MATHEMATICS · GRADES 4-6

Using symbols for unknown numbers

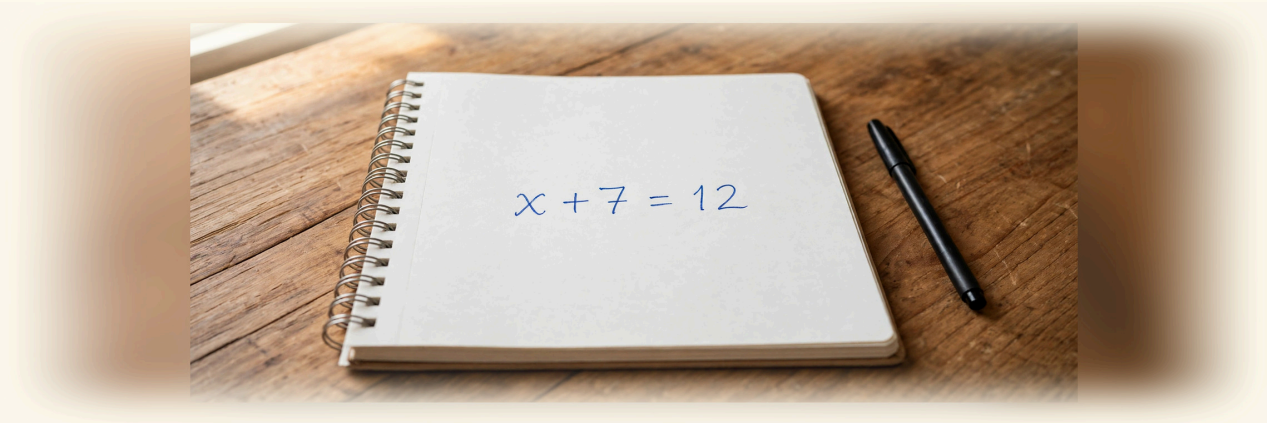
Difficulty level: Intermediate

Mathematics: Grades 4-6

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Overview of the concept

This is how you write a problem with a missing number in it, like a box or a letter standing for the number you do not know yet, which is the first step into algebra. Instead of leaving a blank, you put a symbol where the missing number goes, and the rest of the problem stays written around it. That symbol lets you work with the unknown as if it were a number, until you find out what it is. It is the first step into algebra, and it is how every equation starts.



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Worked examples

EXAMPLE 1

Q Find the value of a in $6 + a = 9$.

SOLUTION

This is a letter stands for a number question, so the one rule to remember is: a letter is just a box hiding a number, and your job is to find what number makes the sentence true. Undo the operation to get the letter alone.

Take 6 from both sides: $a = 9 - 6$

So $a = 3$, and checking back, $6 + 3 = 9$.

EXAMPLE 2

Q Find the value of e in $4e = 32$.

SOLUTION

This is the same question type with multiplication hiding in it: a number written right next to a letter means multiply, so undo it by dividing.

4e means $4 \times e$, so divide both sides by 4: $e = 32 \div 4$

So $e = 8$, and checking back, $4 \times 8 = 32$.

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Practice questions

1. Sara has b stickers. She gets 13 more and now has 30. Find the value of b.

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2. Tom has 15 marbles and gives away c marbles. He has 2 left, so 15 − c = 2. Find the value of c.

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3. Maya thinks of a number d. She subtracts 26 and gets 90, so d − 26 = 90. Find the value of d.

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4 Seven packs of pens cost $77 in all. If f is the cost of one pack, 7f = 77. Find the value of f.

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5 A rope of length g metres is cut into 10 equal pieces, each 12 m long, so g ÷ 10 = 12. Find the value of g.

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6 In the equation 3n + 5 = 20, what does the letter n stand for?

A. The unknown number

B. The number 5

C. The number 20

D. The number 3

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7 There are 40 learners in a class. 34 are present and y are absent. Write an equation using y.

- A 34 + y = 6
- B 40 + y = 34
- C 34 - y = 40
- D 34 + y = 40

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8 Amy has $64 to buy popcorn. Each packet costs $8. Let p be the number of packets she can buy. Write an equation using p.

- A 8p = 64
- B 8 + p = 64
- C 64p = 8
- D p - 8 = 64

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9 Tom has 10 marbles. He gives away x marbles. How many marbles does he have now? Write your answer using x.

- **A** 10 + x
- **B** 10 - x
- **C** x - 10
- **D** 10x

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10 A book costs $3. If you buy x books, how much will it cost? Write your answer using x.

- **A** 3x
- **B** 3 + x
- **C** x ÷ 3
- **D** 3 - x

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ANSWER KEY

1. 17

2. 13

3. 116

4. 11

5. 120

6. The unknown number

7. 34 + y = 40

8. 8p = 64

9. 10 - x

10. 3x

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