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**Algebra****Basic problems****1. Solve each equation. Show work!**

1. $\frac{2}{3}h - 2 = 8$	2. $16 + \frac{d}{2} = 80$	3. $58 - \frac{4}{5}q = 50$
4. $29 = \frac{11}{3}f - 26$	5. $89 - \frac{7}{12}s = 68$	6. $36 = \frac{3}{4}a - 27$

**2. Solve each equation. Show work!**

1. $6x - 14x + 4x = 16$	2. $5x - 5 = 2x + 4$	3. $2x - 6 - 5 = 7$
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**Challenge problems***Solve all questions with algebra. Use the suggested "let" statements or write your own.*

1. The sum of two consecutive integers is 115. What are the number?

*Let the smaller number be  $x$ .*

2. 6.8 added to eleven times a number is  $67\frac{3}{10}$ . What is the number?

*Let the number be  $x$ .*

3. The tens digit of a number is one third of its unit's digit; the sum of these two digits is 8. What is the number?

*Let the unit's digit be  $x$ .*

4. The ones digit of a two-digit number is two more than three times the tens digit. If the digits are reversed, the new number is two less than three times the original number. Find the original number.

*Let the tens digit be  $x$ .*

5. There are  $x$  dimes and  $y$  nickels in bag A, and  $x$  nickels and  $y$  dimes in bag B. The total value of the coins is the same for both bags. The combined number of coins in the 2 bags cannot be

- (A) 30      (B) 40      (C) 60      (D) 80      (E) 100

Steps:

6. One day in a math class, Shelley asked the teacher: "Mr. Nelson, how old are you?" Mr. Nelson responded: "This year I am three times as old as my sister. However, six years ago, I was five times as old as she was". How old is the math teacher?

*Let the sister's age be  $x$ .*

7. Find a number such that, when it's multiplied by 2 and 4 is then subtracted from the result, this new result is divided by 4 and then 5 is added to the it, we obtain the same number as we started with.

*Let the original number be  $x$ .*

8. Jonas takes a two-digit number and subtracts the sum of the digits from it. Which of the following answers is a possible result of the calculation?

- (A) 42   (B) 49   (C) 55   (D) 63   (E) Not enough information

*Let the digits of the number be  $x$  and  $y$ , and its value  $10x + y$ .*

9. Bernard has twice as many pennies as Anne. Charles has three times as many pennies as Bernard. What is the number of pennies they have together?

- a) 44   b) 45   c) 46   d) 47   e) 48

*Let the number pennies Anne has be  $x$ .*

10. Bob and Nabil have some sheep and hens in a yard. Bob counts the heads and finds 18 while Nabil counts the legs and finds 44. How many sheep are there in this yard?

*Let the number of sheep be  $x$ .*