



NSPCC

SUMS OF ANARCHY

Number Day 2024

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COMMS
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CHIEF INSPECTOR
RE: Suspect Elimination
To: SUMS Squad



Alright detectives, gather round. We've had a call from Polly Gonn, Mayor of Arithmetown, reporting the theft of the Golden Numeral trophy from the Arithmetown Hall. And with only a day to go until the town's annual Number Day Competition. We've got to move fast!

The key witnesses have already been interviewed and four suspects have been identified. I need you to track the movements of these suspects and see if anyone can be eliminated.

We've got the data from the local surveillance company, Geome-track but of course, it's encrypted. This is Arithmetown after all! I trust it won't be a problem for our greatest mathematical minds. Report back when you know more.

Chief Inspector.



S.U.M.S.

● PUZZLE ONE ●

THINGS YOU'LL NEED

SUSPECT
LIST

ARITHMETOWN
MAP

GEOMETRACK
DATA

THE MISSION

Each team will be tracking the movements of one suspect. If you're working in fewer teams, you'll need to track all of the suspects.

The Geometrack Data shows the movements of each suspect on the evening of the theft but two of the numbers are missing. Use the Encryption Key and spot the pattern in each sequence to uncover the missing number.

Once you've found the missing numbers, grab the map and make a cross to mark the first location of your suspect on the map. Now you can use the completed movement data to mark out the movements of your suspect.

When the movements of all four suspects have been marked on the map, you may notice that some of them never went to the Arithmetown Hall. Now you'll be able to eliminate at least one suspect!

SUSPECTS

DES SIMMEL

Des has been the runner up in the Number Day competition for the last three years. Perhaps he thought the only way he'd ever get his hands on that trophy was to steal it...



MILLIE MEETER

Ms Meeter is a dealer of precious metals and stones. Rumour has it that she's been left penniless in a costly lawsuit. Would she be interested in the valuable golden trophy?



SOL LUCIAN

Lucian Inc. invests in every event in Arithmetown but the company has been left out of this year's Number Day celebrations. How far would CEO Sol Lucian go to settle the score?



TESSA LATE

The mayor of rival town Numbridge has never been able to put on an event to match the success of Arithmetown's Number Day. Would she stoop to sabotage?



GeOme_TrAck_Suspect_1



DES_SIMMEL

FIRST LOCATED AT: J4

LOCATION: ARITHMETOWN

DATE: 01/02/2024

TIME: 09:00 - 23:00

MOVEMENTS: 2 BLOCKS EAST, 4 BLOCKS SOUTH, X BLOCKS WEST, 2 BLOCKS NORTH, 2 BLOCKS WEST, Y BLOCKS SOUTH

Encryption_Keys

1, X, 9, 27, 81

1, 3, Y, 7, 9

GeOme_TrAck_Suspect_2



SOL_LUCIAN

FIRST LOCATED AT: K12

LOCATION: ARITHMETOWN

DATE: 01/02/2024

TIME: 09:00 - 23:00

MOVEMENTS: 4 BLOCKS EAST, P BLOCKS NORTH, 5 BLOCKS WEST, Q BLOCKS SOUTH, 3 BLOCKS WEST

Encryption_Keys

1, 3, P, 10, 15

Q, 9, 13, 17, 21

GeOme_TrAck_Suspect_3



TESSA_LATE

FIRST LOCATED AT: D20

LOCATION: ARITHMETOWN

DATE: 01/02/2024

TIME: 09:00 - 23:00

MOVEMENTS: **V** BLOCKS NORTH, 1 BLOCK EAST, 2 BLOCKS NORTH, **W** BLOCKS EAST, 5 BLOCKS NORTH, 7 BLOCKS EAST

Encryption_Keys

1, **V**, 9, 16, 25

1, 2, 4, **W**, 16

GeOme_TrAck_Suspect_4



MILLIE_METER

FIRST LOCATED AT: Q9

LOCATION: ARITHMETOWN

DATE: 01/02/2024

TIME: 09:00 - 23:00

MOVEMENTS: 2 BLOCKS SOUTH, 5 BLOCKS WEST, 5 BLOCKS SOUTH, **G** BLOCKS WEST, 5 BLOCKS NORTH, **H** BLOCKS WEST, 2 BLOCKS NORTH

