

# AN EXPRESSION IS SHOWN. $\frac{2}{3} + \frac{1}{5}$ WHAT IS THE VALUE OF THE EXPRESSION?

AN EXPRESSION IS SHOWN.  $\frac{2}{3} + \frac{1}{5}$  WHAT IS THE VALUE OF THE EXPRESSION?

UNDERSTANDING HOW TO EVALUATE MATHEMATICAL EXPRESSIONS IS FUNDAMENTAL IN DEVELOPING STRONG ARITHMETIC SKILLS. IN THIS ARTICLE, WE WILL EXPLORE THE EXPRESSION  $\frac{2}{3} + \frac{1}{5}$ , ANALYZE THE STEPS INVOLVED IN CALCULATING ITS VALUE, AND DISCUSS RELATED CONCEPTS SUCH AS FRACTIONS, COMMON DENOMINATORS, AND SIMPLIFIED RESULTS. BY THE END OF THIS COMPREHENSIVE GUIDE, YOU'LL BE ABLE TO CONFIDENTLY EVALUATE SIMILAR EXPRESSIONS AND DEEPEN YOUR UNDERSTANDING OF FRACTIONAL ADDITION.

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## INTRODUCTION TO FRACTIONS AND ARITHMETIC OPERATIONS

BEFORE DIVING INTO THE SPECIFIC EXPRESSION  $\frac{2}{3} + \frac{1}{5}$ , IT'S IMPORTANT TO UNDERSTAND THE BASICS OF FRACTIONS AND HOW ADDITION WORKS WITH THEM.

### WHAT ARE FRACTIONS?

- FRACTIONS REPRESENT PARTS OF A WHOLE.
- A FRACTION CONSISTS OF A NUMERATOR (TOP NUMBER) AND A DENOMINATOR (BOTTOM NUMBER).
- EXAMPLE: IN  $\frac{2}{3}$ , 2 IS THE NUMERATOR, AND 3 IS THE DENOMINATOR.

### ADDING FRACTIONS: THE GENERAL APPROACH

- TO ADD TWO FRACTIONS, THEY MUST HAVE A COMMON DENOMINATOR.
- IF THE DENOMINATORS ARE DIFFERENT, FIND THE LEAST COMMON DENOMINATOR (LCD).
- CONVERT EACH FRACTION TO AN EQUIVALENT FRACTION WITH THE LCD.
- ADD THE NUMERATORS AND PLACE THE SUM OVER THE COMMON DENOMINATOR.
- SIMPLIFY THE RESULTING FRACTION IF POSSIBLE.

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## STEP-BY-STEP EVALUATION OF THE EXPRESSION $\frac{2}{3} + \frac{1}{5}$

LET'S NOW EVALUATE THE SPECIFIC EXPRESSION  $\frac{2}{3} + \frac{1}{5}$  SYSTEMATICALLY.

### STEP 1: IDENTIFY THE DENOMINATORS

- THE FRACTIONS ARE  $\frac{2}{3}$  AND  $\frac{1}{5}$ .
- DENOMINATORS ARE 3 AND 5, WHICH ARE DIFFERENT.

### STEP 2: FIND THE LEAST COMMON DENOMINATOR (LCD)

- LIST THE MULTIPLES:
- MULTIPLES OF 3: 3, 6, 9, 12, 15, 18, ...

- MULTIPLES OF 5: 5, 10, 15, 20, ...
- THE SMALLEST COMMON MULTIPLE IS 15.
- THEREFORE, LCD = 15.

### STEP 3: CONVERT FRACTIONS TO EQUIVALENT FRACTIONS WITH LCD

- FOR  $2/3$ :
- MULTIPLY NUMERATOR AND DENOMINATOR BY 5:
- $\left( \frac{2}{3} = \frac{2 \times 5}{3 \times 5} = \frac{10}{15} \right)$ .
- FOR  $1/5$ :
- MULTIPLY NUMERATOR AND DENOMINATOR BY 3:
- $\left( \frac{1}{5} = \frac{1 \times 3}{5 \times 3} = \frac{3}{15} \right)$ .

### STEP 4: ADD THE FRACTIONS

- ADD NUMERATORS:
- $\left( \frac{10}{15} + \frac{3}{15} = \frac{10 + 3}{15} = \frac{13}{15} \right)$ .

