25 Points? Suri's Age Is 4 Less Than 3 Times Her Cousin's Age. Suri Is 17 Years Old. Which Method Can

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Understanding how to approach word problems involving ages can be challenging, especially when multiple variables and conditions are involved. In this article, we'll explore the problem: "Suri's age is 4 less than 3 times her cousin's age. Suri is 17 years old. Which method can be used to find her cousin's age?" We will analyze the problem thoroughly, introduce effective methods to solve it, and guide you step-by-step through the solution process. Whether you're a student preparing for math exams or a teacher seeking teaching strategies, this comprehensive guide will clarify the best approach to such age-related algebraic problems.

Understanding the Problem: Breaking Down the Statement

Key Information Provided

- Suri's age is 17 years old.
- Suri's age is 4 less than 3 times her cousin's age.

What Is Being Asked?

- The primary goal is to find her cousin's age.
- The question "Which method can be used?" suggests exploring different problem-solving methods suitable for this type of problem.

Translating the Word Problem into Mathematical Form

Before choosing a method, it's crucial to convert the words into a mathematical equation.

Step-by-Step Conversion

1. Let C represent the cousin's age.
2. According to the problem:
- Suri's age = 3 × cousin's age – 4
- Suri's age = 17
3. Set up the equation:

17 = 3 × C – 4

This simple algebraic equation forms the basis for solving the problem.

Choosing the Right Method to Solve the Problem

When dealing with such algebraic problems, several methods can be employed:

1. Algebraic Method (Using Equations)

- The most straightforward method involving setting up and solving equations.

2. Logical or Estimation Method

- Using reasoning and estimation to arrive at the answer, less precise but useful for quick approximations.

3. Graphical Method

- Plotting the equations on a graph to visually determine the solution point.

4. Substitution or Elimination Methods (Primarily for Systems of Equations)

- More relevant when multiple equations are involved; less applicable here unless extended.

Given the problem's nature, the algebraic method is the most appropriate, straightforward, and efficient way to find her cousin's age.

Applying the Algebraic Method: Step-by-Step Solution

Let's walk through the algebraic approach in detail.

Step 1: Write the Equation

From the problem, we have:

17 = 3C – 4

Step 2: Isolate the Variable (C)

Add 4 to both sides:

17 + 4 = 3C

21 = 3C

Step 3: Solve for C

Divide both sides by 3:

C = 21 ÷ 3

C = 7

Step 4: Interpret the Result

- The cousin's age is 7 years old.

Verification of the Solution

Always verify your answer by substituting back into the original statement.

- 3 × 7 – 4 = 21 – 4 = 17
- Since Suri is 17, the calculation matches her age.

Thus, the solution is consistent and correct.

Alternative Methods for Solving Age Word Problems

While the algebraic method is most efficient here, understanding other approaches can be beneficial.

1. Graphical Method

- Plot the equation y = 3C – 4 and x = 17.
- The point where these two lines intersect gives the solution.
- Suitable for visual learners or when dealing with multiple equations.

2. Logical Reasoning

- Recognize that Suri is 17, which is 4 less than 3 times her cousin's age.
- Think: 3 times her cousin's age should be slightly more than 17.
- Since 3 times her cousin's age should be close to 17 + 4 = 21, divide 21 by 3 to approximate the cousin's age as 7.
- This quick mental estimate confirms the algebraic solution.

3. Using a Table

- List possible ages for the cousin and check if the condition holds.
- For example:

Cousin's Age	3 × Age	3 × Age – 4	Does it equal Suri's age (17)?
6	18	14	No
7	21	17	Yes
8	24	20	No

- Confirmed that 7 is the correct age.

Real-World Applications of the Method

Understanding how to solve age-related problems using algebra can be applied beyond homework:

- Family Planning: Estimating ages for planning events.
- Historical Research: Calculating ages of historical figures based on timelines.
- Business Scenarios: Projecting age demographics for marketing strategies.

The algebraic method provides a reliable, accurate, and scalable approach for solving such problems.

Additional Tips for Solving Age Word Problems

- Always define variables clearly: e.g., C for cousin's age.
- Convert words to equations carefully: Pay attention to keywords like "less than," "more than," "times," etc.
- Verify your answers: Substitute back into the original statement.
- Practice with different problems: To become comfortable with various types of age problems.

Summary: Which Method Can Be Used?

