

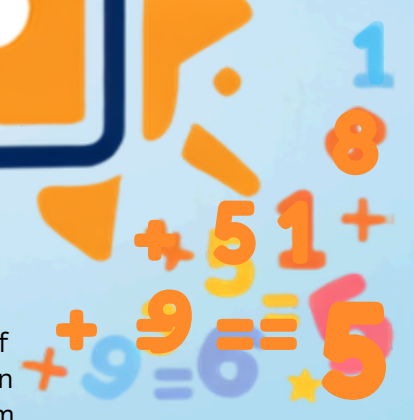
$2 + 3$

★ **Resource Bank** ★

$+$

Alternative Teaching Resources in Math

$1 + 2 = 3$



Teacher's Notes

Grade: 5

Topic: Fractions: Comparison, addition and subtraction

Learning objectives: to understand and master the algorithm for converting to a common denominator; adding and subtracting fractions with the same and different denominators; adding and subtracting mixed numbers; applying new knowledge to solve word problems (finding the unknown).

The worksheet was designed by: Asociacia Dyslexia - Bulgaria

Level 1	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	A/ - Examine the sample carefully - Follow the described steps to find the lowest common denominator. - Find the lowest common denominator of the indicated fractions. B/ Examine the sample carefully. Compare the fractions, not forgetting to first bring	- The student understands the instructions and the given example. - Is aware of the concepts of "fraction", "numerator", "denominator" - Knows how to find the least common multiple and reduce fractions to a common denominator - Compares fractions correctly - Orders fractions correctly by magnitude	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 aware of the concepts - Is (s)he able to find the least common multiple	- A pencil or a pen - The worksheet	- Give the instructions one at a time – wait for the students to complete one action before giving the next one. - Review the given examples with the students and discuss them before they start working independently. - Remind them of the signs of divisibility of numbers and how to find the least common multiple (you can write a few examples on the board and check if the students are aware of the algorithm) - If necessary, explain (and show visually – easiest with a pie chart) that if the



	them under a common denominator. C/ - Arrange the fractions in order by magnitude, starting with the smallest. - Be careful! You must first bring all the fractions under a common denominator.		- Does (s)he know how to reduce fractions to a common denominator - Does (s)he work at a good enough pace - Does (s)he need additional explanations?		fractions have the same denominators, the fraction with the larger numerator is larger. - Provide enough time for the task to be completed. - Help students who are having difficulty with guiding questions or additional instructions
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Level 2	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	A/ - Look carefully at the example. - Remember: - When adding fractions with the same denominator, we need to add the numerators and rewrite the same denominator. - When subtracting fractions with the same denominator, we need to subtract the	- The student understands the instructions and the given example. - Is aware of the concepts of "fraction", "numerator", "denominator" - Knows how to find the least common multiple and reduce fractions to a	The teacher observes: - Does the student understand the instructions? - Can (s)he maintain the necessary concentration? - Can (s)he work independently? - Is the student aware of the meaning of the concepts? - Does (s)he know the signs of divisibility of numbers, is he able	- A pencil or a pen - The worksheet	- Give the instructions one at a time – wait for the students to complete one action before giving instructions for the next. - Go over the given example together and discuss it with the students before they start working independently. - Note that when the fractions have the same denominators, they add and subtract only the numerators, and copy the



	numerators and rewrite the same denominator. 3. Perform the indicated actions by following the example. B/ - Look carefully at the example. - Remember: - When adding fractions with different denominators, we need to first bring them under a common denominator, then add the numerators and rewrite the common denominator. - When subtracting fractions with different denominators, we need to first bring them under a common denominator, then subtract the numerators and rewrite the common denominator. 3. Perform the indicated actions by following the example. C/	common denominator - Can judge when it is necessary to reduce fractions to a common denominator - Is aware of the concepts of "mixed number" and "improper fraction". - Can convert mixed numbers to improper fractions and vice versa. - Correctly performs addition and subtraction operations - Correctly writes the result.	to find the least common multiple and reduce to a common denominator - Can (s)he judge how to approach adding and subtracting fractions (whether or not it is necessary to reduce to a common denominator or convert the mixed number) - Does (s)he work at a constant pace? - Does (s)he need additional instructions or help?		denominator, and when the denominators are different, they must first reduce the fractions to a common denominator before performing the addition and subtraction. - Ensure enough time to complete the task. - If a student is having difficulty working independently, you can review the example again and then use guiding questions to help them. - Give students who are struggling the opportunity to ask for "buddy help."
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	1. Look carefully at the example. 2. Remember: - When adding or subtracting mixed numbers, we must first convert them to improper fractions, if necessary, to a common denominator, then perform the operation and convert the resulting improper fraction into a mixed number. 3. Perform the indicated actions by following the example.				
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Level 3	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	1. Read the condition of the problems carefully. 2. Carefully examine the given example. 3. Compose a mathematical expression following the condition. 4. Find the unknown, being careful about what arithmetic	• The student reads the text problem independently; • Is able to extract information from the text and correctly compose the mathematical expression; • 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. • Is (s)he able to work independently.	• A pencil or a pen • The worksheet	When working with this type of text problems, advise students to: • Carefully read the condition of the problem (if necessary – more than once) • Identify the keywords in the text. • Be careful when composing the mathematical



	operation you will use. 5. Perform the operations with fractions following the rules (see the examples in Level 1 and Level 2 again). 6. Check.	• Correctly performs the calculations. • Correctly records the result. • Knows how to do a check.	• Can (s)he extract key information important for solving the problem; • Can (s)he represent the information with a mathematical expression; • Correctly determines which arithmetic operation to use to solve the problem. • Does (s)he perform operations with fractions correctly? • Does (s)he need help or additional instructions?		expression by following the condition exactly. • Answer the question: What arithmetic operation should I use to find the unknown? • Follow the algorithm for adding and subtracting mixed numbers exactly • Check the result obtained.
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Name: _____



Grade: _____



Date: _____

Fractions

Level 1	 What do I need to do?	 What can I use to solve this task?
	A/ 1. Examine the example carefully 2. Follow the steps described to find the least common denominator. 3. Find the least common denominator of the given fractions. B/ 1. Examine the sample carefully. 2. Compare the fractions, remembering to first bring them under a common denominator. C/ 1. Arrange the fractions by size, starting with the smallest. 2. Be careful! You must bring all the fractions under a common denominator first.	• A pen or a pencil



EXAMPLE A:

Find the common denominator: $\frac{1}{4}$ and $\frac{3}{10}$

(1) $\begin{array}{r|l} 4, 10 & 2 \\ \hline 2, 5 & 2 \\ 1, 5 & 5 \\ 1, 1 & \end{array} \Rightarrow$
 (2) $\begin{array}{l} 20:4=5 \\ 20:10=2 \end{array} \frac{1}{4} \text{ and } \frac{3}{10} \Rightarrow$
 (3) $\frac{1 \times 5}{20} \text{ and } \frac{3 \times 2}{20} \Rightarrow \frac{5}{20} \text{ and } \frac{6}{20}$

$HO3 = 2 \cdot 2 \cdot 5 = 20 \rightarrow 20$

Bring the fractions under a common denominator: $\frac{3}{4}$ and $\frac{5}{6}$

Bring the fractions under a common denominator: $\frac{4}{9}$ and $\frac{7}{12}$

Bring the fractions under a common denominator: $\frac{9}{10}$, $\frac{1}{4}$ and $\frac{3}{25}$



EXAMPLE B:

Compare the fractions: $\frac{1}{4}$ and $\frac{3}{10}$

① Finding the common denominator $\Rightarrow \frac{5}{20}$ and $\frac{6}{20}$

② Comparing the fractions /the one with larger numerator is larger/ $\Rightarrow \frac{5}{20} \boxed{<} \frac{6}{20}$

Compare the fractions: $\frac{1}{3}$ and $\frac{2}{9}$

— —

Compare the fractions: $\frac{4}{7}$ and $\frac{3}{5}$

— —

Compare the fractions: $\frac{13}{20}$ and $\frac{4}{15}$

— —



EXAMPLE C:

Arrange the fractions by the magnitude: $\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{6}$

① Bringing under a common denominator $\Rightarrow \frac{4}{24}$, $\frac{6}{24}$ and $\frac{9}{24}$

② Arranging by the magnitude: $\Rightarrow \frac{4}{24} < \frac{6}{24} < \frac{9}{24}$

Arrange by the magnitude, starting
from the smallest one:

$$\frac{7}{10}, \frac{5}{8}, \frac{3}{5}$$

Arrange by the magnitude, starting
from the largest one:

$$\frac{11}{15}, \frac{9}{10}, \frac{5}{12}$$

Arrange by the magnitude, starting
from the smallest one:

$$\frac{4}{9}, \frac{1}{2}, \frac{10}{27}, \frac{1}{6}$$

— — — —



Level 2	 What do I need to do?	 What can I use to solve this task?
	A/ 1. Look carefully at the example. 2. Remember:: - When adding fractions with the same denominator, we need to add the numerators and write the same denominator. - When subtracting fractions with the same denominator, we subtract the numerators and write the same denominator. 3. Perform the indicated actions by following the example.	• A pen or a pencil
	B/ 1. Look carefully at the example. 2. Remember:: - When adding fractions with different denominators, we need to first bring them under a common denominator, then add the numerators and rewrite the common denominator. - When subtracting fractions with different denominators, we need to first bring them under a common denominator, then subtract the numerators and rewrite the common denominator. 3. Perform the indicated actions by following the example.	
	C/ 1. Look carefully at the example. 2. Remember:: - When adding or subtracting mixed numbers, we first need to convert them to improper fractions, if necessary, to a common denominator, then perform the operation and convert the resulting improper fraction into a mixed number. 3. Perform the indicated actions by following the example.	



EXAMPLE A:

1. Adding fractions with the same denominator: $\frac{1}{5} + \frac{3}{5} = \frac{1+3}{5} = \frac{4}{5}$

2. Subtracting fractions with the same denominator: $\frac{3}{5} - \frac{1}{5} = \frac{3-1}{5} = \frac{2}{5}$

Perform the addition:

$$\frac{2}{7} + \frac{3}{7} =$$

$$\frac{7}{15} + \frac{4}{15} =$$

$$\frac{3}{17} + \frac{5}{17} + \frac{8}{17} =$$

Perform the subtraction:

$$\frac{5}{9} - \frac{1}{9} =$$

$$\frac{24}{31} - \frac{11}{31} =$$



EXAMPLE B:

1. Adding fractions with different denominators: $\frac{\overset{5}{1}}{\underset{4}{4}} + \frac{\overset{4}{3}}{\underset{5}{5}} = \frac{5+12}{20} = \frac{17}{20}$
2. Subtracting fractions with different denominators: $\frac{\overset{4}{3}}{\underset{5}{5}} - \frac{\overset{5}{1}}{\underset{4}{4}} = \frac{12-5}{20} = \frac{7}{20}$

Perform the addition:

$$\frac{3}{5} + \frac{3}{10} =$$

$$\frac{1}{7} + \frac{4}{9} =$$

$$\frac{2}{15} + \frac{3}{20} + \frac{1}{6} =$$

Perform the subtraction:

$$\frac{5}{7} - \frac{2}{3} =$$

$$\frac{23}{24} - \frac{7}{18} =$$

$$\frac{11}{12} - \frac{5}{6} =$$



EXAMPLE C:

1. Adding mixed numbers: $2\frac{1}{4} + 3\frac{3}{5} = \frac{9}{4} + \frac{18}{5} = \frac{45+72}{20} = \frac{119}{20} = 5\frac{19}{20}$

Diagram: A curved arrow from the denominator 4 of $\frac{9}{4}$ to the denominator 5 of $\frac{18}{5}$ is labeled with '20' below it. A red box above the final result contains the text '119:20=5, oct.19' with arrows pointing to the quotient 5 and the remainder 19.

2. Subtracting mixed numbers: $3\frac{2}{5} - 2\frac{1}{4} = \frac{17}{5} - \frac{9}{4} = \frac{85-36}{20} = \frac{49}{20} = 2\frac{9}{20}$

Diagram: A curved arrow from the denominator 5 of $\frac{17}{5}$ to the denominator 4 of $\frac{9}{4}$ is labeled with '20' below it. A red box above the final result contains the text '49:20=2, oct.9' with arrows pointing to the quotient 2 and the remainder 9.

Perform the given operations:

$$7\frac{1}{5} + 2\frac{3}{5} =$$

$$5\frac{2}{7} + 1\frac{3}{4} =$$

$$2\frac{2}{3} + 3\frac{1}{6} =$$

$$11\frac{1}{9} - 8\frac{4}{9} =$$

$$4\frac{1}{6} - 1\frac{2}{5} =$$

$$12\frac{1}{4} - 7\frac{7}{8} =$$



Level 3	 What do I need to do?	 What can I use to solve this task?
	1. Look at the given example. 2. Read the condition of each problem carefully. 3. Compose the mathematical expression that meets the condition. 4. Perform the necessary calculations. 5. Write down the result. 6. Check before moving on to the next problem.	• A pen or a pencil

EXAMPLE:

I thought of a number. I added $3\frac{2}{3}$ to it. I got $4\frac{3}{4}$.

What number did I think of?

$$\boxed{} + 3\frac{2}{3} = 4\frac{3}{4} \Rightarrow 4\frac{3}{4} - 3\frac{2}{3} = \frac{\overset{3}{19}}{4} - \frac{\overset{4}{11}}{3} = \frac{57-44}{12} = \frac{13}{12} = 1\frac{1}{12}$$

I thought of a number. I increased it by $5\frac{2}{5}$ and I got $8\frac{3}{8}$.

What number did I think of?

I think of a number. I subtracted $4\frac{1}{6}$ from it and I got $4\frac{2}{7}$.

What number did I think of?



I think of a number. I added $2\frac{1}{7}$ to it. From the resulting sum I subtracted $3\frac{12}{21}$ and I got $3\frac{5}{21}$. What number did I think of?



LESSON PLAN

GRADE:5

CURRICULAR AREA: Arithmetic

SUBJECT: Mathematics

LESSON TOPIC: Fractions – Comparison, addition and subtraction

LESSON TYPE: revision; new knowledge

SPECIFIC SKILLS: to acquire knowledge and skills for working with common fractions; their basic properties and algorithms for calculating with them; acquiring skills for solving a practical problem.

THE PURPOSE OF THE LESSON:

OPERATIONAL OBJECTIVES:

O1 review of the signs of divisibility of numbers; elements of common fractions

O2 review of finding the least common multiple and mastering the skill of bringing under a common denominator

O3 practice writing and comparing common fractions

O4 skills for performing the operations of addition and subtraction with common fractions and mixed numbers

TEACHING STRATEGY:

Methods and techniques: lecture, brainstorming, questions and answers; old knowledge - new knowledge; exercise, gamification

Teaching aids: worksheet, pen or pencil, eraser

Organizational approaches: frontal, individual, group



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: “You have a birthday party coming up. You have prepared invitations in advance and you know for sure that nine of your friends will be attending the birthday party. In this case, the cake should be divided into nine equal pieces. This way each child will get a piece of the cake, but what part? In mathematics, this is written using fractions. And what are they? (Expected answer: Fractions are numbers that represent some part of a whole unit.) In this case, what part of the cake will each child get? ($\frac{1}{9}$) And if one of the children gives up his piece and gives it to another child, what part will the other child get? Correct, $\frac{2}{9}$.	Activating old knowledge; Brain storm	-	F				5 min



		The teacher suggests that the students compare the fractions: $\frac{1}{9}$, $\frac{2}{9}$ and $\frac{6}{9}$. When the fractions have the same denominator, it is easy. But how can we compare, for example, the fractions: $\frac{1}{9}$, $\frac{2}{5}$ and $\frac{4}{7}$?							
3. Announcing the topic and objectives of the lesson	-	Today we will remember what a common fraction is, which fraction we call "improper", how to find the least common denominator, how to compare fractions by size; We will learn to perform the operations of addition and subtraction of common fractions and mixed numbers.	-	-	F				3 min
4. Updating one's knowledge	O1; O2	The elements of the fraction are recalled and what is the meaning of each of them: denominator (into how many equal parts the whole is divided; numerator – how many of these parts we took; fraction bar. The teacher asks questions to remind students of the concepts of proper and improper fractions and mixed numbers and how to convert an improper fraction into a mixed number and vice versa. The signs of divisibility of the numerator and denominator and the steps for finding the least common multiple are discussed.	Explanation; Questions and answers; exercise	Interactive/ white board; A scheme showing the steps in finding the least common multiple.	F		I		7 min



		The teacher writes several groups of numbers on the board and invites different students to find their least common multiple.							
5. Directing learning	O2; O3; O4	Transferring knowledge of divisibility of numbers and finding the least common multiple to reducing common fractions to a common denominator. The teacher explains that the skill of reducing common fractions to a common denominator is the basis for the skill of comparing fractions by size. The teacher, together with the students, examines and discusses the examples from Level 1 of the Worksheet, after which the students complete the tasks independently. The teacher presents the examples from Level 2 (A) – adding and subtracting fractions with the same denominator; and then from Level 2 (B) – adding and subtracting fractions with different denominators; they discuss the steps and the students solve the tasks.	Old knowledge – new knowledge; Questions and answers; Exercise	Worksheet, Level 1; Level 2 (A); Level 2 (B)	F		I		12 min
6. Aiming for performance	O2; O4	Applying old and new knowledge to perform operations of addition and subtraction of mixed numbers and to solve word problems.	Exercise; Applying the new knowledge in real situation	Worksheet, Level 2 (C); Level 3		G	I		7 min



		Students work on the problems from Level 2 (B) and Level 3 of the Worksheet. They can work individually or in pairs,							
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 groups of 4 students. Each student draws a number from 1 to 4. Each group receives a sheet with four tasks - task 1: comparing fractions; task 2: adding fractions with different denominators; task 3: subtracting fractions with different denominators; task 4: adding or subtracting mixed numbers. Each student in the group must solve the task corresponding to his number. If he decides, he can ask for help from the others in the group, after first trying to cope on his own. The winner is the group that first solves all the tasks correctly.	Exercises; gamification	A list with additional tasks		G	I		7 min

F = frontal

G = group

I = individual



WORKSHEET Sample: Fractions – Comparison, addition and subtraction

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

Level 1: Comparing common fractions /Easy/

- Finding the least common denominator
- Comparing and ordering fractions by size

Level 2: Adding and subtracting common fractions with the same and different denominators (Intermediate level)

- Adding and subtracting common fractions with the same denominator;
- Adding and subtracting common fractions with different denominators;
- Adding and subtracting mixed numbers.