### STEP 5: SIMPLIFY THE RESULT (IF POSSIBLE)

- THE FRACTION  $13/15$  IS ALREADY IN ITS SIMPLEST FORM BECAUSE 13 AND 15 SHARE NO COMMON FACTORS OTHER THAN 1.

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### FINAL RESULT AND INTERPRETATION

THE VALUE OF THE EXPRESSION  $2/3 + 1/5$  IS  $13/15$ . THIS IS AN IMPROPER FRACTION (ALTHOUGH HERE IT'S PROPER BECAUSE NUMERATOR < DENOMINATOR), AND IT CANNOT BE SIMPLIFIED FURTHER.

THEREFORE,

$$\boxed{\frac{2}{3} + \frac{1}{5} = \frac{13}{15}}$$

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### UNDERSTANDING THE RESULT: DECIMAL AND PERCENTAGE EQUIVALENTS

SOMETIMES, IT'S HELPFUL TO EXPRESS THE RESULT AS A DECIMAL OR PERCENTAGE FOR BETTER UNDERSTANDING.

#### CONVERSION TO DECIMAL

- DIVIDE NUMERATOR BY DENOMINATOR:
- $\left( 13 \div 15 \approx 0.8667 \right)$ .

## CONVERSION TO PERCENTAGE

- MULTIPLY DECIMAL BY 100:
- $(0.8667 \times 100 \approx 86.67\%)$ .

THUS,

$$\boxed{\frac{2}{3} + \frac{1}{5} \approx 0.8667 \text{ or } 86.67\%}$$

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## ADDITIONAL EXAMPLES AND PRACTICE PROBLEMS

TO REINFORCE LEARNING, HERE ARE SOME SIMILAR PROBLEMS TO PRACTICE:

- CALCULATE  $(\frac{3}{4} + \frac{2}{7})$ .
- EVALUATE  $(\frac{5}{6} + \frac{1}{3})$ .
- FIND THE SUM OF  $(\frac{7}{8} + \frac{2}{5})$ .
- SUBTRACT  $(\frac{4}{9} - \frac{1}{6})$ .

TIPS FOR SOLVING THESE:

- ALWAYS IDENTIFY THE DENOMINATORS.
- FIND THE LCD.
- CONVERT TO EQUIVALENT FRACTIONS WITH THE LCD.
- PERFORM THE ADDITION OR SUBTRACTION.
- SIMPLIFY THE RESULT IF POSSIBLE.

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## COMMON MISTAKES TO AVOID WHEN ADDING FRACTIONS

WHILE EVALUATING FRACTIONAL EXPRESSIONS, CERTAIN ERRORS ARE COMMON. RECOGNIZING AND AVOIDING THESE CAN IMPROVE ACCURACY:

1. NOT FINDING THE CORRECT LCD WHEN DENOMINATORS ARE DIFFERENT.
2. FORGETTING TO CONVERT FRACTIONS TO EQUIVALENT FORMS BEFORE ADDING.
3. INCORRECTLY ADDING NUMERATORS AND DENOMINATORS WITHOUT PROPER CONVERSION.
4. FAILING TO SIMPLIFY THE RESULTING FRACTION.
5. MISINTERPRETING IMPROPER FRACTIONS OR MIXED NUMBERS.

## CONCLUSION: MASTERING FRACTION ADDITION

ADDING FRACTIONS LIKE  $\frac{2}{3} + \frac{1}{5}$  INVOLVES UNDERSTANDING THE FUNDAMENTAL CONCEPT OF COMMON DENOMINATORS AND EQUIVALENT FRACTIONS. BY FOLLOWING A SYSTEMATIC APPROACH—FINDING THE LCD, CONVERTING FRACTIONS, ADDING NUMERATORS, AND SIMPLIFYING—YOU CAN ACCURATELY EVALUATE A WIDE RANGE OF FRACTIONAL EXPRESSIONS. REMEMBER, PRACTICE MAKES PERFECT. WORK THROUGH VARIOUS PROBLEMS TO BUILD CONFIDENCE AND DEVELOP A STRONG FOUNDATION IN FRACTION ARITHMETIC.

IN SUMMARY:

- THE VALUE OF  $\frac{2}{3} + \frac{1}{5}$  IS  $\frac{13}{15}$ .
- THIS CAN ALSO BE EXPRESSED AS APPROXIMATELY 0.8667 OR 86.67%.
- APPLYING THESE STEPS TO OTHER FRACTIONS ENHANCES OVERALL MATHEMATICAL SKILLS.