Encryption_Keys

15, 12, 9, **G**, 3

0, **H**, 4, 6, 8

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COMMS
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CHIEF INSPECTOR
RE: Suspect Elimination
To: SUMS Squad



Squad,

Excellent work on eliminating a suspect, this makes our job far easier! I've just got word from Polly Gonn that the trophy cabinet at the Arithmetown Hall can only be accessed via Security Door 3 and the security guard who keeps watch over that door, Ray Dios, keeps a visitor log. Apparently he uses his own code (looks like he has a sweet tooth!) but he's not in today. I told her it'd be no match for the SUMS department. Oh, he also said that when he walked the corridor at 21:10, the trophy was still there but by 21:20 it was gone. Looks like we have our crime window! Take a look at the log and let me know what you find.

Keep up the great work!
C.I.

**S.U.M.S**

● PUZZLE TWO ●

THINGS YOU'LL NEED

VISITOR LOG

RAY'S CODE

THE MISSION

Each team will be uncovering the identity of two visitors. If you're working in fewer teams, you'll need to uncover all of the visitor identities.

The sweets in Ray's Code stand for numbers. Work out which numbers make all the sums correct to reveal the value of each sweet.

Once you have the correct values, enter them into the 'Value' column on the Visitor Log. Now you can use Ray's cheat sheet to work out which visitor belongs to which visitor ID.

Next, use the 'Time In' and 'Duration' columns to work out the time each visitor left. You might find that some of our remaining suspects weren't there during the crime window. Now you'll be able to eliminate at least one suspect!

VISITOR LOG

01/02/2024 - EVENING SHIFT

Not much to report tonight. Plenty of time to work on my new code. Made myself a cheat sheet, just in case I forget who's who!

Julie: Even Square < 10
Bob: Sides of a pentagon
Millie: Even Square > 10
Roxy: Fourth prime
Sol: Even multiple of 3
Lou: First odd prime
Des: Odd Square
Sam: Vertices of a cube

VISITOR ID	VALUE	NAME	TIME IN	DURATION	TIME OUT
			19:25	90M	
			20:15	45M	
			20:20	32M	
			20:25	50M	
			20:39	30M	
			20:44	35M	
			20:58	14M	
			21:01	6M	

• RAY'S CODE: A •

Work out which numbers make both sums correct to reveal the value of each sweet!

A

$$\text{Donut} + \text{Donut} = 8$$

$$\text{Donut} \times \text{Ice Cream} = 36$$

$$\text{Donut} = \square$$

$$\text{Ice Cream} = \square$$

RAY'S CODE: B

Work out which numbers make both sums correct to reveal the value of each sweet!

B

 $+$  $= 24$

 $-$  $= 8$

 $=$

 $=$

RAY'S CODE: C

Work out which numbers make both sums correct to reveal the value of each sweet!

