



The Trench Mystery

Grade 5 math · Addition, Subtraction, Multiplication, Fractions of a number · Reading level grades 5-6

Detective: _____ **Date:** _____

A vital brass signal whistle has vanished from the Sector Nine command dugout. A sneaky spy, known as the Phantom Courier, swiped it right under the watch of our scouts. It is up to you to wade through the mud, crack the clues, and find the culprit before night falls.

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 Phantom Courier is _____

Possible suspects

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

NAME	SIGNAL DUTY	SPECIAL TOOL	MUD SPLATTER	HELMET STYLE	FAVORITE RATION
Edward	Runner Patrol	Rubber Mud Boots	Splattered on Right Side	Woolen Watch Cap	Canned Peaches
Charles	Pigeon Carrier	Pocket Watch	Splattered on Left Side	Woolen Watch Cap	Canned Peaches
Percy	Pigeon Carrier	Pocket Watch	Splattered on Right Side	Officer Peak Cap	Peppermint Drops
Albert	Morse Code	Steel Trench Shovel	Splattered on Left Side	Flat Steel Helmet	Canned Peaches
Douglas	Pigeon Carrier	Brass Compass	Splattered on Right Side	Officer Peak Cap	Peppermint Drops
Sidney	Wire Repair	Brass Compass	Splattered on Left Side	Woolen Watch Cap	Peppermint Drops
George	Pigeon Carrier	Steel Trench Shovel	Splattered on Left Side	Flat Steel Helmet	Canned Peaches
Leonard	Periscope Watch	Steel Trench Shovel	Splattered on Left Side	Woolen Watch Cap	Canned Peaches
Herbert	Runner Patrol	Brass Compass	Splattered on Left Side	Woolen Watch Cap	Canned Peaches
Reginald	Periscope Watch	Steel Trench Shovel	Splattered on Left Side	Flat Steel Helmet	Hardtack Biscuits
Victor	Morse Code	Pocket Watch	Splattered on Right Side	Officer Peak Cap	Canned Peaches
Frederick	Runner Patrol	Rubber Mud Boots	Splattered on Left Side	Woolen Watch Cap	Canned Peaches
Stanley	Periscope Watch	Rubber Mud Boots	Splattered on Right Side	Woolen Watch Cap	Canned Peaches
William	Pigeon Carrier	Leather Satchel	Splattered on Right Side	Flat Steel Helmet	Hardtack Biscuits
Ernest	Pigeon Carrier	Rubber Mud Boots	Splattered on Left Side	Woolen Watch Cap	Canned Peaches
Arthur	Runner Patrol	Steel Trench Shovel	Splattered on Right Side	Flat Steel Helmet	Hardtack Biscuits
Thomas	Periscope Watch	Brass Compass	Splattered on Right Side	Officer Peak Cap	Hardtack Biscuits
Bernard	Morse Code	Brass Compass	Splattered on Left Side	Flat Steel Helmet	Canned Peaches
Gordon	Pigeon Carrier	Rubber Mud Boots	Splattered on Left Side	Flat Steel Helmet	Canned Peaches
Alfred	Runner Patrol	Steel Trench Shovel	Splattered on Left Side	Woolen Watch Cap	Hardtack Biscuits
Walter	Periscope Watch	Brass Compass	Splattered on Left Side	Officer Peak Cap	Peppermint Drops

CLUE 1

Addition

We count the total wooden planks recovered from the mud to rebuild our pathway and find a dropped note.

