

## Section 4-9: Using Inequalities to Solve Problems

1. 080732a, P.I. A.A.6  
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?
2. fall0735ia, P.I. A.A.6  
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?
3. 010101a, P.I. A.A.6  
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?  
[A] 11      [B] 9      [C] 8      [D] 10
4. 089914a, P.I. A.A.6  
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?  
[A] 14      [B] 13      [C] 15      [D] 21
5. 080224a, P.I. A.A.6  
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?
6. 069928a, P.I. A.A.6  
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?
7. 089910a  
On June 17, the temperature in New York City ranged from  $90^{\circ}$  to  $99^{\circ}$ , while the temperature in Niagara Falls ranged from  $60^{\circ}$  to  $69^{\circ}$ . The difference in the temperatures in these two cities must be between  
[A]  $20^{\circ}$  and  $30^{\circ}$       [B]  $20^{\circ}$  and  $40^{\circ}$   
[C]  $25^{\circ}$  and  $35^{\circ}$       [D]  $30^{\circ}$  and  $40^{\circ}$

[2] 65, and appropriate work is shown, such as solving the inequality  $15x \geq 225 + 750$  or trial and error with at least three trials and appropriate checks.

[1] Appropriate work is shown, but one computational error is made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] The trial-and-error method is attempted and at least six systematic trials and appropriate checks are shown, but no solution is found.

or [1] 65, but no work or fewer than three trials and appropriate checks are shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[1] incorrect procedure.

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[3] 7, and appropriate work is shown, such as solving the inequality  $15x + 22 \geq 120$ , solving an equation, or trial and error with at least three trials and appropriate checks.

[2] Appropriate work is shown, but one computational or rounding error is made.

or [2] The trial-and-error method is used to find a correct solution, but only two trials and appropriate checks are shown.

[1] Appropriate work is shown, but two or more computational or rounding errors are made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] An incorrect equation of equal difficulty is solved appropriately.

or [1] A correct inequality or equation is written, but no further correct work is shown.

or [1] The trial-and-error method is attempted and at least six systematic trials and appropriate checks are shown, but no solution is found.

or [1] 7, but no work or only one trial with an appropriate check is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[2] incorrect procedure.

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[3] D

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[4] C

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[2] 6, and appropriate work is shown, such as  $0.70x + 0.30 \leq 5.00$  or trial and error with three trials and appropriate checks.

[1] The inequality is solved correctly, but the number of doughnuts is not found.

or [1] The trial-and-error method is used to find a correct solution, but fewer than three trials are shown.

or [1] 6, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[5] incorrect procedure.

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[3] 15 and an appropriate method or explanation is shown, such as trial and error or the inequality  $6x + 15 \geq 100$ .

[2] An appropriate method is shown, but it stops at 14.

[1] An appropriate method is shown, but no answer is found.

or [1] 15 and no explanation is given.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[6] incorrect procedure.

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[7] B

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