

# Grade 7 - Solving Two-Step Equations - Quiz

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Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Answer all 10 multiple-choice questions on solving two-step equations of the forms  $px + q = r$  and  $p(x + q) = r$  with rational numbers, and comparing arithmetic and algebraic solutions. Pick the single best answer, then read the explanation to see why it is right and which common mistake each wrong choice shows. A score of 8 or more means you are ready for the test.

**Grade 7** · Common Core State Standards: **7.EE.B.4a**

## Questions

### Question 1

|        |    |   |   |   |
|--------|----|---|---|---|
| 25     | 25 |   |   |   |
| 3x + 7 | x  | x | x | 7 |

What is the solution of  $3x + 7 = 25$ ?

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

### Question 2

What is the solution of  $\frac{x}{5} - 2 = 3$ ?

- A.  $x = 5$
- B.  $x = 1$
- C.  $x = 15$
- D.  $x = 25$

### Question 3

Which is the first step in solving  $4(x + 6) = 40$ ?

- A. Subtract 6 from both sides
- B. Add 4 to both sides

- C. Divide both sides by 4
- D. Multiply both sides by 40

#### Question 4

What is the solution of  $-2x+5=-9$ ?

- A.  $x=-7$
- B.  $x=7$
- C.  $x=2$
- D.  $x=-2$

#### Question 5

What is the solution of  $0.4x+1.6=5.2$ ?

- A.  $x=17$
- B.  $x=1.44$
- C.  $x=0.9$
- D.  $x=9$

#### Question 6

What is the solution of  $\frac{1}{2}x-3=4$ ?

- A.  $x=14$
- B.  $x=2$
- C.  $x=\frac{7}{2}$
- D.  $x=3.5$

#### Question 7

|         |           |     |     |     |
|---------|-----------|-----|-----|-----|
|         | \$26      |     |     |     |
| Savings | \$8 start | \$3 | \$3 | ... |

Maya has \$8 and saves \$3 each week. Which

equation finds the weeks  $w$  until she has \$26?

- A.  $8w+3=26$
- B.  $3w+8=26$
- C.  $3w-8=26$
- D.  $11w=26$

#### Question 8

9

9

 $(x - 1/2)$  $x - 1/2$  $x - 1/2$  $x - 1/2$  $x - 1/2$  $x - 1/2$  $x - 1/2$ 

What is the solution of  $6(x - \frac{1}{2}) = 9$ ?

A.  $x = 2$

B.  $x = 1$

C.  $x = \frac{3}{2}$

D.  $x = \frac{11}{2}$

### Question 9

Liam says  $x = 4$  solves  $5x - 3 = 22$ . Is he right?

A. Yes, because  $5 \times 4 = 20$

B. No, the solution is  $x = 5$

C. No, the solution is  $x = 3.8$

D. No, the solution is  $x = 25$

### Question 10

| Miles | Fare |
|-------|------|
| 0     | \$3  |
| 2     | \$8  |
| 4     | \$13 |

A taxi charges \$3 plus \$2.50 per mile. The fare is \$18. How many miles?

A. 6 miles

B. 7.2 miles

C. 8.4 miles

D. 36 miles

## Answers

1. **C** - Subtract 7:  $3x=18$ ; divide by 3:  $x=6$ . Adding 7 to 25 is the wrong inverse.
2. **D** - Add 2:  $x/5=5$ ; multiply by 5:  $x=25$ .
3. **C** - Dividing by 4 gives  $x+6=10$ . Subtracting 6 first is not valid because 4 multiplies the whole group.
4. **B** -  $-2x=-14$ , and dividing by -2 gives 7.
5. **D** - Subtract 1.6:  $0.4x=3.6$ ; divide by 0.4:  $x=9$ .
6. **A** - Add 3:  $\frac{1}{2}x=7$ ; multiply by 2:  $x=14$ .
7. **B** - She starts with 8 and adds 3 each week, so the total is  $3w+8$ .
8. **A** - Divide by 6:  $x-\frac{1}{2}=\frac{3}{2}$ ; add  $1/2$ :  $x=2$ .
9. **B** - Check:  $5(4)-3=17$ , not 22. Adding 3 to both sides gives 25, and dividing by 5 gives 5.
10. **A** -  $2.5m+3=18$ , so  $2.5m=15$  and  $m=6$ .

## Remember

- Two forms:  $px+q=r$  and  $p(x+q)=r$ .
- Undo addition or subtraction first, then multiplication or division.
- Do the same operation to both sides.
- Fractions and decimals follow the same steps as whole numbers.
- Check by substituting the solution into the original equation.