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

T																T
8672	7589	8202	3793	3040	8424	4848	2300	8202	4848	3057	3040	8202	4103	9152	3040	8672

										T			T			
3793	8451	4848	4848	7449	8451	6386	3040	3793	4881	8202	8672	6047	8451	8672	3793	7589

$3451 + 5221 = \square \rightarrow \text{**T**}$

$2969 + 5455 = \square \rightarrow \text{**U**}$

$2442 + 3605 = \square \rightarrow \text{**W**}$

$5312 + 2890 = \square \rightarrow \text{**E**}$

$1137 + 1163 = \square \rightarrow \text{**I**}$

$4259 + 2127 = \square \rightarrow \text{**P**}$

$2004 + 1036 = \square \rightarrow \text{**O**}$

$4326 + 4826 = \square \rightarrow \text{**N**}$

$3330 + 1551 = \square \rightarrow \text{**K**}$

$1947 + 1110 = \square \rightarrow \text{**D**}$

$3299 + 1549 = \square \rightarrow \text{**R**}$

$2094 + 1699 = \square \rightarrow \text{**C**}$

$2366 + 5083 = \square \rightarrow \text{**Y**}$

$3174 + 4415 = \square \rightarrow \text{**H**}$

$2836 + 1267 = \square \rightarrow \text{**S**}$

$4874 + 3577 = \square \rightarrow \text{**A**}$

Scratch space:

CLUE 2

Subtraction

By measuring the drop in rainwater levels inside the main trench, we calculate how much mud has been cleared.

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

T 4451	4067	8251	6010	7230	8079	6338	T 4451	6010	8337	4376	2120	6338	2838	8079	4754	T 4451	4067	8251
2511	8251	7967	T 4451	6010	2908	2838	8251											

$6205 - 1754 = \square \rightarrow \boxed{\text{T}}$

$7146 - 3079 = \square \rightarrow \boxed{\text{H}}$

$12856 - 4777 = \square \rightarrow \boxed{\text{O}}$

$8801 - 464 = \square \rightarrow \boxed{\text{A}}$

$8592 - 625 = \square \rightarrow \boxed{\text{F}}$

$10536 - 2285 = \square \rightarrow \boxed{\text{E}}$

$8355 - 3979 = \square \rightarrow \boxed{\text{W}}$

$2931 - 811 = \square \rightarrow \boxed{\text{M}}$

$8733 - 2395 = \square \rightarrow \boxed{\text{U}}$

$6362 - 352 = \square \rightarrow \boxed{\text{S}}$

$6687 - 4176 = \square \rightarrow \boxed{\text{L}}$

$5801 - 1047 = \square \rightarrow \boxed{\text{N}}$

$11260 - 4030 = \square \rightarrow \boxed{\text{C}}$

$5916 - 3008 = \square \rightarrow \boxed{\text{I}}$

$6870 - 4032 = \square \rightarrow \boxed{\text{D}}$

Scratch space:

CLUE 3
Multiplication facts (1-12)

We count the stacks of dry wool socks, arranged in perfect rows, to see what the thief brushed past.

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

A													A					
132	15	48	49	54	6	2	6	27	15	10	88	54	48	132	44	1	48	32

	A											
144	132	32	96	27	32	44	10	11	48	72	48	96

$12 \times 11 = \square \rightarrow \text{A}$

$8 \times 4 = \square \rightarrow \text{S}$

$2 \times 3 = \square \rightarrow \text{T}$

$6 \times 9 = \square \rightarrow \text{P}$

$12 \times 12 = \square \rightarrow \text{W}$

$1 \times 11 = \square \rightarrow \text{V}$

$3 \times 5 = \square \rightarrow \text{N}$

$8 \times 9 = \square \rightarrow \text{R}$

$2 \times 1 = \square \rightarrow \text{Y}$

$12 \times 4 = \square \rightarrow \text{E}$

$11 \times 4 = \square \rightarrow \text{C}$

$7 \times 7 = \square \rightarrow \text{M}$

$12 \times 8 = \square \rightarrow \text{D}$

$11 \times 8 = \square \rightarrow \text{F}$

$9 \times 3 = \square \rightarrow \text{I}$

$5 \times 2 = \square \rightarrow \text{O}$

$1 \times 1 = \square \rightarrow \text{H}$

Scratch space:

Fractions of a number

Only a fraction of the carrier pigeons returned safely with messages about the thief's escape route.