Level 3: Word problems with application of new knowledge (Difficult)

- Solving word problems such as "I thought of a number...."

Additional task:

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



Teacher's Notes

Grade: 5

Topic: Fractions: Comparison, addition and subtraction

Learning objectives: to understand and master the algorithm for comparing, adding and subtracting decimal fractions; applying new knowledge to solve word problems (finding the unknown).

The worksheet was designed by: Asociacia Dyslexia - Bulgaria

Level 1	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	- Listen carefully to the teacher - he will dictate numbers. - Write down the numbers one after another - don't forget, we separate the whole part from the fractional part with a decimal point. - Colour the corresponding number according to the instructions. - Compare the numbers and arrange them in order of magnitude on the number line.	- The student understands the instructions and the given example. - Is aware of the concepts of "decimal fraction", "decimal comma", "whole part", "tenths", "hundredths", "thousandths", etc. - Correctly compares fractions - Correctly arranges fractions by magnitude	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 aware of the concepts? - Is (s)he able to compare decimal fractions by magnitude?	- A pencil or a pen - Coloured pencils or markers - The worksheet	- Give instructions one at a time – wait for students to complete one action before giving instructions for the next. - Review the given examples with students and discuss them before they start working independently. - Remind them of the algorithm for comparing decimal fractions (you can make a few examples on the board together before students start working independently) - Allow enough time to complete the task. - Help students who are struggling with guiding



			- Is (s)he working at a good enough pace? - Does (s)he need additional explanations and help?		questions or additional instructions
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Level 2	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	A/ - Look carefully at the example. - Remember: - When adding decimal fractions, we write them one below the other, making sure that the decimal points of the two addends are located exactly below each other. Then we perform the addition by following the rules for adding multi-digit numbers. If the number of digits after the decimal point in the addends is different, we add as many zeros to the “shorter” number as necessary to equal the number of digits after the decimal point in the two numbers. We place the decimal point of the resulting number exactly below the	- The student understands the instructions and the given example. - Is aware of the concepts of "decimal fraction", "decimal comma", "whole part", "tenths", "hundredths", "thousandths", etc. - Knows how to correctly place decimal fractions in vertical writing - Correctly performs addition and subtraction operations - Correctly writes the result.	The teacher observes: - Does the student understand the instructions? - Does (s)he manage to maintain the necessary concentration? - Is (s)he able to work independently? - Is the student aware of the meaning of the concepts? - Does (s)he arrange the decimals correctly in vertical writing?	- A pencil or a pen - The worksheet	- Give the instructions one at a time – wait for the students to complete one action before giving instructions for the next. - Look at the given example together and discuss it with the students before they start working independently. - Pay attention to the following: - when adding or subtracting decimal fractions in vertical notation, the decimal points of the numbers must be located exactly below each other;



	decimal points of the addends. 3. Perform the indicated actions by following the example. B/ 1. Look carefully at the example. 2. Remember: • When adding decimal fractions, we write them one below the other, making sure that the decimal points of the two addends are located exactly below each other. Then we perform the addition by following the rules for adding multi-digit numbers. If the number of digits after the decimal point in the addends is different, we add as many zeros to the “shorter” number as necessary to equal the number of digits after the decimal point in the two numbers. We place the decimal point of the resulting number exactly below the decimal points of the addends. 3. Perform the indicated actions by following the example.		• Does (s)he perform the indicated action correctly? • Does (s)he work at a constant pace? • Does (s)he need additional instructions or help?		- the number of digits after the decimal point must be the same in both numbers / if necessary, add zeros; - we follow the rules for adding and subtracting multi-digit numbers • Provide enough time to complete the task. • If a student is having difficulty doing it independently, 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”.
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Level 3	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	- Look at the given example. - Read the condition of each problem carefully. - Compose the mathematical expression that meets the condition. - Perform the necessary calculations. - Write down the result. - Check before moving on to the next problem.	- The student reads the text problem independently; - Is able to extract information from the text and correctly compose the mathematical expression; - Correctly determines which arithmetic operation to use. - Correctly performs the calculations. - Correctly records the result. - Knows how to do a check.	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. - Can (s)he extract key information important for solving the problem; - Can (s)he represent the information with a mathematical expression; - Correctly determines which arithmetic operation to use to solve the problem. - Does (s)he perform operations with fractions correctly? - Does (s)he need help or additional instructions?	- A pencil or a pen - The worksheet	When working with this type of text problems, advise students to: - Carefully read the condition of the problem (if necessary – more than once) - Identify the keywords in the text. - Be careful when composing the mathematical expression by following the text exactly. - Answer the question: What arithmetic operation should I use to find the unknown? - Follow the algorithm for adding and subtracting decimal fractions - Check the result obtained.



Name:



Grade:



Date:

Decimal fractions

Level 1	 What do I need to do?	 What can I use to solve this task?
	4. Listen carefully to the teacher - he will dictate numbers. 5. Write down the numbers one after another - don't forget, we separate the whole part from the fractional part with a decimal point. 6. Colour the corresponding number according to the instructions. 7. Compare the numbers and arrange them in order of magnitude on the number line.	• A pencil or a pen • Coloured pencils or markers • An eraser



EXAMPLE:

1. Listen and write down: **1.37; 0.344; 8.0982**
2. Colour following the instructions: "Colour the tenths digit in red, and the thousandths digit in blue" **8,0982, ...**
3. Arrange the numbers on the number axes:

1. Listen and write down:

.....

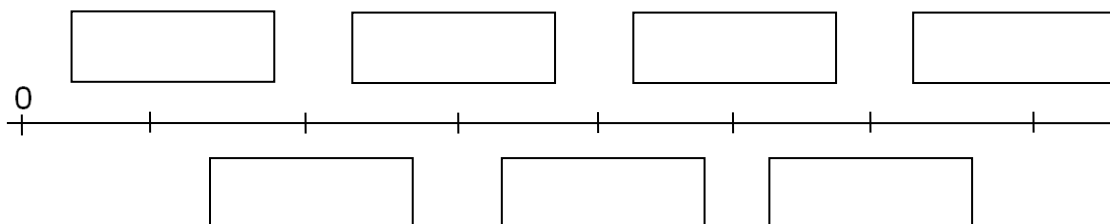
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2. - In the first number, colour the tens digit in yellow, and the tenths digit in green.
- In the fourth number, colour the hundredths digit in blue, and the ones digit in orange.
- In the seventh number, colour the thousandths digit in purple, and the ten-thousandths digit in red.

3. Arrange the numbers in order of magnitude and plot them on the number line.

When comparing decimal fractions, we first compare the whole part.
If the whole parts are equal, we compare the tens digit, then the hundreds digit, and so on.





Level 2	 What do I need to do?	 What can I use to solve this task?
	A/ 4. Look carefully at the example. 5. Remember: - When adding decimal fractions, we write them one below the other, making sure that the decimal points of the two addends are located exactly below each other. Then we perform the addition by following the rules for adding multi-digit numbers. If the number of digits after the decimal point in the addends is different, we add as many zeros to the “shorter” number as necessary to equal the number of digits after the decimal point in the two numbers. We place the decimal point of the resulting number exactly below the decimal points of the addends. 6. Perform the indicated actions by following the example. B/ 7. Look carefully at the example. 8. Remember: - When adding decimal fractions, we write them one below the other, making sure that the decimal points of the two addends are located exactly below each other. Then we perform the addition by following the rules for adding multi-digit numbers. If the number of digits after the decimal point in the addends is different, we add as many zeros to the “shorter” number as necessary to equal the number of digits after the decimal point in the two numbers. We place the decimal point of the resulting number exactly below the decimal points of the addends. 9. Perform the indicated actions by following the example.	• A pencil or a pen • An eraser



EXAMPLE A:

Perform the addition: $1,267 + 12,74 =$

$$\begin{array}{r} 1,267 \\ + 12,74 \\ \hline \end{array} \Rightarrow \begin{array}{r} 1,267 \\ + 12,740 \\ \hline \end{array} \Rightarrow \begin{array}{r} \textcircled{1} \\ 1,267 \\ + 12,740 \\ \hline 14,007 \end{array}$$

Perform the addition: $15,8 + 7,72 =$

Perform the addition: $5,408 + 8,9 =$

Perform the addition: $2,65 + 5,032 + 11,3961 =$

Perform the addition: $10,51 + 0,207 + 101,4 =$



EXAMPLE B:

Perform the subtraction: $12,74 - 1,267 =$

$$\begin{array}{r} 12,74 \\ - 1,267 \\ \hline \end{array} \Rightarrow \begin{array}{r} 12,740 \\ - 1,267 \\ \hline \end{array} \Rightarrow \begin{array}{r} 12,7\dot{4}0 \\ - 1,267 \\ \hline 11,473 \end{array}$$

Perform the subtraction: $13,8 - 7,34 =$

Perform the subtraction: $27,56 - 8,917 =$

Perform the subtraction: $33,7 - 25,623 =$

Perform the operations: $11,28 - (10,3 - 4,844) =$



Level 3	 What do I need to do?	 What can I use to solve this task?
	1. Look at the given example. 2. Read the condition of each problem carefully. 3. Compose the mathematical expression that meets the condition. 4. Perform the necessary calculations. 5. Write down the result. 6. Check before moving on to the next problem.	• A pen or a pencil



I thought of a number. I added 15.7 to it and got 29.12.

What number did I think of?

I thought of a number. I subtracted 8.05 from it and got the sum of the numbers 13.075 and 7.894. What number did I think of?

1. Write down five numbers, the first one is 6.4, and each subsequent number is 3.712 greater than the previous one. Calculate:

- **The sum of the first and the forth numbers;**
- **The difference of the fifth and second numbers;**
- **To the difference of the fourth and third, add the first number.**



Teacher's Notes

Grade: Grade 5

Topic: Measurement, Area, and Perimeter (Unit Conversions, Squares & Rectangles)

Learning objective(s):

- Convert common metric units of length (mm, cm, m, km).
- Calculate the perimeter and area of squares and rectangles using standard formulas and appropriate units (cm, m, cm², m²).
- Solve multi-step real-world word problems involving unit conversion prior to calculating perimeter and area.

The worksheet was designed by: GedonSoft GmbH

Level 1	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Convert the given length measurements to the requested units. Students must decide whether to multiply or divide by 10, 100 or 1000. 1 m=100 cm 1 cm=10 mm 1 km=1000 m	• 400 cm • 25 cm • 3500 m • 1.2 m (or 1 m 20 cm)	Check: Does the student know when to multiply/divide? Are units written correctly? Are there place-value errors with zeros?	Metric conversion chart visual, ruler.	• <i>Support (Scaffolding):</i> Provide a "Metric Ladder" visual chart showing x10, x100, x1000 jumps. • <i>Extension:</i> Include conversions with decimals or smaller



					sub-units like decimeters.
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Level 2	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Calculate Perimeter (P) and Area (A) of Square A and Rectangle B. Students must write the correct units (cm/cm ² or m/m ²).	• Square A: P=24 cm, A=36 cm² • Rectangle B: P=26 cm, A=40 cm²	Observe: Do students confuse perimeter (linear) with area (square units)? Are formulas applied correctly? Are units consistent? cmcm ²	Grid paper, colored markers, formula reference sheet.	• <i>Support (Scaffolding):</i> Support: Draw shapes on grid paper and count outer lines (P) and inner squares (A). Extension: Give area/perimeter first and ask for missing side (inverse). Common error: using wrong formula or forgetting units. 1 cm×1 cm • <i>Extension:</i> Give the area/perimeter first and ask students to find the missing side length (inverse problem).



Level 3	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Solve the vegetable garden problem step-by-step. Students must convert units first, then calculate perimeter and area.	• Width=$500\text{ cm} \div 100 = 5\text{ m}$ • Fence needed (Perimeter)=$2 \times 12\text{ m} + 5\text{ m} = 34\text{ m}$ • Total Area=$12\text{ m} \times 5\text{ m} = 60\text{ m}^2$	Check if students remember to convert different units to a single matching unit <i>before</i> multiplying or adding sides.	Scratch paper, word problem sentence starters.	• <i>Support (Scaffolding):</i> Support: Highlight different units in different colours. Extension: Add cost calculation (fencing €5/m). Common error: calculating without converting units first.mcm • <i>Extension:</i> Add a cost calculation element (e.g., "If fencing costs €5 per meter, how much will Mr. Green pay?").



Name:



Grade:



Date:

Mastering Measurement: The Great Perimeter & Area Quest!

Task 1 The Measurement Converter!	 What do I need to do?	 What can I use to solve this task?
	Convert the length measurements to the requested units using the conversion rules.	A pencil, an eraser, and your unit conversion table/chart.

Convert the length measurements to the requested units using the conversion rules.

(1 m = 100 cm, 1 cm = 10 mm, 1 km = 1000 m). Fill in the blanks below:

1. 4 m = _____ cm
2. 250 mm = _____ cm
3. 3.5 km = _____ m
4. 120 cm = _____ m

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

How did I do (circle):





Task 2 Perimeter and Area Architect!	 What do I need to do?	 What can I use to solve this task?
	Calculate the Perimeter (P) and Area (A) for the following shapes.	A ruler, a pencil, and the formulas

Don't forget to write the correct units (cm or cm^2)!

- Square A:** Side length $s = 6\text{ cm}$
 - $Perimeter (P) =$ _____
 - $Area (A) =$ _____
- Rectangle B:** Length $l = 8\text{ cm}$, Width $w = 5\text{ cm}$
 - $Perimeter (P) =$ _____
 - $Area (A) =$ _____

(
 $P_{square} = 4 \times s$, $A_{square} = s \times s$, $P_{rectangle} = 2 \times (l + w)$, $A_{rectangle} = l \times w$).

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

How did I do (circle):





Task 3	 What do I need to do?	 What can I use to solve this task?
	Read the real-life math problem and solve it step-by-step: ○	A pencil, scratch paper, and your problem-solving skills!

"Mr. Green wants to build a rectangular vegetable garden. The garden is 12 m long and 500 cm wide."

2. Convert the width from centimeters (*cm*) to meters (*m*).
 - *Width in meters* = _____ *m*
3. How many meters of fencing wire does he need to go all the way around the garden (*Perimeter*)?
 - *Fence needed* = _____ *m*
4. What is the total area of the vegetable garden in square meters (m^2)?
 - *Total Area* = _____ m^2

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

How did I do (circle):





LESSON PLAN

GRADE: Grade 5

CURRICULAR AREA: Mathematics & Geometry

SUBJECT: Mathematics

LESSON TOPIC: Measurement, Area, and Perimeter of Squares and Rectangles

LESSON TYPE: Skill Application and Problem Solving

SPECIFIC SKILLS: Metric unit conversion (mm,cm,m,km); applying area and perimeter formulas; solving real-world contextual math problems

THE PURPOSE OF THE LESSON: To guide students in converting common units of length and applying perimeter and area formulas to squares and rectangles in both abstract calculations and practical real-life scenarios.

