

1. 41
2. 27
3. 20
4. 200
5. Let's ignore the fact that Christian moved some drinks, and just consider the part where the blue chest has 4 more than the red chest. Now we can use our sum and difference formulas to find out how many drinks are in each. The blue has  $\frac{sum+diff}{2} = \frac{76+4}{2} = \frac{80}{2} = 40$ , and red has  $\frac{sum-diff}{2} = \frac{76-4}{2} = \frac{72}{2} = 36$ . Now we will consider the fact that some drinks were moved. Now blue = 40, red = 36. But before, there were 10 more drinks in red and 10 less in blue. So to find out how many drinks each cooler had originally, we find blue =  $40 - 10 = 30$ , and red =  $36 + 10 = \span style="border: 1px solid black; padding: 2px;">46.$
6. Here's where most of you got this wrong. You didn't read the second sentence carefully: *If the console is \$300 MORE THAN THE TOTAL of the video games....* So this means that our sum is \$480 and our difference is \$300. So the console =  $\frac{sum+diff}{2} = \frac{480+300}{2} = \frac{780}{2} = \$390$ , and the video games =  $\frac{sum-diff}{2} = \frac{480-300}{2} = \frac{180}{2} = \$90$ . Now we know the total of 5 video games is \$90, so each video game costs  $\$90 \div 5 = \span style="border: 1px solid black; padding: 2px;">\$18.$
7. Most of you made the mistake of making \$30 the difference. However, that is not the difference. Consider this closely: Let's pretend I have \$6 and you have \$10. If you gave me \$2, we would both have \$8. But the difference between our money is NOT \$2! It is double that, or \$4. So using this logic, if we know that moving \$30 will make the amounts equal, we know the difference is twice \$30, or \$60. Annika has less money, so  $\frac{sum-diff}{2} = \frac{300-60}{2} = \frac{240}{2} = \span style="border: 1px solid black; padding: 2px;">\$120$
8. 37
9. N: \$50, R: \$47, H: \$41
10. Let's write the information in this problem in a more simple way:  
*The sum of two numbers is 200. Write  $SUM = 200$ .*  
*the sum is 4 times their difference. Write  $SUM = 4 \times DIFF$ .*  
 Since we know  $SUM = 200$  and  $SUM = 4 \times DIFF$ , then we know that  $200 = 4 \times DIFF$ . What must  $DIFF$  be then? 50, because  $50 \times 4 = 200$ . So now we know the sum is 200 and the difference is 50. So let's find the two numbers:  

$$X = \frac{sum+diff}{2} = \frac{200+50}{2} = \frac{250}{2} = 125.$$

$$Y = \frac{sum-diff}{2} = \frac{200-50}{2} = \frac{150}{2} = 75.$$
 The problem asks for the product, so we find  $X \times Y = 125 \times 75 = \span style="border: 1px solid black; padding: 2px;">9375$