

Grade 8 · Solving Linear Equations · Quiz

Common Core 8.EE.C.7a, 8.EE.C.7b · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

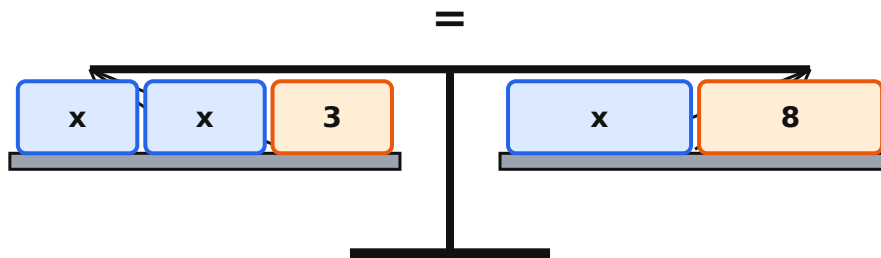
Answer these ten multiple-choice questions on solving linear equations. Some questions use a picture and some ask how many solutions an equation has. Choose the single best answer, then read the explanation to learn from any mistakes.

Grade 8 Common Core: 8.EE.C.7a · 8.EE.C.7b

Questions

Question 1

The scale is balanced. What is the value of x ?



The pans balance.

- A. 5
- B. 11
- C. $\frac{11}{3}$
- D. -5

Question 2

Solve $6x - 4 = 2x + 12$.

- A. $x = 2$
- B. $x = 4$
- C. $x = 3$
- D. $x = 8$

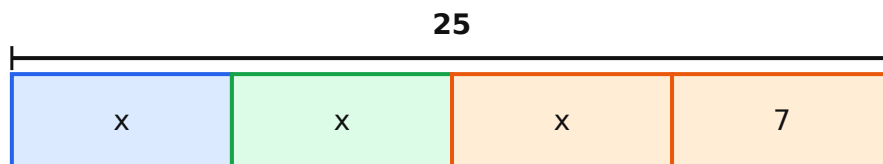
Question 3

Solve $3(x-4) = 2x+5$.

- A. $x=17$
- B. $x=9$
- C. $x=7$
- D. $x=-17$

Question 4

The tape diagram shows an equation. What is x ?



A tape diagram for an equation.

- A. $x=18$
- B. $x=\frac{32}{3}$
- C. $x=6$
- D. $x=8$

Question 5

How many solutions does $4(x+3) = 4x+9$ have?

- A. One solution, $x=3$
- B. Infinitely many solutions
- C. One solution, $x=0$
- D. No solution

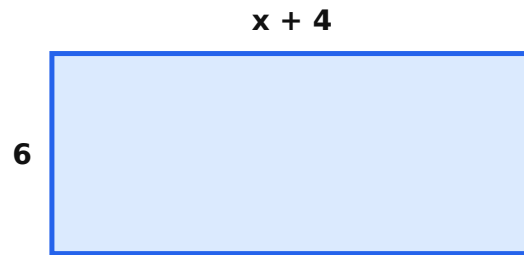
Question 6

How many solutions does $2(3x-1)+4 = 6x+2$ have?

- A. No solution
- B. One solution, $x=0$
- C. Infinitely many solutions
- D. One solution, $x=1$

Question 7

The perimeter of this rectangle is 40 feet. What is x ?



The perimeter is 40 feet.

- A. $x = 10$
- B. $x = 30$
- C. $x = 13$
- D. $x = 12$

Question 8

Solve $\frac{1}{2}x + 3 = \frac{1}{4}x + 7$.

- A. $x = 4$
- B. $x = 40$
- C. $x = 8$
- D. $x = 16$

Question 9

Ravi's work is shown. Which step contains his first error?



Ravi's solution.

- A. The second step: subtracting $3x$
- B. The first step: distributing
- C. The third step: dividing by two
- D. There is no error

Question 10

Solve $0.5x + 2.5 = 0.2x + 4.3$.

- A. $x = 60$
- B. $x = \frac{18}{7}$
- C. $x = 6$
- D. $x = 8$

Answer key

1. **A** - The equation is $2x+3=x+8$. Subtract x : $x+3=8$, so $x=5$. Adding 3 and 8 instead gives the typical wrong answer 11.
2. **B** - Subtract $2x$: $4x-4=12$. Add 4: $4x=16$, so $x=4$. Combining $6x$ and $2x$ into $8x$ leads to the wrong answer 2.
3. **A** - Distribute: $3x-12=2x+5$. Subtract $2x$: $x-12=5$, so $x=17$. Forgetting to multiply the -4 by 3 gives 9.
4. **C** - The tape gives $3x+7=25$, so $3x=18$ and $x=6$. Stopping after subtracting 7 (answer 18) forgets to divide by 3.
5. **D** - Distribute: $4x+12=4x+9$. Subtract $4x$: $12=9$, which is false, so there is no solution.
6. **C** - The left side is $6x-2+4=6x+2$, the same as the right side. The statement $2=2$ is always true, so every number is a solution.
7. **A** - Perimeter: $2(x+4+6)=40$, so $x+10=20$ and $x=10$. Forgetting to double the sides gives $x+10=40$, so 30.
8. **D** - Subtract $\frac{1}{4}x$: $\frac{1}{4}x+3=7$. Then $\frac{1}{4}x=4$, so $x=16$. The answer 4 forgets to multiply by 4.
9. **B** - Ravi wrote $5(x-2)=5x-2$, but it equals $5x-10$. The correct solution is $2x=14$, so $x=7$.
10. **C** - Subtract $0.2x$: $0.3x+2.5=4.3$. Then $0.3x=1.8$, so $x=6$. Adding $0.5x$ and $0.2x$ gives the wrong value $\frac{18}{7}$.

Remember:

- Standards 8.EE.C.7a and 8.EE.C.7b: solve linear equations with rational coefficients, and decide how many solutions an equation has.
- Use the distributive property, $a(b+c)=ab+ac$, and combine like terms before moving terms across.
- Do the same operation to both sides to keep the equation balanced.
- A false result like $3=7$ means no solution; a true result like $6=6$ means infinitely many solutions.
- Always check by substituting the solution into the original equation.