C

$$\text{Sweet} + \text{Sweet} + \text{Sweet} = 15$$

$$\text{Sweet} = \square$$

$$\text{Cupcake} - \text{Sweet} = 7$$

$$\text{Cupcake} = \square$$

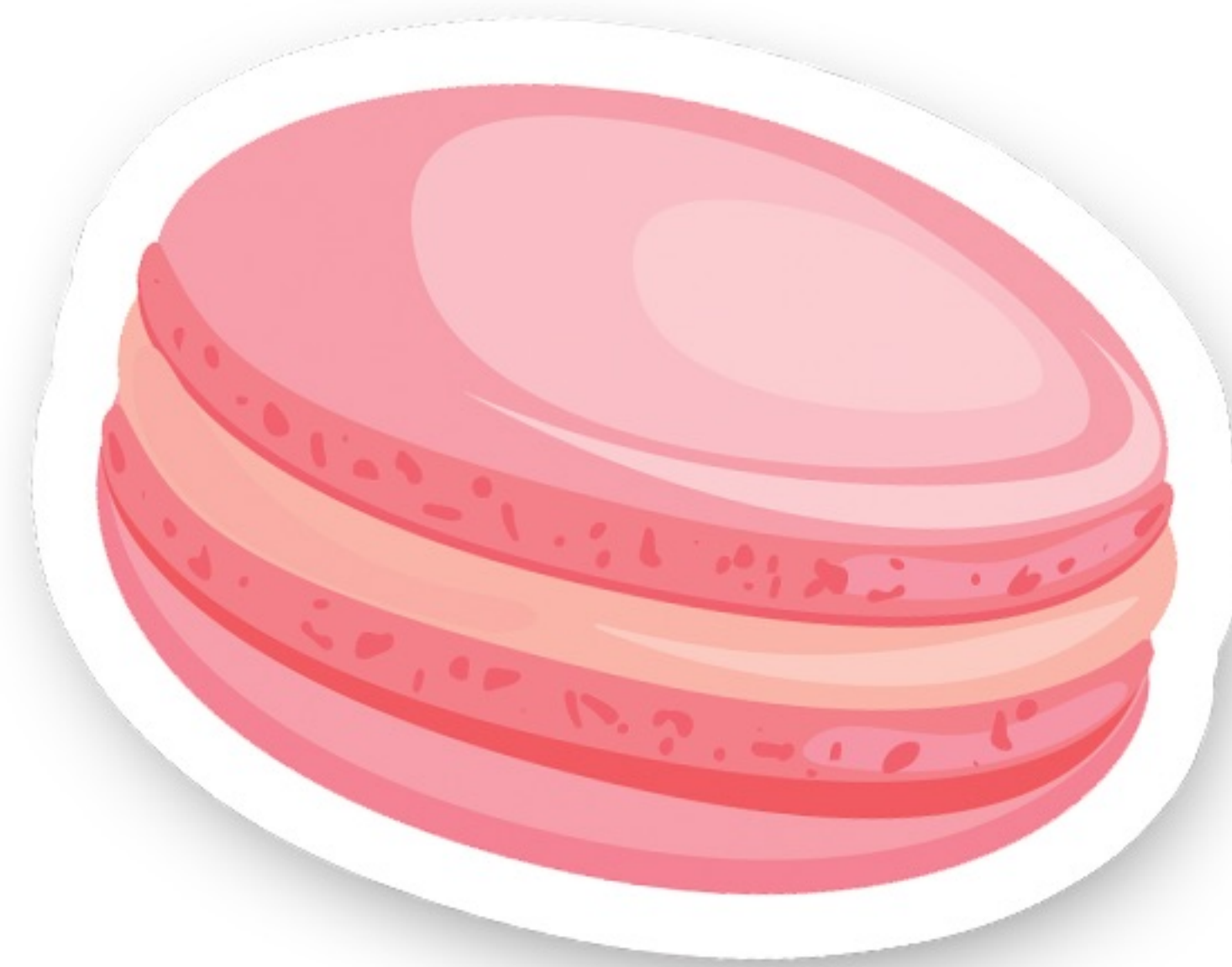
• RAY'S CODE: D •

Work out which numbers make both sums correct to reveal the value of each sweet!

D



+



=

10



-



=

4



=



=

COMMS
3

CHIEF INSPECTOR
RE: Another Suspect Down!!
To: SUMS Squad



Squad,

You're on fire today! Another suspect bites the dust. Or walks free, I guess. We just got the forensics report back and they found a torn bit of receipt inside the trophy cabinet for a purchase made in Arithmetown yesterday! (I've attached a copy).

Polly Gonn confirmed that she's the only one with the keys to the trophy cabinet and she didn't open it at all. That means whoever made the purchase stole the trophy! The good news is that we've already mapped our suspects' movements for the day. The weird news is that all company IDs are encrypted. Classic Arithmetown. I'll leave it with you. The next time we speak, you'll be telling me who to put the cuffs on.