The most suitable method for solving the problem "Suri's age is 4 less than 3 times her cousin's age, and she is 17" is the algebraic method. This involves:

- Setting up an algebraic equation based on the problem statement.
- Solving for the unknown variable (cousin's age).
- Verifying the solution for accuracy.

Using algebra allows for precise and efficient problem-solving, especially when dealing with straightforward age-related equations. Alternative methods like graphical, estimation, and tabular approaches can supplement understanding but are less precise for this type of problem.

Conclusion

Understanding how to approach age word problems using the algebraic method is essential for students and professionals alike. By translating words into equations and solving systematically, one can find accurate solutions efficiently. In the case of Suri and her cousin's ages, algebra provides a clear pathway to discovering that her cousin is 7 years old. Embracing multiple methods enhances problem-solving flexibility and deepens comprehension, making math both accessible and enjoyable.

Remember: Practice with various age problems to strengthen your skills and recognize

which method best suits each scenario.

Frequently Asked Questions

What is Suri's cousin's age if Suri is 17 and her age is 4 less than 3 times her cousin's age?

Let's denote her cousin's age as x. According to the problem, 17 = 3x - 4. Solving for x: 3x = 17 + 4 = 21, so x = 7. Therefore, her cousin is 7 years old.

Which algebraic method is best to find Suri's cousin's age in this problem?

Using algebraic equations, specifically setting up and solving a linear equation, is the best method to find her cousin's age.

How do you set up the equation for Suri's age being 4 less than 3 times her cousin's age?

Let x be her cousin's age. The equation is: 17 = 3x - 4.

Can this problem be solved using mental math or estimation?

Yes, since the numbers are simple, you can estimate: 3 times her cousin's age is close to 17 + 4, so about 21, and dividing 21 by 3 gives approximately 7 for her cousin's age.

What are common mistakes to avoid when solving this problem?

Common mistakes include mixing up the order of operations, forgetting to add 4 before dividing, or misreading the problem statement. Always carefully set up the equation and verify your solution.

If Suri's age was not given, how could you find her age using the same method?

You would need another piece of information, such as her cousin's age, to set up an equation. Without that, the problem cannot be solved algebraically.

What real-life scenarios can this problem relate to?

This problem relates to situations involving age differences, such as planning activities based on age, understanding age relationships among family members, or solving similar

word problems involving proportional relationships.

How can understanding this problem help improve algebra skills?

It reinforces setting up equations from word problems, solving linear equations, and understanding proportional relationships, which are fundamental algebra skills.

Is there an alternative method to solve this problem besides algebra?

While algebra is the most straightforward, you could use logical reasoning or trial and error with guess estimates, but algebra is more efficient and precise.

What is the key takeaway from solving this problem about age relationships?

The key takeaway is that algebra helps translate word problems into equations, enabling accurate calculation of unknown quantities like ages based on given relationships.

Additional Resources

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Introduction: Deciphering the Puzzle of Age Relationships

Mathematics, especially algebra, often presents us with intriguing word problems that challenge our reasoning skills and deepen our understanding of relationships between variables. One such problem involves determining the age of a person based on given relationships with another individual. The problem at hand states:

> Suri's age is 4 less than 3 times her cousin's age. Suri is 17 years old. Which method can be used to find her cousin's age?

At first glance, this seems straightforward, but it offers an insightful opportunity to explore various problem-solving strategies, including algebraic modeling, logical reasoning, and even alternative approaches like graphical analysis. This article aims to thoroughly analyze this problem, identify the most suitable method for solving it, and discuss the reasoning behind the selection.

Understanding the Problem Statement

Before choosing a method, it's crucial to interpret the problem carefully.

Given:

- Suri's age = 17 years
- Relationship: Suri's age = 3 (her cousin's age) - 4

Question:

- Which method can be used to find her cousin's age?

This is essentially an algebraic word problem involving a linear relationship between two variables: Suri's age (known) and her cousin's age (unknown).

Breaking Down the Known and Unknown Variables

To approach this problem systematically, we identify:

- Let C = her cousin's age (unknown)
- Suri's age = 17 (known)

The key relationship provided is:

> Suri's age = 3 × (cousin's age) - 4

Substituting known value:

> 17 = 3C - 4

This simplifies the problem to solving a single linear equation for C.