OPERATIONAL OBJECTIVES:

- **O1:** Convert metric units of length between millimeters, centimeters, meters, and kilometers.
- **O2:** Calculate the perimeter of squares and rectangles using linear addition/multiplication formulas.
- **O3:** Calculate the area of squares and rectangles using grid-based or formula-based multiplication ($s \times s$, $l \times w$).
- **O4:** Solve multi-step real-world word problems requiring unit conversion before perimeter and area calculations.

TEACHING STRATEGY:

Methods and techniques: Modeling, Metric Ladder Strategy, Guided Problem Solving, Real-World Application, Self-Correction

Teaching aids: Printed Worksheet 2, Metric Unit Conversion Chart, Grid Paper, Rulers, Highlighters

Organizational approaches: Frontal (F), Group work (G), Individual work (I)

BIBLIOGRAPHY: National Curriculum Standards for Grade 5 Mathematics; GedonSoft STEM/Math Activity Series



Lesson segments/ steps	Op. Ob	The scientific content of the lesson	Teaching strategy					Evaluation	Timing
			Methods	Aids	Forms of organisation				
					F	G	I		
1. Organizational moment		Preparing learning materials, organizing seating arrangements for smooth transitions.	Conversation	Attendance sheet	X			Classroom readiness	2 min
2. Gaining attention	-	"Fence vs Grass": Showing a picture of a soccer field. Asking: "How do we measure the line around it? How do we measure the grass inside?"	Visual Prompt, Open Questions	Projector / Soccer field picture	X			Oral engagement	5 min
3. Announcing the topic and objectives of the lesson	-	Announcing the topic "Measurement, Area, and Perimeter" and presenting the lesson goals.	Presentation	Board	X			Goal awareness	3 min
4. Updating one's knowledge	O1	Reviewing metric unit scales (1 m=100 cm, 1 cm=10 mm, 1 km=1000 m). Practicing multiplying/dividing by 10,100,1000.	Metric Ladder Demonstration, Drill	Conversion Wall Chart	X			Oral diagnostic check	5 min
5. Directing learning	O1, O2, O3	Task 1 & Task 2 Implementation: Students complete unit conversion exercises. Then, using given dimensions, they compute Perimeter (P) and Area (A)	Direct Instruction, Guided Practice	Worksheet 2, Rulers, Formula Sheet		X	X	Continuous formative observation, Checking unit notations (cm vs cm2)	15 min



		for Square A and Rectangle B.							
6. Aiming for performance	O1, O4	Task 3 Implementation: Students tackle "The Garden Fencing Challenge." They must convert centimeters to meters first, then calculate perimeter (fencing) and area (garden plot).	Multi-Step Problem Solving, Critical Thinking	Worksheet 2, Scratch paper, Highlighters			X	Individual performance assessment	10 min
7. Concluding the Activity/ Homework	O4	Reviewing answers on the board. Completing self-assessment smileys. Homework: "Measure your bedroom desk's perimeter and area in cm and cm ² ."	Class Discussion, Feedback	Worksheet 2 (Self-check section)	X		X	Final teacher feedback & comments	5 min

F = frontal
G = group

I = individual



Teacher's Notes

Grade: Grade 5

Topic: Plane Figures and Their Properties (Triangles & Quadrilaterals: Square, Rectangle, Parallelogram, Trapezoid)

Learning objective(s):

- Identify and classify plane figures into triangles and quadrilaterals based on the number of sides.
- Describe and compare the geometric properties of squares, rectangles, parallelograms, and trapezoids (sides, angles, parallelism).
- Apply geometric definitions to evaluate logical statements and riddles about 2D shapes.

The worksheet was designed by: GedonSoft GmbH

Level 1	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Look at shapes A–F. Answer questions about number of sides, equal sides, right angles and parallel sides. Complete the extra exercises under the picture.	• Triangles: A, D • Quadrilaterals: B, C, E, F • Circled shapes (with parallel sides): B, C, E, F	Observe correct counting of sides, recognition of parallel lines and right angles, and ability to classify rotated shapes.	Printed shape cards (A-F), ruler, colored pencils.	• <i>Support (Scaffolding):</i> Support: Provide physical cut-outs. Extension: Name specific triangle types. Common error: confusing parallelogram with rectangle. • <i>Extension:</i> Ask advanced students to name the specific type of triangle (e.g., right-angled vs. equilateral).



Level 2	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Read each detective clue carefully. Match the description to the correct quadrilateral name (Square, Rectangle, Parallelogram or Trapezoid).90	• Square • Rectangle • Parallelogram • Trapezoid	Check if students distinguish between a general parallelogram and a rectangle/square (focusing on right angles) and whether they realize a trapezoid has <i>exactly one</i> pair of parallel sides.	Protractor (or set square) to measure right angles, ruler, properties reference chart.	• <i>Support (Scaffolding):</i> Allow students to use a "Shape Property Cheat Sheet" with visual icons for equal sides ($\square$), right angles ($\llcorner$), and parallel lines ($\parallel$). • <i>Extension:</i> Challenge students to draw an example of each shape next to the clue, intentionally changing the orientation (e.g., drawing a slanted trapezoid).



Level 3	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Read each geometry statement. Decide if it is TRUE or FALSE. If it is FALSE, write a short explanation stating the correct geometric rule.	• TRUE (A square fits all criteria of a rectangle: 4 sides, opposite equal sides, 4 right angles). • FALSE (A trapezoid has <i>exactly one</i> pair of parallel sides, not two). • FALSE (Opposite angles in a parallelogram are equal, but they are not required to be 90).	Evaluate critical thinking and mathematical reasoning. Observe whether students understand shape hierarchies (e.g., a square is a special type of rectangle).	Venn diagram graphic organizer (Hierarchy of Quadrilaterals visual), notebooks.	• <i>Support (Scaffolding):</i> Provide sentence starters for false statements (e.g., "This is false because a trapezoid only has..."). • <i>Extension:</i> Ask students to create their own "True or False" riddle about a rhombus or a parallelogram for a classmate to solve.



Name:



Grade:



Date:

Shape Detectives: Unlocking the Secrets of 2D Figures!

Task 1 The Great Shape Sorting Challenge!	 What do I need to do?	 What can I use to solve this task?
	Look at the shapes carefully and answer the questions below. • Which shapes have exactly 3 sides? Write their letters. • Which shapes have exactly 4 sides? Write their letters. • Which shapes have all sides equal? Write their letters. • Which shapes have at least one right angle? Write their letters. • Circle the shapes that have parallel sides.	A pencil, an eraser, and a ruler.

Shape Bank

A - Right-angled Triangle

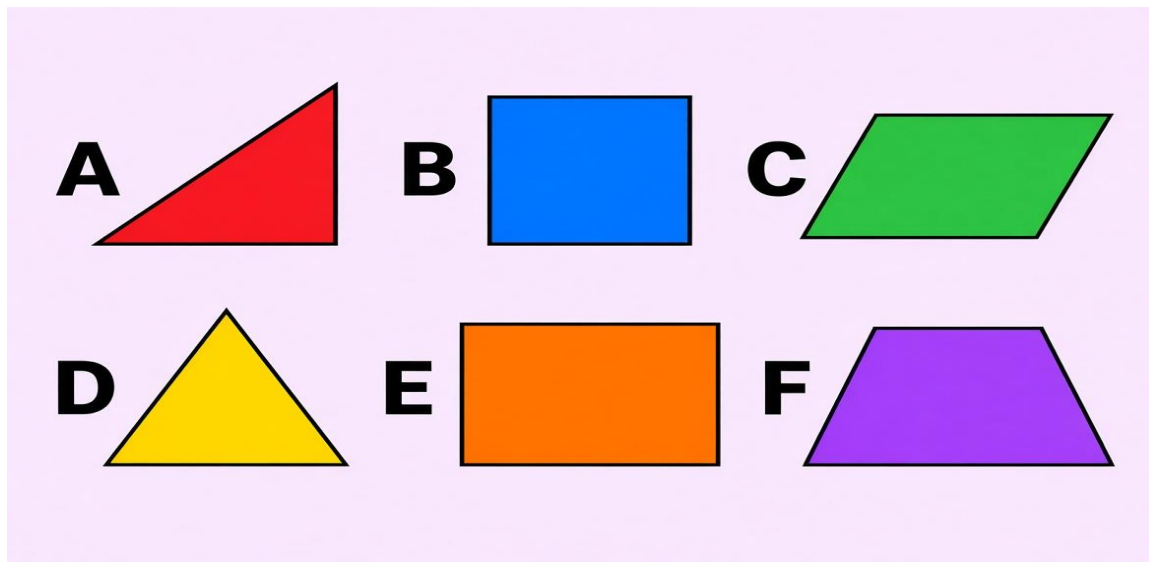
B - Square

C - Parallelogram

D - Equilateral Triangle

E - Rectangle

F - Trapezoid



1. Answer the questions

Shapes with exactly 3 sides: _____
Shapes with exactly 4 sides: _____
Shapes with all sides equal: _____
Shapes with at least one right angle: _____
Shapes with parallel sides (circle the letters): _____

2. Answer the questions

Write the letter of every triangle: _____

Write the letter of every quadrilateral: _____

Which shapes have parallel sides? Circle them: A B C D E F

Which shape is a square? Letter: _____

Which shape is a right-angled triangle? Letter: _____

Draw one more triangle and one more quadrilateral in the space below.

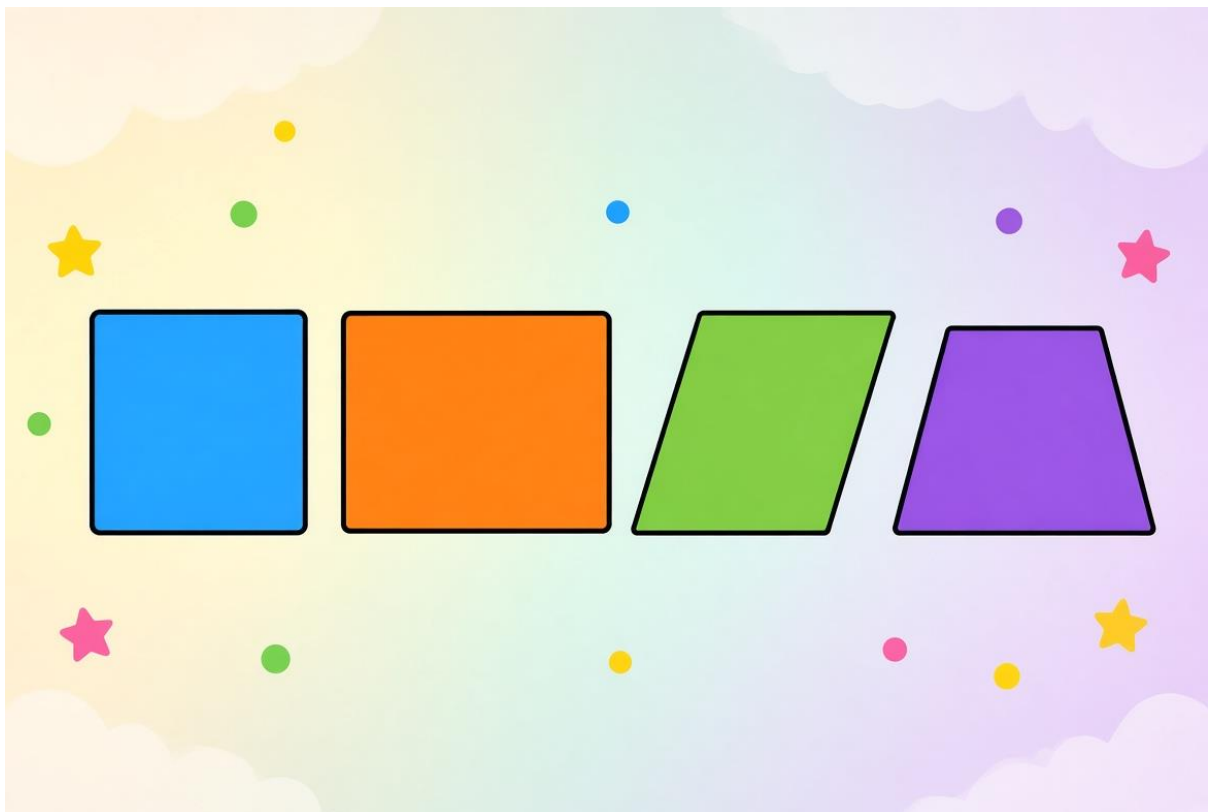
.

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

How did I do (circle):



Task 2 Match the Quadrilateral Clues!	 What do I need to do?	 What can I use to solve this task?
	Read the property clues given by the Shape Detectives. Match each property description to the correct quadrilateral by writing the name (Square, Rectangle, Parallelogram, or Trapezoid).	A ruler and a protractor (to check 90° right angles).



1. “I have 4 equal sides and 4 right angles (90°). My opposite sides are parallel.”

Shape Name: _____

2. “I have 2 pairs of equal opposite sides and 4 right angles (90°).”

Shape Name: _____



3. “I have 2 pairs of parallel opposite sides, but my angles do NOT have to be 90° .”

Shape Name: _____

4. “I am a special 4-sided shape with EXACTLY one pair of parallel sides.”

Shape Name: _____

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

How did I do (circle):



Task 3 True or False Geometry Riddle!	What do I need to do?	What can I use to solve this task?
	- Read the statements carefully. - Write TRUE or FALSE next to each statement. - If the statement is FALSE, explain why in one short sentence.	Your geometry notes, ruler, and critical thinking skills!

1. Statement: “Every square is also a rectangle.”

Answer: _____

Reason (if false): _____

2. Statement: “A trapezoid must have two pairs of parallel sides.”

Answer: _____

Reason (if false): _____

3. Statement: “All angles in a parallelogram are always right angles (90°).”

Answer: _____

Reason (if false): _____ \

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

How did I do (circle):



LESSON PLAN

GRADE: Grade 5

CURRICULAR AREA: Mathematics & Geometry

SUBJECT: Mathematics

LESSON TOPIC: Plane Figures and Their Properties (Triangles & Quadrilaterals)

LESSON TYPE: Knowledge Acquisition and Skill Development

SPECIFIC SKILLS: Identifying, classifying, and describing 2D shapes; mathematical reasoning and property analysis

THE PURPOSE OF THE LESSON: To enable students to recognize, classify, and describe the geometric properties of triangles and quadrilaterals (square, rectangle, parallelogram, trapezoid) through interactive inquiry and structured tasks.

OPERATIONAL OBJECTIVES:

- **O1:** Classify 2D figures into triangles and quadrilaterals based on the number of sides.
- **O2:** Identify parallel sides and right angles in given geometric shapes.
- **O3:** Describe specific properties of squares, rectangles, parallelograms, and trapezoids.
- **O4:** Analyze geometric statements to determine their truth value and justify answers using proper geometric terminology.

TEACHING STRATEGY:

Methods and techniques: Interactive Dialogue, Guided Inquiry, Problem Solving, Shape Classification, Peer Review

Teaching aids: Printed Worksheet 1, Shape cut-outs, Rulers, Protractors, Geometric Property Posters

Organizational approaches: Frontal (F), Group work (G), Individual work (I)

BIBLIOGRAPHY: National Curriculum Standards for Grade 5 Mathematics; GedonSoft STEM/Math Activity Series

Lesson segments/ steps	Op. Ob	The scientific content of the lesson	Teaching strategy					Evaluation	Timing
			Methods	Aids	Forms of organisation				
					F	G	I		
1. Organizational moment		Greeting students, checking attendance, creating a welcoming learning atmosphere.	Conversation	Blackboard / Markers	X			Systematic observation	2 min
2. Gaining attention		"Shape Mystery": Showing a set of real-life objects (traffic sign, chess board, kite) and asking what geometric figures they represent.	Brainstorming, Interactive Dialogue	Flashcards, Real-life objects	X			Oral feedback	5 min
3. Announcing the topic and objectives of the lesson	-	Announcing the topic "Plane Figures and Their Properties" and explaining that students will act as "Shape Detectives".	Exposition	Blackboard	X			Attention monitoring	3 min
4. Updating one's knowledge	O1	Reviewing basic definitions: What is a side, an angle, a vertex, and parallel lines? Distinguishing 3-sided vs 4-sided figures.	Questioning, Review	Geometry Posters	X			Diagnostic evaluation	5 min
5. Directing learning	O1, O2, O3	Task 1 & Task 2 Implementation: Students sort shapes A-F into Triangles/Quadrilaterals. They then solve detective clues matching properties to Squares, Rectangles, Parallelogram, and Trapezoid using protractors/rulers.	Guided Practice, Discovery Learning	Worksheet 1, Protractors, Rulers, Shape Cut-outs		X	X	Formative assessment, Observation during group work	15 min

6. Aiming for performance	O3, O4	Task 3 Implementation: Students evaluate True/False statements regarding shape hierarchies (e.g., "Every square is a rectangle") and write justifications for false statements.	Critical Thinking, Problem Solving	Worksheet 1, Scratch paper			X	Self-check evaluation & Peer assessment	10 min
7. Concluding the Activity/ Homework	O4	Summarizing key learnings. Self-check emoji reflection on worksheet. Assigning homework: "Find 3 quadrilaterals at home and list their properties."	Conversation, Self-reflection	Worksheet 1 (Self-check section)	X		X	Summative evaluation, Teacher comments	5 min

F = frontal
G = group

I = individual

Teacher's Notes

Grade: 5

Topic: Percentages (Connecting Percentages with Fractions & Decimals, Calculating Simple Percentages of Quantities)

Learning objective(s): • Understand percentages as parts out of 100 and convert fluently between percentages, fractions (simplest form), and decimals.

