Inequalities

1. If $4x \leq 48$ and $7x > 63$, then which of the following can be equal to the value of x?
   A. 9
   B. 11
   C. 13
   D. 15
   E. 12
   F. 10

2. Gift boxes, to be distributed among school children, contain pencils and erasers. Each gift box can hold a maximum of 12 items. If each box must have at least 3 more pencils than the number of erasers, what is the maximum number of erasers in a gift box?
   A. 2
   B. 3
   C. 4
   D. 5
   E. 6

3. David is planning to borrow books from a library. The charge for borrowing each book is $5. However, if he takes a membership, then he can borrow each book for $1 and pay a one-time membership fee of $125. What is the minimum number of books David should borrow if taking the membership must be comparatively cost effective option?
   A. 30
   B. 22
   C. 32
   D. 16
   E. 58

4. A contractor needs to color a wall having dimensions 12 feet by 8 feet. The wall has a glass door having dimensions 3 feet by 5 feet. The wall also has a glass window having area 5 square feet to 10 square feet. If the contractor charges $0.60 per square feet, which of the following inequalities shows all possible values for p, the amount in dollars, required to paint the wall?
   A. $71 \leq p \leq 76$
   B. $43 \leq p \leq 46$
   C. $42.60 \leq p \leq 45.60$
   D. $40 \leq p \leq 41$
   E. $85.20 \leq p \leq 91.20$

5. The toll for crossing a certain bridge is $0.75 for each crossing. Drivers who frequently use the bridge may instead purchase a sticker each month for $13.00 and then pay only $0.30 for each crossing during that month. If a particular driver will cross the bridge twice on each of x days next month and will not cross the bridge on any other day, what is the least value of x for which this driver can save money by using the sticker?
   A. 14
   B. 15
   C. 16
   D. 28
   E. 30

6. If $-1 < h < 0$, which of the following has the greatest value?
   A. $1 - h$
   B. $1 + h$
   C. $1 + h^2$
   D. $1 - \frac{1}{h}$
   E. $1 + \frac{1}{h}$

7. If $-1 \le p \le 1$, $-2 \le q \le -½$, $-2 < r < ½$, and $s = \frac{pq}{r}$, which of the following MUST be correct?
   A. $-½ \le s \le 2$
   B. $-4 \le s \le 2$
   C. $-2 \le s \le ½$
   D. $-4 \le s \le 4$
   E. $2 \le s \le -½$

8. Before launching a new product in a city, a company wants to do a survey. The company needs at least 2300 completed surveys. It is known that for every seven survey forms given to the people, only two are completed surveys. The company already has received 1400 completed surveys. If s represents the number of additional survey forms the company needs to give away, what is the minimum value of s?
   A. 3150
   B. 450
   C. 900
   D. 6300
   E. 6750

9. If $-\frac{5}{3} \le 2a + 3 \le \frac{7}{2}$, how many integer values are possible for $\left(\frac{a}{2} + 1\right)$?
   A. 0
   B. 1
   C. 2
   D. 3
   E. 4

10. If $-1 < x < 0$, which of the following must be true?
    A. $x^3 < x^2$
    B. $x^5 < 1 - x$
    C. $x^4 < x^2$
    D. $x^5 < x^3$
    E. $x^{1/2} < x^2$
    F. $x^5 < x^2 + 2$