

SIMPLIFY THIS ALGEBRAIC EXPRESSION, $X - \frac{5}{5} + 100$ A. $X - 30$ B. $X + 110$ C. $X + 90$ D. $X - 9$

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UNDERSTANDING HOW TO SIMPLIFY ALGEBRAIC EXPRESSIONS IS A FUNDAMENTAL SKILL IN MATHEMATICS THAT HELPS IN SOLVING EQUATIONS AND ANALYZING MATHEMATICAL PROBLEMS EFFICIENTLY. IN THIS ARTICLE, WE WILL EXPLORE THE PROCESS OF SIMPLIFYING THE EXPRESSION $X - \frac{5}{5} + 100$ AND COMPARE IT WITH THE OPTIONS PROVIDED: A. $X - 30$, B. $X + 110$, C. $X + 90$, AND D. $X - 9$. BY EXAMINING EACH STEP CAREFULLY, YOU'LL LEARN HOW TO APPROACH SIMILAR ALGEBRAIC PROBLEMS WITH CONFIDENCE AND CLARITY.

BREAKING DOWN THE EXPRESSION

BEFORE ATTEMPTING TO SIMPLIFY, IT'S CRUCIAL TO UNDERSTAND THE COMPONENTS OF THE GIVEN EXPRESSION:

UNDERSTANDING THE TERMS

- X : A VARIABLE REPRESENTING AN UNKNOWN VALUE.
- $-\frac{5}{5}$: A FRACTION THAT SIMPLIFIES TO A CONSTANT.
- $+ 100$: A TERM INVOLVING THE VARIABLE OR SYMBOL O , WHICH COULD REPRESENT A VARIABLE OR A COEFFICIENT.

CLARIFYING THE EXPRESSION

THE EXPRESSION IS WRITTEN AS:

$$\left[X - \frac{5}{5} + 100 \right]$$

ASSUMING ' O ' IS A VARIABLE OR AN UNKNOWN, THE KEY IS TO SIMPLIFY THE CONSTANT PART AND THEN COMBINE LIKE TERMS.

STEP-BY-STEP SIMPLIFICATION PROCESS

LET'S ANALYZE THE EXPRESSION STEP-BY-STEP:

STEP 1: SIMPLIFY THE FRACTION

THE FRACTION $\left(\frac{5}{5}\right)$ SIMPLIFIES DIRECTLY TO 1:

$$\left[X - 1 + 100 \right]$$

STEP 2: REWRITE THE EXPRESSION

NOW THE EXPRESSION BECOMES:

$$\left[X - 1 + 100 \right]$$

THIS IS A COMBINATION OF THE VARIABLE X , THE CONSTANT -1 , AND THE TERM INVOLVING 100 .

STEP 3: IDENTIFY LIKE TERMS

- THE TERMS INVOLVING VARIABLES ARE (X) AND $(10O)$.
- THE CONSTANT TERM IS (-1) .

SINCE (X) AND $(10O)$ ARE DIFFERENT VARIABLES UNLESS (X) AND (O) ARE THE SAME, THEY CANNOT BE COMBINED FURTHER.

STEP 4: PRESENT THE SIMPLIFIED EXPRESSION

THE SIMPLIFIED FORM IS:

$$[X + 10O - 1]$$

THIS EXPRESSION CANNOT BE SIMPLIFIED FURTHER UNLESS ADDITIONAL INFORMATION ABOUT THE RELATIONSHIP BETWEEN (X) AND (O) IS PROVIDED.

COMPARING THE SIMPLIFIED EXPRESSION WITH OPTIONS

NOW, ANALYZE THE OPTIONS TO SEE WHICH MATCHES OUR SIMPLIFIED EXPRESSION:

- OPTION A: $X - 3O$
- OPTION B: $X + 11O$
- OPTION C: $X + 9O$
- OPTION D: $X - 9$

OUR SIMPLIFIED EXPRESSION IS:

$$[X + 10O - 1]$$

LET'S EXAMINE EACH OPTION:

- OPTION A: $(X - 3O)$ — DOES NOT MATCH BECAUSE THE COEFFICIENT OF (O) IS DIFFERENT, AND THE CONSTANT TERM (-1) IS MISSING.
- OPTION B: $(X + 11O)$ — CLOSER BUT THE COEFFICIENT OF (O) IS 11, WHICH DOESN'T MATCH OUR 10O, AND THE CONSTANT TERM IS MISSING.
- OPTION C: $(X + 9O)$ — THE COEFFICIENT OF (O) IS 9, NOT 10, SO NOT A MATCH.
- OPTION D: $(X - 9)$ — DOES NOT INCLUDE ANY (O) TERM, SO IT DOESN'T MATCH.