C.I.

Date of Purchase: 01/02/2024

Arithmetown Compl.D:



S.U.M.S

● PUZZLE THREE ●

THINGS YOU'LL NEED

CLOSE UP OF ID

ARITHMETOWN
COMPANY ID

ARITHMETOWN
MAP

THE MISSION

Each team will decrypt one part of the ID. If you're working in fewer teams, you'll need to decrypt all four parts.

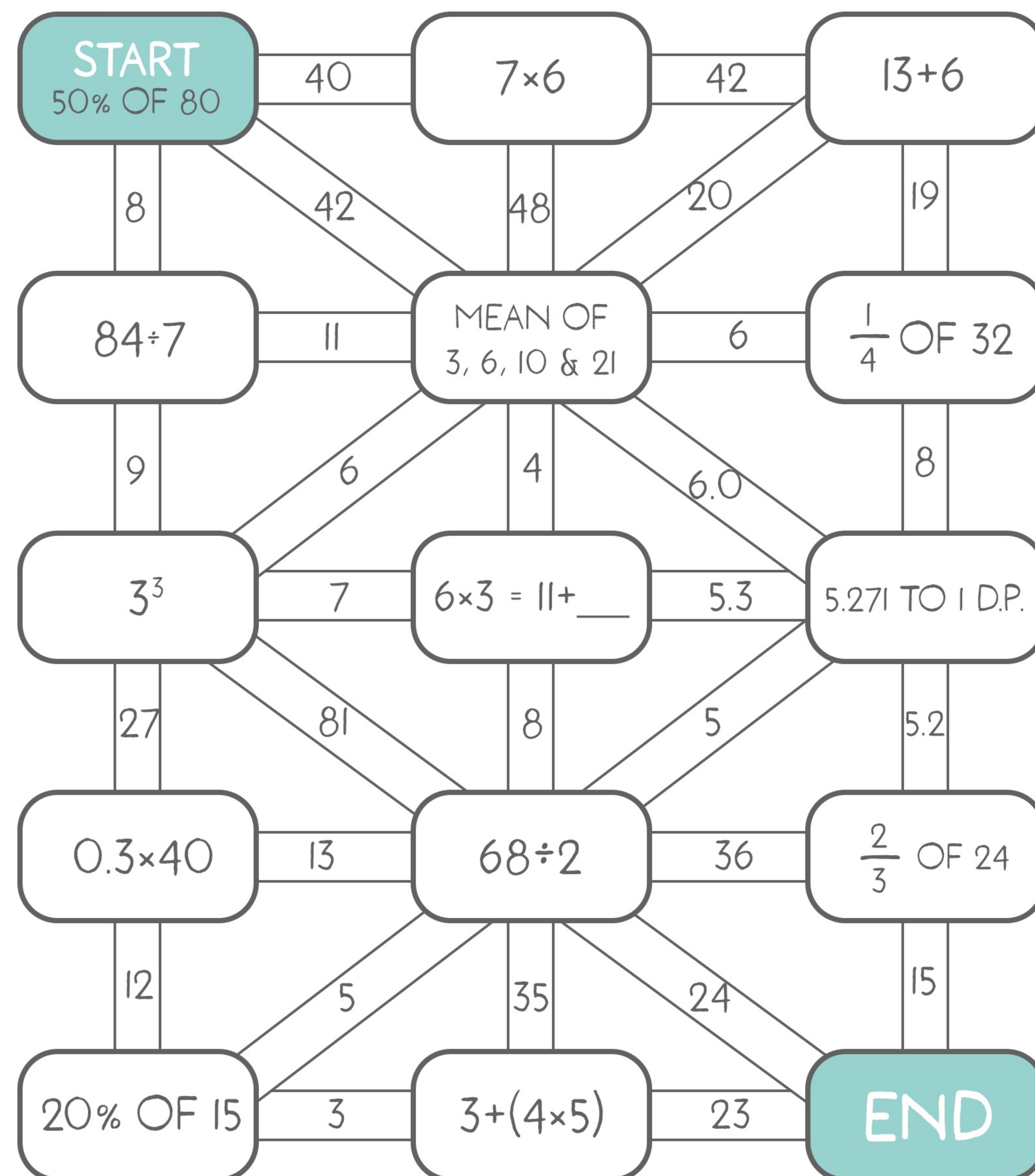
Locate the 'Start' square, answer the question and shade the route with the correct answer. Keep going until you reach the 'End' square. If a question doesn't seem to have a correct answer, something has gone wrong. Go back a step and check your answer.

