



SOLUTION SQUAD™

in

"PRIMER"

WRITTEN BY JIM McCLAIN

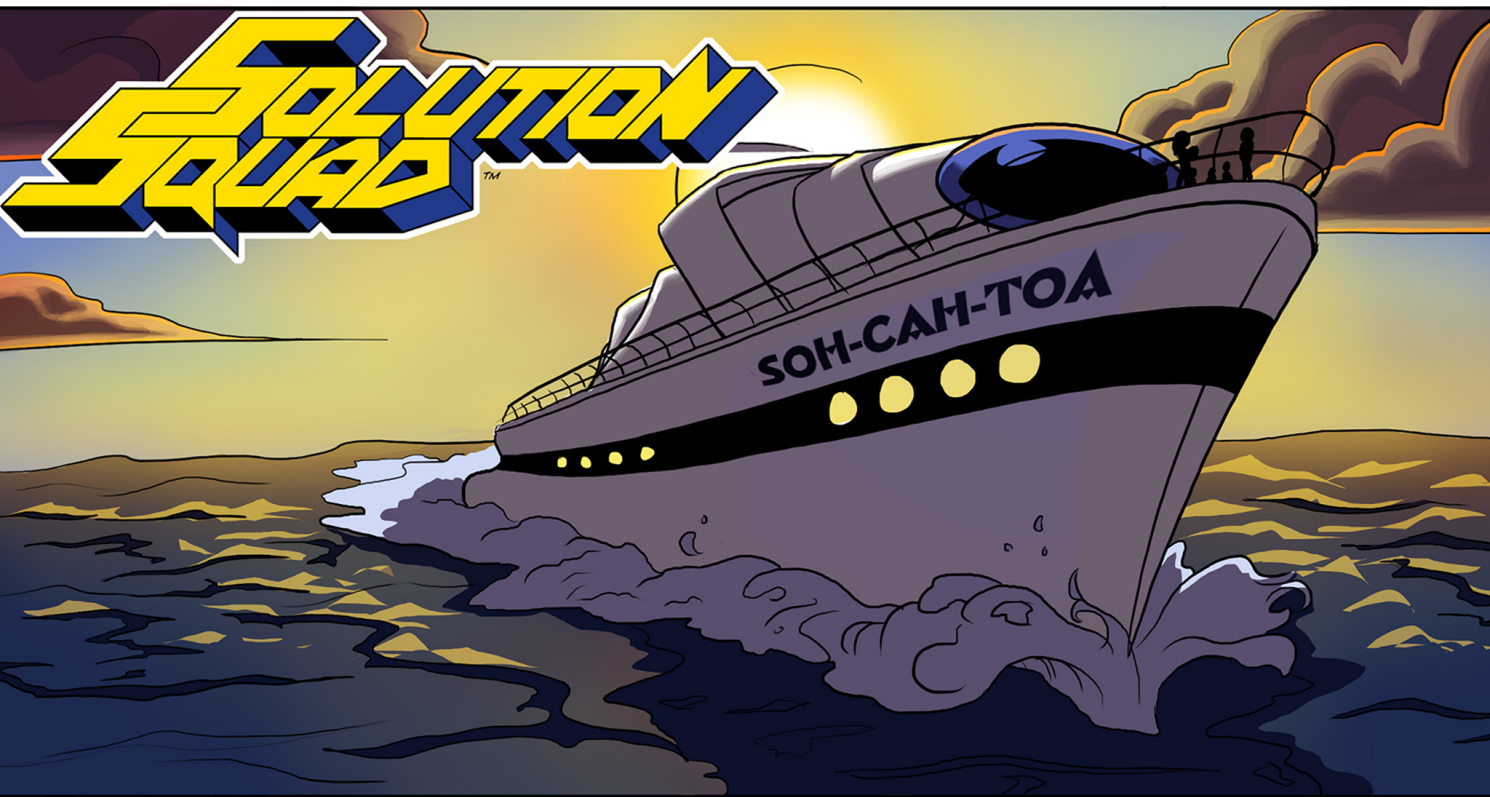
ART BY ROSE McCLAIN

LETTERED BY JIM McCLAIN

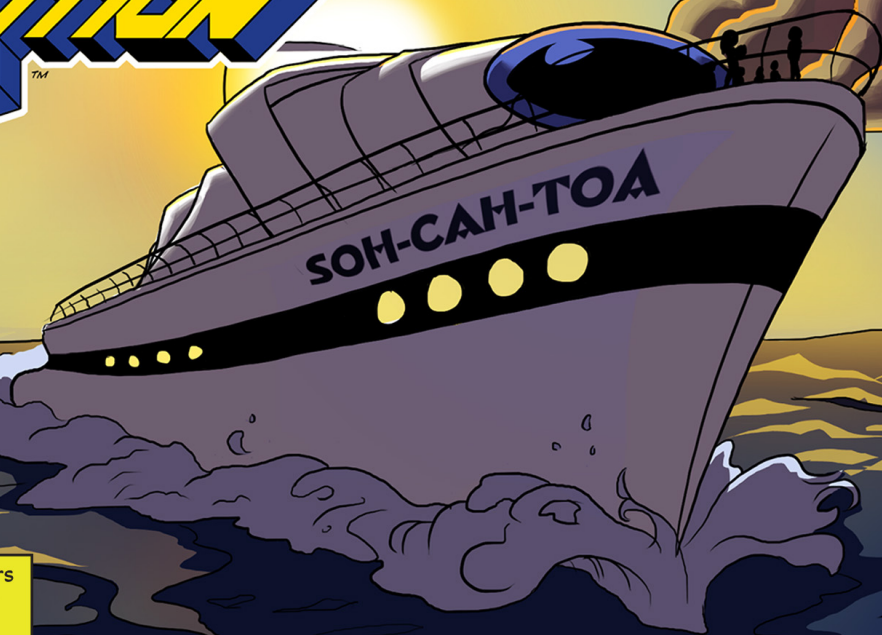
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SOLUTION SQUAD

TM



SOLUTION SQUAD™



The **SOH-CAH-TOA**, mobile headquarters of the teen hero group **Solution Squad**, cruising 30 miles off the southern coast of Louisiana on the Gulf of Mexico...



Now that you have passed all of your admissions tests, it is with great honor that I, *La Calculadora*, administer this oath of membership.

Though we don't wear masks,
we do use *code-names*. We put a lot
of thought into yours. With your style
and powers, the only name that
fits you is...







"Welcome to the
Solution Squad!"

"**Absolutia** is our founder and financier. She has the ability to raise and lower temperature. Hot or cold, above or below zero, both changes require effort. That's called absolute value!"

"Her real name is **Ashley Thermopolis**, the granddaughter of a shipping magnate. She inherited wealth after her grandfather's violent death. Her emotional reaction triggered her powers. She uses her wealth to fund this team and to prevent further tragedies whenever possible!"





"My story isn't sad at all. As plain old **Dora Pérez**, I've always been fast at computation. Then I started to develop other talents as my brain began to make connections between mathematical concepts.

"I was able to use those talents to raise my family up out of poverty in Mexico. My story drew the attention of Absolutia, and the next thing I knew, she was calling me **La Calculadora**, leader of the Solution Squad!

"My talents include a perfect memory, hyper-acute senses, and a knack for languages, invention, design, cooking, art...just about anything!"

