

# DIVIDE 63 IN THE RATIO 2:5

## DIVIDE 63 IN THE RATIO 2:5

DIVIDING A NUMBER IN A SPECIFIC RATIO IS A COMMON PROBLEM IN MATHEMATICS, ESPECIALLY WITHIN THE REALM OF RATIO AND PROPORTION. WHETHER YOU'RE A STUDENT LEARNING ABOUT RATIOS OR SOMEONE SOLVING REAL-WORLD PROBLEMS INVOLVING FAIR SHARING, UNDERSTANDING HOW TO DIVIDE A NUMBER IN A GIVEN RATIO IS A VITAL SKILL. IN THIS ARTICLE, WE WILL EXPLORE THE STEP-BY-STEP PROCESS OF DIVIDING 63 IN THE RATIO 2:5, EXPLAIN THE CONCEPT THOROUGHLY, AND PROVIDE PRACTICAL EXAMPLES TO HELP YOU MASTER THIS TOPIC.

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## UNDERSTANDING RATIOS AND THEIR SIGNIFICANCE

### WHAT IS A RATIO?

A RATIO IS A WAY TO COMPARE TWO OR MORE QUANTITIES RELATIVE TO EACH OTHER. IT INDICATES HOW MANY PARTS OF ONE QUANTITY ARE COMPARED TO PARTS OF ANOTHER. RATIOS CAN BE EXPRESSED IN VARIOUS FORMS, SUCH AS:

- USING A COLON (E.G., 2:5)
- AS FRACTIONS (E.G.,  $\frac{2}{5}$ )
- IN WORDS (E.G., "TWO TO FIVE")

### APPLICATIONS OF RATIOS

RATIOS ARE WIDELY USED IN:

- COOKING (RECIPE ADJUSTMENTS)
- FINANCIAL ANALYSIS (PROFIT SHARING)
- ENGINEERING (COMPONENT PROPORTIONS)
- DAILY LIFE (SPLITTING BILLS OR RESOURCES)

UNDERSTANDING HOW TO MANIPULATE RATIOS ALLOWS YOU TO DISTRIBUTE QUANTITIES ACCURATELY ACCORDING TO SPECIFIED PROPORTIONS.

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## STEP-BY-STEP GUIDE TO DIVIDING 63 IN THE RATIO 2:5

DIVIDING A NUMBER INTO PARTS BASED ON A RATIO INVOLVES SEVERAL LOGICAL STEPS. LET'S WALK THROUGH THE PROCESS IN DETAIL.

### STEP 1: UNDERSTAND THE RATIO COMPONENTS

THE RATIO 2:5 INDICATES THAT THE TOTAL PARTS ARE:

- 2 PARTS FOR THE FIRST QUANTITY
- 5 PARTS FOR THE SECOND QUANTITY

TOTAL PARTS =  $2 + 5 = 7$  PARTS

## STEP 2: FIND THE SIZE OF ONE PART

SINCE THE TOTAL OF THE PARTS EQUALS 7, AND THE TOTAL QUANTITY TO BE DIVIDED IS 63, EACH PART IS:

- SIZE OF ONE PART = TOTAL QUANTITY  $\div$  TOTAL PARTS
- SIZE OF ONE PART =  $63 \div 7 = 9$

## STEP 3: CALCULATE THE INDIVIDUAL SHARES

NOW, MULTIPLY THE SIZE OF ONE PART BY EACH RATIO COMPONENT:

- FIRST PART (CORRESPONDING TO 2):  $2 \times 9 = 18$
- SECOND PART (CORRESPONDING TO 5):  $5 \times 9 = 45$

## STEP 4: VERIFY THE SUM

CHECK THAT THE SUM OF PARTS EQUALS THE TOTAL:

- $18 + 45 = 63$ , WHICH CONFIRMS THE CORRECTNESS.

