Hot Dog Problem

One day after diving, Cameron and some of the kids that he has met at the resort decide to eat some hotdogs on the beach. Cameron takes everyone's order and heads to the hot dog stand. He figures that he will get a tray. Each of the kids has given him a few dollars and Cameron thinks that he has enough money to get everything.
When he gets to the stand, he checks the prices. Cameron needs to buy 9 hotdogs. The hotdogs are $1.50 for a plain dog plus 1.00 for cheese and sauce. Everyone wants cheese and sauce, so Cameron needs to buy nine hotdogs with cheese and sauce. Given these numbers, how much will Cameron spend?

Cameron isn't sure. He takes a napkin and asks for a pen so that he can figure it all out. He has $25.00. Does he have enough?

Dist Property
$$9(1.50 + 1.00)$$
$$9(2.50)$$
$$\$22.50$$

Video Games

Say that the sales tax is 5%.

You decide to buy a video game for $50.00 and you want to know how much tax you'll pay.

So say that you needed to buy that new joystick because it works better with that new game than the old 4-button controller you have at home. That's $45.00. How much tax will you pay for that new joystick?

Then you decided you got bored with the CDs you have in your car, so you buy a new album, costing $17.00.

So how much would you be taxed for those 3 products? So, it's the video game, the joystick, and the CD.

What will the total cost be in the end?

$$.05(50 + 45 + 17)$$
$$.05(112) = \$5.60 \ (TAX)$$
$$112 + 5.60 = \$117.60 \ (TOTAL)$$

59. Three friends go bowling. The cost per game is $5.30. The cost to rent shoes is $2.50 per person. Their total cost is $55.20. How many games did they play?

$$3(5.30x + 2.50) = 55.20$$
$$15.90x + 7.50 = 55.20$$
$$15.90x = 47.7$$

$x = 3$ games

65. You have $85 in your bank account. Each week you plan to deposit $8 from your allowance and $15 from your paycheck.

Total $= 85 + (8 + 15)w$

(a) Write an equation to model the situation.

(b) How many weeks will it take you to save up $175?

$$175 = 85 + (8 + 15)w$$
$$175 = 85 + 23w$$
$$90 = 23w \quad w = 3.9$$

4 weeks

64. You are ordering a meal and have $15 to spend. The restaurant charges 6% sales tax. You plan to leave a 15% tip.

$$x + .06x + .15x = total$$

(a) Write an equation modeling the situation

(b) What is the maximum amount you can spend on the meal BEFORE tax and tip, so that you will have enough to cover EVERYTHING?

$$15 = x + .06x + .15x$$
$$\frac{15}{1.21} = \frac{1.21x}{1.21}$$

$12.40

65. A cook buys two identical bags of rice and uses some of the rice in each bag so that one bag is half full and the other is one-third full. The cook combines them into one bag, which then contains 3 1/3 cups of rice. How much rice was in a full bag?

$$\frac{1}{2}x + \frac{1}{3}x = 3\frac{1}{3} \left(\frac{10}{3}\right)$$
$$\frac{3}{6}x + \frac{2}{6}x = \frac{20}{6}$$

67. Write an equation that has infinite solutions.

Many answers

Make a change to that equation so it would have only one solution.

$$\frac{6}{5} \cdot \frac{5}{6}x = \frac{20}{6} \cdot \frac{6}{5}$$

Make a change to that equation so it would have no solutions.

$$\frac{120}{30} =$$

4 cups

Math in Focus

$$\frac{5(x + 2)}{3} - \frac{x - 1}{3} = 1$$

$$\frac{-x + 1}{6} - \frac{5 - 3x}{4} = \frac{1}{3}$$

$$\frac{5(x+2)}{3} - \frac{x-1}{3} = 1$$

$$\frac{3(5(x+2))}{3} - \frac{3(x-1)}{3} = 3(1)$$

$$5(x+2) - (x-1) = 3$$

$$5x + 10 - x + 1 = 3$$

$$4x + 11 = 3$$
$$ -11 \quad -11$$
$$\overline{}$$
$$4x = -8$$

$$\boxed{x = -2}$$

this sign distributes to each term in numerator

$$\ominus \quad \frac{x+1}{6} - \frac{(5-3x)}{4} = \frac{1}{3}$$

$$-12\left(\frac{x+1}{6}\right) - 12\left(\frac{5-3x}{4}\right) = 12\left(\frac{1}{3}\right)$$

Multiply by lowest common denominators to eliminate fractions

$$-2(x+1) - 3(5-3x) = 4$$

Divide

$$-2x - 2 - 15 + 9x = 4$$

Distribute number and its sign!

$$7x - 17 = 4$$
$$+17 \quad +17$$

Combine like terms

$$\frac{7x}{7} = \frac{21}{7}$$

Addition Property of Equality

$$\boxed{x = 3}$$

Division Property of Equality