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

Diagram illustrating the arrangement of boxes and their associated numbers:

Top row (left to right):

- Box 1: **R** (orange)
- Box 2: (empty)
- Box 3: (empty)
- Box 4: (empty)
- Box 5: (empty)
- Box 6: (empty)
- Box 7: (empty)
- Box 8: (empty)
- Box 9: (empty)
- Box 10: (empty)
- Box 11: (empty)
- Box 12: **R** (orange)
- Box 13: (empty)
- Box 14: (empty)
- Box 15: (empty)
- Box 16: (empty)
- Box 17: **R** (orange)
- Box 18: (empty)

Bottom row (left to right):

- Box 1: (empty)
- Box 2: (empty)
- Box 3: (empty)
- Box 4: (empty)
- Box 5: (empty)
- Box 6: (empty)
- Box 7: (empty)
- Box 8: (empty)
- Box 9: (empty)
- Box 10: (empty)
- Box 11: (empty)
- Box 12: **R** (orange)
- Box 13: (empty)

Numbers below the boxes (left to right):

Top row: 28, 36, 24, 26, 35, 35, 23, 39, 40, 6, 36, 28, 7, 26, 36, 28, 36

Bottom row: 7, 4, 38, 12, 12, 36, 24, 35, 4, 26, 40, 28, 36

$7/10$ of 40 = $\rightarrow$ **R**

$2/4$ of 14 = $\rightarrow$ **S**

$2/8$ of 144 = $\rightarrow$ **E**

$$1/5 \text{ of } 200 = \boxed{} \rightarrow \boxed{\text{I}}$$

$\frac{1}{3}$ of 12 = $\rightarrow$ **N**

$\frac{3}{4}$ of 32 = $\rightarrow$ **D**

$$5/10 \text{ of } 46 = \boxed{} \rightarrow \boxed{\text{L}}$$

2/6 of 114 = → **A**

$\frac{1}{5}$ of 175 = $\rightarrow$ **0**

$2/8$ of 48 = $\rightarrow$ **G**

$2/4$ of $78 = \boxed{} \rightarrow \boxed{\text{F}}$

$3/10$ of 20 = $\rightarrow$ **B**

$$2/5 \text{ of } 65 = \boxed{} \rightarrow \boxed{\text{W}}$$

Scratch space:

CLUE 5**Fractions of a number - the last clue**

Our scouts examined a fraction of the boots left in the supply tent to track down the size of the suspect.

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:

$1/3 \text{ of } 6 = \boxed{}$

$9/10 \text{ of } 10 = \boxed{}$

$2/10 \text{ of } 55 = \boxed{}$

$5/10 \text{ of } 12 = \boxed{}$

$2/10 \text{ of } 50 = \boxed{}$

$3/6 \text{ of } 10 = \boxed{}$

$2/8 \text{ of } 32 = \boxed{}$

$3/10 \text{ of } 40 = \boxed{}$

$3/6 \text{ of } 14 = \boxed{}$

$3/6 \text{ of } 2 = \boxed{}$

$5/10 \text{ of } 8 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain climbed the wooden ladder, then headed toward the camp.
2. The villain crept through the dugout, then slipped away in the rain.
3. The villain sneaked past the sentry, then slipped away in the rain.
4. The villain climbed the wooden ladder, then slipped away in the rain.
5. The villain crept through the dugout, then escaped into the mist.
6. The villain slipped through the wire, then vanished near the outpost.
7. The villain splashed down the trench, then scrambled into the fog.
8. The villain splashed down the trench, then headed toward the camp.
9. The villain climbed the wooden ladder, then vanished near the outpost.
10. The villain sneaked past the sentry, then scrambled into the fog.
11. The villain crept through the dugout, then scrambled into the fog.
12. The villain sneaked past the sentry, then headed toward the camp.