MASTERING FRACTIONAL ADDITION NOT ONLY IMPROVES YOUR ARITHMETIC PROFICIENCY BUT ALSO PREPARES YOU FOR MORE ADVANCED TOPICS IN MATHEMATICS, SUCH AS ALGEBRA, RATIOS, AND PROPORTIONS. KEEP PRACTICING, AND YOU'LL FIND EVALUATING SIMILAR EXPRESSIONS BECOMES SECOND NATURE.

## FREQUENTLY ASKED QUESTIONS

### WHAT IS THE VALUE OF THE EXPRESSION $\frac{2}{3} + \frac{1}{5}$ ?

THE VALUE OF THE EXPRESSION  $\frac{2}{3} + \frac{1}{5}$  IS  $\frac{13}{15}$ .

### HOW DO YOU ADD FRACTIONS LIKE $\frac{2}{3}$ AND $\frac{1}{5}$ ?

TO ADD  $\frac{2}{3}$  AND  $\frac{1}{5}$ , FIND A COMMON DENOMINATOR (WHICH IS 15), THEN CONVERT THE FRACTIONS TO HAVE THAT DENOMINATOR:  $\frac{10}{15} + \frac{3}{15} = \frac{13}{15}$ .

### WHAT IS THE STEP-BY-STEP PROCESS TO EVALUATE $\frac{2}{3} + \frac{1}{5}$ ?

FIRST, FIND THE LEAST COMMON DENOMINATOR (LCD) OF 3 AND 5, WHICH IS 15. CONVERT EACH FRACTION:  $\frac{2}{3} = \frac{10}{15}$  AND  $\frac{1}{5} = \frac{3}{15}$ . THEN, ADD THE NUMERATORS:  $10 + 3 = 13$ , RESULTING IN  $\frac{13}{15}$ .

### IS $\frac{13}{15}$ A SIMPLIFIED FRACTION, OR CAN IT BE REDUCED FURTHER?

$\frac{13}{15}$  IS ALREADY IN ITS SIMPLEST FORM BECAUSE 13 AND 15 HAVE NO COMMON FACTORS OTHER THAN 1.

### CAN THE SUM $\frac{2}{3} + \frac{1}{5}$ BE EXPRESSED AS A DECIMAL?

YES,  $\frac{13}{15}$  AS A DECIMAL IS APPROXIMATELY 0.8667.

## ADDITIONAL RESOURCES

AN EXPRESSION IS SHOWN.  $\frac{2}{3} + \frac{1}{5}$  — WHAT IS THE VALUE OF THE EXPRESSION?

IN THE WORLD OF MATHEMATICS, FRACTIONS ARE FUNDAMENTAL COMPONENTS THAT HELP US UNDERSTAND PARTS OF A WHOLE.

FROM EVERYDAY TASKS LIKE DIVIDING A PIZZA TO COMPLEX SCIENTIFIC CALCULATIONS, FRACTIONS PLAY A VITAL ROLE. RECENTLY, A SIMPLE YET INTRIGUING EXPRESSION HAS CAPTURED THE CURIOSITY OF STUDENTS AND EDUCATORS ALIKE:  $\frac{2}{3} + \frac{1}{5}$ . WHILE AT FIRST GLANCE IT APPEARS STRAIGHTFORWARD, UNDERSTANDING HOW TO EVALUATE THIS EXPRESSION INVOLVES A DEEPER GRASP OF FRACTIONS, LEAST COMMON DENOMINATORS, AND BASIC ADDITION RULES. THIS ARTICLE EXPLORES THE PROCESS STEP-BY-STEP, PROVIDING CLARITY AND INSIGHT INTO CALCULATING THE VALUE OF THIS EXPRESSION.

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## UNDERSTANDING THE COMPONENTS OF THE EXPRESSION

BEFORE DIVING INTO THE CALCULATION, IT'S ESSENTIAL TO COMPREHEND WHAT THE EXPRESSION  $\frac{2}{3} + \frac{1}{5}$  REPRESENTS AND THE FUNDAMENTAL PRINCIPLES BEHIND ADDING FRACTIONS.

### WHAT ARE FRACTIONS?

A FRACTION CONSISTS OF TWO PARTS:

- NUMERATOR: THE TOP NUMBER (E.G., 2 IN  $\frac{2}{3}$ ), INDICATING HOW MANY PARTS ARE CONSIDERED.
- DENOMINATOR: THE BOTTOM NUMBER (E.G., 3 IN  $\frac{2}{3}$ ), REPRESENTING THE TOTAL NUMBER OF EQUAL PARTS INTO WHICH A WHOLE IS DIVIDED.