- Calculate simple benchmark percentages (50%, 25%, 20%, 10%) of given quantities using mental math strategies.
- Apply percentage calculations to real-world discount problems in financial contexts.

The worksheet was designed by: Creative Thinking Association (CTA)

Level 1	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Complete the Golden Trio Match table by filling in the missing values. Convert each percentage into a fraction with a denominator of 100 (and simplify it) and into a decimal.	• Row 2 (25%): Fraction = $\frac{25}{100} = \frac{1}{4}$, Decimal = 0.25 • Row 3 (0.75): Percentage = 75%	Check if students understand that "percent" means "per hundred". Observe whether they simplify fractions correctly and place decimals in the correct tenths/hundredths position.	100-grid visual models, fraction-decimal-percentage equivalence wheel/chart, colored pencils.	• <i>Support (Scaffolding):</i> Provide a shaded 10x10 grid visual where students can physically count squares (e.g., 25 shaded squares out of 100 = 0.25 = 25%). • <i>Extension:</i> Ask advanced students to add

		• Row 4 (10%): Fraction $=\frac{10}{100}=\frac{1}{10}$ • Row 5 (15%): Percentage $=20\%$, Decimal $=0.20$ (or 0.2)			5% and 1% rows to the table.
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Level 2	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Calculate the percentage of each given quantity by using the division shortcuts ($50\%=\div 2$, $25\%=\div 4$, $10\%=\div 10$, $20\%=\div 5$). Show your work clearly.	• $80 \text{ kg} \div 2 = 40 \text{ kg}$ • $40 \text{ students} \div 4 = 10 \text{ students}$ • $\\$200 \div 10 = \\$20$ • $50 \text{ apples} \div 5 = 10 \text{ apples}$	Observe if students choose the correct division strategy corresponding to each benchmark percentage. Ensure they include correct measurement units (kg, students, apples) in their final answers.	Scratch paper, percentage mental-math trick cards	• <i>Support (Scaffolding):</i> Allow students to calculate 10% first as a step, then double it to find 20% if dividing by 5 is challenging. • <i>Extension:</i> Give non-benchmark calculations, such as finding 30% of a number ($10\% \times 3$).

Level 3	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Read the video game console discount story. Find the fraction equivalent of the 25% discount, calculate the money saved, and determine the final discounted price.	• Fraction of discount: $25/100=1/4$ • Savings: $€120 \div 4 = €30$ • Final Price: $€120 - €30 = €90$	Verify that students perform two steps: finding the discount amount first, and then subtracting it from the original price to find the final price.	Play money, supermarket receipt visual examples.	• <i>Support (Scaffolding):</i> Break the problem down with step-by-step prompts: "Step 1: Divide by 4 to get discount. Step 2: Subtract discount from €120." • <i>Extension:</i> Ask students to calculate what the price would be if a 10% sales tax was added <i>after</i> the discount



Name: _____



Grade : _____



Date: _____

Percent Power: Connecting Fractions, Decimals, and Percentages!

TASK 1: The Golden Trio Match!	 What do I need to do?	 Materials Needed?
	Every percentage can be written as a fraction with a denominator of 100 and as a decimal! Complete the table below by filling in the missing values	A pencil, an eraser, and your fraction-to-decimal reference grid.

Percentage (%)	Fraction (out of 100 / simplest form)	Decimal
50%	$\frac{50}{100} = \frac{1}{2}$	0.5
25%	$\frac{25}{100} = \underline{\hspace{2cm}}$	$\underline{\hspace{2cm}}$
$\underline{\hspace{2cm}}$	$\frac{75}{100} = \frac{3}{4}$	0.75
10%	$\underline{\hspace{2cm}}$	0.1
$\underline{\hspace{2cm}}$	$\frac{20}{100} = \frac{1}{5}$	$\underline{\hspace{2cm}}$

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



How did I do ?



TASK 2: Calculate the Magic Quantity!	 What do I need to do?	 Materials Needed?
	Calculate the simple percentage of each given quantity. Show your working step-by-step!	A pencil, scratch paper, and simple division strategies.

☐ **Find 50% of 80 kg**

- *Hint: 50% means half ($\div 2$)*
- **Answer:** _____ kg

☐ **Find 25% of 40 students**

- *Hint: 25% means one quarter ($\div 4$)*
- **Answer:** _____ students

☐ **Find 10% of \$200**

- *Hint: 10% means one tenth ($\div 10$)*
- **Answer:** \$ _____

☐ **Find 20% of 50 apples**

- *Hint: 20% means one fifth ($\div 5$)*
- **Answer:** _____ apples

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

How did I do ?





TASK 3: The Supermarket Discount Challenge!	 What do I need to do?	 Materials Needed?
	Read the real-life shopping story and answer the questions below:	A pencil, scratch paper, and your critical thinking skills!

*"Mia wants to buy a video game console that costs **€120**. The store is offering a 25% **weekend discount** on all electronics."*

- What fraction of the original price is the discount?
 - Fraction:** _____
- How much money will Mia save with the 25% discount?
 - Savings:** € _____
- What is the final price Mia pays for the console after the discount?
 - Final Price:** € _____

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

How did I do ?

😊

😊

😊

LESSON PLAN

GRADE: Grade 5

CURRICULAR AREA: Mathematics & Numbers

SUBJECT: Mathematics

LESSON TOPIC: Percentages (Connecting Percentages with Fractions & Decimals & Calculating Simple Percentages)

LESSON TYPE: Skill Acquisition and Practical Application

SPECIFIC SKILLS: Mathematical fluency, number sense, converting representations, mental calculation, financial literacy

THE PURPOSE OF THE LESSON: To help students understand percentages as parts out of 100, convert fluently between percentages, fractions, and decimals, and apply mental division strategies to solve simple percentage and discount problems.

OPERATIONAL OBJECTIVES:

- **O1:** Convert fluently between benchmark percentages (10%,20%,25%,50%,75%), fractions, and decimals.
- **O2:** Calculate simple percentages of given quantities using shortcut mental division strategies ($\div 2, \div 4, \div 5, \div 10$).
- **O3:** Solve real-life shopping discount problems by calculating savings and final prices.
- **O4:** Communicate mathematical reasoning clearly using percentage, fraction, and decimal equivalents.

TEACHING STRATEGY:

Methods and techniques: Interactive Dialogue, Visual Modeling, Mental Math Shortcuts, Problem Solving, Peer Discussion

Teaching aids: CTA Worksheet 1, 100-Grid Visuals, Equivalence Wheel Chart, Price Tag Flashcards, Play Money

Organizational approaches: Frontal (F), Group work (G), Individual work (I)

BIBLIOGRAPHY: National Curriculum Standards for Grade 5 Mathematics; Creative Thinking Association (CTA) STEM & Math Activity Series

Lesson segments/ steps	Op. Ob	The scientific content of the lesson	Teaching strategy					Evaluation	Timing
			Methods	Aids	Forms of organisation				
					F	G	I		
1. Organizational moment		Welcoming students, checking readiness, and ensuring everyone has required materials.	Conversation	Attendance sheet	X			Classroom environment check	2 Min
2. Gaining attention		"The Sale Banner": Showing a price tag with "50% OFF" alongside a pizza divided in half. Asking: "What does 50% mean when you buy something?"	Visual Hook, Brainstorming	Discount price tags, Pizza visual	X			Oral response check	5 min
3. Announcing the topic and objectives of the lesson		Introducing the lesson topic "Percent Power" and explaining objectives (converting numbers and calculating discounts).	Direct Instruction	Board	X			Objective awareness	3 min
4. Updating one's knowledge	O1	Reviewing fractions with denominator 100 (25/100) and decimal place values (0.25). Explaining "percent" means "per hundred".	Interactive Review, 100- Grid Shading	10×10 Grid visual chart	X			Diagnostic questioning	5 min
5. Directing learning	O1, O2	Task 1 & Task 2 Implementation: Students complete "The Golden Trio Match" table. Then, they practice mental math shortcuts (÷2 for 50%, ÷4 for 25%, ÷10	Guided Practice, Modeling	CTA Worksheet 1, Equivalence Chart		X	X	Formative assessment, Monitoring conversion accuracy	15 min

		for 10%, $\div 5$ for 20%) to calculate quantities.							
6. Aiming for performance	O2, O3, O4	Task 3 Implementation: Students solve "The Supermarket Discount Challenge" (finding 25% discount on a €120 game console, calculating savings and final price).	Multi-Step Problem Solving, Financial Literacy	CTA Worksheet 1, Play Money			X	Individual problem-solving assessment	10 min
7. Concluding the Activity/ Homework	O4	Summary of mental shortcuts. Students complete self-check emojis. Homework: "Find 2 discounted items in a supermarket catalog and calculate the savings."	Self-reflection, Class Discussion	CTA Worksheet 1 (Self-check section)	X		X	Self-assessment & Teacher feedback	5 min

F = frontal
G = group

I = individual

Teacher's Notes

Grade: 5

Topic: Lines and Angles (Line Segments, Rays, Parallel and Perpendicular Lines, Types of Angles)

Learning Outcomes:

- Distinguishes between a line, a line segment and a ray based on their properties.
- Identifies parallel and perpendicular lines in geometric diagrams and everyday situations.
- Classifies angles according to their measures in degrees: acute, right, obtuse or straight angles.

Worksheet developed by: Creative Thinking Association (CTA) (Türkiye)

Level 1	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Read each description carefully and write the correct geometric term: line segment, ray, parallel lines or perpendicular lines.	1. Ray 2. Line segment 3. Parallel lines	Observe whether the student distinguishes between a ray (one endpoint), a line segment (two endpoints) and a line (no endpoints), and correctly identifies parallel and perpendicular lines.	Geometry reference sheet, strings or ribbons, and small markers to represent endpoints.	Support: Use hand gestures to visually demonstrate endpoints and the directions in which a line or ray extends. Additional challenge: Ask the student to draw a line, a ray and a line segment

		4. Perpendicular lines			independently and explain how they differ.
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Level 2	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Identify the type of each given angle (45° , 90° , 135° and 180°): acute, right, obtuse or straight angle.	1. Acute angle 2. Right angle 3. Obtuse angle 4. Straight angle	Observe whether the student uses 90° as a reference point: an angle smaller than 90° is acute; an angle of exactly 90° is a right angle; an angle greater than 90° but smaller than 180° is obtuse; and an angle of 180° is a straight angle.	Reference sheet on types of angles, pencil.	Support: Use the visual reference sheet “Types of Angles”, which presents 90° as a reference point. Additional challenge: Ask the student to draw approximate 60° and 120° angles without using a protractor, then measure them with a protractor to check their accuracy.

Level 3	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Look at the city map. Identify which streets are parallel, which are perpendicular, and what type of angle is formed where the streets intersect.	1. Parallel lines 2. Perpendicular lines 3. Right angle (90°)	Observe whether the student can apply their knowledge of parallel and perpendicular lines and right angles in a practical, real-life context.	City map illustration, pencil, coloured pencils or markers.	Support: Ask the student to highlight parallel and perpendicular streets on the map using different colours, for example, blue for parallel streets and red for perpendicular streets. Additional challenge: Ask the student to create their own small city map featuring two parallel streets, one street perpendicular to them, and an intersection where two streets form an acute angle.



Name: _____



Grade: _____



Date: _____

Geometry Detectives: Navigating Lines, Rays, and Angles!

Task 1 Line & Angle Identifier!	 What do I need to do?	 What can I use to solve this task?
	Look at the geometric figures below. Match each description to the correct geometric term (Point , Line Segment , Ray , Parallel Lines , or Perpendicular Lines).	A pencil, an eraser, and your geometry vocabulary guide.

1. "A straight path that has a starting point but continues forever in one direction."

→ **Term:** _____

2. "A straight path with two fixed endpoints."

→ **Term:** _____

3. "Two lines in the same plane that never cross or intersect, no matter how far they extend."

→ **Term:** _____

4. "Two lines that intersect to form a right angle (90°)."

→ **Term:** _____

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

How did I do (circle):





Task 2 The Angle Sorting Challenge!	 What do I need to do?	 What can I use to solve this task?
	Classify each given angle measurement as Acute ($< 90^\circ$), Right ($= 90^\circ$), Obtuse ($> 90^\circ$ and $< 180^\circ$), or Straight ($= 180^\circ$).	A protractor (or set square) and a pencil.

- $45^\circ \rightarrow$ _____
- $90^\circ \rightarrow$ _____
- $135^\circ \rightarrow$ _____
- $180^\circ \rightarrow$ _____

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

How did I do (circle):



Task 3	 What do I need to do?	 What can I use to solve this task?
	Read the town map scenario and answer the questions step-by-step:	A ruler, scratch paper, and your critical thinking skills!

"On a city map, Main Street and Park Avenue run side-by-side and never cross each other. Broadway crosses Main Street at an exact 90° corner."

- What type of lines do Main Street and Park Avenue represent?
 - Answer:** _____
- What type of lines do Main Street and Broadway represent?
 - Answer:** _____
- What kind of angle is formed at the corner of Main Street and Broadway?
 - Answer:** _____

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

How did I do (circle):



LESSON PLAN

GRADE: Grade 5

CURRICULAR AREA: Mathematics & Numbers

SUBJECT: Mathematics

LESSON TOPIC: Lines and Angles (Points, Rays, Line Segments, Parallel/Perpendicular Lines, Angle Classification)

LESSON TYPE: Concept Acquisition and Interactive Practice

SPECIFIC SKILLS: Spatial reasoning, line recognition, angle measurement, real-world geometric mapping

THE PURPOSE OF THE LESSON: To guide students in identifying basic geometric elements (points, segments, rays), recognizing relationships between lines (parallel, perpendicular), and classifying angles based on measure.

OPERATIONAL OBJECTIVES:

- **O1:** Identify and define points, line segments, rays, and lines.
- **O2:** Identify parallel and perpendicular lines using visual grids and real-life examples.
- **O3:** Classify angles into acute, right, obtuse, and straight categories.
- **O4:** Apply line and angle concepts to solve a street map word problem.

TEACHING STRATEGY:

Methods and techniques: Interactive Modeling, Visual Kinesthetics, Guided Discovery, Problem Solving

Teaching aids: Printed Worksheet, Protractors, Rulers, Town Map Visuals, String

Organizational approaches: Frontal (F), Group work (G), Individual work (I)

BIBLIOGRAPHY: National Curriculum Standards for Grade 5 Mathematics; Creative Thinking Association (CTA) STEM & Math Activity Series

Lesson segments/ steps	Op. Ob	The scientific content of the lesson	Teaching strategy					Evaluation	Timing
			Methods	Aids	Forms of organisation				
					F	G	I		
1. Organizational moment		Greeting students, checking seating arrangements and geometry toolkit readiness.	Conversation	Readiness check	X			Classroom environment check	2 Min
2. Gaining attention		"Laser Beam vs Ruler": Showing a laser pointer (ray) and a wooden ruler (line segment). Asking: "Which one stops and which one keeps going?"	Visual Hook, Open Dialogue	Laser pointer, Wooden ruler	X			Oral engagement	5 min
3. Announcing the topic and objectives of the lesson		Announcing "Geometry Detectives: Lines and Angles" and presenting lesson goals.	Direct Instruction	Board	X			Objective awareness	3 min
4. Updating one's knowledge	O1, O2	Reviewing line types (segment vs ray) and line relationships (parallel=never cross, perpendicular=90).	Demonstration, Hand Movement Drill	Geometry posters	X			Diagnostic questioning	5 min
5. Directing learning	O1, O2, O3	Task 1 & Task 2 Implementation: Students complete matching line definitions and sorting angle degree values (45,90,135,180) using protractors.	Guided Practice, Discovery	Worksheet, Protractors, Rulers		X	X	Formative observation, Checking angle classification	15 min

6. Aiming for performance	O2, O3, O4	Task 3 Implementation: Students solve the "Map Inspector Riddle", applying parallel, perpendicular, and right-angle concepts to a city map scenario.	Problem Solving, Critical Thinking	Worksheet, Scratch paper			X	Individual performance evaluation	10 min
7. Concluding the Activity/ Homework	O4	Summary of mental shortcuts. Students complete self-check emojis. Homework: "Find 3 real-world examples of parallel lines and 2 right angles in your home or neighborhood, and sketch them in your notebook."	Self-reflection, Class Review	Worksheet (Self-check section)	X		X	Self-assessment & Teacher feedback	5 min

F = frontal
G = group

I = individual

Teacher's Notes

Grade: 5

Topic: Order of operations in mathematical calculations: solving expressions with several operations and using brackets correctly

Learning outcome: Performs mathematical calculations following the correct order of operations, solves expressions with several operations, and uses brackets correctly.