The Core of the Problem: Formulating the Equation

The primary step is translating the word problem into an algebraic expression:

> 17 = 3C - 4

This equation encapsulates the relationship between Suri's age and her cousin's age, with the goal of solving for C.

Exploring Different Methods to Solve the Equation

Now, we can consider various methods suitable for solving this problem:

1. Algebraic Method (Direct Equation Solving)

This is the most straightforward method, involving algebraic manipulation:

- Add 4 to both sides: 17 + 4 = 3C
- Simplify: 21 = 3C
- Divide both sides by 3: C = 21 / 3
- Result: C = 7

Result: Her cousin is 7 years old.

Advantages:

- Precise and efficient
- Suitable for straightforward linear equations
- Encourages understanding of algebraic principles

2. Graphical Method

Plotting the relationship on a graph:

- Plot the line y = 3x - 4
- Find the point where y = 17
- The x-coordinate at y = 17 gives the cousin's age

Implementation:

- Set y = 17
- 17 = 3x - 4
- Solve for x as before

Advantages:

- Visual understanding
- Useful when dealing with multiple solutions or more complex relationships

3. Logical Reasoning / Elimination

Given the known relationship, reasoning without formal algebra involves testing plausible ages:

- For example, if the cousin is 5: 3×5 - 4 = 15 - 4 = 11 ≠ 17
- If the cousin is 6: 3×6 - 4 = 18 - 4 = 14 ≠ 17
- If the cousin is 7: 3×7 - 4 = 21 - 4 = 17 ✓

Advantages:

- Suitable for simple problems
- Reinforces estimation and reasoning skills

4. Use of a Table or List

Creating a table of possible ages and testing the relationship:

Cousin's Age	3 × Age	3 × Age - 4	Does it equal 17?
5	15	11	No
6	18	14	No
7	21	17	Yes

This method systematically narrows down the solution.

Which Method Is Most Suitable?

Given the context and the nature of the problem, the most effective and efficient method is algebraic solving of the linear equation. It offers clear steps, minimal trial and error, and a precise solution.

However, for educational purposes or when teaching problem-solving strategies, combining methods such as reasoning with algebra or visual representation enhances understanding.

Why Algebraic Method Reigns Supreme in This Context

Speed and Precision: Algebra allows rapid computation, especially with simple linear equations.

Clarity of Process: The steps are transparent, making it easier to verify the solution.

Scalability: The algebraic approach extends seamlessly to more complex problems involving multiple variables or nonlinear relationships.

Educational Value: Learning algebraic manipulation builds foundational skills applicable across mathematics.

Additional Considerations: Real-World Implications and Limitations

While the algebraic method is ideal here, it's important to recognize potential limitations:

- Data Accuracy: The problem assumes exact ages without fractional parts or errors.
- Contextual Constraints: The problem doesn't specify if ages are in whole years, which could influence interpretation.
- Multiple Solutions: In more complex problems, multiple solutions might exist, requiring additional context to determine the correct one.

Summary of the Solution Process

To encapsulate, the steps to solve the problem are:

1. Identify variables: Let C be her cousin's age.
2. Translate the relationship into an equation: 17 = 3C - 4.
3. Solve algebraically:

- Add 4 to both sides: 21 = 3C
- Divide both sides by 3: C = 7

4. Interpret the result: Her cousin is 7 years old.

This process exemplifies a clear, logical approach suitable for classroom teaching, exam solving, or practical problem-solving.

Conclusion: The Most Suitable Method for this Problem

The algebraic method stands out as the most appropriate and efficient approach for solving the problem involving Suri's age and her cousin's age. It provides a direct pathway from the word problem to the numerical solution, minimizing guesswork and maximizing clarity.

While other methods like graphical analysis, logical reasoning, and tabular testing are valuable educational tools, especially for beginners or visual learners, the algebraic method remains the gold standard for precise, straightforward linear problems like this one.

In essence:

- Formulate the relationship as an equation.
- Isolate the unknown variable through algebraic manipulation.
- Verify the solution.

This approach not only solves the immediate problem but also reinforces fundamental mathematical principles applicable across a broad spectrum of problem types.

References & Further Reading:

- "Algebra: A Complete Course" by Robert F. Blitzer
- "Elementary Algebra" by Harold R. Jacobs
- Khan Academy’s Algebra Course: https://www.khanacademy.org/math/algebra

End of Article

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