FRACTIONS CAN BE PROPER (NUMERATOR LESS THAN DENOMINATOR), IMPROPER (NUMERATOR GREATER THAN OR EQUAL TO DENOMINATOR), OR MIXED. THE KEY TO ADDING FRACTIONS IS ENSURING THEY ARE EXPRESSED WITH A COMMON DENOMINATOR.

### THE CHALLENGE OF ADDING FRACTIONS

UNLIKE WHOLE NUMBERS, FRACTIONS CANNOT BE DIRECTLY ADDED UNLESS THEY SHARE THE SAME DENOMINATOR. TO COMBINE TWO FRACTIONS LIKE  $\frac{2}{3}$  AND  $\frac{1}{5}$ , WE NEED TO FIND A COMMON DENOMINATOR—A NUMBER THAT BOTH DENOMINATORS DIVIDE EVENLY INTO.

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## THE PROCESS OF ADDING $\frac{2}{3}$ AND $\frac{1}{5}$

ADDING FRACTIONS INVOLVES A SYSTEMATIC APPROACH:

### STEP 1: FIND THE LEAST COMMON DENOMINATOR (LCD)

THE LEAST COMMON DENOMINATOR IS THE SMALLEST NUMBER THAT BOTH DENOMINATORS DIVIDE EVENLY INTO. FOR 3 AND 5, THE MULTIPLES ARE:

- MULTIPLES OF 3: 3, 6, 9, 12, 15, 18, ...
- MULTIPLES OF 5: 5, 10, 15, 20, 25, ...

THE SMALLEST COMMON MULTIPLE IS 15, MAKING IT THE LEAST COMMON DENOMINATOR.

### STEP 2: CONVERT FRACTIONS TO EQUIVALENT FRACTIONS WITH LCD

NEXT, WE REWRITE EACH FRACTION AS AN EQUIVALENT FRACTION WITH DENOMINATOR 15:

- FOR  $\frac{2}{3}$ :
  - DETERMINE WHAT TO MULTIPLY 3 BY TO GET 15:  $3 \times 5 = 15$ .
  - MULTIPLY NUMERATOR AND DENOMINATOR BY 5:
    - $2 \times 5 = 10$
  - SO,  $\frac{2}{3} = \frac{10}{15}$ .
- FOR  $\frac{1}{5}$ :
  - DETERMINE WHAT TO MULTIPLY 5 BY TO GET 15:  $5 \times 3 = 15$ .
  - MULTIPLY NUMERATOR AND DENOMINATOR BY 3:
    - $1 \times 3 = 3$

- So,  $1/5 = 3/15$ .

### STEP 3: ADD THE NUMERATORS

HAVING EXPRESSED BOTH FRACTIONS WITH THE SAME DENOMINATOR, SIMPLY ADD THE NUMERATORS:

$$10 + 3 = 13$$

THE DENOMINATOR REMAINS 15, SO:

$$2/3 + 1/5 = 13/15$$

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### SIMPLIFICATION AND FINAL RESULT

IN THIS CASE, THE RESULTING FRACTION  $13/15$  IS ALREADY IN ITS SIMPLEST FORM BECAUSE:

- 13 IS A PRIME NUMBER.
- 15 FACTORS INTO 3 AND 5.
- SINCE 13 SHARES NO COMMON FACTORS WITH 15, THE FRACTION CANNOT BE SIMPLIFIED FURTHER.

THEREFORE, THE VALUE OF THE EXPRESSION  $2/3 + 1/5$  IS  $13/15$ .

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### VISUALIZING THE ADDITION: AN INTUITIVE APPROACH

WHILE THE ARITHMETIC PROCESS IS CLEAR, VISUALIZING THE FRACTIONS CAN AID UNDERSTANDING.

- IMAGINE DIVIDING A CIRCLE (OR A RECTANGULAR SHAPE) INTO 3 EQUAL PARTS; SHADING 2 PARTS REPRESENTS  $2/3$ .
- SIMILARLY, DIVIDE ANOTHER SHAPE INTO 5 EQUAL PARTS; SHADING 1 PART REPRESENTS  $1/5$ .
- TO COMBINE THESE, CONVERT BOTH SHAPES INTO PARTS THAT ARE EQUALLY DIVIDED INTO 15 SEGMENTS:
- THE  $2/3$  SHAPE NOW HAS 10 SHADED SEGMENTS OUT OF 15.
- THE  $1/5$  SHAPE HAS 3 SHADED SEGMENTS OUT OF 15.
- COMBINING THESE SHADED SEGMENTS GIVES A TOTAL OF 13 OUT OF 15, VISUALLY CONFIRMING THE SUM AS  $13/15$ .