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## PRACTICAL EXAMPLE OF DIVIDING 63 IN RATIO 2:5

LET'S CONSIDER A REAL-WORLD SCENARIO:

SCENARIO:

YOU HAVE A TOTAL OF 63 DOLLARS, AND YOU WANT TO DISTRIBUTE THIS MONEY BETWEEN TWO FRIENDS IN THE RATIO 2:5.

SOLUTION STEPS:

1. TOTAL PARTS:  $2 + 5 = 7$
2. VALUE OF ONE PART:  $63 \div 7 = 9$  DOLLARS
3. DISTRIBUTION:
  - FRIEND A (RATIO 2):  $2 \times 9 = 18$  DOLLARS
  - FRIEND B (RATIO 5):  $5 \times 9 = 45$  DOLLARS

RESULT:

FRIEND A GETS 18 DOLLARS, AND FRIEND B GETS 45 DOLLARS, MAINTAINING THE RATIO 2:5.

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## ADDITIONAL METHODS FOR DIVIDING IN A RATIO

WHILE THE ABOVE METHOD IS STRAIGHTFORWARD, THERE ARE OTHER APPROACHES AND TIPS TO HANDLE RATIO-BASED DIVISIONS, ESPECIALLY WITH MORE COMPLEX RATIOS OR LARGER NUMBERS.

### METHOD 1: USING CROSS-MULTIPLICATION

IN CASES WHERE THE TOTAL SUM IS UNKNOWN OR YOU ARE GIVEN INDIVIDUAL PARTS, CROSS-MULTIPLICATION CAN HELP DETERMINE THE MISSING VALUE.

## METHOD 2: USING ALGEBRAIC EXPRESSIONS

FOR MORE COMPLEX RATIOS OR ALGEBRAIC PROBLEMS, SET THE PARTS AS VARIABLES:

- LET THE FIRST PART BE  $2x$
- THE SECOND PART BE  $5x$
- TOTAL =  $(2x + 5x) = 7x$
- THEN,  $7x = \text{TOTAL QUANTITY}$  (E.G., 63)
- SOLVE FOR  $x$ :  $x = \text{TOTAL} \div 7$
- CALCULATE INDIVIDUAL PARTS:  $2x$  AND  $5x$

## METHOD 3: USING PROPORTIONS

SET UP PROPORTIONS AND SOLVE FOR UNKNOWN QUANTITIES:

- $(\text{PART 1}) / (\text{TOTAL}) = (\text{RATIO COMPONENT 1}) / (\text{SUM OF RATIO PARTS})$
- $(\text{PART 2}) / (\text{TOTAL}) = (\text{RATIO COMPONENT 2}) / (\text{SUM OF RATIO PARTS})$

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## COMMON ERRORS TO AVOID

WHEN DIVIDING NUMBERS IN RATIO, BE CAUTIOUS OF THE FOLLOWING MISTAKES:

- INCORRECT TOTAL PARTS CALCULATION: ALWAYS SUM THE RATIO PARTS BEFORE DIVIDING.
- MISAPPLICATION OF DIVISION: ENSURE YOU DIVIDE THE TOTAL QUANTITY BY THE TOTAL PARTS TO FIND THE SIZE OF A SINGLE PART.
- IGNORING THE RATIO COMPONENTS: DON'T FORGET TO MULTIPLY THE SIZE OF EACH PART BY THE INDIVIDUAL RATIO COMPONENTS.
- FORGETTING TO VERIFY: ALWAYS CHECK IF THE SUM OF THE DIVIDED PARTS EQUALS THE TOTAL.

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## PRACTICE PROBLEMS FOR MASTERY

TO SOLIDIFY YOUR UNDERSTANDING, TRY SOLVING THESE PROBLEMS:

- DIVIDE 84 IN THE RATIO 3:4.
- SPLIT 150 IN THE RATIO 5:7.
- DIVIDE 100 IN THE RATIO 1:2:3.

