

### A.REI.B.3: Solving Linear Inequalities 1

- 1 When  $3a + 7b > 2a - 8b$  is solved for  $a$ , the result is
  - 1)  $a > -b$
  - 2)  $a < -b$
  - 3)  $a < -15b$
  - 4)  $a > -15b$
- 2 What is the solution to  $2h + 8 > 3h - 6$ ?
  - 1)  $h < 14$
  - 2)  $h < \frac{14}{5}$
  - 3)  $h > 14$
  - 4)  $h > \frac{14}{5}$
- 3 When  $3x + 2 \leq 5(x - 4)$  is solved for  $x$ , the solution is
  - 1)  $x \leq 3$
  - 2)  $x \geq 3$
  - 3)  $x \leq -11$
  - 4)  $x \geq 11$
- 4 The solution to  $4p + 2 < 2(p + 5)$  is
  - 1)  $p > -6$
  - 2)  $p < -6$
  - 3)  $p > 4$
  - 4)  $p < 4$
- 5 What is the solution to  $-3(x - 6) > 2x - 2$ ?
  - 1)  $x > 4$
  - 2)  $x < 4$
  - 3)  $x > -16$
  - 4)  $x < -16$
- 6 What is the solution to the inequality  $2m - 4 \leq 3(2m + 4)$ ?
  - 1)  $m \leq -2$
  - 2)  $m \geq -2$
  - 3)  $m \leq -4$
  - 4)  $m \geq -4$
- 7 What is the solution to the inequality  $2x - 7 > 2.5x + 3$ ?
  - 1)  $x > -5$
  - 2)  $x < -5$
  - 3)  $x > -20$
  - 4)  $x < -20$
- 8 What is the solution to  $\frac{3}{2}b + 5 < 17$ ?
  - 1)  $b < 8$
  - 2)  $b > 8$
  - 3)  $b < 18$
  - 4)  $b > 18$
- 9 The inequality  $7 - \frac{2}{3}x < x - 8$  is equivalent to
  - 1)  $x > 9$
  - 2)  $x > -\frac{3}{5}$
  - 3)  $x < 9$
  - 4)  $x < -\frac{3}{5}$

10 What is the solution to the inequality

$$2 + \frac{4}{9}x \geq 4 + x?$$

- 1)  $x \leq -\frac{18}{5}$
- 2)  $x \geq -\frac{18}{5}$
- 3)  $x \leq \frac{54}{5}$
- 4)  $x \geq \frac{54}{5}$

16 Solve algebraically for  $x$ :

$$3600 + 1.02x < 2000 + 1.04x$$

17 Solve  $\frac{3}{5}x + \frac{1}{3} < \frac{4}{5}x - \frac{1}{3}$  for  $x$ .

18 Given that  $a > b$ , solve for  $x$  in terms of  $a$  and  $b$ :  
 $b(x - 3) \geq ax + 7b$

11 What is the solution to the inequality below?

$$4 - \frac{2}{5}x \geq \frac{1}{3}x + 15$$

- 1)  $x \leq 11$
- 2)  $x \geq 11$
- 3)  $x \leq -15$
- 4)  $x \geq -15$

12 Solve  $5(x - 2) \leq 3x + 20$  algebraically.

13 Solve algebraically for  $y$ :  $4(y - 3) \leq 4(2y + 1)$

14 Solve the inequality  $-\frac{2}{3}x + 6 > -12$  algebraically  
 for  $x$ .

15 Solve the inequality below:  
 $1.8 - 0.4y \geq 2.2 - 2y$

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Answer Section**

1 ANS: 4  
 $a + 7b > -8b$

$$a > -15b$$

REF: 061913ai

2 ANS: 1  
 $2h + 8 > 3h - 6$

$$14 > h$$

$$h < 14$$

REF: 081607ai

3 ANS: 4  
 $3x + 2 \leq 5x - 20$

$$22 \leq 2x$$

$$11 \leq x$$

REF: 061609ai

4 ANS: 4  
 $4p + 2 < 2p + 10$

$$2p < 8$$

$$p < 4$$

REF: 061801ai

5 ANS: 2  
 $-3(x - 6) > 2x - 2$

$$-3x + 18 > 2x - 2$$

$$20 > 5x$$

$$4 > x$$

REF: 082310ai

6 ANS: 4  
 $2m - 4 \leq 3(2m + 4)$

$$2m - 4 \leq 6m + 12$$

$$-16 \leq 4m$$

$$-4 \leq m$$

REF: 082413ai

7 ANS: 4

$$2x - 7 > 2.5x + 3$$

$$-10 > 0.5x$$

$$-20 > x$$

REF: 012418ai

8 ANS: 1

$$\frac{3}{2}b < 12$$

$$b < 12\left(\frac{2}{3}\right)$$

$$b < 8$$

REF: 062207ai

9 ANS: 1

$$7 - \frac{2}{3}x < x - 8$$

$$15 < \frac{5}{3}x$$

$$9 < x$$

REF: 011507ai

10 ANS: 1

$$2 + \frac{4}{9}x \geq 4 + x$$

$$-2 \geq \frac{5}{9}x$$

$$x \leq -\frac{18}{5}$$

REF: 081711ai

11 ANS: 3

$$-\frac{2}{5}x \geq \frac{1}{3}x + 11$$

$$-\frac{11}{15}x \geq 11$$

$$-\frac{15}{11}\left(-\frac{11}{15}x\right) \leq \left(-\frac{15}{11}\right)11$$

$$x \leq -15$$

REF: 062322ai

12 ANS:

$$5x - 10 \leq 3x + 20$$

$$2x \leq 30$$

$$x \leq 15$$

REF: 062425ai

13 ANS:

$$4y - 12 \leq 8y + 4$$

$$-16 \leq 4y$$

$$-4 \leq y$$

REF: 062125ai

14 ANS:

$$-3 \left( -\frac{2}{3}x + 6 > -12 \right)$$

$$2x - 18 < 36$$

$$2x < 54$$

$$x < 27$$

REF: 012327ai

15 ANS:

$$1.8 - 0.4y \geq 2.2 - 2y$$

$$1.6y \geq 0.4$$

$$y \geq 0.25$$

REF: 011727ai

16 ANS:

$$3600 + 1.02x < 2000 + 1.04x$$

$$1600 < 0.02x$$

$$80000 < x$$

REF: 011925ai

17 ANS:

$$\frac{2}{3} < \frac{x}{5}$$

$$\frac{10}{3} < x$$

REF: 081929ai

18 ANS:

$$b(x-3) \geq ax + 7b$$

$$bx - 3b \geq ax + 7b$$

$$bx - ax \geq 10b$$

$$x(b-a) \geq 10b$$

$$x \leq \frac{10b}{b-a}$$

REF: 011631ai