

**A.A.6: Modeling Inequalities 2: Analyze and solve verbal problems whose solution requires solving a linear equation in one variable or linear inequality in one variable**

- 1 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
- 2 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
- 3 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
- 4 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?
- 5 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?
- 6 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?
- 7 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?
- 8 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?

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## **Answer Section**

1 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

2 ANS: 3

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

$$b \geq 9.25$$

$$b = 10$$

REF: 010101a

3 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

4 ANS:

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

$$.7d \leq 4.5$$

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

$$d \leq 6.4$$

$$d = 6$$

REF: 080224a

5 ANS:

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

$$12.75P \leq 75$$

5.  $P \leq 5.9$

$$P = 5$$

REF: 010938a

6 ANS:

$$2000x > 500000 + 550x$$

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

$$x = 345$$

REF: 010737a

7 ANS:

$$15x \geq 225 + 750$$

$$65. \quad x \geq 65$$

REF: 080732a

8 ANS:

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

$$6x + 15 \geq 100$$

$$x \geq 14.\overline{1\bar{6}}$$

$$15. \quad x = 15$$

REF: 069928a