SOLUTIONS:

1. DIVIDE 84 IN THE RATIO 3:4

- TOTAL PARTS:  $3 + 4 = 7$
- ONE PART:  $84 \div 7 = 12$
- FIRST SHARE:  $3 \times 12 = 36$
- SECOND SHARE:  $4 \times 12 = 48$

2. SPLIT 150 IN THE RATIO 5:7

- TOTAL PARTS:  $5 + 7 = 12$
- ONE PART:  $150 \div 12 = 12.5$
- FIRST SHARE:  $5 \times 12.5 = 62.5$
- SECOND SHARE:  $7 \times 12.5 = 87.5$

3. DIVIDE 100 IN THE RATIO 1:2:3

- TOTAL PARTS:  $1 + 2 + 3 = 6$

- ONE PART:  $100 \div 6 \approx 16.67$

- SHARES:

- 1 PART:  $\approx 16.67$

- 2 PARTS:  $\approx 33.33$

- 3 PARTS:  $\approx 50.00$

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## REAL-WORLD APPLICATIONS OF DIVIDING IN RATIOS

UNDERSTANDING HOW TO DIVIDE QUANTITIES IN RATIOS EXTENDS BEYOND MATHEMATICS INTO NUMEROUS PRACTICAL FIELDS:

- BUDGET ALLOCATION: DISTRIBUTING FUNDS AMONG DEPARTMENTS BASED ON PREDETERMINED RATIOS.

- RECIPE ADJUSTMENT: SCALING INGREDIENTS PROPORTIONALLY.

- RESOURCE DISTRIBUTION: SHARING RESOURCES LIKE WATER, ELECTRICITY, OR SUPPLIES FAIRLY.

- TEAM ASSIGNMENTS: DIVIDING TASKS OR RESPONSIBILITIES ACCORDING TO TEAM MEMBER CAPACITIES.

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## CONCLUSION

DIVIDING A NUMBER IN A RATIO LIKE 2:5, AS IN THE CASE OF 63, INVOLVES UNDERSTANDING THE FUNDAMENTAL PRINCIPLES OF RATIOS AND PROPORTIONS. THE KEY STEPS INCLUDE SUMMING THE RATIO PARTS, DETERMINING THE VALUE OF EACH PART, AND THEN MULTIPLYING BY INDIVIDUAL RATIO COMPONENTS. THIS METHOD ENSURES AN ACCURATE AND FAIR DIVISION OF QUANTITIES IN VARIOUS CONTEXTS. MASTERING SUCH PROBLEMS ENHANCES PROBLEM-SOLVING SKILLS AND PROVIDES A FOUNDATION FOR MORE COMPLEX MATHEMATICAL CONCEPTS INVOLVING RATIOS, PROPORTIONS, AND ALGEBRA.

BY PRACTICING DIFFERENT RATIOS AND APPLYING THE STEP-BY-STEP APPROACH OUTLINED ABOVE, YOU'LL DEVELOP CONFIDENCE IN HANDLING RATIO-BASED DIVISION PROBLEMS EFFICIENTLY AND ACCURATELY.

## FREQUENTLY ASKED QUESTIONS

### HOW DO I DIVIDE 63 INTO THE RATIO 2:5?

TO DIVIDE 63 INTO THE RATIO 2:5, FIRST FIND THE TOTAL PARTS BY ADDING  $2 + 5 = 7$ . THEN, DIVIDE 63 BY 7 TO GET THE VALUE OF ONE PART:  $63 \div 7 = 9$ . THE FIRST PART (RATIO 2) IS  $2 \times 9 = 18$ , AND THE SECOND PART (RATIO 5) IS  $5 \times 9 = 45$ .

### WHAT IS THE VALUE OF EACH PART WHEN DIVIDING 63 IN THE RATIO 2:5?

EACH PART IS WORTH 9 UNITS BECAUSE 63 DIVIDED BY THE TOTAL NUMBER OF PARTS (7) EQUALS 9.