"**Equality** is perhaps our most powerful teammate. She can do anything anyone else can do at exactly the same level, but she can only duplicate one person at a time.

"A three-sport athlete before she discovered her powers, **Hannah Harrah** is also our physical trainer. Her self-discipline is second to none.

"Equality's father, Otto Harrah, is the chief of police in **Crescent City**, and it's under his watchful eye that we are allowed to operate as heroes."





"Then there's the *Ordered Pair*: Twins orphaned as toddlers in China who were adopted and raised separately by American parents. They each grew up knowing that the other was out there, somewhere. When they met, their powers were triggered.

"*Abscissa*, whose real name is *Xiao Sheng Mercer*, can move at incredible velocities along any horizontal surface. She doesn't run up the sides of buildings..."

"...but her twin, **Ordinate**, who is younger by minutes, can fly to the highest heights, and dive to the deepest depths.

"**Yao Feng Cheung** can withstand those extremes, which makes him really strong and tough. He also has an array of senses that allows him to thrive in those environments.

"**Ordinate** is fiercely loyal. Where his sister **Abscissa** leads, he will always follow. Separately, they are formidable. Together, they make a nearly unbeatable team."





"And then there's you."

"We're still not sure how you traveled to our time from 1984, but your ability to create, and move things along the hypotenuses of invisible right triangular prisms is remarkable enough. But to surf on them? *Tony Marchesi*, you are totally *Radical!*"



Do you swear
to uphold justice and
preserve order according to
our by-laws and further
promise to *never* take
a human life?