When you've reached the end, you should notice that the path you've shaded resembles a number. Once you have all four numbers, check the Arithmetown Company ID List to see which company it refers to.

Now you know where the purchase was made. Check the movements that you marked on the Arithmetown map. The suspect who visited the company you identified is the thief. You've cracked the case!

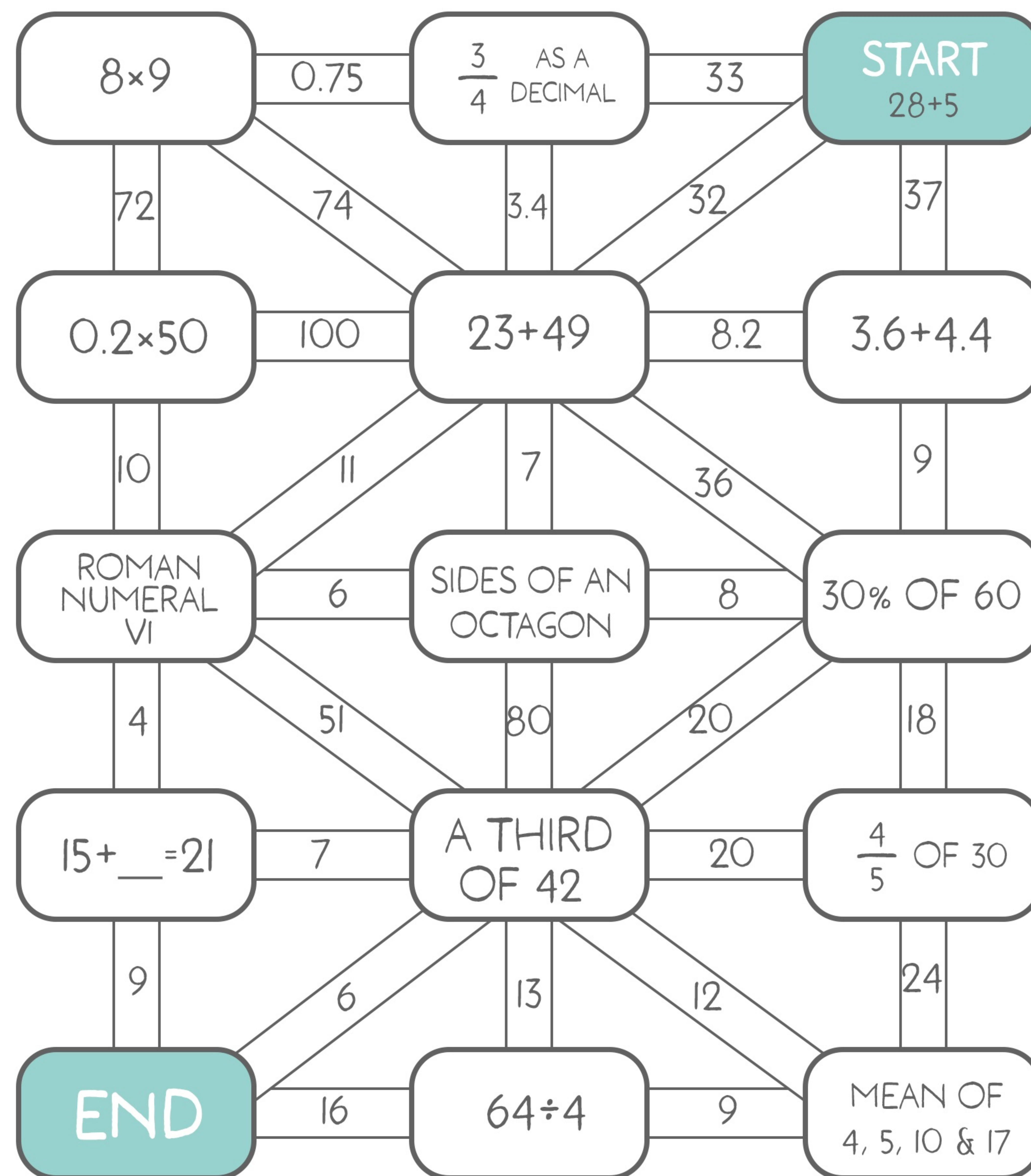
• ENCRYPTION I.D. • ONE

ANSWER THE QUESTIONS CORRECTLY, SHADING AS YOU GO. IF A QUESTION DOESN'T SEEM TO HAVE THE RIGHT ANSWER, SOMETHING'S GONE WRONG. GO BACK A STEP AND CHECK YOUR ANSWER.