### WHAT ARE THE TWO QUANTITIES WHEN DIVIDING 63 IN THE RATIO 2:5?

THE TWO QUANTITIES ARE 18 (CORRESPONDING TO RATIO 2) AND 45 (CORRESPONDING TO RATIO 5), SINCE 63 IS DIVIDED INTO PARTS OF 9 UNITS EACH.

## CAN I DIRECTLY MULTIPLY 63 BY THE RATIO PARTS TO FIND THE TWO QUANTITIES?

NO, YOU SHOULD FIRST FIND THE TOTAL NUMBER OF PARTS ( $2 + 5 = 7$ ), THEN DIVIDE 63 BY 7 TO GET THE SIZE OF ONE PART, AND MULTIPLY THAT BY EACH RATIO PART TO FIND THE QUANTITIES.

## WHAT IS THE GENERAL METHOD TO DIVIDE A NUMBER IN A GIVEN RATIO?

ADD THE PARTS OF THE RATIO TO FIND THE TOTAL NUMBER OF PARTS, DIVIDE THE TOTAL NUMBER BY THE GIVEN NUMBER TO FIND THE VALUE OF ONE PART, THEN MULTIPLY EACH RATIO PART BY THIS VALUE TO GET THE INDIVIDUAL QUANTITIES.

## IS DIVIDING 63 IN THE RATIO 2:5 THE SAME AS SPLITTING IT INTO TWO PARTS OF 18 AND 45?

YES, DIVIDING 63 IN THE RATIO 2:5 RESULTS IN TWO PARTS OF 18 AND 45, MAINTAINING THE RATIO 2:5.

## ADDITIONAL RESOURCES

DIVIDE 63 IN THE RATIO 2:5 IS A COMMON MATHEMATICAL PROBLEM THAT APPEARS FREQUENTLY IN ALGEBRA, RATIOS, AND REAL-WORLD SCENARIOS INVOLVING PROPORTIONAL DIVISION. WHETHER YOU'RE A STUDENT TRYING TO UNDERSTAND HOW TO SPLIT A QUANTITY BASED ON A GIVEN RATIO OR A PROFESSIONAL APPLYING PROPORTIONAL REASONING IN A PRACTICAL CONTEXT, MASTERING HOW TO DIVIDE A NUMBER IN A SPECIFIC RATIO IS A FUNDAMENTAL SKILL. IN THIS GUIDE, WE WILL THOROUGHLY EXPLORE THE CONCEPT OF DIVIDING 63 IN THE RATIO 2:5, BREAKING DOWN THE STEP-BY-STEP PROCESS, ILLUSTRATING KEY PRINCIPLES, AND PROVIDING EXAMPLES TO DEEPEN YOUR UNDERSTANDING.

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### UNDERSTANDING RATIOS AND THEIR SIGNIFICANCE

BEFORE DIVING INTO THE SPECIFICS OF DIVIDING 63 IN THE RATIO 2:5, IT'S ESSENTIAL TO UNDERSTAND WHAT RATIOS ARE AND WHY THEY MATTER.

#### WHAT IS A RATIO?

A RATIO IS A WAY TO COMPARE TWO OR MORE QUANTITIES RELATIVE TO EACH OTHER. IT SHOWS HOW MANY TIMES ONE VALUE CONTAINS OR IS CONTAINED WITHIN ANOTHER. RATIOS ARE EXPRESSED IN DIFFERENT FORMS: AS FRACTIONS, WITH A COLON (E.G., 2:5), OR IN WORDS.

#### PRACTICAL EXAMPLES OF RATIOS

- THE RATIO OF INGREDIENTS IN A RECIPE
- THE PROPORTION OF BOYS TO GIRLS IN A CLASS
- THE ALLOCATION OF BUDGET ACROSS DEPARTMENTS

#### WHY USE RATIOS?

RATIOS ALLOW US TO:

- MAINTAIN PROPORTIONAL RELATIONSHIPS WHEN DIVIDING OR SCALING QUANTITIES
- SIMPLIFY COMPLEX COMPARISONS
- SOLVE PROBLEMS INVOLVING PARTS OF A WHOLE

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### THE PROBLEM: DIVIDING 63 IN THE RATIO 2:5

GIVEN THE TOTAL AMOUNT OF 63, OUR GOAL IS TO DIVIDE THIS AMOUNT INTO TWO PARTS THAT ARE PROPORTIONAL TO 2

AND 5, RESPECTIVELY.

