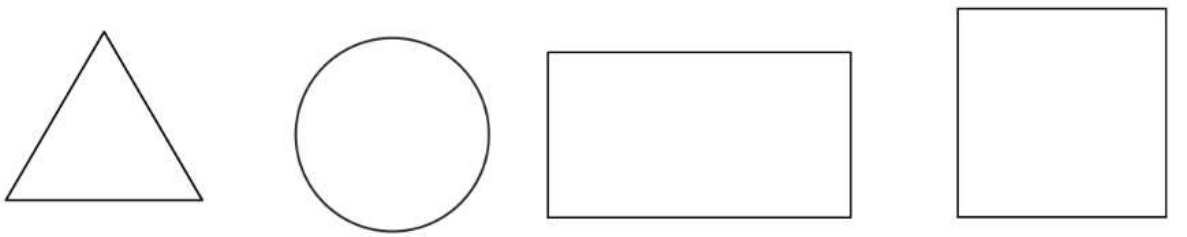
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Name: Grade: Date:

Geometry: recognising two-dimensional shapes and solids, circles, angles, parallel and perpendicular lines

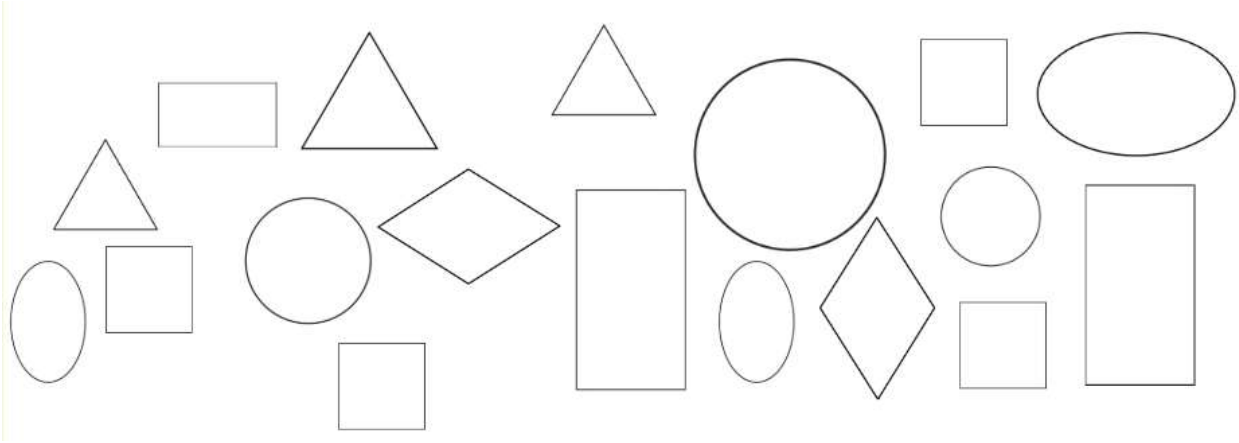
Level 1	What do I need to do?	What can I solve this use to task?
	1. Remember what you know about different geometrical shapes and geometric solides. 2. Look carefully at the images and try to understand what they represent. 3. Solve the tasks given. 4. Check the results before going to the next exercise.	● A pencil or a pen ● An eraser

1. Write the names of the geometric shapes below:

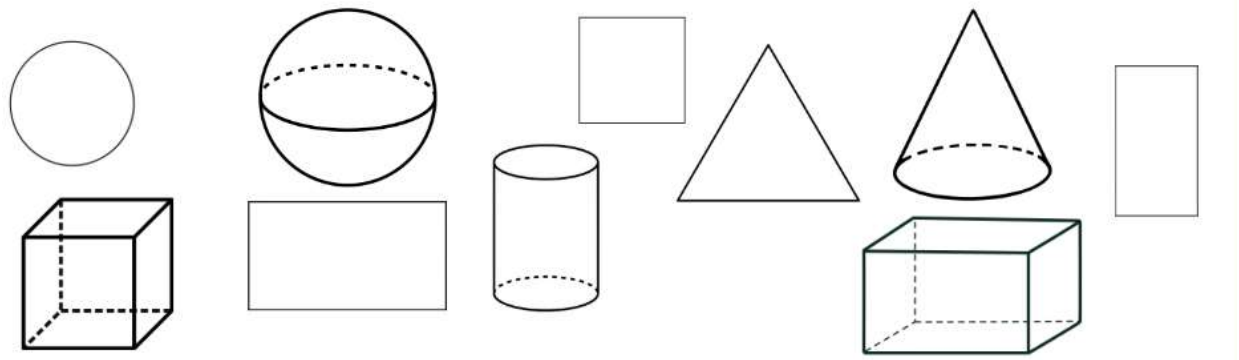


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2. Colour the triangles red, the circles green, the squares blue and the rectangles yellow:



3. Colour the geometric shapes green and the geometric solids yellow:



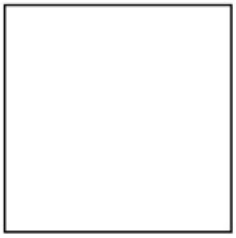
4. Draw lines to divide each square into:

