



The Silent Symphony

Grade 9 math · Two-step equations, Exponents, Square roots, Integers · Reading level grades 7-9

Detective: _____ Date: _____

The night of the grand gala has arrived, but the orchestra pit is in absolute chaos. One by one, the symphony's legendary double bass players have vanished right before the curtain rises. A mysterious maestro is behind the plot, leaving behind only strange musical cyphers and altered sheet music. You must step in as the lead detective, decode the acoustic evidence, and find which musician is secretly the saboteur before the final movement begins.

1. Solve each math problem. The answer is a number, and the letter beside it is what that number stands for.
2. In the clue boxes, write that letter in every box showing the same number, then read the secret clue.
3. Use each clue to cross suspects off the list. The one suspect left at the end is the culprit!

My answer: the rogue conductor is _____

Possible suspects

Cross off a row as each clue rules it out. The one left at the end is the culprit.

NAME	SIGNATURE PIECE	BACKUP INSTRUMENT	TUNING STYLE	HAIR COLOR	SENSORY DISTRACTION
Rufus Reid	Schubert Trout	electric bass	plucks with left thumb	silver gray hair	bright spotlight
Richard Davis	Stravinsky Rite	electric bass	plucks with right thumb	dark brown curls	cracking floorboard
John Patitucci	Schubert Trout	electric bass	plucks with right thumb	silver gray hair	screeching feedback
Victor Wooten	Beethoven Ninth	contrabassoon	plucks with right thumb	silver gray hair	bright spotlight
Ron Carter	Mahler First	contrabassoon	plucks with right thumb	dark brown curls	cracking floorboard
Buster Williams	Mozart Forty	electric bass	plucks with right thumb	dark brown curls	bright spotlight
Jimmy Blanton	Stravinsky Rite	contrabassoon	plucks with right thumb	dark brown curls	cracking floorboard
Charles Mingus	Stravinsky Rite	tubular bells	plucks with left thumb	dark brown curls	cracking floorboard
Edgar Meyer	Mahler First	tubular bells	plucks with right thumb	bright blonde hair	cracking floorboard
Ray Brown	Schubert Trout	electric bass	plucks with right thumb	bright blonde hair	screeching feedback
Serge Koussevitzky	Beethoven Ninth	harpsichord	plucks with right thumb	silver gray hair	bright spotlight
Christian McBride	Beethoven Ninth	contrabassoon	plucks with left thumb	silver gray hair	cracking floorboard
Gary Karr	Mahler First	contrabassoon	plucks with right thumb	silver gray hair	cracking floorboard
Domenico Dragonetti	Beethoven Ninth	orchestral harp	plucks with left thumb	silver gray hair	cracking floorboard
Renaud Garcia Fons	Stravinsky Rite	contrabassoon	plucks with right thumb	bright blonde hair	bright spotlight
Oscar Pettiford	Beethoven Ninth	contrabassoon	plucks with right thumb	dark brown curls	cracking floorboard
Scott LaFaro	Mahler First	harpsichord	plucks with right thumb	silver gray hair	screeching feedback
Stanley Clarke	Mozart Forty	harpsichord	plucks with right thumb	dark brown curls	cracking floorboard
Paul Chambers	Schubert Trout	tubular bells	plucks with left thumb	silver gray hair	screeching feedback
Ludwig Streicher	Beethoven Ninth	tubular bells	plucks with left thumb	dark brown curls	screeching feedback
Giovanni Bottesini	Mozart Forty	tubular bells	plucks with right thumb	silver gray hair	cracking floorboard

CLUE 1

Two-step equations

The manager finds a strange backstage order form for extra-thick bass strings. Solve for the missing variable in this two-step equation to discover which backup instrument was excluded.

Solve each problem, then write its letter in every clue box that shows the same number.

