



Solving Equations Crime Scene Investigation

The police have just been notified of a robbery in your area. The police have called upon you to help them uncover the details of the crime. Answer the questions below, remembering to show your working out. First to finish **with the correct working** wins a prize.

Who

These are the 5 suspects in this robbery. Each were shown the 4 equations below and asked to make 3 comments on them:

$$\begin{aligned}2x + 3 &= 23 \\4y - 15 &= 45 \\8h - 9 &= -25 \\7k + 8 &= 2k - 7\end{aligned}$$

All the statements made by the robber were incorrect whereas all the statements of the victim are correct. Identify the robber and the victim.

THE FARMER



x and y are both odd numbers
k
h is a positive number
y is the highest value variable

THE CHEF



x is a multiple of 5
y is a multiple of 3.
All variable equal a positive integer

THE ARTIST



K is impossible to solve as there is a k on both sides of the equal sign.
All but one of the variables equal a positive integer.
X is a multiple of 20.

THE BUILDER



h is a negative number.
Y is a multiple of 5.
K = 3

THE LAWYER



Half the variable equal a positive integer, the other half are negative.
X = 10
y is a factor of 30.



When

Follow the clues below to determine the exact date the robbery was committed.

Date	Solve $6x - 24 = 48$ and whatever x equals that was the date.
Month	Solve $24x - 4 = 188$ and whatever x equals, half it and that was the month it happened.
Year	The robbery took place in either 2015, 2016, or 2017. Add up the digits of the year. The murder took place in the year the sum of the digits is a multiple of 3.

Where

Solve the two equations and add up both values for x .

Then match the answer to the place where the robbery was committed.

$$3x - 4 = 17$$

$$5x - 9 = 3x + 3$$

15.....At the bowling alley



14.....At the restaurant



13..... At the salon



16..... At the museum



Why

Solve the equations then use your answers to decode the murders message.

E	A	B	O
1	2	3	4
T	L	H	S
5	6	7	8
P	Y	I	
9	10	11	

$15x = 75$	$-21x = -84$	$9x - 4 = 23$	$x - 21 = -20$	$7x + 4 = 18$
$12x - 6 = 30$	$2x - 18 = -6$	$-5x - 2 = -7$	$-9x + 4 = -41$	$-8x - 2 = -34$
$6x - 10 = -64$	$12x - 28 = -4$	$-2x - 10 = -30$	$3x - 21 = 0$	$-4x - 22 = -66$
$2x + 1 = 4x - 15$	$3x + 2 = 2x + 5$	$2x - 8 = 3x - 19$	$5x - 9 = 3x + 3$	$3x - 3 = 2x + 3$

Final Accusation

_____ murdered _____
In (where) _____ at (when) _____
Because (why) _____



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Answers

Who The painter stole the money from the builder.	When 12 th April 2016
Where At the salon.	Why When decoded the message reads To be able to pay his bill.

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