CONCLUSION: NONE OF THE OPTIONS PERFECTLY MATCH OUR SIMPLIFIED EXPRESSION $(X + 10O - 1)$. HOWEVER, IF THE ORIGINAL EXPRESSION WAS INTENDED TO BE:

$$[X - \frac{5}{5} + 10O = X - 1 + 10O]$$

AND PERHAPS THE OPTIONS ARE SIMPLIFIED OR ROUNDED VERSIONS.

NOTE: IF THE OPTIONS ARE APPROXIMATE OR IF THE EXPRESSION WAS INTENDED DIFFERENTLY (FOR EXAMPLE, IF THE ORIGINAL EXPRESSION WAS DIFFERENT), PLEASE CLARIFY.

ADDITIONAL TIPS FOR SIMPLIFYING ALGEBRAIC EXPRESSIONS

HOW TO APPROACH SIMILAR ALGEBRAIC PROBLEMS

1. ALWAYS SIMPLIFY CONSTANTS FIRST

IDENTIFY AND SIMPLIFY CONSTANT FRACTIONS OR NUMBERS TO MAKE THE EXPRESSION CLEANER.

2. RECOGNIZE LIKE TERMS

COMBINE VARIABLES WITH THE SAME VARIABLES AND COEFFICIENTS WHEN POSSIBLE.

3. UNDERSTAND VARIABLES AND COEFFICIENTS

DISTINGUISH BETWEEN DIFFERENT VARIABLES AND THEIR COEFFICIENTS TO AVOID INCORRECT COMBINATIONS.

4. REVIEW THE EXPRESSION CAREFULLY

MAKE SURE YOU'VE INTERPRETED THE EXPRESSION CORRECTLY, ESPECIALLY WITH SYMBOLS OR VARIABLES.

COMMON MISTAKES TO AVOID

- OVERLOOKING THE SIGNS (+/-)
- FORGETTING TO SIMPLIFY FRACTIONS
- COMBINING UNLIKE TERMS
- MISINTERPRETING SYMBOLS OR VARIABLES

PRACTICE PROBLEMS FOR MASTERY

TO MASTER ALGEBRAIC SIMPLIFICATION, PRACTICE WITH A VARIETY OF EXPRESSIONS:

1. SIMPLIFY $(3x + 4 - 2x + 7)$
2. SIMPLIFY $(\frac{8}{4} + 50 - 20)$
3. SIMPLIFY $(x - 5 + 2x + 3)$
4. SIMPLIFY $(6A - 2A + 4)$

FINAL THOUGHTS

SIMPLIFYING ALGEBRAIC EXPRESSIONS IS AN ESSENTIAL SKILL THAT FORMS THE FOUNDATION FOR SOLVING MORE COMPLEX MATH PROBLEMS. ALWAYS START BY SIMPLIFYING CONSTANTS, THEN COMBINE LIKE TERMS, AND BE ATTENTIVE TO THE SIGNS AND COEFFICIENTS INVOLVED. IN THE CASE OF THE EXPRESSION $x - \frac{5}{5} + 100$, THE KEY STEP WAS RECOGNIZING THAT $(\frac{5}{5} = 1)$, LEADING TO THE SIMPLIFIED FORM $(x + 100 - 1)$. WHILE NONE OF THE PROVIDED OPTIONS EXACTLY MATCH THIS, UNDERSTANDING THE PROCESS HELPS YOU APPROACH SIMILAR PROBLEMS WITH CONFIDENCE.

IF YOU ENCOUNTER SIMILAR EXPRESSIONS, REMEMBER TO BREAK THEM DOWN SYSTEMATICALLY. WITH PRACTICE, YOU'LL BECOME PROFICIENT AT QUICKLY SIMPLIFYING ALGEBRAIC EXPRESSIONS AND CHOOSING THE CORRECT OPTIONS.

KEYWORDS: ALGEBRAIC EXPRESSION, SIMPLIFY ALGEBRA, ALGEBRA PRACTICE, COMBINING LIKE TERMS, ALGEBRA TIPS, MATHEMATICAL EXPRESSIONS, ALGEBRAIC PROBLEMS, VARIABLE TERMS, CONSTANT TERMS

FREQUENTLY ASKED QUESTIONS

WHAT IS THE SIMPLIFIED FORM OF THE EXPRESSION $(X - 5)/5 + 100$?

THE SIMPLIFIED FORM IS $X/5 - 1 + 100$.

HOW DO YOU SIMPLIFY THE EXPRESSION $X - 5/5 + 100$?

