



# Tiered Instruction and Assessment Grade 8

- 2.8.11N** Solve linear, quadratic and exponential equations both symbolically and graphically.
- Solve linear equations and inequalities symbolically.

## Level I

What is the solution to this equation?

$$2x + 1 = 5$$

- A.  $x = 0$
- B.  $x = 1$
- C.  $x = 2$
- D.  $x = 3$

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**Level II**

What is the solution to this equation?

$$2(3x + 1) = 8$$

A.  $x = 1$

B.  $x = \frac{7}{6}$

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

D.  $x = \frac{5}{3}$

**Level II**

What is the solution to this equation?

$$2 - 3(x - 7) - 7x = 4(x - 2) + 3$$

A.  $x = -3$

B.  $x = -2$

C.  $x = -\frac{19}{14}$

D.  $x = 2$

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**2.5.11B**

**Level III**

a. Solve this equation and show all the steps.

$$10 - (4 + 2x) = 12 - 2(2x + 3)$$

$$10 - 4 - 2x = 12 - 4x - 6$$

$$6 - 2x = 6 - 4x$$

$$0 = -2x$$

$$0 = x$$

**Scoring Tool part a:**

2 Points – Correct show of work.

Correct solution ( $x = 0$ ).

1 Point – Mostly correct show of work OR correct answer with no show of work.

0 Points – Incorrect response.

b. Justify that your solution is correct.

$$10 - (4 + 2x) = 12 - 2(2x + 3)$$

$$10 - (4 + 2(0)) = 12 - 2(2(0) + 3)$$

$$10 - (4 + 0) = 12 - 2(0 + 3)$$

$$10 - 4 = 12 - 6$$

$$6 = 6$$

**Scoring Tool part b:**

2 Points – Correct show of work with correct substitutions leading to  $6 = 6$  or  $0 = 0$ .

1 Point – Some show of work that includes substitutions of zero for  $x$  in the original equation.

0 Points – Incorrect response.

**2.8.11N Solve linear, quadratic and exponential equations both symbolically and graphically.**

- Solve linear equations and inequalities symbolically.

**2.8.11R, 2.8.11Q, 2.8.11S**

**Level IV**

In Connecticut the speeding fine is determined by the function:

$$F(s) = \$10(s - 55) + \$40$$

While Vermont speeding fine is determined by the function:

$$H(s) = \$4(s - 65) + \$10$$

- a. Given the information compare their speeding fines symbolically and graphically.

$$F(s) = \$10(s - 55) + 40$$

$$F(s) = 10s - 550 + 40$$

$$F(s) = 10s - 510$$

$$s > 55$$

$$m = 10 \quad b = -510$$

$$H(s) = \$4(s - 65) + 10$$

$$H(s) = 4s - 260 + 10$$

$$H(s) = 4s - 250$$

$$s > 65$$

$$m = 4 \quad b = -250$$

**Scoring Tool part a:**

2 Points – Both equations are simplified by removing parentheses and combining like terms.

All steps are shown.

1 Point – Some show of work with at least one correct equation in slope intercept form.

0 Points – Incorrect response.



**Scoring Tool for Graph:**

2 Points – Both equations are graphed correctly.

1 Point – One equation is graphed correctly.

0 Points – Incorrect response.

- b. Create a function for speeding in Pennsylvania that would result in fines between Connecticut and Vermont fines. Justify your function.

$$P(s) = \$6(s - 65) + 40$$

$$P(s) = 6s - 390 + 40$$

$$P(s) = 6s - 350$$

Speeds	F(s)	P(s)	H(s)
51	\$0	\$ - 44	\$ - 46
58.3	\$73	\$0	\$ - 16.8
62.5	\$115	\$25	\$0
75	\$240	\$100	\$50

**Scoring Tool part b:**

2 Points – Correct equation supported by either a correct table or correct graph.

1 Point – Correct equation partially supported by a table or graph.

0 Points – Incorrect response.