#### RESTATING THE PROBLEM

- TOTAL QUANTITY: 63
- RATIO PARTS: 2 PARTS AND 5 PARTS
- QUESTION: HOW MUCH DOES EACH PART REPRESENT? WHAT ARE THE INDIVIDUAL AMOUNTS?

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#### STEP-BY-STEP APPROACH TO DIVIDING 63 IN THE RATIO 2:5

TO ACCURATELY DIVIDE THE TOTAL INTO PARTS BASED ON THE GIVEN RATIO, FOLLOW THIS SYSTEMATIC PROCESS.

##### STEP 1: UNDERSTAND THE RATIO COMPONENTS

THE RATIO 2:5 INDICATES THERE ARE TWO PARTS:

- PART A: REPRESENTS 2 UNITS
- PART B: REPRESENTS 5 UNITS

$$\text{TOTAL PARTS} = 2 + 5 = 7$$

##### STEP 2: FIND THE VALUE OF ONE PART

SINCE THE TOTAL AMOUNT (63) CORRESPONDS TO THE TOTAL NUMBER OF PARTS (7), WE CAN DETERMINE THE VALUE OF EACH PART:

$$\text{VALUE OF ONE PART} = \text{TOTAL AMOUNT} / \text{TOTAL NUMBER OF PARTS}$$

$$\text{VALUE OF ONE PART} = 63 / 7 = 9$$

##### STEP 3: CALCULATE EACH PART

NOW, MULTIPLY THE VALUE OF ONE PART BY EACH RATIO COMPONENT:

- PART A (RATIO 2):  $2 \times 9 = 18$
- PART B (RATIO 5):  $5 \times 9 = 45$

FINAL ANSWER:

- FIRST PART: 18
- SECOND PART: 45

THUS, DIVIDING 63 IN THE RATIO 2:5 RESULTS IN PARTS OF 18 AND 45.

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#### ADDITIONAL EXAMPLES AND APPLICATIONS

UNDERSTANDING HOW TO DIVIDE IN RATIOS CAN BE APPLIED ACROSS VARIOUS CONTEXTS. HERE ARE SOME PRACTICAL EXAMPLES TO REINFORCE THE CONCEPT.

##### EXAMPLE 1: SPLITTING A SUM OF MONEY

SUPPOSE YOU HAVE \$63 TO SPLIT BETWEEN TWO FRIENDS IN THE RATIO 2:5. HOW MUCH DOES EACH FRIEND RECEIVE?

- FRIEND A: 18 DOLLARS
- FRIEND B: 45 DOLLARS

## EXAMPLE 2: DISTRIBUTING WORK HOURS

A PROJECT REQUIRES 63 HOURS OF WORK TO BE SPLIT AMONG TWO TEAMS IN THE RATIO 2:5.

- TEAM 1: 18 HOURS
- TEAM 2: 45 HOURS

## EXAMPLE 3: DIVIDING QUANTITIES IN BUSINESS

A COMPANY WANTS TO ALLOCATE A BUDGET OF 63 UNITS BETWEEN TWO DEPARTMENTS IN THE RATIO 2:5.

- DEPARTMENT 1: 18 UNITS
- DEPARTMENT 2: 45 UNITS

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## VARIATIONS AND RELATED PROBLEMS

WHILE DIVIDING A NUMBER IN A SIMPLE RATIO IS STRAIGHTFORWARD, SIMILAR PROBLEMS CAN INVOLVE MORE COMPLEX RATIOS OR DIFFERENT TOTAL QUANTITIES.