SIMPLIFY $5/5$ TO 1, SO THE EXPRESSION BECOMES $X - 1 + 100$.

WHICH OPTION CORRECTLY REPRESENTS THE SIMPLIFIED FORM OF $(X - 5)/5 + 100$?

OPTION D: $X - 9$ IS NOT CORRECT; THE CORRECT SIMPLIFIED FORM IS $X/5 - 1 + 100$, WHICH DOESN'T MATCH THE GIVEN OPTIONS DIRECTLY.

IS THE EXPRESSION $(X - 5)/5 + 100$ EQUIVALENT TO ANY OF THE OPTIONS A, B, C, OR D?

NO, AFTER SIMPLIFICATION, IT BECOMES $X/5 - 1 + 100$, WHICH DOESN'T MATCH ANY OF THE PROVIDED OPTIONS EXACTLY.

WHAT IS THE MAIN STEP IN SIMPLIFYING $(X - 5)/5 + 100$?

DIVIDE THE NUMERATOR $(X - 5)$ BY 5 TO GET $X/5 - 1$, THEN ADD 100 TO THE ENTIRE EXPRESSION.

IF 0 IS A CONSTANT, WHAT IS THE EXPRESSION'S SIMPLIFIED FORM?

IT SIMPLIFIES TO $X/5 - 1 + 100$.

CAN THE EXPRESSION $(X - 5)/5 + 100$ BE WRITTEN IN A MORE SIMPLIFIED ALGEBRAIC FORM?

YES, IT SIMPLIFIES TO $X/5 - 1 + 100$.

ADDITIONAL RESOURCES

UNDERSTANDING AND SIMPLIFYING ALGEBRAIC EXPRESSIONS: A COMPREHENSIVE GUIDE

ALGEBRAIC EXPRESSIONS FORM THE BACKBONE OF MATHEMATICS, PROVIDING A LANGUAGE TO MODEL REAL-WORLD SITUATIONS, SOLVE PROBLEMS, AND EXPLORE PATTERNS. AMONG THESE EXPRESSIONS, SIMPLIFYING COMPLEX ALGEBRAIC STRUCTURES IS AN ESSENTIAL SKILL, ENABLING US TO SEE THE ESSENCE OF AN EXPRESSION AND DETERMINE ITS MOST CONCISE FORM. TODAY, WE WILL DELVE DEEP INTO THE PROCESS OF SIMPLIFYING A PARTICULAR ALGEBRAIC EXPRESSION: $X - 5/5 + 100$. WE WILL ANALYZE THE OPTIONS PROVIDED—A. $X - 30$, B. $X + 110$, C. $X + 90$, D. $X - 9$ —AND DETERMINE WHICH ONE CORRECTLY REPRESENTS THE SIMPLIFIED FORM.

DECODING THE EXPRESSION: STEP-BY-STEP ANALYSIS

BEFORE JUMPING INTO SIMPLIFICATION, IT'S CRUCIAL TO FULLY UNDERSTAND THE GIVEN EXPRESSION. THE EXPRESSION PROVIDED IS:

$$> X - 5/5 + 10O$$

AT FIRST GLANCE, THE EXPRESSION CONTAINS SEVERAL COMPONENTS:

- A VARIABLE X
- A FRACTION $5/5$
- A TERM $10O$

LET'S ANALYZE EACH PART CAREFULLY.

UNDERSTANDING EACH COMPONENT

1. X

- REPRESENTS AN ALGEBRAIC VARIABLE.
- ITS VALUE CAN BE ANYTHING DEPENDING ON THE CONTEXT OR PROBLEM.

2. $5/5$

- THIS IS A SIMPLE FRACTION.
- SIMPLIFIES DIRECTLY TO 1 BECAUSE ANY NON-ZERO NUMBER DIVIDED BY ITSELF EQUALS 1 .

3. $10O$

- THIS APPEARS TO BE A TERM INVOLVING O , WHICH COULD BE A VARIABLE OR CONSTANT.
- THE COEFFICIENT IS 10 , MULTIPLYING O .

NOTE ON NOTATION:

THE LETTER O MIGHT CAUSE SOME CONFUSION. IT COULD BE A VARIABLE, BUT IN MANY CONTEXTS, O MIGHT BE MISTAKEN FOR A ZERO. HOWEVER, SINCE THE OPTIONS INVOLVE O , AND THE EXPRESSION CONTAINS $10O$, IT IS SAFE TO ASSUME O IS A VARIABLE.

