1. The cost of airing a commercial on television is modeled by the function $C(n) = 110n + 900$, where n is the number of times the commercial is aired. Based on this model, which statement is true?

1) The commercial costs \$0 to produce and \$110 per airing up to \$900.
2) The commercial costs \$110 to produce and \$900 each time it is aired.
3) The commercial costs \$900 to produce and \$110 each time it is aired.
4) The commercial costs \$1010 to produce and can air an unlimited number of times.

2. If $f(x) = 3^x$ and $g(x) = 2x + 5$, at which value of x is $f(x) < g(x)$?

1) -1
2) 2
3) -3
4) 4

irr. irr.

$\sqrt{2} \cdot \sqrt{3} = \sqrt{6}$

3. Which statement is *not* always true?

a) The sum of two rational numbers is rational.
b) The product of two irrational numbers is rational.
c) The sum of a rational number and an irrational number is irrational.
d) The product of a nonzero rational number and an irrational number is irrational.

$\sqrt{2} \cdot \sqrt{2} = 2$

irrational rational

4. Connor wants to attend the town carnival. The price of admission to the carnival is \$4.50, and each ride costs an additional 79 cents. If he can spend at most \$16.00 at the carnival, write and solve an inequality to determine the maximum number of rides Connor can go on.

$4.50 + 0.79r \leq 16$

$-4.50 \quad -4.50$

$\frac{0.79r}{0.79} \leq \frac{11.50}{0.79}$

$r \leq 14.55$

$r = 14$ rides

5. Which value of x satisfies the equation $\frac{7}{3}\left(x + \frac{9}{28}\right) = 20$?

1) 8.25
2) 8.89
3) 19.25
4) 44.92

6. Alicia has invented a new app for smart phones that two companies are interested in purchasing for a 2-year contract. Company *A* is offering her \$10,000 for the first month and will increase the amount each month by \$5000. Company *B* is offering \$500 for the first month and will double their payment each month from the previous month. Monthly payments are made at the end of each month. For which monthly payment will company *B*'s payment first exceed company *A*'s payment?

1) 6
2) 7
3) 8
4) 9

A: $y = 10000 + 5000(x-1)$ B: $y = 500(2)^{x-1}$

7. The cost of a pack of chewing gum in a vending machine is \$0.75. The cost of a bottle of juice in the same machine is \$1.25. Julia has \$22.00 to spend on chewing gum and bottles of juice for her team and she must buy seven packs of chewing gum. If *b* represents the number of bottles of juice, write and solve an inequality to determine the maximum number of bottles she can buy?

$7(0.75) + 1.25b \leq 22$

$5.25 + 1.25b \leq 22$

$-5.25 \quad -5.25$

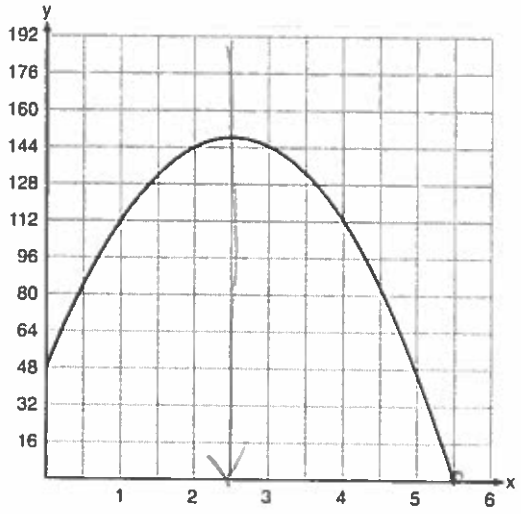
$1.25b \leq 16.75$

$\frac{1.25b}{1.25} \leq \frac{16.75}{1.25}$

$b \leq 13.4$

13 bottles

8. A ball is thrown into the air from the edge of a 48-foot-high cliff so that it eventually lands on the ground. The graph below shows the height, *y*, of the ball from the ground after *x* seconds.



What interval is the ball's height always *increasing*?

$2.5 < x < 5.5$

9. Solve the inequality below to determine and state the smallest possible value for *x* in the solution set.

$3(x+3) \leq 5x - 3$

$3x + 9 \leq 5x - 3$

$-5x \quad -9 \quad -5x \quad -9$

$-2x \leq -12$

$\frac{-2x}{-2} \leq \frac{-12}{-2}$

$x \geq 6$

smallest value = 6