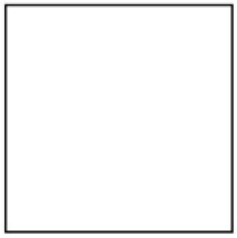
a. two triangles and

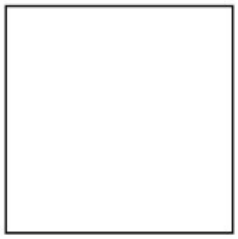
b. two rectangles

c. one rectangle

two squares





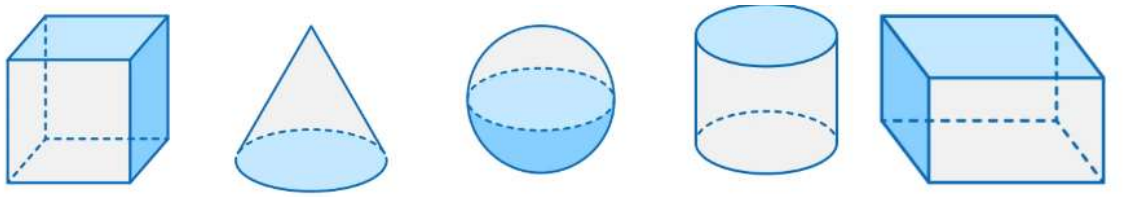


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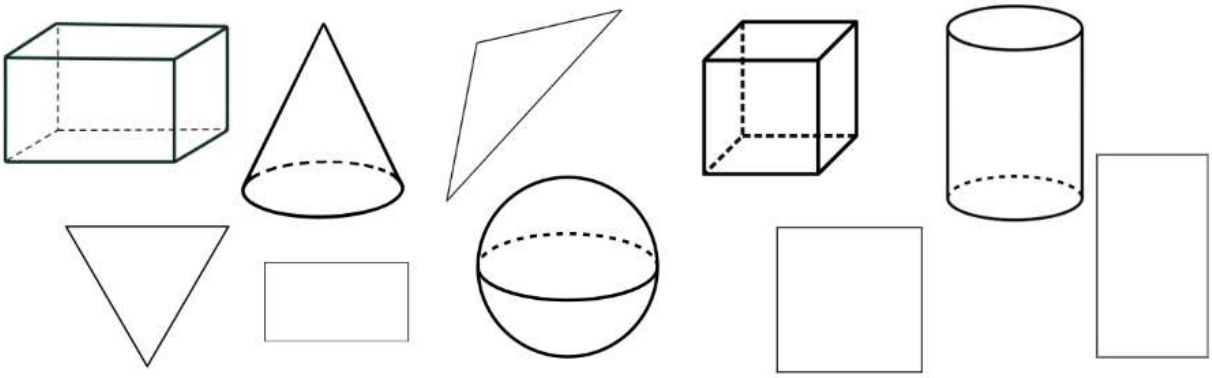
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Level 2	What do I need to do?	What can I use to solve this task?
	1. Remember what you know about the solid geometric shapes. 2. Read the tasks of each problem carefully. 3. Write down the solutions. 4. Check the answers	● A pencil or a pen ● An eraser

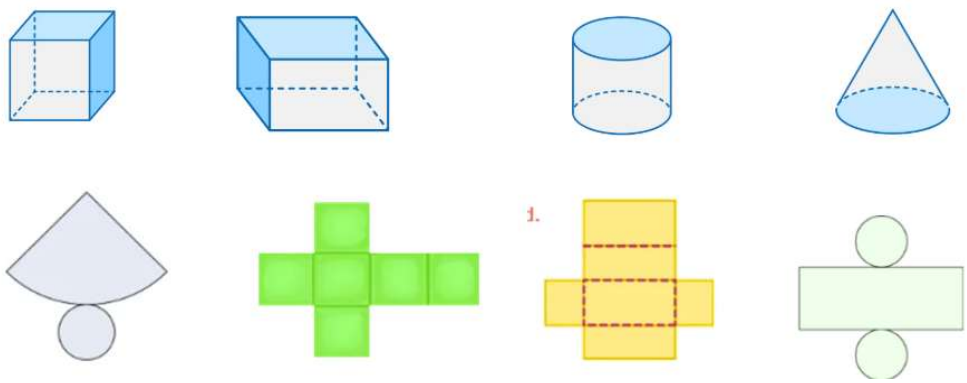
1. Write the names of the solid geometric shapes below:



2. Colour the cube red, the sphere green, the cylinder blue, the cuboid yellow and the cone pink.



3. Match each geometric body with its unfolded form:

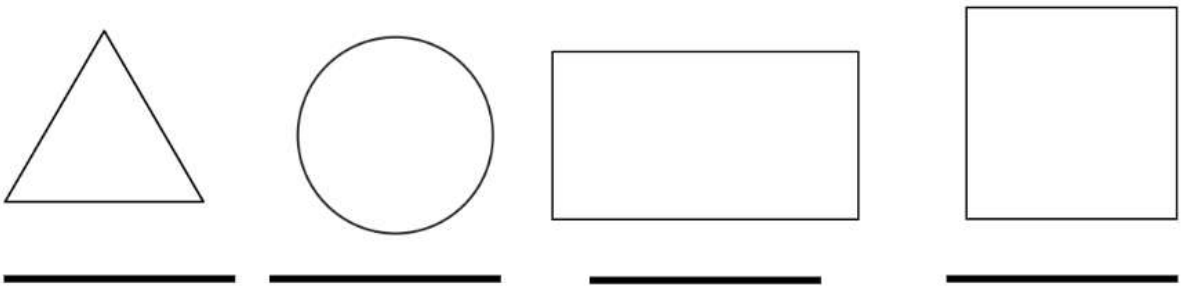


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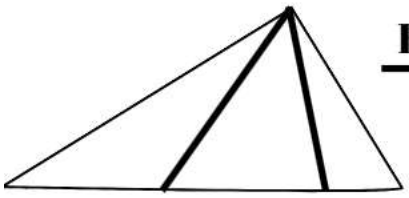
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Level 3	What do I  need to do?	What can I use this to solve task? 
	1. Remember what you know about symmetry axes and perimetres. 2. Read the tasks carefully, so as to understand what you have to do. 3. Solve the problems. 4. Check the results.	● A pencil or a pen ● An eraser

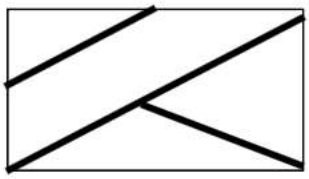
1. Write the names of the figures below and draw their axes of symmetry:



2. How many triangles are there in the figures below?



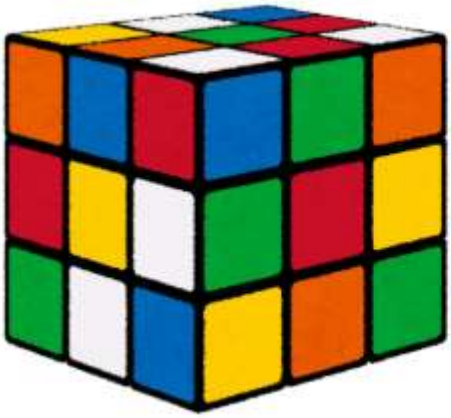
R: _____

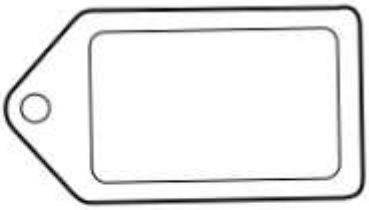


R: _____

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3. How many small cubes formed the Rubik cube?

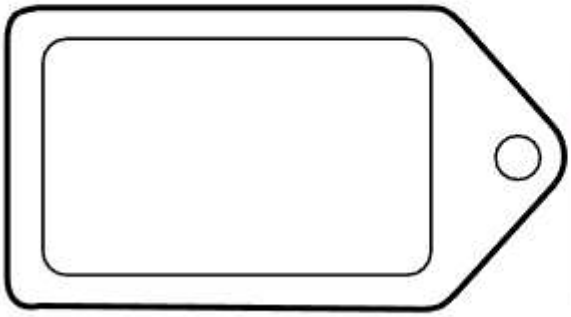


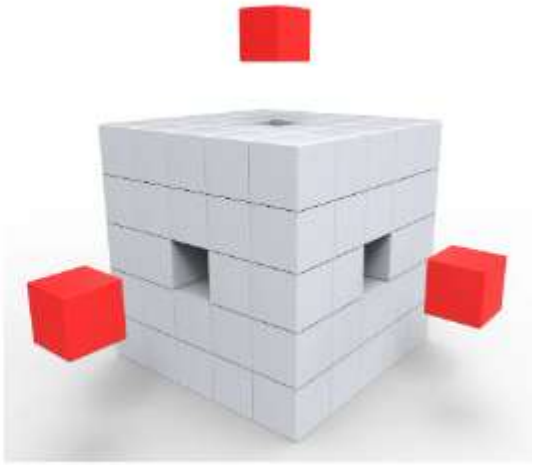




4. I took 3 small, cube-shaped pieces (the red ones) out of the large cube. How many white pieces are left to make the shape?

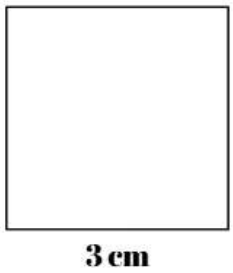




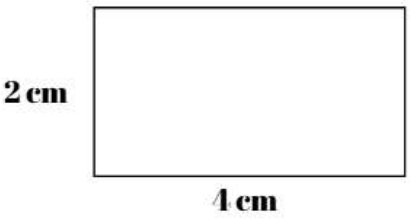


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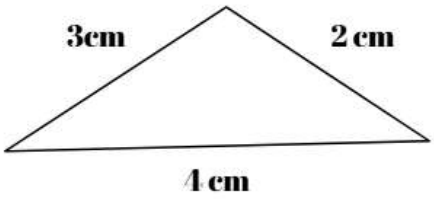
5. Calculate the perimeter of the following figures:



P=



P=



P=

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