T									T								T
2	9	14	11	8	11	4	14	21	2	17	22	14	11	20	22	2	
				T													
4	12	16	19	2	9	14	9	16	3	4	11	15	21	9	22	3	17

$$6x + 12 = 24, x = \boxed{} \rightarrow \boxed{\text{T}}$$

$$4x + 1 = 61, x = \boxed{} \rightarrow \boxed{\text{I}}$$

$$4x + 11 = 99, x = \boxed{} \rightarrow \boxed{\text{O}}$$

$$4x + 9 = 45, x = \boxed{} \rightarrow \boxed{\text{H}}$$

$$5x + 5 = 45, x = \boxed{} \rightarrow \boxed{\text{U}}$$

$$3x + 12 = 45, x = \boxed{} \rightarrow \boxed{\text{S}}$$

$$6x + 10 = 112, x = \boxed{} \rightarrow \boxed{\text{D}}$$

$$3x + 8 = 65, x = \boxed{} \rightarrow \boxed{\text{Y}}$$

$$9x + 2 = 38, x = \boxed{} \rightarrow \boxed{\text{P}}$$

$$4x + 12 = 96, x = \boxed{} \rightarrow \boxed{\text{C}}$$

$$9x + 5 = 113, x = \boxed{} \rightarrow \boxed{\text{L}}$$

$$2x + 1 = 7, x = \boxed{} \rightarrow \boxed{\text{R}}$$

$$3x + 12 = 60, x = \boxed{} \rightarrow \boxed{\text{A}}$$

$$5x + 12 = 112, x = \boxed{} \rightarrow \boxed{\text{N}}$$

$$8x + 1 = 113, x = \boxed{} \rightarrow \boxed{\text{E}}$$

Scratch space:

CLUE 2

Exponents

The soundboard recorded an acoustic feedback loop that multiplied exponentially with each second. Calculate the final value of this exponent to reveal the suspect's tuning style.

Solve each problem, then write its letter in every clue box that shows the same number.

T															T
4	196	343	625	400	343	441	343	196	243	625	49	729	256	196	4
196	243	441	8	343	8	361	512	100	400	64	289	243	49	64	625

$2^2 = \square \rightarrow \text{T}$

$8^2 = \square \rightarrow \text{K}$

$2^8 = \square \rightarrow \text{G}$

$10^2 = \square \rightarrow \text{U}$

$5^4 = \square \rightarrow \text{S}$

$7^2 = \square \rightarrow \text{R}$

$14^2 = \square \rightarrow \text{H}$

$2^9 = \square \rightarrow \text{L}$

$21^2 = \square \rightarrow \text{N}$

$3^5 = \square \rightarrow \text{A}$

$17^2 = \square \rightarrow \text{M}$

$7^3 = \square \rightarrow \text{E}$

$2^3 = \square \rightarrow \text{D}$

$3^6 = \square \rightarrow \text{I}$

$20^2 = \square \rightarrow \text{C}$

$19^2 = \square \rightarrow \text{P}$

Scratch space:

CLUE 3

Square roots

The villain left a square pattern of empty music stands standing on the rehearsal stage. Taking the square root of the total area gives you the grid size and a major hair clue.

Solve each problem, then write its letter in every clue box that shows the same number.

A				A											A		
7	25	5	16	7	24	19	20	12	11	11	5	13	11	7	5	8	
														A			
21	18	11	10	21	18	9	16	3	23	12	12	7	23	22			

$\sqrt{49} = \square \rightarrow \boxed{\text{A}}$

$\sqrt{25} = \square \rightarrow \boxed{\text{R}}$

$\sqrt{169} = \square \rightarrow \boxed{\text{B}}$

$\sqrt{576} = \square \rightarrow \boxed{\text{K}}$

$\sqrt{64} = \square \rightarrow \boxed{\text{D}}$

$\sqrt{144} = \square \rightarrow \boxed{\text{L}}$

$\sqrt{625} = \square \rightarrow \boxed{\text{C}}$

$\sqrt{529} = \square \rightarrow \boxed{\text{I}}$

$\sqrt{100} = \square \rightarrow \boxed{\text{P}}$

$\sqrt{324} = \square \rightarrow \boxed{\text{T}}$

$\sqrt{256} = \square \rightarrow \boxed{\text{E}}$

$\sqrt{9} = \square \rightarrow \boxed{\text{V}}$

$\sqrt{484} = \square \rightarrow \boxed{\text{N}}$

$\sqrt{441} = \square \rightarrow \boxed{\text{S}}$

$\sqrt{121} = \square \rightarrow \boxed{\text{O}}$

$\sqrt{81} = \square \rightarrow \boxed{\text{H}}$

$\sqrt{400} = \square \rightarrow \boxed{\text{F}}$

$\sqrt{361} = \square \rightarrow \boxed{\text{Y}}$

Scratch space:

CLUE 4 Integers

The temperature in the underground instrument vault fluctuated wildly as the suspect fled. Calculate the total integer change to see which sensory distraction will stop them.

Solve each problem, then write its letter in every clue box that shows the same number.

A		A															A		
11	37	11	2	40	24	2	20	13	6	35	7	2	28	16	3	11	25	2	

	A											
13	11	31	28	29	18	39	24	29	3	25	6	37

$(-13) + 24 = \square \rightarrow \text{A}$	$11 - (-9) = \square \rightarrow \text{O}$	$(-7) + 9 = \square \rightarrow \text{R}$
$21 - (-3) = \square \rightarrow \text{B}$	$(-5) + 18 = \square \rightarrow \text{W}$	$(-15) + 46 = \square \rightarrow \text{S}$
$(-5) + 23 = \square \rightarrow \text{F}$	$(-1) + 8 = \square \rightarrow \text{U}$	$(-12) + 18 = \square \rightarrow \text{N}$
$(-5) + 21 = \square \rightarrow \text{Y}$	$(-12) + 37 = \square \rightarrow \text{I}$	$(-4) + 33 = \square \rightarrow \text{E}$
$(-7) + 10 = \square \rightarrow \text{H}$	$(-4) + 32 = \square \rightarrow \text{L}$	$(-6) + 46 = \square \rightarrow \text{K}$
$36 - (-1) = \square \rightarrow \text{D}$	$(-15) + 54 = \square \rightarrow \text{T}$	$(-13) + 48 = \square \rightarrow \text{C}$

Scratch space:

CLUE 5**Two-step equations - the last clue**

A mysterious ticket sales record shows a series of reserved seats in the balcony. Complete this final two-step calculation to pinpoint the true identity of our culprit.

First solve each problem. Then find each answer in the numbered list below and cross that sentence out. One sentence will be left - that is exactly what the villain did!

Step 1 - solve these:

$3x + 4 = 25, x = \boxed{}$

$8x + 2 = 50, x = \boxed{}$

$4x + 2 = 38, x = \boxed{}$

$3x + 11 = 20, x = \boxed{}$

$7x + 7 = 91, x = \boxed{}$

$4x + 8 = 16, x = \boxed{}$

$2x + 11 = 27, x = \boxed{}$

$5x + 7 = 27, x = \boxed{}$

$7x + 3 = 38, x = \boxed{}$

$2x + 5 = 7, x = \boxed{}$

$2x + 12 = 34, x = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain unbalances the riser under the brass section, then steals the brass mutes.
2. The villain locks the instrument vault from the outside, then hides the rosin stash.
3. The villain swaps the sheet music on the conductor stand, then tunes down the cellos.
4. The villain locks the instrument vault from the outside, then tunes down the cellos.
5. The villain loosens the pegs on the principal double bass, then muffles the timpani drums.
6. The villain sneaks backstage during the cello solo, then snips the extra bow hair.
7. The villain swaps the sheet music on the conductor stand, then snips the extra bow hair.
8. The villain loosens the pegs on the principal double bass, then steals the brass mutes.
9. The villain loosens the pegs on the principal double bass, then hides the rosin stash.
10. The villain loosens the pegs on the principal double bass, then snips the extra bow hair.
11. The villain swaps the sheet music on the conductor stand, then muffles the timpani drums.
12. The villain locks the instrument vault from the outside, then steals the brass mutes.