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 expression. Remember the order of operations – first multiplication or division, then addition or subtraction. Calculate the first operation. Write the steps of the solution as a continuous calculation. Calculate the final result. 2. Read the expression. First calculate the operation in brackets. Continue the calculations following the correct order of operations. Write the solution as a	1. $15 - 3 \times 4 = 15 - 12 = 3$; $20 \div 5 + 6 = 4 + 6 = 10$; $18 - 12 \div 3 = 18 - 4 = 14$; $5 \times 4 + 8 = 20 + 8 = 28$; $24 \div 6 + 7 = 4 + 7 = 11$ 2. $4 \times (10 - 5) = 4 \times 5 = 20$; $(15 - 7) + 6 = 8 + 6 = 14$; $18 \div (3 + 3) = 18 \div 6 = 3$; $(12 + 4) \div 4 = 16 \div 4 = 4$ 3.	The teacher checks: Whether the pupil follows the order of operations; whether they carry out multiplication and division correctly; whether they write down the steps of the solution; whether they can check the result. Whether the pupil calculates the operations in brackets first; whether they write down the calculation steps correctly; whether they use correct mathematical notation; whether they can arrive at the correct result independently.	Resources: worksheets, writing materials, order of operations reminder cards, number columns (if needed).	Support: use an order of operations reminder and highlight the first operation to be carried out in colour. Extension: provide more complex expressions with several operations. Give pupils with learning difficulties fewer tasks and more examples. Use a visual reminder: “Brackets first!” Offer to solve the first example together with the teacher. Extension: provide expressions with more than one set of brackets or with three operations. For pupils with ADHD, divide the task into small steps and use visual markers.

	continuous calculation. Write the final answer. 3. Read the expression. Decide which operation should be done first. Calculate mentally. Find the correct answer and tick it. Check your choice.	$8 + 3 \times 2 = 8 + 6$ $= 14$. Correct answer: ☐ 14. $(8 + 3) \times 2 = 11$ $\times 2 = 22$ Correct answer: 22	Whether the pupil understands the order of operations without writing down the calculation; whether they can calculate mentally; whether they choose the correct answer from the given options.		Allow pupils to use number columns or explain their reasoning orally. Extension: create similar tasks without answer options. For pupils with intellectual disabilities, use smaller numbers and provide more examples with visual support.
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	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological notes
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Level 2	1. Read the expression. First carry out multiplication or division, then addition or subtraction. Write down all the calculation steps. 2. Read the expression. First calculate the operation in brackets, then carry out the remaining operations. Write down the calculation steps. 3. Calculate both expressions and compare the results. Write the correct symbol. 4. Read the calculation. Find where the mistake was made. Write an explanation and calculate the correct answer. 5. Read the expression. Try different ways of adding brackets to obtain the given result. 6. Read the text. Decide which operations are	1. $48 - 12 \div 4 = 45$; $7 \times 5 + 9 = 44$; $64 \div 8 + 13 = 21$ 2. $5 \times (14 - 8) = 30$; $(25 - 10) \times 2 = 30$; $36 \div (5 + 1) = 6$ 3. $12 + 3 \times 4 < (12 + 3) \times 4$; $30 - 2 \times 5 < (30 - 2) \times 5$; $(16 + 8) \div 4 > 16 + 8 \div 4$ 4. Mistake: the pupil first subtracted 4 from 36, without following the order of operations. Correct: $36 - 4 \times 5 = 36 - 20 = 16$. 5. $(8 + 4) \times 2 = 24$; $(20 - 5) \times 3 = 45$; $18 \div (3 + 3) = 3$; $(12 + 6) \div 3 = 6$	The teacher should pay attention to: Whether the pupil follows the order of operations; whether they write down intermediate results; whether the calculations are accurate. Whether the pupil starts the calculation with the operation in brackets; whether they carry out the operations correctly; whether they write the solution in the correct sequence. Whether the pupil calculates both sides; whether they use the comparison symbols correctly. Whether the pupil can justify their reasoning; whether they understand the rules for the order of operations. Whether the pupil understands the purpose of brackets; whether they can change the order of operations. Whether the pupil understands the word problem; whether they choose the correct operations; whether they write a complete answer. Whether the pupil can carry out the calculations mentally and correctly;	Worksheets, number and operation cards, writing materials.	The teacher can provide task versions with different levels of difficulty: Easier: use an order of operations reminder. More challenging: provide longer expressions with several operations. Easier: highlight the brackets in colour. More challenging: use expressions with more than one set of brackets. Easier: allow the pupil to use a calculator to check the result. More challenging: create more complex expressions. Easier: discuss the mistake together. More challenging:
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	needed. Write an expression, calculate the result and write the answer in a full sentence. 7. Calculate the expression mentally, following the correct order of operations. Tick the correct answer.	6. $15 + 4 \times 6 = 39$. Answer: Paul now has 39 cards. 7. $8 + 3 \times 2 = 14$; $(8 + 3) \times 2 = 22$	whether they choose the correct answer.		analyse several incorrect solutions. Easier: use visual bracket cards. More challenging: create their own expressions with brackets. Easier: highlight the important numbers in the text. More challenging: create similar word problems independently. Easier: allow the pupil to use rough paper. More challenging: add more answer options or use larger numbers.
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Level 3	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological notes
	1. Read the expression. Carry out the operations in the correct order (first multiplication or division, then addition or subtraction). Write down each calculation step. Write the final result. 2. First calculate the operation in brackets. Continue the calculations following the correct order of operations. Write the solution as a continuous calculation. 3. Read the expression. Try placing the brackets in different positions. Check whether you get the correct result. 4. Read the text. Decide which operations are needed.	1. $72 \div 8 \times 5 - 6 = 39; 15 + 6 \times 8 - 12 = 51; 90 - 36 \div 4 + 7 = 88$ 2. $7 \times (15 - 8) + 12 = 61; (40 - 16) \div 4 + 18 = 24; 50 - (24 \div 6) \times 5 = 30$ 3. $(6 + 3) \times 4 = 36; (24 - 6) \times 2 = 36; 18 \div (3 + 3) = 3$ 4. $(18 + 6) \div 4 = 6$	The teacher assesses: Whether the pupil follows the order of operations; whether they calculate accurately; whether they write the solution step by step. Whether the pupil calculates the operations in brackets correctly; whether they follow the order of operations. Whether the pupil understands how brackets affect the result; whether they can check their answer. Whether the pupil understands mathematical language (“sum”, “difference”, “multiply”, “divide”); whether they can turn the text into an expression. Whether the pupil can analyse the word problem; whether they choose	Worksheets, mathematical terminology reminder cards, writing materials.	The teacher can adapt the tasks: Easier: use an order of operations reminder. More challenging: provide longer expressions. For pupils with ADHD, divide the task into smaller steps. Easier: highlight the brackets in colour. More challenging: use expressions with more than one set of brackets. Easier: use number cards and operation

	Write the expression. Calculate its value. 5. Read the text. Identify what is given and what you need to find. Write an expression. Calculate the result. Write the answer in a full sentence. 6. Read the expression. Change the order of operations by adding brackets. Check the result.	5. Expression: $120 - (8 \times 9) + 15 = 63$. Answer: There are now 63 books in the library. 6. $(10 + 15) \times 2 = 50$	the correct operations; whether they write a complete answer. Whether the pupil understands the purpose of brackets and how they change the order of operations.		symbol cards. More challenging: provide tasks with several possible solutions. Easier: highlight key words in the text. More challenging: use tasks involving several operations. Easier: use a diagram or picture. More challenging: provide tasks that include unnecessary information. For pupils with ASD, use a visual order of operations diagram. Easier: use concrete objects or number cards. More challenging: provide several expressions with different solutions.
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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?
	Put your calculation skills to work! Follow the correct order of operations, solve expressions with and without brackets, and calculate mentally when you can. Use the reminders if you need help.	Order of operations reminder card, brackets reminder, multiplication table (if needed), worksheet, pencil/pen, eraser, rough paper.

1. Solve! Follow the order of operations! Write the steps as a continuous calculation!

EXAMPLE: $12 + 4 \times 2 = 12 + 8 = 20$

REMEMBER THE ORDER OF OPERATIONS!

- ☐ 1 First → brackets $()$
- ☐ 2 Then → multiplication and division from left to right $\times \div$
- ☐ 3 Finally → addition and subtraction from left to right $+ -$

1. $15 - 3 \times 4 =$ _____
2. $20 \div 5 + 6 =$ _____
3. $18 - 12 \div 3 =$ _____
4. $5 \times 4 + 8 =$ _____
5. $24 \div 6 + 7 =$ _____

Do your calculations here

2. Calculate the value of each expression (with brackets)! Write the solution as a continuous calculation!

EXAMPLE: $(8 + 2) \times 3 = 10 \times 3 = 30$

1. $4 \times (10 - 5) =$ _____
2. $(15 - 7) + 6 =$ _____
3. $18 \div (3 + 3) =$ _____
4. $(12 + 4) \div 4 =$ _____

Do your calculations here

3. Calculate mentally! Tick the correct answer!

FOLLOW THE ORDER OF OPERATIONS!

- | | |
|-----------------------------|-----------------------------|
| 1. $8 + 3 \times 2$ | 2) $(8 + 3) \times 2$ |
| ☐ 22 | ☐ 22 |
| ☐ 14 | ☐ 14 |
| ☐ 11 | ☐ 11 |

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



I checked my work.	
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How did I do (circle):





Name: _____



Grade: _____



Date: _____

Order of Operations Challenge

Level 2	 What do I need to do?	 What can I use to solve this task?
	Put your order-of-operations skills to work! Calculate expressions, compare results, find and correct mistakes, add brackets where needed, and solve a word problem. Use the reminders if you need help.	order of operations reminder cards, multiplication table (if needed), pencil/pen, eraser, squared paper, electronic calculator for self-checking

1. Calculate the value of the expression! Write the solution as a continuous calculation!

EXAMPLE: $24 + 6 \times 3 = 24 + 18 = 42$

① $\times \div$

② $+$ $-$

③ $\longrightarrow$

① $18 \div 3 \times 4 = 6 \times 4 = 24$

① ②

② $15 - 4 + 7 = 11 + 7 = 18$

① ②

③ $20 \div 5 \div 2 = 4 \div 2 = 2$

① ②

$2 + 3 \times 4 - 6 \div 2 = 2 + 12 - 3 = 14 - 3 = 11$

① ② ③ ④

REMEMBER!

- First do multiplication ($\times$) and division ($\div$).
- Then do addition ($+$) and subtraction ($-$).
- When operations have the same priority, work from left to right.

1) $48 - 12 \div 4 =$ _____

2) $7 \times 5 + 9 =$ _____

3) $64 \div 8 + 13 =$ _____

2. Calculate the value of each expression (with brackets)!

EXAMPLE: $(18 + 6) \div 4 = 24 \div 4 = 6$

1) $5 \times (14 - 8) =$ _____

2) $(25 - 10) \times 2 =$ _____

3) $36 \div (5 + 1) =$ _____

3. Calculate the value of each expression and compare the results. Write $<$, $>$ or $=$ in the $\bigcirc$.

① ()

② $\times \div$

③ $+ -$

$$12 + 3 \times 4$$

↓ ①

$$= 12 + 12$$

↓ ②

$$= 24$$

$$(12 + 3) \times 4$$

↓ ①

$$= 15 \times 4$$

↓ ②

$$= 60$$

$$(12 + 3) \times 4$$

↓

$$60$$

$\neq$

$$12 + 3 \times 4$$

↓

$$24$$

REMEMBER

- If there are brackets, calculate what is inside the brackets first.
- Then follow the usual order of operations.
- Brackets can change the result.

$12 + 3 \times 4 \bigcirc (12 + 3) \times 4$

$30 - 2 \times 5 \bigcirc (30 - 2) \times 5$

$(16 + 8) \div 4 \bigcirc 16 + 8 \div 4$

4. Calculate and solve! Find the mistake!

FOLLOW THE ORDER OF OPERATIONS!

A pupil calculated: $36 - 4 \times 5 = 160$

a) What is wrong? Write an explanation!



b) Calculate correctly!

5. Add brackets to each expression so that the equation is correct.

1) $8 + 4 \times 2 = 24$

2) $20 - 5 \times 3 = 45$

3) $18 \div 3 + 3 = 9$

4) $12 + 6 \div 3 = 6$

6. Read! Solve the word problem!

Paul has 15 collectible cards. He buys 4 more packs, and each pack contains 6 cards. How many cards does Paul have now?

Expression: $15 + 4 \times 6$

1. _____

Answer: _____

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

How did I do (circle):



Name:



Grade:



Date:

Brackets and Operations

Level 3	 What do I need to do?	 What can I use to solve this task?
	Take control of the order of operations! Build expressions from clues, solve a real-life problem and use brackets strategically to reach the target result. Use the reminders whenever you need a quick check.	Order of operations reminder cards, multiplication table (if needed), pencil/pen, eraser, squared paper, electronic calculator for self-checking

1. Calculate the value of the expression! Write the solution as a **continuous** calculation!

EXAMPLE: $48 - 4 \times 7 + 10 = 48 - 28 + 10 = 20 + 10 = 30$

If the expression has NO BRACKETS, do the operations in this order:

- First do **multiplication** ($\times$) and **division** ($\div$).
- Then do **addition** (+) and **subtraction** ($-$).
- When operations have the **same priority**, work **from left to right**.



1. $72 \div 8 \times 5 - 6 =$ _____
2. $15 + 6 \times 8 - 12 =$ _____
3. $90 - 36 \div 4 + 7 =$ _____

2. Calculate the value of each expression (with brackets)!

EXAMPLE: $(18 + 24) \div 6 \times 3 = 24 \div 6 \times 3 = 4 \times 3 = 12$

REMEMBER!

- If there are **brackets**, calculate what is **inside the brackets first**.
- Then continue using the **order of operations**.
- Brackets can **change the result**.

1. $7 \times (15 - 8) + 12 =$ _____
2. $(40 - 16) \div 4 + 18 =$ _____
3. $50 - (24 \div 6) \times 5 =$ _____

3. Add brackets to each expression so that the equation is correct.

1. $6 + 3 \times 4 = 36$
2. $24 - 6 \times 2 = 36$
3. $18 \div 3 + 3 = 3$

4. Write an expression! Calculate its value!

EXAMPLE: Multiply 8 by the difference between 20 and 5.

Expression: $8 \times (20 - 5) = 8 \times 15 = 120$

Divide the sum of 18 and 6 by 4.

Expression:

5. Solve the word problem!

The school library has **120 books**. **8 sets of 9 books** each are **removed**. Then **15 more** books are donated to the library. How many books are in the library now? (Write an expression and solve!)

1. _____

Answer:

6. Add brackets to make the result 50!

$$10 + 15 \times 2 = 50$$

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

How did I do (circle):



Teacher's Notes

Grade: 5

Topic: Natural numbers: reading, writing, comparing and ordering large numbers in ascending or descending order, and rounding; identifying place value and recognising patterns in numbers

Learning outcome: The pupil reads, writes and compares natural numbers up to millions, identifies the place value of digits, orders numbers in ascending and descending order, rounds numbers to the specified place value, forms the greatest and smallest possible numbers from given digits, and recognises patterns in number sequences.

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
	- Read the numbers. - Write them in words. - Identify the place value of the specified digit. - Compare the numbers using the correct symbol. - Order the numbers in ascending order.	The pupil reads multi-digit numbers correctly, identifies place values, uses the symbols $>$, $<$ and $=$ correctly, orders numbers and rounds them to the nearest thousand.	The teacher observes: - Whether the pupil reads numbers from left to right. - Whether the pupil correctly identifies the position of a digit in a number. - Whether the pupil can determine the place value of a digit. - Whether the pupil uses the comparison	Visual aids - Place value chart (millions, hundred thousands, ten thousands, thousands, hundreds, tens, ones) “How to Compare Natural Numbers” reminder “How to Round Numbers” reminder - Number periods poster for the classroom - Number line - Digit cards (0–9)	- Revise the place value chart. - Make connections between a number and place value. - Use guiding questions: “What does the digit 5 represent in this place?” Support: use a place value chart. Additional challenge: the pupil creates a number and identifies the place value of each digit.