### DIVIDING IN MULTIPLE RATIOS

- DIVIDING A TOTAL IN RATIOS LIKE 3:4:5
- DIVIDING A TOTAL INTO MORE THAN TWO PARTS

### DIVIDING DIFFERENT TOTALS

- WHAT IF THE TOTAL IS NOT DIVISIBLE EVENLY? HOW TO HANDLE REMAINDERS?
- HOW TO ADJUST THE DIVISION IF THE TOTAL IS A DECIMAL OR FRACTIONAL NUMBER?

## PRACTICAL TIPS

- ALWAYS VERIFY THAT THE SUM OF THE PARTS EQUALS THE TOTAL.
- BE CAUTIOUS WITH ROUNDING IF WORKING WITH DECIMALS.

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## KEY TAKEAWAYS AND BEST PRACTICES

- IDENTIFY THE RATIO PARTS AND TOTAL PARTS: SUM THE RATIO COMPONENTS TO DETERMINE THE TOTAL NUMBER OF PARTS.
- CALCULATE THE VALUE OF EACH PART: DIVIDE THE TOTAL QUANTITY BY THE TOTAL PARTS.
- MULTIPLY EACH RATIO PART BY THE VALUE OF A SINGLE PART TO FIND INDIVIDUAL AMOUNTS.
- CHECK YOUR WORK: ENSURE THE SUM OF ALL PARTS EQUALS THE TOTAL.

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## COMMON MISTAKES TO AVOID

- MISINTERPRETING THE RATIO: REMEMBER THAT RATIOS ARE RELATIVE, NOT ABSOLUTE. ALWAYS SUM THE PARTS BEFORE DIVIDING.
- IGNORING REMAINDERS: WHEN THE TOTAL ISN'T DIVISIBLE EVENLY, DECIDE HOW TO HANDLE FRACTIONAL PARTS OR ROUNDING.
- CONFUSING RATIOS WITH PROPORTIONS: RATIOS COMPARE QUANTITIES, BUT PROPORTIONS RELATE PARTS TO THE ENTIRE.

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## FINAL THOUGHTS

DIVIDING A NUMBER LIKE 63 IN THE RATIO 2:5 IS A FUNDAMENTAL SKILL THAT UNDERPINS MANY AREAS OF MATHEMATICS AND

REAL-WORLD PROBLEM-SOLVING. BY UNDERSTANDING THE PROCESS—ADDING THE RATIO PARTS, CALCULATING THE VALUE OF EACH PART, AND THEN MULTIPLYING TO FIND INDIVIDUAL SHARES—YOU CAN CONFIDENTLY APPROACH SIMILAR PROBLEMS INVOLVING RATIOS, PROPORTIONS, AND DISTRIBUTION.

MASTERING THIS CONCEPT NOT ONLY ENHANCES YOUR MATHEMATICAL REASONING BUT ALSO EQUIPS YOU WITH A VERSATILE TOOL FOR ANALYZING AND SOLVING A WIDE RANGE OF PRACTICAL AND ACADEMIC CHALLENGES. REMEMBER, PRACTICE MAKES PERFECT: TRY DIVIDING DIFFERENT TOTALS IN VARIOUS RATIOS TO STRENGTHEN YOUR UNDERSTANDING AND PROFICIENCY.

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IN CONCLUSION, WHETHER YOU'RE DIVIDING RESOURCES, CALCULATING DISTRIBUTIONS, OR SOLVING ALGEBRAIC PROBLEMS, KNOWING HOW TO DIVIDE A QUANTITY LIKE 63 IN THE RATIO 2:5 IS AN ESSENTIAL SKILL THAT COMBINES LOGICAL REASONING WITH STRAIGHTFORWARD ARITHMETIC. KEEP PRACTICING, AND YOU'LL FIND THIS METHOD BECOMES AN INTUITIVE PART OF YOUR MATHEMATICAL TOOLKIT.

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