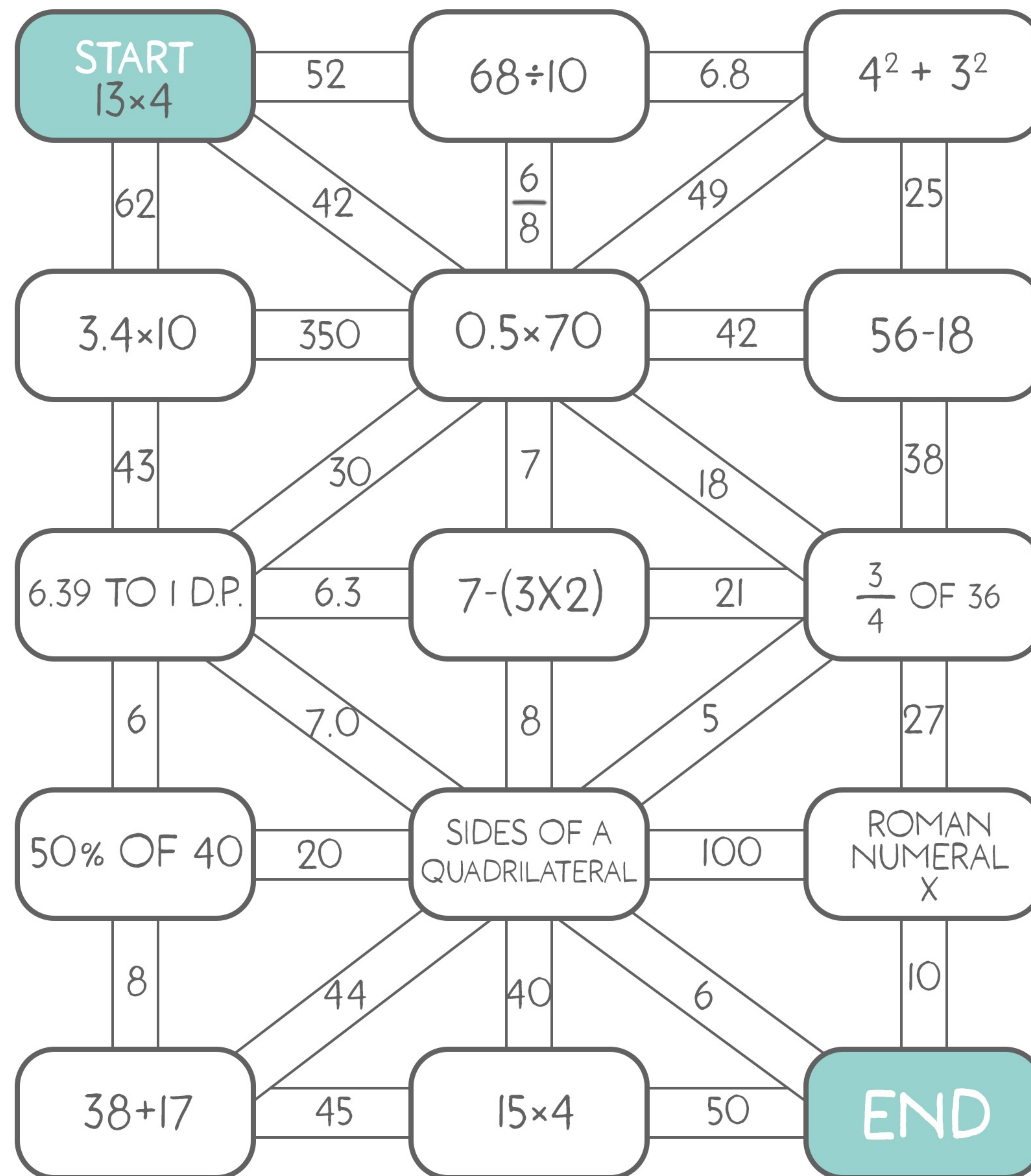
• ENCRYPTION I.D. • TWO

ANSWER THE QUESTIONS CORRECTLY, SHADING AS YOU GO. IF A QUESTION DOESN'T SEEM TO HAVE THE RIGHT ANSWER, SOMETHING'S GONE WRONG. GO BACK A STEP AND CHECK YOUR ANSWER.