	Round to the nearest thousand.		symbols $>$, $<$ and $=$ correctly. 5. Whether the pupil understands ascending order. 6. Whether the pupil uses the rounding rule. Particular attention should be paid to pupils: - who confuse a digit with its value; - who read large numbers digit by digit rather than in groups of three digits; - who confuse the comparison symbols $>$ and $<$; - who have difficulty identifying which number is greater; - who have difficulty rounding to the nearest thousand; - who do not use a place value chart.	- Laminated place value cards - Magnetic digits for use on the board - Number-building cards Support materials - Individual reminder cards - Worksheets - Self-check cards - Worked examples	
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Level 2	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological notes
	- Write the numbers in digits. Identify the value of each digit. - Order the numbers in descending order. Round to the specified place value. Continue the sequences. - Form the greatest and smallest possible numbers. - Find the mistake in the given statement.	The pupil correctly converts numbers written in words into digits, identifies place values, orders and rounds numbers, and finds mistakes.	The teacher observes: - Whether the pupil correctly converts numbers written in words into digits. - Whether the pupil identifies the value of digits in multi-digit numbers. - Whether the pupil orders numbers correctly in descending order. - Whether the pupil identifies the correct place value to which the number should be rounded. - Whether the pupil recognises and continues patterns in number sequences. - Whether the pupil can form the greatest	Visual aids - Place value chart up to millions - Rounding poster “Ascending and Descending Order” reminder - Number periods poster Practical materials - Digit cards for forming the greatest and smallest numbers - Number sequence cards - Laminated comparison symbol cards ($>$, $<$, $=$) - Task cards with differentiated activities Support materials	- Remind pupils: the more digits a number has, the greater the number. - Use visual examples. - Discuss different solutions. Support: use a place value chart. Additional challenge: compare and round seven-digit numbers.

			and smallest possible numbers. 7. Whether the pupil can identify and correct an incorrect solution. Particular attention should be paid to pupils: • who confuse the millions, thousands and units periods; • who do not take the position of a digit into account when determining its value; • who order numbers in ascending order instead of descending order; • who look at the wrong digit when rounding; • who do not recognise the step in a number sequence; • who form numbers without taking place value into account; • who accept an answer without explaining or checking it.	• Place value charts for individual work • Number periods reminder cards • Self-assessment sheets • Error-correction cards	
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Level 3	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological notes
	- Identify the place value of every digit. - Compare the values of the digits. Form numbers using the given digits. - Order the numbers. Round large numbers. - Find and describe the pattern. - Create your own number sequence.	The pupil uses the place value system, analyses the structure of numbers, justifies their solutions and describes patterns.	The teacher observes: - Whether the pupil accurately identifies the place value of every digit. - Whether the pupil can compare the values of different digits within the same number. - Whether the pupil uses their knowledge of place value to form the greatest and smallest possible numbers. - Whether the pupil orders large numbers correctly. - Whether the pupil can round numbers to different place values. - Whether the pupil can identify more complex	Visual aids - Extended place value chart up to billions - Number pattern posters “Comparing and Ordering Numbers” reminder “Rounding to Different Place Values” reminder Practical materials - Logical thinking cards - Number sequence cards - Digit cards for forming complex numbers	- Encourage pupils to explain their solutions. - Make connections with everyday situations. - Provide tasks with several possible solutions. Support: use worked examples and reminder cards. Additional challenge: the pupil creates their own number sequence and describes its pattern.

			patterns in number sequences. 7. Whether the pupil can describe the pattern in words. 8. Whether the pupil justifies their solution. Particular attention should be paid to pupils: • who compare individual digits rather than their values; • who cannot explain why one number is greater than another; • who make mistakes when rounding large numbers; • who confuse place value with the name of the digit; • who have difficulty identifying more complex patterns; • who make guesses without justification; • who have difficulty creating their own number sequence and describing its pattern.	• Maths station tasks • Laminated cards for repeated use Differentiation materials • Individual challenge tasks • Additional worksheets for more able pupils • Self-check cards • Investigative tasks	
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Name:



Grade:



Date:

Adventures with Natural Numbers

Level 1	 What do I need to do?	 What can I use to solve this task?
	Put your number skills to the test! Read, write and compare large numbers, find place values, put numbers in the correct order and round to the nearest thousand. Use the reminders whenever you need a little help.	Place value chart, “How to Compare Natural Numbers” reminder, “How to Round Numbers” reminder, number line, digit cards, worksheet, writing materials.

PLACE VALUES

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
1 000 000	100 000	10 000	1 000	100	10	1

Read and compare numbers from left to right.

1. Read and write the numbers in words:

34 567 _____

108 902 _____

700 015 _____

2. Identify the place value of the digit:

5 in the number 25 483

7 in the number 174 620

9 in the number 491 008

3. Compare the numbers using the symbol $>$, $<$ or $=$:

54 321 54 123

89 700 89 700

120 450 120 540

1. Count how many digits each number has.
More digits = greater number.
2. If the numbers have the same number of digits, compare the digits from left to right.
Start with the first digit on the left. Move one digit at a time until you find digits that are different.
3. Compare the first different digits.
Greater digit = greater number.
If the digits are equal, look at the next place.

4. Order the numbers in ascending order:

34 560; 34 506; 34 650; 34 056

REMEMBER!

To round to the nearest thousand:

- Look at the hundreds digit.
- 0, 1, 2, 3 or 4 $\rightarrow$ round down.
- 5, 6, 7, 8 or 9 $\rightarrow$ round up.



5. Round to the nearest thousand:

6 360 _____

8 720 _____

19 800 _____

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

How did I do (circle):





Name:



Grade:



Date:

Adventures with Natural Numbers

Level 2	 What do I need to do?	What can I solve this  use to task?
	Put your large-number skills to work! Write numbers in digits, explore place value, order and round numbers, continue number sequences, build the greatest and smallest possible numbers, and spot mistakes. Use the reminders whenever you need help.	Place value chart, rounding reminder, ascending and descending order reminder, digit cards, number sequence cards, self-check cards, worksheet, writing materials

PLACE VALUES

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
1 000 000	100 000	10 000	1 000	100	10	1

1. Write in digits:

two hundred and thirty-four thousand five hundred and nine;

one million seventy thousand and eight.

2. Identify the value of each digit in the number 4 582 731:

5 _____

8 _____

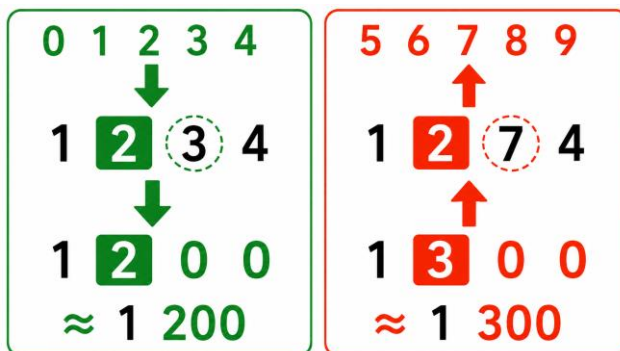
7 _____

3. Order the numbers in descending order:

1 245 890; 1 254 809; 1 245 980; 1 254 890

4. Round:

REMEMBER!



1. Choose the digit you are rounding to.
2. Look at the digit immediately to its right.
3. 0, 1, 2, 3, 4 → keep the chosen digit the same.
4. 5, 6, 7, 8, 9 → increase the chosen digit by 1.
5. Change all digits to the right to 0.

56 781 to the nearest ten thousand _____

804 320 to the nearest hundred thousand _____

3 478 912 to the nearest million _____

5. Fill in the missing numbers:

125 000; 130 000; 135 000; _____; _____; _____

900 000; 800 000; 700 000; _____; _____; _____

6. Form the greatest and smallest possible numbers using the digits:

3, 7, 0, 5, 9, 1

greatest _____ smallest _____

7. Find the mistake:

“468 920 rounded to the nearest thousand is 468 000.”



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

How did I do (circle):





Name:



Grade:



Date:

Adventures with Natural Numbers

Level 13	 What do I need to do?	 What can I use to solve this task?
	Put your number reasoning skills to work! Explore place value, build and order large numbers, round to different place values, uncover number patterns and use clues to identify hidden numbers. Use the reminders and worked examples whenever you need support.	extended place value chart, rounding reminder, number comparison and ordering reminder, number pattern cards, digit cards, self-check cards, worksheet, writing materials.

6 294 051

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
6	2	9	4	0	5	1
6 000 000	200 000	90 000	4 000	0	50	1
↓ 6 million	↓ 2 hundred thousand	↓ 9 ten thousand	↓ 4 thousand	↓ 0 hundred	↓ 5 tens	↓ 1 one

$$6\,294\,051 = 6\,000\,000 + 200\,000 + 90\,000 + 4\,000 + 0 + 50 + 1$$

1. In the number 8 407 295:

a) identify the place value of each digit;

b) how many times greater is the value of digit 8 than the value of digit 4?

8 _____
4 _____
0 _____

7 _____
2 _____
9 _____
5 _____

2. Write five six-digit numbers that can be formed using the digits

2, 4, 6, 8, 0, 1, using each digit only once:

3. Order the numbers in ascending order:

2 305 099; 2 350 909; 2 305 990; 2 350 099; 2 309 509

4. Round the number 7 549 999:

- to the nearest thousand _____
- to the nearest ten thousand _____
- to the nearest hundred thousand _____
- to the nearest million _____

5. Find the pattern and continue the sequences:

4; 12; 36; 108; _____; _____; _____; _____; _____

1 000 000; 900 000; 810 000; 729 000; _____; _____

6. What number is described by the clues?

It is a seven-digit number.

- The millions digit is 5.
- The tens digit is 2.
- The hundreds digit is 9.
- The hundred thousands digit is 0.
- The ten thousands digit is 8.
- The thousands digit is 3.
- The ones digit is 7.

Answer: _____



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

How did I do (circle):



Lesson Plan

Subject: Mathematics

Grade: Grade 5

Topic: Natural Numbers

Lesson Duration: 40 minutes

Lesson Topic: Reading, writing, place value, comparing, ordering, rounding and identifying patterns in natural numbers.

Learning Outcomes

By the end of the lesson, the pupil will be able to:

- read and write natural numbers up to millions;
- identify the position and place value of a digit in a multi-digit number;
- compare and order natural numbers in ascending and descending order;
- round numbers to the specified place value;
- form the largest and smallest possible numbers using given digits;
- identify and continue patterns in number sequences;
- explain and justify their solution according to their level of ability.

Note: These learning outcomes directly reflect the three levels of differentiation included in the teacher's worksheet: Level 1 focuses on the basic skills of reading large numbers, understanding place value, comparing and ordering numbers, and simple rounding; Level 2 focuses on using these skills independently, forming numbers, continuing number sequences and analysing errors; Level 3 focuses on more in-depth analysis of number structure, identifying more complex patterns, justifying solutions and applying knowledge in non-standard tasks.

Required Materials and Resources

For the teacher: interactive whiteboard; demonstration place value chart up to millions; number-period chart; magnetic digits; digit cards and comparison symbol cards $>$, $<$, $=$; rounding reminder card; teacher observation sheet.

For the pupil: differentiated Level 1, Level 2 or Level 3 worksheet; individual place value chart; digit cards; reminder cards **“How to Compare Natural Numbers”** and **“How to Round Numbers”**; self-check/self-assessment card; pencil and eraser.

Part 1 – Introduction and Review of Prior Knowledge (10 min)

Lesson stage	Teacher activity – what the teacher says and does	Pupil activity / expected response	Materials	Formative assessment / observation focus	Methodological notes
Introducing the lesson topic - 2 min	The teacher displays the number 4 582 731 on the board and says: “Today we are going to work with large natural numbers. What can you already tell me about this number?”	Pupils read the number and identify individual digits, their positions or their values.	Interactive whiteboard, number 4 582 731 .	Does the pupil recognise a multi-digit number and read it as a whole number rather than as separate digits?	Do not correct responses immediately. The teacher uses them to identify pupils’ prior knowledge.
Number periods and place value - 3 min	The teacher places the number 4 582 731 in a place value chart. Asks: “What is the value of the digit 5 in this number?” “What is the value of 8?” “Which period does the digit 4 belong to?”	5 = 500 000; 8 = 80 000; 4 is in the millions period.	Place value chart, magnetic digits.	Vai skolēns atšķir ciparu, cipara vietu un cipara vērtību.	If necessary, use colour coding or a visual division into periods. The teacher materials specifically recommend paying attention to pupils who confuse a digit with its value.
Reviewing comparison - 2 min	The teacher writes on the board: 54 321 □ 54 123 . Asks: “Where do we start when comparing these	54 321 > 54 123 . Pupils explain that comparison begins from the left.	Board, >, <, = cards.	Does the pupil distinguish between the digit, its position and its place value?	Use the Level 1 visual algorithm from the worksheet: compare from left to right and look for the first digit that is different.

	numbers?” “Which is the first digit that is different?”				
Reviewing rounding - 2 min	The teacher says: “Let’s round 6 360 to the nearest thousand. Which digit do we identify first? Which digit do we look at to decide whether to round up or down?”	Pupils identify the thousands place, look at the hundreds digit and conclude: 6 360 ≈ 6 000.	Rounding reminder card.	Does the pupil compare the values of the numbers, rather than confusing the comparison symbols?	Remind pupils of the rule: 0–4 – round down; 5–9 – round up. In the worksheet, rounding is one of the fundamental skills at all three levels.
Transition to practical work - 1 min	The teacher says: “Today, each of you will complete tasks appropriate to your worksheet level. What matters is not only the correct answer. I will also observe how you arrive at your solution and how you check your work.”	Pupils prepare their worksheet and the reminder cards they need.	Differentiated worksheets, individual reminder cards.	Does the pupil understand the task instructions and prepare to work independently?	Differentiation levels are not presented as a “rating” of the pupil’s ability; they determine the appropriate level of task difficulty and the amount of support required.

Part 2. Practical Work (20 min)

Lesson stage	Teacher activity – what the teacher says and does	Level	Materials	Formative assessment / observation focus	Methodological notes
Task 1 - reading and writing numbers	The teacher says: “First, let’s find out how a multi-digit number is formed. We read large numbers by periods from	Level 1: Reads and writes in words 34 567; 108 902; 700 015. Then identifies the place value of the specified digit in 25 483; 174 620; 491 008.	Worksheets, place value chart, number-period	✓ Reads large numbers by periods. ✓ Correctly converts	If difficulties arise, the pupil places the number in a place value chart. The teacher asks: “Which column is this digit in?”