STEP 1: SIMPLIFY THE FRACTIONS

THE FIRST STEP IN SIMPLIFYING THE EXPRESSION IS TO HANDLE THE FRACTION $5/5$.

$$- 5/5 = 1$$

REPLACING THIS BACK INTO THE EXPRESSION:

$$> X - 1 + 10O$$

NOW, THE EXPRESSION IS CLEANER:

$$> X - 1 + 10O$$

STEP 2: REARRANGEMENT FOR CLARITY

THE SIMPLIFIED EXPRESSION:

$$> X - 1 + 100$$

CAN BE REWRITTEN FOR CLARITY AS:

$$> X + (100) - 1$$

OR SIMPLY, IN A STANDARD FORM:

$$> X + 100 - 1$$

STEP 3: COMPARING TO THE OPTIONS

THE OPTIONS PROVIDED ARE:

- A: $X - 30$
- B: $X + 110$
- C: $X + 90$
- D: $X - 9$

OUR SIMPLIFIED EXPRESSION IS $X + 100 - 1$.

AT FIRST GLANCE, NONE OF THE OPTIONS EXACTLY MATCH THIS FORM, BUT PERHAPS THE PROBLEM INVOLVES A FURTHER STEP OR AN IMPLICIT ASSUMPTION.

ARE THE OPTIONS REPRESENTING POSSIBLE SIMPLIFIED FORMS? LET'S ANALYZE EACH.

OPTION A: $X - 30$

- DOES NOT MATCH OUR EXPRESSION.
- THE SIGN BEFORE 0 IS NEGATIVE, WHEREAS OURS IS POSITIVE, AND THE COEFFICIENT IS 3 INSTEAD OF 10.

OPTION B: $X + 110$

- COEFFICIENT DIFFERS: OURS IS 10, THIS IS 11.
- SIGN IS POSITIVE, MATCHING OURS.

OPTION C: $X + 90$

- CLOSER IN SIGN BUT COEFFICIENT IS 9, WHEREAS OURS IS 10.

OPTION D: $X - 9$

- HERE, THE 0 TERM IS MISSING, AND THE CONSTANT IS NEGATIVE 9, WHICH DOESN'T MATCH OUR EXPRESSION.

STEP 4: ADDRESSING THE DISCREPANCY

THE MAIN ISSUE IS THAT OUR SIMPLIFIED EXPRESSION IS $X + 10O - 1$, WHICH IS NOT EXACTLY MATCHING ANY OPTIONS. BUT SINCE THE OPTIONS INVOLVE O AND CONSTANTS, PERHAPS THE PROBLEM ASKS FOR A SIMPLIFIED FORM INVOLVING ONLY X AND O , OR PERHAPS A SPECIFIC SUBSTITUTION OR ASSUMPTION.

POSSIBLE INTERPRETATIONS INCLUDE:

- IF $O = 1$, THEN THE EXPRESSION BECOMES $X + 10(1) - 1 = X + 10 - 1 = X + 9$.
THIS MATCHES OPTION C: $X + 9O$ IF $O=1$.

- IF O IS A VARIABLE, THEN THE OPTIONS IMPLY DIFFERENT COEFFICIENTS OR CONSTANTS.

GIVEN THE OPTIONS, THE MOST LOGICAL APPROACH IS TO CONSIDER O AS A VARIABLE, AND PERHAPS THE PROBLEM IS ASKING WHICH SIMPLIFIED FORM MATCHES AFTER SOME SUBSTITUTION.

ADDRESSING THE EXPRESSION: FINAL CLARIFICATION

BASED ON THE EARLIER STEPS:

> ORIGINAL EXPRESSION: $X - 5/5 + 10O$
> SIMPLIFIED TO: $X - 1 + 10O$

THIS IS A LINEAR EXPRESSION INVOLVING X AND O WITH A CONSTANT TERM -1 .

INTERPRETING THE OPTIONS IN CONTEXT

SINCE THE OPTIONS INVOLVE O WITH DIFFERENT COEFFICIENTS, AND THE SIMPLIFIED EXPRESSION INVOLVES $10O$, THE MOST DIRECTLY MATCHING OPTION WOULD BE:

- OPTION B: $X + 11O$

BUT ONLY IF THE CONSTANT TERM OR COEFFICIENTS ARE ADJUSTED.

ALTERNATIVELY, MAYBE THE QUESTION IS ASKING TO RECOGNIZE THE EQUIVALENT EXPRESSION OF THE ORIGINAL AFTER CONSIDERING SOME TRANSFORMATIONS.

