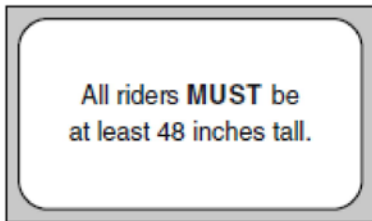


A.CED.A.1: Modeling Linear Inequalities 2

- 1 If Rosa's age is represented by R , which inequality represents the statement "Rosa is at most 29 years old"?
- 1) $R < 29$
 - 2) $R > 29$
 - 3) $R \leq 29$
 - 4) $R \geq 29$
- 2 The sign shown below is posted in front of a roller coaster ride at the Wadsworth County Fairgrounds.



If h represents the height of a rider in inches, what is a correct translation of the statement on this sign?

- 1) $h < 48$
 - 2) $h > 48$
 - 3) $h \leq 48$
 - 4) $h \geq 48$
- 3 Roger is having a picnic for 78 guests. He plans to serve each guest at least one hot dog. If each package, p , contains eight hot dogs, which inequality could be used to determine how many packages of hot dogs Roger will need to buy?
- 1) $p \geq 78$
 - 2) $8p \geq 78$
 - 3) $8 + p \geq 78$
 - 4) $78 - p \geq 8$

- 4 Jeremy is hosting a Halloween party for 80 children. He will give each child *at least* one candy bar. If each bag of candy contains 18 candy bars, which inequality can be used to determine how many bags, c , Jeremy will need to buy?
- 1) $18c \geq 80$
 - 2) $18c \leq 80$
 - 3) $\frac{c}{18} \geq 80$
 - 4) $\frac{c}{18} \leq 80$
- 5 Carol plans to sell twice as many magazine subscriptions as Jennifer. If Carol and Jennifer need to sell at least 90 subscriptions in all, which inequality could be used to determine how many subscriptions, x , Jennifer needs to sell?
- 1) $x \geq 45$
 - 2) $2x \geq 90$
 - 3) $2x - x \geq 90$
 - 4) $2x + x \geq 90$
- 6 Mrs. Smith wrote "Eight less than three times a number is greater than fifteen" on the board. If x represents the number, which inequality is a correct translation of this statement?
- 1) $3x - 8 > 15$
 - 2) $3x - 8 < 15$
 - 3) $8 - 3x > 15$
 - 4) $8 - 3x < 15$

- 7 The ninth grade class at a local high school needs to purchase a park permit for \$250.00 for their upcoming class picnic. Each ninth grader attending the picnic pays \$0.75. Each guest pays \$1.25. If 200 ninth graders attend the picnic, which inequality can be used to determine the number of guests, x , needed to cover the cost of the permit?
- 1) $0.75x - (1.25)(200) \geq 250.00$
 - 2) $0.75x + (1.25)(200) \geq 250.00$
 - 3) $(0.75)(200) - 1.25x \geq 250.00$
 - 4) $(0.75)(200) + 1.25x \geq 250.00$
- 8 The length of a rectangle is 15 and its width is w . The perimeter of the rectangle is, *at most*, 50. Which inequality can be used to find the longest possible width?
- 1) $30 + 2w < 50$
 - 2) $30 + 2w \leq 50$
 - 3) $30 + 2w > 50$
 - 4) $30 + 2w \geq 50$
- 9 If five times a number is less than 55, what is the greatest possible integer value of the number?
- 1) 12
 - 2) 11
 - 3) 10
 - 4) 9
- 10 Jason's part-time job pays him \$155 a week. If he has already saved \$375, what is the minimum number of weeks he needs to work in order to have enough money to buy a dirt bike for \$900?
- 1) 8
 - 2) 9
 - 3) 3
 - 4) 4
- 11 An online music club has a one-time registration fee of \$13.95 and charges \$0.49 to buy each song. If Emma has \$50.00 to join the club and buy songs, what is the maximum number of songs she can buy?
- 1) 73
 - 2) 74
 - 3) 130
 - 4) 131
- 12 Tamara has a cell phone plan that charges \$0.07 per minute plus a monthly fee of \$19.00. She budgets \$29.50 per month for total cell phone expenses without taxes. What is the maximum number of minutes Tamara could use her phone each month in order to stay within her budget?
- 1) 150
 - 2) 271
 - 3) 421
 - 4) 692
- 13 In a hockey league, 87 players play on seven different teams. Each team has at least 12 players. What is the largest possible number of players on any one team?
- 1) 13
 - 2) 14
 - 3) 15
 - 4) 21
- 14 There are 461 students and 20 teachers taking buses on a trip to a museum. Each bus can seat a maximum of 52. What is the *least* number of buses needed for the trip?
- 1) 8
 - 2) 9
 - 3) 10
 - 4) 11