and place value	left to right. Pay attention not only to the digit, but also to the position it occupies." The teacher asks: "Which place is the digit in?" "What is its value?" "How did you work it out?"	Level 2: Converts numbers written in words into numerals: two hundred and thirty-four thousand five hundred and nine → 234 509; one million seventy thousand and eight → 1 070 008. Then, in the number 4 582 731, identifies the values of the digits 5, 8 and 7. Level 3: In the number 8 407 295, identifies the place value of each digit and analyses how many times greater the value of the digit 8 is than the value of the digit 4.	reminder card, digit cards.	between numbers written in words and numerals. ✓ Distinguishes a digit from its value. ✓ Correctly identifies a digit's position and place value. ✓ At Level 3, compares digit values and justifies the answer.	"What does it represent?" For pupils who read large numbers as separate digits, visually separate the number into periods. Particular attention is also given to this difficulty in the teacher materials.
Task 2 - comparing, ordering and forming numbers	The teacher says: "When comparing large numbers, we start from the left. If the digits are the same, we move on until we find the first digit that is different." When ordering numbers, the teacher asks: "Do we need ascending or descending order?" "Which number should we start with?" For Levels 2–3: "How should	Level 1: Compares: 54 321 > 54 123; 89 700 = 89 700; 120 450 < 120 540. Orders in ascending order: 34 056; 34 506; 34 560; 34 650. Level 2: Orders the numbers 1 245 890; 1 254 809; 1 245 980; 1 254 890 in descending order. Correct order: 1 254 890; 1 254 809; 1 245 980; 1 245 890. Using the digits 3, 7, 0, 5, 9, 1, forms the largest and smallest possible	Worksheets, digit cards, >, <, = cards, place value chart, reminder card for comparing numbers.	✓ Compares numbers from left to right. ✓ Uses >, <, = correctly. ✓ Distinguishes between ascending and descending order. ✓ When ordering numbers,	If a pupil makes a mistake, the teacher does not immediately give the correct answer, but asks: "Where is the first digit that is different?" When forming the smallest number, discuss the role of 0 in particular: it cannot be the first digit of a six-digit number. The Level 3 instruction "write all six-digit numbers" allows for a very large number of

	the digits be arranged to make the largest or smallest possible number?"	numbers: 975 310 and 103 579. Level 3: Orders in ascending order: 2 305 099; 2 350 909; 2 305 990; 2 350 099; 2 309 509. Correct order: 2 305 099; 2 305 990; 2 309 509; 2 350 099; 2 350 909. The worksheet also includes forming six-digit numbers using the digits 2, 4, 6, 8, 0, 1, using each digit once.		considers the value of the whole number rather than a single digit. ✓ Observes place value when forming numbers. ✓ Can justify their choice.	combinations, so the teacher determines the amount to be completed according to the time available; the source itself does not specify a reduced number of answers.
Task 3 - rounding	The teacher says: “When rounding, first identify the place to which you need to round. Then look at the digit immediately to its right.” The teacher reminds pupils: “If the next digit is 0, 1, 2, 3 or 4, the selected digit stays the same. If it is 5, 6, 7, 8 or 9, increase it by one. Replace the digits to its right with zeros.” The teacher asks: “To which place are we rounding?” “Which digit do we look at?” “Why do we round	Level 1: Rounds to the nearest thousand: 6 360 → 6 000; 8 720 → 9 000; 19 800 → 20 000. Level 2: Rounds 56 781 to the nearest ten thousand → 60 000; 804 320 to the nearest hundred thousand → 800 000; 3 478 912 to the nearest million → 3 000 000. Then analyses the incorrect statement: “468 920, rounded to the nearest thousand, is 468 000.” Correct answer: 469 000, because the hundreds digit is 9. Level 3: Rounds 7 549 999 to several place values: to the nearest thousand → 7 550	Worksheets, rounding reminder card, place value chart, board.	✓ Identifies the correct place to which the number must be rounded. ✓ Looks at the digit immediately to the right. ✓ Correctly applies the 0–4 / 5–9 rule. ✓ Correctly replaces lower place values with zeros.	If a pupil experiences difficulty, first ask them to circle the digit in the place to which they are rounding and underline the digit immediately to its right. The teacher asks: “Which digit helps us make the decision?” The teacher materials specifically recommend observing whether the pupil selects the correct digit to consider when rounding.

	up or keep the digit unchanged?”	000; to the nearest ten thousand → 7 550 000; to the nearest hundred thousand → 7 500 000; to the nearest million → 8 000 000.		✓ Can explain their decision. ✓ At Levels 2–3, can analyse and correct an error.	
Task 4 - number sequences and patterns	The teacher says: “Before you write the next number, identify the rule. What happens to each successive number?” The teacher asks: “Does the number increase or decrease?” “Does the same rule apply each time?” For Level 3: “First describe the pattern in words, and only then continue the sequence.”	Level 1: A separate number-sequence task is not included in the Level 1 worksheet. Pupils complete the ordering/rounding tasks and carry out a self-check using the place value and rounding reminder cards. Level 2: Continues the sequences: 125 000; 130 000; 135 000; 140 000; 145 000; 150 000 – step +5 000. 900 000; 800 000; 700 000; 600 000; 500 000; 400 000 – step –100 000. Level 3: Identifies the pattern: 4; 12; 36; 108... – each number is multiplied by 3; continues with 324; 972; 2 916; 8 748; 26 244. In the second sequence 1 000 000; 900 000; 810 000; 729 000..., each successive number is 90% of the previous number, or the previous number is	Worksheets, number-sequence cards, place value chart, self-check cards.	✓ Identifies the step/rule of the sequence. ✓ Does not rely on guessing as the main strategy. ✓ Continues the sequence correctly. ✓ Can describe the pattern in words. ✓ At Level 3, uses a more complex mathematical relationship and justifies the solution.	If a pupil experiences difficulty, the teacher helps them compare the first two terms of the sequence: “What do we need to do to 125 000 to get 130 000?” At Level 3, the pupil should also check whether the same relationship applies between several consecutive terms. The teacher materials particularly emphasise the ability to identify more complex patterns and express them in words.

		multiplied by 0.9; the next numbers are 656 100; 590 490. The Level 3 worksheet also requires pupils to formulate the rule of the pattern themselves.			
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Teacher Questions During Practical Work

- “Which period and place is this digit in?”
- “What is the value of this digit in the number?”
- “How would you read this number by periods?”
- “What is the first digit that is different in the two numbers?”
- “Why is this number greater?”
- “Should the numbers be ordered in ascending or descending order?”
- “To which place should the number be rounded?”
- “Which digit determines whether we round up?”
- “What is the rule of the sequence?”
- “How can you check your answer?”
- “Where is the error, and how did you notice it?”
- “Can you justify your solution to another pupil?”

Teacher Observation Focus in Part 2

Skill observed	What the teacher specifically observes
Reading large numbers	Reads a multi-digit number by periods rather than as separate digits.
Understanding place value	Distinguishes between the digit itself, its position and its value in the number.
Writing numbers	Correctly converts between numbers written in words and numerals.

Comparing numbers	Compares numbers from left to right and uses $>$, $<$, $=$ correctly.
Ordering numbers	Correctly orders numbers in ascending and descending order.
Forming numbers	Forms the largest/smallest possible number, taking place value and the role of 0 into account.
Rounding	Identifies the specified place, analyses the next digit and rounds correctly.
Identifying patterns	Identifies the step or rule of a sequence and continues it correctly.
Error analysis	Identifies an incorrect solution, corrects it and explains the reason for the error.
Reasoning and independence	Does not only give an answer, but explains the solution and uses reminder cards for self-checking.

Part 3. Lesson Plenary (10 min)

Lesson stage	Time	Teacher activity – what the teacher says and does	Pupil activity / expected response	Materials	Formative assessment / observation focus	Methodological notes
Review of work and error analysis	3 min	The teacher says: “Now we will check a few important skills. The aim is not only to see the correct answer, but to understand how we arrived at it.” The teacher shows 54 321 and 54 123 on the board and asks: “Which number is greater? Which digit helped you decide?” The teacher then shows the rounding example 8 720 to the nearest thousand and asks: “Which digit do we look at?”	Pupils compare: 54 321 > 54 123 . They explain that the first different digit is in the hundreds place: 3 hundreds > 1 hundred . They round: 8 720 $\approx$ 9 000 , because the hundreds digit is 7 . Pupils check their own work and correct any errors they notice.	Interactive whiteboard, worksheets, place value and rounding reminder cards.	✓ Compares numbers according to place value. ✓ Rounds correctly. ✓ Justifies the solution. ✓ Notices and corrects an error.	There is no need to check every example on the worksheet together. Select a few tasks that allow the teacher to check pupils’ understanding and the strategy used.

		Why do we get 9 000?" Pupils are also invited to check their own worksheet: "If you notice an error, correct it and think about why it happened."				
Exit task – "Show that you understand!"	2 min	The teacher writes 468 920 on the board and says: "Choose one thing you can say about this number." The teacher guides pupils with questions: "What is the value of the digit 6?" "Between which two thousands does this number lie?" "How would you round it to the nearest thousand?" For an additional challenge: "Explain why 468 000 is not the correct answer."	Possible answers: the value of the digit 6 is 60 000; the number lies between 468 000 and 469 000; rounded to the nearest thousand, it is 469 000. Pupils justify: the hundreds digit is 9, so the thousands digit is increased by one.	Board, individual place value chart if needed.	✓ Transfers what has been learnt to a new situation. ✓ Identifies place value. ✓ Applies the rounding procedure. ✓ Can justify the answer.	The example is linked to the error-analysis task included in the Level 2 worksheet.
Self-assessment	2 min	The teacher says: "Think not about how many tasks you completed, but about what you can do now." The teacher names the skills: "I can read and write large numbers." "I can identify the place value of a digit." "I can compare and round	Pupils choose an appropriate self-assessment and, where possible, justify their choice: "I can compare numbers, but I still need to practise rounding." "The place value chart helps me." "I can identify	Self-assessment cards 🟢 🟡 🔴.	✓ Assesses their own progress realistically. ✓ Identifies a skill they have developed. ✓ Recognises where	Self-assessment is not linked to the pupil's Level 1, Level 2 or Level 3 differentiation. The focus is on each pupil's individual progress.

		numbers.” “I can explain my solution.” The pupil chooses: ☐ “I can do this independently.” ☐ “I can do this with a little support.” ● “I still need to practise this.”	the rule of a sequence independently.”		additional support is needed.	
Teacher feedback	2 min	The teacher summarises what has been observed: “Today I noticed that more and more of you are reading large numbers by periods and beginning comparisons from the left. Many of you used the place value chart and the rounding reminder card correctly to check your own work.” The teacher gives specific individual feedback, for example: “You correctly identified the first different digit and were able to justify your comparison.” “You noticed your rounding error and corrected it yourself.”	Pupils listen to the feedback and compare it with their own self-assessment. They identify one thing that went well during the lesson.	Pupils’ worksheets, teacher observation notes.	✓ Feedback is linked to a specific skill. ✓ The pupil recognises their own progress and the next step in learning.	Avoid relying only on general praise such as “Well done!” Praise should be linked to a specific action, strategy or area of progress.
Lesson summary	1 min	The teacher says: “Today we worked with natural numbers – we read and	Possible responses: “We read large numbers by periods.” “The value of a	Visual reminder cards.	✓ Formulates one key learning point	At the end of the lesson, do not try to repeat all the lesson

		wrote them, identified the place value of digits, compared and ordered numbers, rounded them and identified patterns. What is one important thing to remember when working with large numbers?"	digit depends on its position." "We compare numbers from left to right." "When rounding, we look at the next digit."		from the lesson. ✓ Uses appropriate mathematical terminology.	content; the pupil should be able to formulate at least one key learning point .
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Assessment Summary

Skill being assessed	What the teacher specifically observes	Achieved	Partially achieved	Support needed
Reads and writes natural numbers	Reads large numbers by periods and correctly converts between numbers written in words and numerals.	☐	☐	☐
Understands place value	Identifies the position of a digit and its numerical value.	☐	☐	☐
Compares numbers	Compares numbers from left to right and uses $>$, $<$, $=$ correctly.	☐	☐	☐
Orders numbers	Correctly arranges numbers in ascending or descending order.	☐	☐	☐
Rounds numbers	Identifies the required place and correctly uses the next digit to decide whether to round up or down.	☐	☐	☐
Identifies patterns	Identifies the rule of a number sequence and continues the sequence correctly.	☐	☐	☐
Analyses errors	Identifies an incorrect solution, corrects it and explains the reason for the error.	☐	☐	☐
Justifies the solution	Explains mathematically how they arrived at the answer.	☐	☐	☐
Works independently	Uses reminder cards and other support materials before asking the teacher for help.	☐	☐	☐

Teacher Reflection After the Lesson

What went well?

- Do pupils read large natural numbers correctly by periods?
- Do they understand the difference between a digit, its position and its value?
- Can they compare and order numbers correctly?
- When rounding, do they identify the correct place and the correct digit to consider?
- Were the differentiated tasks appropriate to pupils' skill levels?

What caused difficulties?

- Do pupils confuse number periods and place values?
- Do they read large numbers as separate digits?
- When comparing numbers, do they begin from the left?
- When rounding, do they choose the wrong digit to consider?
- In number sequence tasks, do they identify the pattern rather than continue the sequence by guessing?
- Can pupils explain and justify their solutions?

Next Steps

- For pupils who find the structure of large numbers difficult, continue to use a place value chart and visually separate number periods.
- Consolidate comparing and rounding skills while gradually reducing the use of reminder cards.
- For pupils who have mastered the basic skills, provide more challenging tasks involving forming numbers, analysing errors and working with number sequences.
- Continue to develop mathematical reasoning by asking pupils not only to give an answer, but also to provide a brief justification.
- Encourage self-checking and independence by teaching pupils to choose an appropriate checking strategy before asking the teacher for help.

Teacher's Notes

Grade: V

Topic: Addition and subtraction with multi-digit numbers: calculating accurately with larger numbers and solving practical problems

Learning objective(s):

By the end of the lesson, students should be able to:

1. Accurately add and subtract multi-digit numbers, including numbers requiring regrouping/carrying and borrowing.
2. Identify the appropriate operation (addition or subtraction) when solving practical word problems.
3. Solve one-step and multi-step problems involving larger numbers and explain the calculation strategy used.
4. Check and evaluate their answers using estimation, the inverse operation, or by considering whether the answer is reasonable.

The worksheet was designed by: LTGM

Level 1	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Read the task carefully. Say what you need to find and decide what operation is needed. Explain how you could solve the task.	"I need to add." / "I need to subtract." / "I need to find the total." / "I need to find how much is left."	Can the student identify the mathematical action required before calculating? Can they distinguish between <i>total</i> , <i>difference</i> , and <i>remaining amount</i> ?	worksheet, board/projector place-value chart if needed pencil eraser	Encourage students to verbalize their plan before calculating. Avoid immediately

	Calculate carefully and write each number in the correct place-value column. Identify what is known, what needs to be found, and choose the operation.	“I can use written addition/subtraction.” / “I can calculate step by step.” / “I can estimate to check.” Correct numerical answers for Exercises 1–3. Operation: $8,425 + 1,275 = 9,700$ books	Does the student know more than one strategy? Can they select an appropriate method independently? Accuracy, alignment of digits, regrouping/carrying, borrowing, understanding of place value. Can the student connect the wording “buys new books” and “how many now?” with addition? Can they write a complete answer?		telling them which operation to use. Accept different valid strategies. For students who need support, provide a place-value chart or allow them to use expanded notation. Ask students to estimate before calculating where appropriate. Remind them to check that ones, tens, hundreds, etc. are aligned. Model the Read → Plan → Calculate → Check routine if students are unfamiliar with it.
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Level 2	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Find the number of students who remain at school. Subtract the number sold from the original number. Then check the result. Determine whether the population increases or decreases and calculate the new population. First find the total amount collected. Then compare it with the target amount.	OPERATION 1: $1,248 - 356 = 892$ students OPERATION 2: $15,750 - 8,625 = 7,125$ footballs Then check your answer using addition/ subtraction. OPERATION 3: $24,685 + 3,450 = 28,135$ inhabitants Then check your answer using addition/ subtraction. OPERATION 4: €4,300 collected; €700 needed	Correct choice of subtraction; accurate regrouping; interpretation of the answer in context. Accuracy with several regroupings; ability to check a subtraction answer. Can the student interpret “move to the town” as an increase? Accurate addition and appropriate units. Can the student recognize that two calculations are required? Can they distinguish between finding a total and finding the remaining amount?	Worksheet, optional calculator for checking optional number line pencil eraser	Ask: “Are we finding the total or what remains?” This reinforces operation selection without giving the answer. Have students use the inverse operation: $7,125 + 8,625 = 15,750$. Emphasize that a calculator can be used for checking rather than replacing mathematical thinking. Discuss mathematical vocabulary such as <i>increase</i>, <i>new total</i>, <i>altogether</i>. Encourage students to label each calculation. This helps prevent errors in multi-part problems.

