

Solving Basic Equations

Hope Chinese School Fall Week 1

August 19, 2017

Problems

1. Twenty-seven increased by twice a number is 39. What is the number?
2. A frisbee costs \$1 more than a pen. If they together cost \$1.10, how much does the pen cost?
3. 17 bowls of chilled cucumber soup and 1 bowl of minted melon soup cost \$42. 1 bowl of chilled cucumber soup and 17 bowls of minted melon soup cost \$48. How much do 2 bowls of chilled cucumber soup and 2 bowls of minted melon soup cost?
4. Given that $6x + y = 15$, the value of $3x$ can be written as $ay + b$ for some values a and b . What is the simplified value of $a + b$?
5. For what number A does the equation $3Ax - 24 = 5x - 9 + x$ have no solutions for x ?
6. A fraction, $\frac{a}{b}$, not necessarily in lowest terms is equivalent to $\frac{5}{9}$. When 5 is added to the denominator of $\frac{a}{b}$, the value of the new fraction becomes equivalent to $\frac{1}{3}$. What is $a + b$?
7. There are a lot of cookies in a cookie jar. 10 people come and start eating the cookies; the first person takes $\frac{1}{2}$ the cookies, the second person takes $\frac{1}{3}$ of the *remaining* cookies, the third person takes $\frac{1}{4}$ of the remaining cookies, and so on until each person has eaten some cookies. If there are N cookies remaining, how many cookies were originally in the cookie jar, in terms of N ?

(People might have taken a noninteger number of cookies.)

8. If

$$9001x + 9002y = 9003$$

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find x and y .

9. John's age is currently twice Jeremy's age, but three times Jeremy's age is 5 years more than John's age. In how many years will Jeremy's age be $\frac{16}{17}$ of John's age?
10. Find all integer values of x such that $\frac{3}{x}$ is greater than $\frac{1}{3}$ and less than $\frac{3}{4}$.

11. ★ The cost of five pencils and one pen is \$2.49, while the cost of one pencil and two pens is \$1.86. What is the cost of two pencils and one pen?

12. ★ Solve for x if:

$$(x - 1) + (x - 2) + (x - 3) + \cdots + (x - 17) = x.$$

13. ★ Find $A + B + C + D + E$ if

$$A + B + C + D = 17$$

$$A + B + C + E = 19$$

$$A + B + D + E = 20$$

$$A + C + D + E = 23$$

$$B + C + D + E = 25.$$