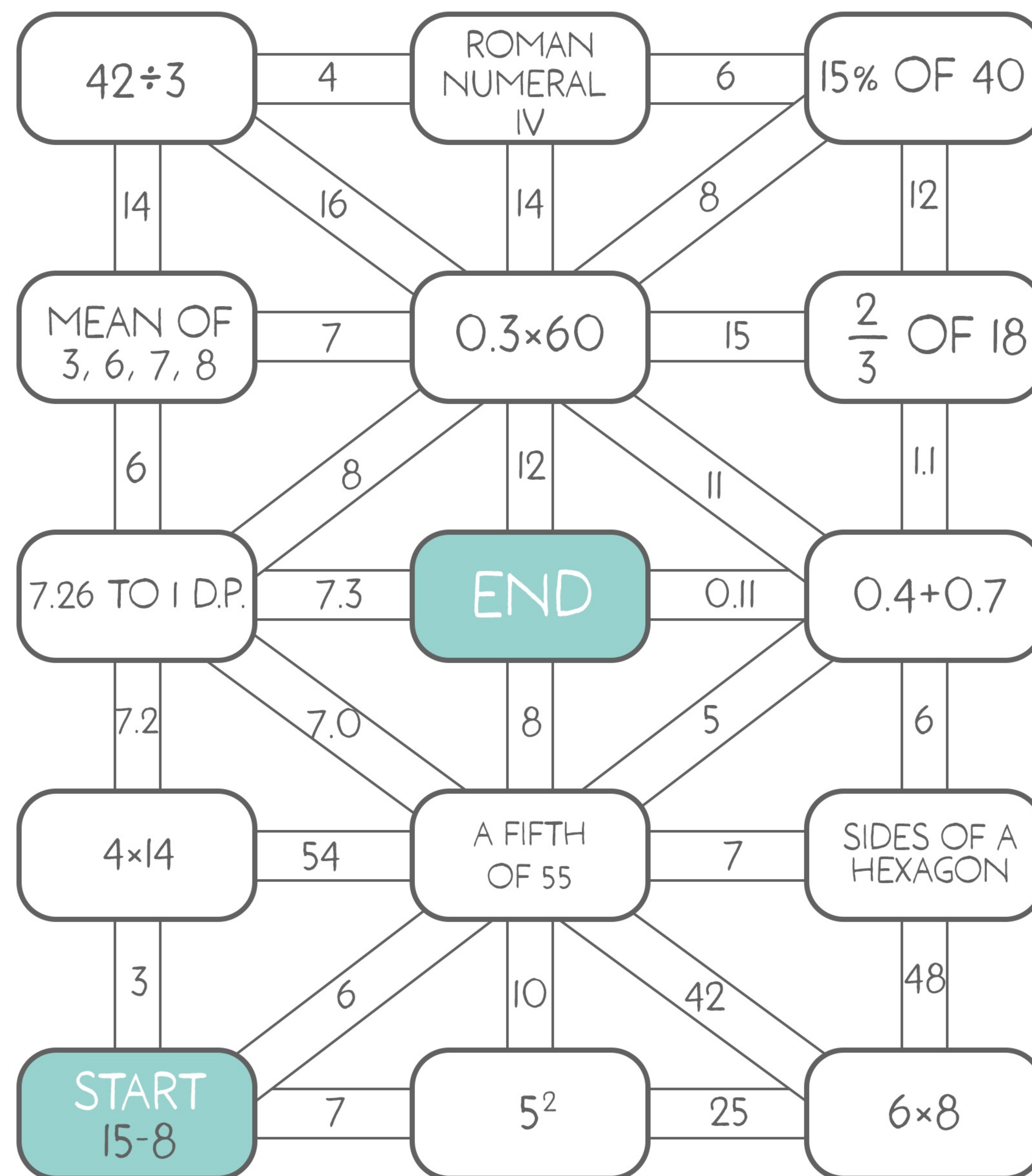
● ENCRYPTION I.D. ● THREE

ANSWER THE QUESTIONS CORRECTLY, SHADING AS YOU GO. IF A QUESTION DOESN'T SEEM TO HAVE THE RIGHT ANSWER, SOMETHING'S GONE WRONG. GO BACK A STEP AND CHECK YOUR ANSWER.



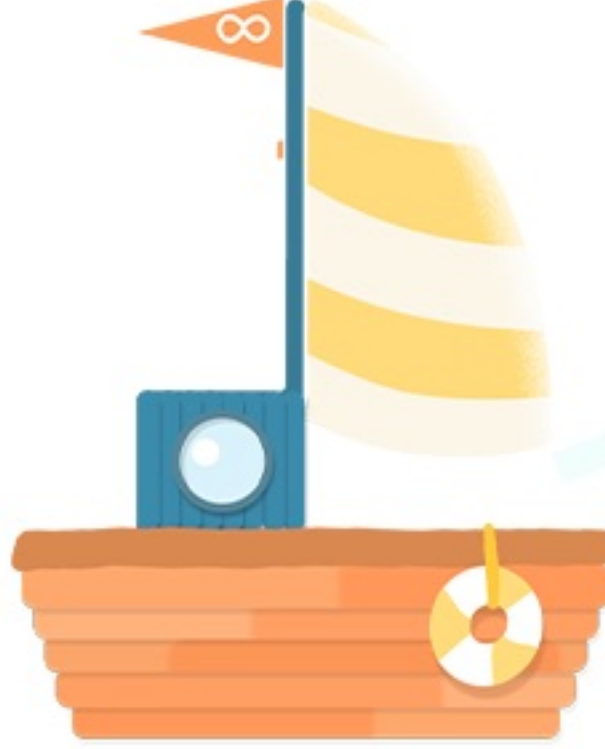
• ENCRYPTION I.D. • FOUR

ANSWER THE QUESTIONS CORRECTLY, SHADING AS YOU GO. IF A QUESTION DOESN'T SEEM TO HAVE THE RIGHT ANSWER, SOMETHING'S GONE WRONG. GO BACK A STEP AND CHECK YOUR ANSWER.



ARITHMETOWN

COMPANY I.D. LIST

SNEAKY FEET	CODEON CINEMA	CALCULAKE TOURS
 2524	 3671	 0243
MATHDONALD'S	TURING BIKES	THE TAKE AWAY
 7521	 2749	 4768
THROWIN' SHADES	MEETER'S METALS	THREE MATHKETEERS
 2579	 1966	 3858

