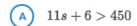# Linear inequality word problems

More than 450 students traveled to a state park for a field trip. The school allowed 6 students to travel by car, and the rest traveled on 11 buses, each of which held the same number of students. If there were s students in each bus, which inequality best represents this situation?

- **A** $11s + 6 > 450$
- **B** $11s + 6 < 450$
- **C** $6s + 11 > 450$
- **D** $6s + 11 < 450$

A barber charges $\$12$ for a haircut. His operating expenses are, on average, $\$37$ per day. He calculates his profit by subtracting his operating costs from the money he earns from the haircuts he gives. In a given day, the barber expects to make a profit of at least $\$86$. If the barber gives h haircuts in a day, which inequality best models this situation?

- **A** $12h - 37 \geq 86$
- **B** $12(h - 37) \geq 86$
- **C** $12h + 37 \geq 86$
- **D** $12(h + 37) \geq 86$

A distributor ships DVDs to several stores. The shipping boxes contain several DVDs (in their cases) plus a layer of padding at each end of the box. The DVD cases and layers of padding can be arranged neatly inside each box. Each DVD case is $14\,\text{mm}$ (millimeters) thick, each layer of padding is $10\,\text{mm}$ thick, and the length of the interior of the box is $132\,\text{mm}$. If d represents the number of DVDs that the distributor can fit into one box with two layers of padding, which of the following inequalities best models the situation?

- **A** $10d + 14 \leq 132$
- **B** $14d + 20 \leq 132$
- **C** $20d + 14 \leq 132$
- **D** $14d + 10 \leq 132$

Linear inequality word problems

Woo-Jin would like to bring several books from his favorite series in his backpack. The backpack can hold up to a depth of $10\frac{1}{2}$ inches of materials. Woo-Jin's laptop and a notebook fill a total of 3 inches of that depth. Each book would fill 1.5 inches of the depth of the backpack. Only one stack of books can fit the height and width of the backpack. If x represents the number of books that Woo-Jin could carry in his backpack, which of the following inequalities best models the situation described above?

(A) $3 + 1.5x < 10.5$

(B) $3 + 1.5x \leq 10.5$

(C) $3x + 1.5 < 10.5$

(D) $3x + 1.5 \leq 10.5$

To rent a car for one week, a car rental company charges a $200 base price as well as $0.45 per mile. Jennifer will rent a vehicle at this company, but she has a $275 budget. Which of the following is a possible number of miles that Jennifer can drive without exceeding her budget?

(A) 166 miles

(B) 167 miles

(C) 168 miles

(D) 169 miles