Answer Key

The Trench Mystery

Culprit: Ernest

Pigeon Carrier · Rubber Mud Boots · Splattered on Left Side · Woolen Watch Cap · Canned Peaches

Trail: Start 21 → Clue 1 18 → Clue 2 12 → Clue 3 8 → Clue 4 4 → Clue 5 1

Clue 1 (Addition): "THE COURIER DOES NOT CARRY A POCKET WATCH"

$3451 + 5221 = 8672$ (T) · $2969 + 5455 = 8424$ (U) · $2442 + 3605 = 6047$ (W) · $5312 + 2890 = 8202$ (E) · $1137 + 1163 = 2300$ (I) · $4259 + 2127 = 6386$ (P) · $2004 + 1036 = 3040$ (O) · $4326 + 4826 = 9152$ (N) · $3330 + 1551 = 4881$ (K) · $1947 + 1110 = 3057$ (D) · $3299 + 1549 = 4848$ (R) · $2094 + 1699 = 3793$ (C) · $2366 + 5083 = 7449$ (Y) · $3174 + 4415 = 7589$ (H) · $2836 + 1267 = 4103$ (S) · $4874 + 3577 = 8451$ (A)

Clue 2 (Subtraction): "THE SCOUT SAW MUD ON THE LEFT SIDE"

$6205 - 1754 = 4451$ (T) · $7146 - 3079 = 4067$ (H) · $12856 - 4777 = 8079$ (O) · $8801 - 464 = 8337$ (A) · $8592 - 625 = 7967$ (F) · $10536 - 2285 = 8251$ (E) · $8355 - 3979 = 4376$ (W) · $2931 - 811 = 2120$ (M) · $8733 - 2395 = 6338$ (U) · $6362 - 352 = 6010$ (S) · $6687 - 4176 = 2511$ (L) · $5801 - 1047 = 4754$ (N) · $11260 - 4030 = 7230$ (C) · $5916 - 3008 = 2908$ (I) · $6870 - 4032 = 2838$ (D)

Clue 3 (Multiplication facts (1-12)): "AN EMPTY TIN OF PEACHES WAS DISCOVERED"

$12 \times 11 = 132$ (A) · $8 \times 4 = 32$ (S) · $2 \times 3 = 6$ (T) · $6 \times 9 = 54$ (P) · $12 \times 12 = 144$ (W) · $1 \times 11 = 11$ (V) · $3 \times 5 = 15$ (N) · $8 \times 9 = 72$ (R) · $2 \times 1 = 2$ (Y) · $12 \times 4 = 48$ (E) · $11 \times 4 = 44$ (C) · $7 \times 7 = 49$ (M) · $12 \times 8 = 96$ (D) · $11 \times 8 = 88$ (F) · $9 \times 3 = 27$ (I) · $5 \times 2 = 10$ (O) · $1 \times 1 = 1$ (H)

Clue 4 (Fractions of a number): "RED WOOL FIBERS WERE SNAGGED ON WIRE"

$7/10$ of 40 = 28 (R) · $2/4$ of 14 = 7 (S) · $2/8$ of 144 = 36 (E) · $1/5$ of 200 = 40 (I) · $1/3$ of 12 = 4 (N) · $3/4$ of 32 = 24 (D) · $5/10$ of 46 = 23 (L) · $2/6$ of 114 = 38 (A) · $1/5$ of 175 = 35 (O) · $2/8$ of 48 = 12 (G) · $2/4$ of 78 = 39 (F) · $3/10$ of 20 = 6 (B) · $2/5$ of 65 = 26 (W)

Clue 5 (Fractions of a number): surviving statement is box 3 → Ernest

$1/3$ of 6 = 2 · $9/10$ of 10 = 9 · $2/10$ of 55 = 11 · $5/10$ of 12 = 6 · $2/10$ of 50 = 10 · $3/6$ of 10 = 5 · $2/8$ of 32 = 8 · $3/10$ of 40 = 12 · $3/6$ of 14 = 7 · $3/6$ of 2 = 1 · $5/10$ of 8 = 4