**Question 1**

Rick was counting his collection of bottle caps. He started organizing them in piles. He put all of the bottle caps in piles of five, but found that there were three left over. Then he put them in piles of four and found that there were two left over. Then he put them in piles of six, and found that there were four left over. He thought he finally had an equal number in each pile with piles of three, but there was one left over. Finally, he tried piles of seven and had two left over. He has less than 100 bottle caps. How many bottle caps does Rick have?

**12 points**

6 points for detailed solution (make a drawing or list), 4 points for written summary or outline of steps (explain or outline your approach), 2 points for final answer \*circle please\* (how many bottle caps).

**Question 2**

CHOOSE ONE **A.** OR **B.**

1. Five even numbers add up to 100. The greatest of the five numbers is 28. The last digit of each number is different. One pair of numbers adds up to 32. A second pair of numbers, consisting of two different numbers than the first pair, adds up to 46. What are the five numbers?
2. In rugby, points can be scored in four different ways. A try is worth 5 points. After scoring a try, a team can get a conversion worth 2 points. It is not possible to score a conversion unless a try is scored first. There are also two different kinds of kicks. A penalty kick is worth 3 points, and a drop kick is also worth 3 points. Last week the Northampton Wanderers scored 29 points in a rugby match. In how many different ways could this have occurred? (You should consider scoring 3 points with a penalty kick to be different than scoring 3 points with a drop kick.)

**12 points**

6 points for detailed solution (make a drawing or list), 4 points for written summary or outline of steps (explain or outline your approach), 2 points for final answer \*circle please\* (**A.** what are the five numbers OR **B.** how many ways).

**Question 3**

Disney Movie Club made me an offer I couldn’t refuse. For their low prices I could buy millions of movies (Blu-ray discs) and save millions of dollars. Well, anyway, I joined. The first month I bought 3 discs, and the cost was $43.72, which included shipping and handling. The second month I ordered 5 for a total of $67.30. Anyway, for $90.88 I bought 7 discs the next month. I paid $55.51 for 4 discs the next month. I looked through their catalog and picked out 53 more discs that I wanted to buy sometime. If I buy all 53 at once, then I pay the shipping and handling fee only once. On the other hand, if I buy them in smaller groups, well . . . What I really need to know is, how much would it cost to buy all 53 discs as one order so I only pay the shipping and handling one time for all 53?

**12 points**

6 points for detailed solution (make a drawing or list), 4 points for written summary or outline of steps (explain or outline your approach), 2 points for final answer \*circle please\* (how much for 53 discs).

**Question 4**

Tigger and Roo decided to have a race. Roo could make four jumps of 3 feet each in the same time that Tigger could make three jumps of 4 feet each. The racecourse was 75 feet long, with the race being up and back. (So that’s 150 feet total.) Who won and by how far?

**12 points**

6 points for detailed solution (make a drawing or list), 4 points for written summary or outline of steps (explain or outline your approach), 2 points for final answer \*circle please\* (who won and by how far).

**Question 5**

Two women (Cory and Shawna) and two men (Rohan and Brandon) each have a favorite TV show. Two of the TV shows are comedies (The Big Bang Theory and Family Guy) and two are dramas (Lost and Life on Mars). From the clues below, figure out which TV shows each person enjoys.

1. One man likes a comedy; the other man likes a drama.
2. Cory has never seen Lost. She has seen Family Guy but doesn’t like it.
3. Rohan has never heard of Life on Mars.
4. Brandon’s favorite show is The Big Bang Theory. He likes it because everyone uses a laptop computer to do cool things.

**12 points**

6 points for detailed solution (matrix with Xs and Os), 4 points for notes outlining how you used the clues to find or eliminate options, 2 points for final answer \*please circle\* (list of the final matched items).

EXTRA CREDIT

**Option 1**

Abbi bought a set of colored pencils that were marked down 40% to 22.55. What was the price of the colored pencils before the markdown?

**3 points**

All or nothing; 3 points for final answer \*circle please\* (what is the price before markdown).

**Option 2**

Renee was having an argument with her roommate, Frankie, about whether or not Frankie could cook. After arguing for a while, Renee said, “Wow, wow, so cook!” Frankie, who was a math teacher, noticed that what Renee said might be a cryptarithm. She sat down to work on it, and Renee ended up cooking dinner. Each letter in the cryptarithm stands for a different digit. (Hint: K=9)

**3 points**

All or nothing; 3 points for final answer \*circle please\* (list what letters each number stands for).

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| --- | --- | --- | --- |
|  | W | O | W |
|  | W | O | W |
| + |  | S | O |
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