- 15 Parking charges at Superior Parking Garage are \$5.00 for the first hour and \$1.50 for each additional 30 minutes. If Margo has \$12.50, what is the maximum amount of time she will be able to park her car at the garage?
- 1) $2\frac{1}{2}$ hours
 - 2) $3\frac{1}{2}$ hours
 - 3) 6 hours
 - 4) $6\frac{1}{2}$ hours
- 16 A prom ticket at Smith High School is \$120. Tom is going to save money for the ticket by walking his neighbor's dog for \$15 per week. If Tom already has saved \$22, what is the minimum number of weeks Tom must walk the dog to earn enough to pay for the prom ticket?
- 17 Peter begins his kindergarten year able to spell 10 words. He is going to learn to spell 2 new words every day. Write an inequality that can be used to determine how many days, d , it takes Peter to be able to spell *at least* 75 words. Use this inequality to determine the minimum number of whole days it will take for him to be able to spell *at least* 75 words.
- 18 Chelsea has \$45 to spend at the fair. She spends \$20 on admission and \$15 on snacks. She wants to play a game that costs \$0.65 per game. Write an inequality to find the maximum number of times, x , Chelsea can play the game. Using this inequality, determine the maximum number of times she can play the game.
- 19 Tony makes a phone call at a pay phone. The charge is 25 cents for the first four minutes, and 10 cents for each additional minute. Tony has \$2.10 in change in his pocket. Write an inequality that can be used to find m , the maximum number of minutes that Tony can talk on the phone. Solve this inequality algebraically to find the maximum number of whole minutes he can talk on the phone.
- 20 A swimmer plans to swim at least 100 laps during a 6-day period. During this period, the swimmer will increase the number of laps completed each day by one lap. What is the *least* number of laps the swimmer must complete on the first day?
- 21 A doughnut shop charges \$0.70 for each doughnut and \$0.30 for a carryout box. Shirley has \$5.00 to spend. At most, how many doughnuts can she buy if she also wants them in one carryout box?
- 22 Mr. Braun has \$75.00 to spend on pizzas and soda pop for a picnic. Pizzas cost \$9.00 each and the drinks cost \$0.75 each. Five times as many drinks as pizzas are needed. What is the maximum number of pizzas that Mr. Braun can buy?
- 23 The Eye Surgery Institute just purchased a new laser machine for \$500,000 to use during eye surgery. The Institute must pay the inventor \$550 each time the machine is used. If the Institute charges \$2,000 for each laser surgery, what is the *minimum* number of surgeries that must be performed in order for the Institute to make a profit?
- 24 Thelma and Laura start a lawn-mowing business and buy a lawnmower for \$225. They plan to charge \$15 to mow one lawn. What is the *minimum* number of lawns they need to mow if they wish to earn a profit of *at least* \$750?

A.CED.A.1: Modeling Linear Inequalities 2**Answer Section**

1 ANS: 3 REF: 081410ia

2 ANS: 4 REF: 060906ia

3 ANS: 2 REF: 011005ia

4 ANS: 1 REF: 011403ia

5 ANS: 4 REF: 061321ia

6 ANS: 1 REF: 080803ia

7 ANS: 4 REF: 081107ia

8 ANS: 2 REF: 081212ia

9 ANS: 3

$$5x < 55$$

$$x < 11$$

REF: 061211ia

10 ANS: 4

$$375 + 155w \geq 900$$

$$155w \geq 525$$

$$w \geq 3.4$$

REF: 081206ia

11 ANS: 1

$$13.95 + 0.49s \leq 50.00$$

$$0.49s \leq 36.05$$

$$s \leq 73.57$$

REF: 080904ia

12 ANS: 1

$$0.07m + 19 \leq 29.50$$

$$0.07m \leq 10.50$$

$$m \leq 150$$

REF: 010904ia

13 ANS: 3

To find the largest possible number of players on any one team, assume the other six teams have the minimum number of players.

$$p \leq 87 - (6 \times 12)$$

$$p \leq 15$$

REF: 089914a

14 ANS: 3

$$b \geq \frac{461+20}{52}$$

$$b \geq 9.25$$

$$b = 10$$

REF: 010101a

15 ANS: 2

$$5 + 3(h - 1) = 12.5$$

The hourly parking rate is \$3. $5 + 3h - 3 = 12.5$

$$3h = 10.5$$

$$h = 3.5$$

REF: 060406a

16 ANS:

$$7. 15x + 22 \geq 120$$

$$x \geq 6.\bar{53}$$

REF: fall0735ia

17 ANS:

$$10 + 2d \geq 75, 33. 10 + 2d \geq 75$$

$$d \geq 32.5$$

REF: 060834ia

18 ANS:

$$0.65x + 35 \leq 45$$

$$0.65x \leq 10$$

$$x \leq 15$$

REF: 061135ia

19 ANS:

$$0.25 + 0.10(m - 4) \leq 2.10 \quad 22 \text{ minutes}$$

$$0.10(m - 4) \leq 1.85$$

$$m - 4 \leq 18.5$$

$$m \leq 22.5$$

REF: 061539ia

20 ANS:

$$x + (x + 1) + (x + 2) + (x + 3) + (x + 4) + (x + 5) \geq 100$$

$$6x + 15 \geq 100$$

$$x \geq 14.\overline{16}$$

15.

$$x = 15$$

REF: 069928a

21 ANS:

$$.7d + .5 \leq 5$$

$$.7d \leq 4.5$$

$$6. \quad d \leq \frac{4.5}{.7}$$

$$d \leq 6.4$$

$$d = 6$$

REF: 080224a

22 ANS:

$$9P + 0.75(5P) \leq 75$$

$$5. \quad 12.75P \leq 75$$

$$P \leq 5.9$$

$$P = 5$$

REF: 010938a

23 ANS:

$$2000x > 500000 + 550x$$

$$345. \quad 1450x > 500000$$

$$x = 345$$

REF: 010737a

24 ANS:

$$65. \quad 15x \geq 225 + 750$$

$$x \geq 65$$

REF: 080732a