Answer Key

The Silent Symphony

Culprit: Jimmy Blanton

Stravinsky Rite · contrabassoon · plucks with right thumb · dark brown curls · cracking floorboard

Trail: Start 21 → Clue 1 18 → Clue 2 12 → Clue 3 7 → Clue 4 4 → Clue 5 1

Clue 1 (Two-step equations): "THE SUSPECT DOES NOT PLAY THE HARPSICHORD"

$6x + 12 = 24, x = 2$ (T) · $4x + 1 = 61, x = 15$ (I) · $4x + 11 = 99, x = 22$ (O) · $4x + 9 = 45, x = 9$ (H) · $5x + 5 = 45, x = 8$ (U) · $3x + 12 = 45, x = 11$ (S) · $6x + 10 = 112, x = 17$ (D) · $3x + 8 = 65, x = 19$ (Y) · $9x + 2 = 38, x = 4$ (P) · $4x + 12 = 96, x = 21$ (C) · $9x + 5 = 113, x = 12$ (L) · $2x + 1 = 7, x = 3$ (R) · $3x + 12 = 60, x = 16$ (A) · $5x + 12 = 112, x = 20$ (N) · $8x + 1 = 113, x = 14$ (E)

Clue 2 (Exponents): "THE SCENE HAS RIGHT HANDED PLUCK MARKS"

$2^2 = 4$ (T) · $8^2 = 64$ (K) · $2^8 = 256$ (G) · $10^2 = 100$ (U) · $5^4 = 625$ (S) · $7^2 = 49$ (R) · $14^2 = 196$ (H) · $2^9 = 512$ (L) · $21^2 = 441$ (N) · $3^5 = 243$ (A) · $17^2 = 289$ (M) · $7^3 = 343$ (E) · $2^3 = 8$ (D) · $3^6 = 729$ (I) · $20^2 = 400$ (C) · $19^2 = 361$ (P)

Clue 3 (Square roots): "A CREAKY FLOORBOARD STOPS THE VILLAIN"

$\sqrt{49} = 7$ (A) · $\sqrt{25} = 5$ (R) · $\sqrt{169} = 13$ (B) · $\sqrt{576} = 24$ (K) · $\sqrt{64} = 8$ (D) · $\sqrt{144} = 12$ (L) · $\sqrt{625} = 25$ (C) · $\sqrt{529} = 23$ (I) · $\sqrt{100} = 10$ (P) · $\sqrt{324} = 18$ (T) · $\sqrt{256} = 16$ (E) · $\sqrt{9} = 3$ (V) · $\sqrt{484} = 22$ (N) · $\sqrt{441} = 21$ (S) · $\sqrt{121} = 11$ (O) · $\sqrt{81} = 9$ (H) · $\sqrt{400} = 20$ (F) · $\sqrt{361} = 19$ (Y)

Clue 4 (Integers): "A DARK BROWN CURLY HAIR WAS LEFT BEHIND"

$(-13) + 24 = 11$ (A) · $11 - (-9) = 20$ (O) · $(-7) + 9 = 2$ (R) · $21 - (-3) = 24$ (B) · $(-5) + 18 = 13$ (W) · $(-15) + 46 = 31$ (S) · $(-5) + 23 = 18$ (F) · $(-1) + 8 = 7$ (U) · $(-12) + 18 = 6$ (N) · $(-5) + 21 = 16$ (Y) · $(-12) + 37 = 25$ (I) · $(-4) + 33 = 29$ (E) · $(-7) + 10 = 3$ (H) · $(-4) + 32 = 28$ (L) · $(-6) + 46 = 40$ (K) · $36 - (-1) = 37$ (D) · $(-15) + 54 = 39$ (T) · $(-13) + 48 = 35$ (C)

Clue 5 (Two-step equations): surviving statement is box 10 → Jimmy Blanton

$3x + 4 = 25, x = 7$ · $8x + 2 = 50, x = 6$ · $4x + 2 = 38, x = 9$ · $3x + 11 = 20, x = 3$ · $7x + 7 = 91, x = 12$ · $4x + 8 = 16, x = 2$ · $2x + 11 = 27, x = 8$ · $5x + 7 = 27, x = 4$ · $7x + 3 = 38, x = 5$ · $2x + 5 = 7, x = 1$ · $2x + 12 = 34, x = 11$