Level 3	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	1. Combine the two new orders and then include the books already in storage. 2. Add the money collected, then subtract the event costs. 3. Find how many boxes are delivered altogether, then subtract that number from the original stock. 4. Add the amounts from all four classes. Compare the result with the cost of the playground and determine the difference.	OPERATION 1: $3,275 + 2,850 + 1,425 = 7,550$ books Operation 2: $\text{€}21,375$ collected; $\text{€}17,000$ left Operation 3: $12,475 + 8,625 = 21,100$; $45,000 - 21,100 = 23,900$ boxes Operation 4: $\text{€}14,000$ collected; $\text{€}1,000$ more needed	Ability to recognize a multi-step problem; organization of calculations; accuracy with larger numbers. Can the student sequence two operations correctly? Can they explain why addition comes before subtraction? Multi-step reasoning, regrouping, organization, ability to interpret intermediate results. Can the student organize several pieces of information and choose the correct sequence of operations? Can they interpret “enough” correctly?	Worksheet, place-value chart, optional calculator optional number line pencil eraser	Encourage students to write an intermediate result before completing the second step. Ask students to represent the problem with a short calculation plan: morning + afternoon → total – costs. Encourage students to solve in two clear stages rather than performing several operations mentally. Challenge stronger students to find a second way to check the result, e.g.

					estimating or calculating the difference from €15,000.
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Name: _____



Grade: _____



Date: _____

Addition and subtraction with multi-digit numbers

Level 1	 What do I need to do?	 What can I use to solve this task?
	1. Remember what you know about adding and subtracting multi-digit numbers, and the rules. 2. Read carefully the numbers and try to understand how the operations can be solved. 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. Add the numbers.

a) $3,245 + 2,136 =$ _____

b) $12,408 + 5,321 =$ _____

c) $24,507 + 13,284 =$ _____

2. Subtract the numbers.

a) $7,856 - 3,421 =$ _____

b) $15,000 - 6,735 =$ _____



c) $42,316 - 21,204 =$ _____

3. Find the missing number.

a) $4,500 +$ _____ $= 7,250$

b) _____ $- 3,200 = 5,600$

c) $12,000 -$ _____ $= 4,750$

4. A school library has 8,425 books. The school buys 1,275 new books. How many books does the library have now?

Calculation: _____

Answer: _____

Level 2	What do I need to do?	What can I use to solve this task?
	 1. Find the total. 2. Find how much is left. 3. Find the difference between two numbers. 4. Read the problems carefully and solve the calculations. 5. Check the answers where required.	 • A pencil or a pen • An eraser

1. There are 1,248 students in a school. 356 students go on a school trip. How many students stay at school?

Calculation: _____

Answer: _____

2. A sports shop has 15,750 footballs. During the year, it sells 8,625 footballs. How many footballs are left?

Calculation: _____

Answer: _____

Check your answer: _____

3. A town has 24,685 inhabitants. During the next year, 3,450 new people move to the town. What is the new population?

Calculation: _____

Answer: _____

Check your answer: _____



4. Class 5A collects at a charity fair €2,475. Class 5B collects €1,825. The school needs €5,000 for a very important project project.

a) How much money have the two classes collected altogether?

b) How much more money do they need?

a) Calculation: _____

Answer: _____

b) Calculation: _____

Answer: _____

Level 3	 What do I need to do?	 What can I use to solve this task?
	1. Read the problem carefully and decide whether to add or subtract. 2. Use estimation to check my answer. 3. Use the numbers and information given in the problem. 4. Check my answer using the opposite operation	• A pencil or a pen • An eraser

1. A school orders 3,275 mathematics books and 2,850 science books. The school already has 1,425 books in storage. How many books will the school have in total after the new books arrive?

Calculation:

Answer: _____

Check your answer: _____



2. A charity event collects €12,750 in the morning and €8,625 in the afternoon. The organizers spend €4,375 on the costs of the event. How much money is left for the charity?

Calculation 1: _____

Calculation 2: _____

Answer: _____

3. A warehouse has 45,000 boxes. On Monday, 12,475 boxes are delivered to shops. On Tuesday, another 8,625 boxes are delivered. How many boxes are left in the warehouse?

Calculation 1: _____

Calculation 2: _____

Answer: _____

4. Four classes collect money for a new playground:

- **Class 5A: €3,275**
- **Class 5B: €2,850**
- **Class 5C: €4,125**
- **Class 5D: €3,750**

The playground costs €15,000.

a) How much money do the four classes collect altogether?

b) Is there enough money to pay for the playground?



c) If there is not enough money, how much more is needed?

If there is extra money, how much is left over?

Calculation: _____

Answer a): _____

Answer b): _____

Answer c): _____

Teacher's Notes

Grade: V

Topic: Multiplication and Division with Multi-Digit Numbers: Applying written methods and using the four operations in real-life contexts

Learning objective(s):

By the end of the lesson, students should be able to:

1. Use efficient written procedures to multiply and divide larger whole numbers accurately.
2. Interpret multiplication and division situations in everyday contexts and determine what the numbers and results represent.
3. Break down complex problems into manageable steps, selecting and combining appropriate operations to reach a solution.
4. Evaluate their own calculations by using estimation, inverse operations, or another suitable checking strategy.

The worksheet was designed by: LTGM

Level 1	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Read the problem carefully. Identify what you know, what	"I need to multiply." / "I need to divide." / "I need to find the total." /	Observe whether students understand the mathematical situation	Worksheet Place-value chart	Remind students to estimate the approximate

	you need to find, and which operation is needed. Explain which strategy or tool could help you solve the task. Multiply the numbers using a written method. Keep the digits correctly aligned and show your working. Divide each number carefully using a written method. Check the result when possible. Find the number that makes each multiplication or division statement true. Identify the number of equal groups and the number of items in each group, then find the total.	“I need to share the amount equally.” / “I need to solve it in several steps.” “I can use written multiplication/division.” / “I can calculate step by step.” / “I can use a place-value chart.” / “I can estimate and check.” / “I can use the inverse operation.” Exercise 1: a) 1,944 b) 4,820 c) 11,580 d) 28,175 Exercise 2: a) 216 b) 208 c) 483 d) 609 Exercise 3: a) 6 b) 500 c) 8 d) 6,000 Exercise 4: $125 \times 8 = 1,000$ notebooks	before starting the calculation. Check whether they can distinguish between multiplication and division situations. Can students select an appropriate strategy independently? Do they understand that different strategies can be used to solve or check a problem? Accuracy of written multiplication; correct use of place value; carrying/regrouping; organization of written work. Correct division procedure; understanding of place value; ability to interpret the quotient; checking for errors. Understanding of the relationship between multiplication and division; flexible use of inverse operations. Can the student recognize a multiplication situation involving equal groups?	Multiplication/division reference chart for students who need additional support Optional counters or visual representation of equal groups pencil eraser	answer before calculating. Emphasize correct alignment of digits according to place value. Encourage students to check multiplication using division and division using multiplication. For students who struggle, provide a partially completed example rather than the complete solution. Ask students to explain why multiplication is appropriate. If necessary, represent the situation visually as equal groups. Encourage students to connect
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			Can they provide a complete answer with the correct unit?		multiplication with repeated addition.
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Level 2	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	Determine whether you need to share the total equally and calculate how many bottles go in each box. Find the total number of seats by multiplying the number of rows by the number of seats in each row. Share the total number of cards equally among the classes. First calculate the total number of rolls made in six days. Then divide the total equally among five vans.	OPERATION 1: $2,450 \div 7 = 350$ bottles per box OPERATION 2: $24 \times 35 = 840$ seats OPERATION 3: $3,600 \div 9 = 400$ cards per class OPERATION 4: a) 7,500 rolls b) 1,500 rolls per van	Correct identification of division; accuracy of written division; interpretation of the quotient in context. Understanding of multiplication as equal groups; accuracy with a two-digit multiplier; correct use of written multiplication. Accuracy of division; ability to interpret the quotient; use of appropriate units. Ability to recognize that the problem requires two operations; correct	Worksheet Place-value chart Optional counters or grouping diagram Grid paper or array diagram if needed pencil eraser	1. Ask: "Are we finding a total or sharing a total?" Encourage students to describe what the quotient represents. Have students check with multiplication: $350 \times 7 = 2,450$. 2. Allow students to draw rows of seats before calculating if useful. Ask students to estimate first. Encourage students to compare their written calculation with a mental or partitioning strategy. 3. Ask students what the number 400 represents. Use inverse operations for checking. Encourage students to explain the meaning of their answer in a complete sentence.

			order of operations; accuracy of intermediate result.		4. Encourage students to write a short plan before calculating. Ask students to label the intermediate answer. Emphasize that the second calculation cannot be completed correctly until the first calculation is finished.
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Level 3	Instruction for a student	Expected answer	Assessment / observation focus	Materials / Resources	Methodological recommendations
	1. First find the total number of seats available on all buses. Then find how many seats will remain empty. 2. Work through the problem step by step. Find how many bottles are in each box, determine how many remain in each box after sales, and then find the total remaining.	a) $8 \times 48 = \mathbf{384 \text{ seats}}$ b) $384 - 356 = \mathbf{28 \text{ empty seats}}$ $4,800 \div 12 = 400$ $400 - 150 = 250$ $250 \times 12 = \mathbf{3,000 \text{ bottles left}}$	Ability to identify two connected steps; Correct use of multiplication followed by subtraction; organization of written work; interpretation of the final answer. Ability to organize several steps; correct sequencing of division, subtraction, and multiplication; understanding of intermediate results; accuracy when combining operations.	Worksheet Scrap paper Optional diagram of buses and seats Optional grouping diagram	Encourage students to write: buses $\times$ seats $\rightarrow$ total seats $\rightarrow$ subtract students. Ask students to explain what the intermediate number represents. Challenge students to estimate the final answer before calculating. Ask students to identify the purpose of

	3. First find the amount collected by one class. Then calculate the total collected by all four classes. Finally determine how much remains after paying for the project. 4. First find how many new books are placed on each shelf. Add the books already on each shelf. Then calculate the total number of books on all shelves.	a) $28 \times €15 = \mathbf{€420}$ b) $€420 \times 4 = \mathbf{€1,680}$ c) $€1,680 - €1,500 = \mathbf{€180 \text{ left}}$ a) $3,600 \div 9 = \mathbf{400 \text{ books per shelf}}$ b) $400 + 175 = \mathbf{575 \text{ books per shelf}}$ c) $575 \times 9 = \mathbf{5,175 \text{ books altogether}}$	Ability to combine multiplication and subtraction; correct sequencing of operations; understanding of money amounts; ability to interpret the final result. Ability to manage a three-step problem; correct sequencing of division, addition, and multiplication; understanding of intermediate results; accurate use of units; ability to explain the reasoning.	Play money for additional support	each calculation before starting. Encourage them to label each intermediate result. Do not provide the sequence of operations immediately; allow students to reason it out. Encourage students to write a calculation plan. Ask: "What does €420 represent?" and "What does €1,680 represent?" Encourage students to predict whether the final amount will be positive before calculating. Ask students to explain what each number represents. Encourage them to record each intermediate result before moving on. Have students check the final answer using
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					estimation or a reverse calculation. For stronger students, ask them to solve the problem using an alternative strategy.
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Name:



Grade:



Date:

Multiplication and Division with Multi-Digit Numbers: Applying written methods and using the four operations in real-life contexts

Level 1	What do I need to do?	What can I use to solve this task?
	 1. Remember to multiply the numbers, to divide them, if they are multi-digit ones. 2. Find the total. 3. Know to write multiplication and division. 4. Solve the calculations. 5. Check the answers.	 • A pencil or a pen • An eraser

1. Calculate carefully the following multiplications:

- a) $324 \times 6 =$ _____
- b) $1,205 \times 4 =$ _____
- c) $2,316 \times 5 =$ _____
- d) $4,025 \times 7 =$ _____

2. Calculate carefully the following multiplications:

- a) $864 \div 4 =$ _____
- b) $1,248 \div 6 =$ _____
- c) $2,415 \div 5 =$ _____



d) $4,872 \div 8 =$ _____

3. Find the missing number.

a) $425 \times$ _____ $= 2,550$

b) _____ $\times 7 = 3,500$

c) $4,800 \div$ _____ $= 600$

d) _____ $\div 8 = 750$

4. A school buys 125 packs of notebooks. Each pack contains 8 notebooks. How many notebooks does the school buy altogether?

Calculation: _____

Answer: _____

Level 2	 What do I need to do?	 What can I use to solve this task?
	1. Find how many groups there are. 2. Find how many items are in each group. 3. Solve the problem step-by-step. 4. Check the answer. 5. Use a place-value chart. 6. Use estimation to check my answer.	• A pencil or a pen • An eraser

1. A sports club orders 2,450 bottles of water. The bottles are packed equally into seven boxes. How many bottles are in each box?

Calculation: _____

Answer: _____

2. There are 24 rows of seats in a hall. Each row has 35 seats. How many seats are there altogether?

Calculation: _____

Answer: _____

Check your answer: _____

3. A school has 3,600 sports cards. The cards are shared equally among nine classes. How many cards does each class receive?

Calculation: _____

Answer: _____



Check your answer: _____

4. A bakery makes 1,250 rolls each day. It works for 6 days.

a) How many rolls does the bakery make in 6 days?

b) The bakery packs the rolls equally into five delivery vans. How many rolls does each van receive?

a) Calculation: _____

Answer: _____

b) Calculation: _____

Answer: _____

Level 3	 What do I need to do?	 What can I use to solve this task?
	1. Use the inverse operation to check my answer. 2. Use a number line or repeated addition if I need help. 3. Solve the problem step-by-step. 4. Decide which operation or operations I need.	• A pencil or a pen • An eraser

1. A school has 8 buses. Each bus can carry 48 students.

a) How many students can the buses carry altogether?

There are 356 students going on the trip.

b) How many seats will be empty?

Calculation:

Answer: _____

Check your answer: _____

2. A supermarket receives 4,800 bottles of juice. The bottles are packed equally into 12 large boxes. The supermarket sells 150 bottles from each box. How many bottles are left altogether?

Calculation 1: _____

Calculation 2: _____

Answer: _____

3. Four classes are collecting money for a school project. Each class has 28 students. Each student collects €15.

a) How much money does one class collect?

b) How much money do all four classes collect?

c) The project costs €1,500. How much money is left after paying for the project?

Calculation:

Answer a): _____

Answer b): _____

Answer c): _____



4. A library receives 3,600 new books. The books are placed equally on nine shelves. Each shelf already contains 175 books.

a) How many new books are placed on each shelf?

b) How many books are on each shelf after the new books are added?

c) How many books are there on all 9 shelves altogether?

Calculation:

Answer a): _____

Answer b): _____

Answer c): _____

LESSON PLAN

Date:

Grade: 5th

Unit: Multi-digit numbers

Topic: **Multiplication and Division with Multi-Digit Numbers; Applying written methods and using the four operations in real-life contexts**

Lesson type: mixed

General skills:

1. Problem-solving skills: Apply the four basic operations (addition, subtraction, multiplication, and division) to solve mathematical problems in real-life contexts.
2. Computational skills: Perform multiplication and division with multi-digit numbers using appropriate written methods accurately and efficiently.
3. Critical thinking and reasoning skills: Analyze real-life problems, select the appropriate operation, and interpret the results in the context of the problem

Operational objectives: **At the end of the class, the pupils will be able to:**

- To identify the appropriate arithmetic operation(s) for solving problems involving multi-digit multiplication and division;
- To represent the data in a problem using numbers, mathematical expressions, or diagrams in order to select a suitable written method;
- To apply written multiplication and division methods to solve problems involving multi-digit natural numbers;
- To use the four basic arithmetic operations to solve real-life problems and interpret the results in context

Methods: conversation, explanation, exercise, observation.

Means: notebook, smartboard, marker, computers, videoprojector

Organisation of activity: individual, frontal

Duration: 50 min,

References: Programa scolara in vigoare pentru Matematica, clasa a Va -2017, Matematica, manual clasa a V-a., Culegere de exercitii si probleme; Editura Art educational.

Lesson stages/ Duration/ Op. Obj	Content and learning objectives		Teaching strategies			Assessment
	Teacher's activity	Pupils' activity	Methods	Means	Organisation	
1. Organizational Moment 2 min	Creates the right conditions for the lesson to run smoothly: checks attendance and the pupils' mood, and ensures the computers and projector are switched on.	Pupils report absences and prepare the materials needed for the lesson.	Conversation			Verbal appreciations
2. Assessment of knowledge (5 min)	Checks the homework and provides guidance to pupils who have encountered difficulties in completing it.	The pupils check whether they have completed the homework correctly.	Conversation	Notebooks		
3. Capturing the pupil's attention (3 min) 4. Revising what has been learnt (5 min)	Asks the pupils what lesson they have prepared. Asks them examples of multi-digit numbers. Writes several examples on the whiteboard. Asks the students to remember how the addition and subtraction of multiple-digit numbers are performed. Gives a few examples.	The pupils answer the teacher's question. The pupils solve the exercises in their notebooks.	Conversation Explanation Marker Board	Exercise Computer/ notebook	Frontal Individual	Systematic observation

5. Announcing the topic and the main objectives	States the title of the lesson: Multiplication and Division with Multi-Digit Numbers Outlines the learning objectives.	note down the objectives and write the title of the lesson in their notebooks.	Explanation Conversation	Board Notebooks	Frontal	Systematic observation
6. Presentation of content (23 min)	The teacher asks the students to remember how multiplication and division are performed, by asking several of them to solve some operations. Then the worksheet is provided, with the three levels of difficulty, and the teacher asks them to start solving the problems. The first level problems are to be solved individually, and the results are checked together. The second level problems are to be solved in pairs, with the results written in the notebooks.	They answer the questions. Solve the operations. Start working on the worksheets provided.	Exposition Conversation Exercise	Notebooks Board	Frontal Individual Pair	Systematic observation
7. Performance appraisal (10 min)	Several students are asked to explain how they solved the problems, and the results are discussed with the entire class. Corrections can be made by either the students or the teacher.	Students have the opportunity to find other methods of solving. They correct the mistakes together.	Explanation Exercise	Board Notebooks	Frontal Individual	Verbal appreciations
8. Concluding the activity	The teacher explains what the pupils need to do for the next	Make a note of the tasks.	Conversation	Notebooks	Frontal	

(2 min)	lesson and sets them their homework, level 3 part of the worksheet.					
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