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### REAL-WORLD APPLICATIONS OF FRACTION ADDITION

UNDERSTANDING HOW TO ADD FRACTIONS LIKE  $2/3 + 1/5$  IS NOT JUST AN ACADEMIC EXERCISE BUT HAS PRACTICAL IMPLICATIONS:

- COOKING: ADJUSTING RECIPES THAT INVOLVE FRACTIONAL MEASUREMENTS.
- FINANCIAL CALCULATIONS: COMBINING PARTIAL PAYMENTS OR SHARES.
- ENGINEERING AND CONSTRUCTION: SUMMING FRACTIONAL DIMENSIONS.
- DATA ANALYSIS: COMBINING RATIOS OR PROBABILITIES EXPRESSED AS FRACTIONS.

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### COMMON PITFALLS AND MISCONCEPTIONS

WHEN WORKING WITH FRACTIONS, LEARNERS OFTEN ENCOUNTER SOME COMMON MISTAKES:

- FORGETTING TO FIND THE LCD: ATTEMPTING TO ADD NUMERATORS DIRECTLY WITHOUT CONVERTING TO A COMMON DENOMINATOR.
- INCORRECTLY MULTIPLYING DENOMINATORS: USING THE PRODUCT OF DENOMINATORS (15) IS CORRECT, BUT ALWAYS ENSURE TO FIND THE LEAST COMMON MULTIPLE TO SIMPLIFY CALCULATIONS.

- NEGLECTING TO SIMPLIFY THE FINAL ANSWER: ALWAYS CHECK IF THE RESULTING FRACTION CAN BE REDUCED FURTHER.

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#### SUMMARY AND KEY TAKEAWAYS

THE CALCULATION OF  $\frac{2}{3} + \frac{1}{5}$  EXEMPLIFIES FUNDAMENTAL FRACTION ADDITION PRINCIPLES. THE PROCESS INVOLVES:

1. IDENTIFYING THE LEAST COMMON DENOMINATOR (LCD) — IN THIS CASE, 15.
2. CONVERTING EACH FRACTION TO AN EQUIVALENT FRACTION WITH THE LCD.
3. ADDING THE NUMERATORS WHILE KEEPING THE DENOMINATOR UNCHANGED.
4. SIMPLIFYING THE RESULTING FRACTION IF POSSIBLE.

THE FINAL, SIMPLIFIED ANSWER IS  $\frac{13}{15}$ .

THIS EXAMPLE DEMONSTRATES THAT EVEN SEEMINGLY SIMPLE MATH PROBLEMS REQUIRE CAREFUL STEPS AND UNDERSTANDING OF CONCEPTS LIKE COMMON DENOMINATORS AND FRACTION EQUIVALENCE. MASTERING THESE SKILLS ENHANCES MATHEMATICAL LITERACY AND PREPARES LEARNERS FOR MORE COMPLEX CALCULATIONS ACROSS VARIOUS DISCIPLINES.

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#### FINAL THOUGHTS

MATHEMATICS OFTEN APPEARS DAUNTING, BUT BREAKING DOWN PROBLEMS INTO MANAGEABLE STEPS REVEALS THEIR ELEGANCE AND LOGIC. THE ADDITION OF FRACTIONS SUCH AS  $\frac{2}{3} + \frac{1}{5}$  IS A FOUNDATIONAL SKILL THAT UNDERPINS MANY ADVANCED TOPICS. WHETHER IN ACADEMICS, PROFESSIONAL FIELDS, OR EVERYDAY LIFE, THE ABILITY TO ACCURATELY PERFORM FRACTION OPERATIONS EMPOWERS INDIVIDUALS TO MAKE PRECISE CALCULATIONS AND INFORMED DECISIONS. AS WITH MANY MATHEMATICAL CONCEPTS, PRACTICE AND VISUALIZATION DEEPEN UNDERSTANDING, TURNING ABSTRACT OPERATIONS INTO CLEAR, INTUITIVE PROCESSES.

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