DEEP DIVE: POSSIBLE MISINTERPRETATION AND CLARIFICATIONS

GIVEN THE LIMITED INFORMATION, HERE ARE KEY CONSIDERATIONS:

- THE NOTATION $10O$ SUGGESTS A TERM INVOLVING O , WITH COEFFICIENT 10 .
- THE ORIGINAL EXPRESSION $X - 5/5 + 10O$ SIMPLIFIES TO $X - 1 + 10O$.
- THE OPTIONS ARE ALL IN THE FORM $X + kO$ OR INVOLVE CONSTANTS.

THUS, THE CORE OF THE PROBLEM REDUCES TO:

> WHICH OPTION BEST REFLECTS THE SIMPLIFIED EXPRESSION $X + 10O - 1$?

SINCE NONE OF THE OPTIONS EXPLICITLY INCLUDE A CONSTANT TERM -1 , PERHAPS THE PROBLEM EXPECTS US TO FOCUS ON THE O TERM.

CONCLUSION: SELECTING THE MOST APPROPRIATE OPTION

GIVEN THE ANALYSIS, THE OPTIONS INVOLVE DIFFERENT COEFFICIENTS ON O AND DIFFERENT CONSTANTS:

- OUR EXPRESSION: $X + 10O - 1$

- OPTIONS:

- A: $X - 3O$
- B: $X + 11O$
- C: $X + 9O$
- D: $X - 9$

FROM THESE, THE CLOSEST MATCH IN TERMS OF O COEFFICIENT IS OPTION B: $X + 11O$, WHICH HAS A COEFFICIENT OF 11 FOR O AND A POSITIVE SIGN, ALIGNING WITH THE IDEA OF AN INCREASE IN THE O TERM RELATIVE TO OUR SIMPLIFIED FORM.

ALTERNATIVELY, IF THE QUESTION CONSIDERS THE CONSTANT TERM AS SIGNIFICANT, THEN NONE OF THE OPTIONS EXACTLY MATCH THE -1 CONSTANT. BUT IN MANY ALGEBRAIC SIMPLIFICATION PROBLEMS, THE FOCUS IS OFTEN ON THE VARIABLE TERMS, ESPECIALLY WHEN CONSTANTS ARE NOT EXPLICITLY ADDRESSED.

FINAL THOUGHTS AND RECOMMENDATIONS FOR STUDENTS

- ALWAYS BEGIN BY SIMPLIFYING FRACTIONS WITHIN ALGEBRAIC EXPRESSIONS.
- CAREFULLY IDENTIFY EACH TERM AND VARIABLE.
- WHEN DEALING WITH MULTIPLE VARIABLES, FOCUS ON COMBINING LIKE TERMS.
- RECOGNIZE THAT CONSTANTS CAN SOMETIMES BE ABSORBED OR IGNORED DEPENDING ON THE CONTEXT.
- PAY ATTENTION TO THE NOTATION—VARIABLES, CONSTANTS, COEFFICIENTS—AND HOW THEY INTERACT.
- UNDERSTAND THAT MULTIPLE CHOICE OPTIONS OFTEN TEST YOUR ABILITY TO RECOGNIZE EQUIVALENT OR SIMILAR FORMS, NOT NECESSARILY EXACT MATCHES UNLESS SPECIFIED.

SUMMARY

IN THIS DETAILED EXPLORATION, WE'VE:

- DECIPHERED THE ORIGINAL EXPRESSION $X - \frac{5}{5} + 10O$.
- SIMPLIFIED $\frac{5}{5}$ TO 1, LEADING TO $X - 1 + 10O$.
- ANALYZED THE OPTIONS PROVIDED, FOCUSING ON THE STRUCTURE INVOLVING X AND O .
- RECOGNIZED THAT THE EXPRESSION'S CORE IS $X + 10O - 1$.
- CONCLUDED THAT OPTION B ($X + 11O$) IS THE CLOSEST MATCH IF CONSIDERING THE COEFFICIENT OF O AND THE OVERALL

STRUCTURE.

IN CONCLUSION, THE MOST APPROPRIATE ANSWER, BASED ON THE SIMPLIFICATION AND ANALYSIS, IS OPTION B: $X + 110$. THIS EXERCISE UNDERSCORES THE IMPORTANCE OF CAREFUL SIMPLIFICATION, UNDERSTANDING VARIABLE INTERACTIONS, AND RECOGNIZING PATTERN MATCHES IN ALGEBRAIC EXPRESSIONS.

HAPPY SIMPLIFYING!

Simplify This Algebraic Expression $X^5 + 5 \cdot 100A + X^3 + 30B + X^{11} + C + X^9 + D + X^9$

Simplify This Algebraic Expression $X^5 + 5 \cdot 100A + X^3 + 30B + X^{11} + C + X^9 + D + X^9$

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