Do you swear
to uphold justice and
preserve order according to
our by-laws and further
promise to *never* take
a human life?

Dude--
I mean, *Dora*--
I so *totally*
do!





Do you swear
to uphold justice and
preserve order according to
our by-laws and further
promise to *never* take
a human life?

Dude--
I mean, *Dora*--
I so *totally*
do!

Then by the
power invested in me as
team leader, I hearby grant you
full membership in the
Solution Squad!





**DEFENDIT
NUMERUS!***



**DEFENDIT
NUMERUS!***

*Pronounced dee-FEND-it NEW-mer-us,
from the Latin, "There is safety in numbers!"

BZZT! BZZT! BZZT! BZZT!



Looks like
our celebration will
have to wait. ***Solution
Squad***, we have a
problem to
solve!

LET'S G--



BZZT! BZZT! BZZT! BZZT!



Looks like
our celebration will
have to wait. ***Solution
Squad***, we have a
problem to
solve!

LET'S G--



Oh.

BZZT! BZZT! BZZT! BZZT!



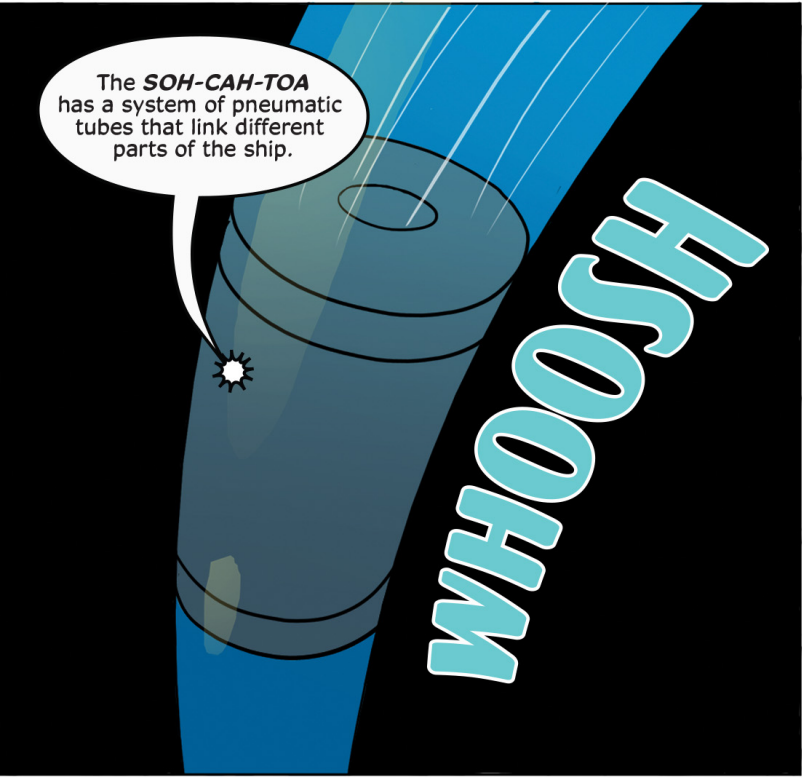
Looks like our celebration will have to wait. **Solution Squad**, we have a problem to solve!

LET'S G--




Oh.

Dude, where'd that elevator come from?



The **SOH-CAH-TOA** has a system of pneumatic tubes that link different parts of the ship.

WHOOSH



You passed your flight test yesterday, so you're driving!

Totally awesome!



Buenos dias,
U.N.O.!* Are we
ready to roll?

The *Coordinate Plane*
has been fueled and prepped,
Dora. A flight plan has been filed.
Your estimated travel time at
standard cruising speed
is 45 minutes.

Excellent!
Another job well
done if I do say
so myself!



The *Coordinate Plane* has been fueled and prepped, Dora. A flight plan has been filed. Your estimated travel time at standard cruising speed is 45 minutes.


Buenos días, U.N.O.!* Are we ready to roll?

Excellent! Another job well done if I do say so myself!

*U.N.O. is the team's Universal Nanorobotic Operative. Invented by La Calculadora, he is a construct made of 3.92×10^9 tiny robots working together.







Okay, *Radical*, lower the wings and engage the VTOL* rotors. Then, release the docking clamps. Take it nice and easy.

*Vertical Take-Off and Landing







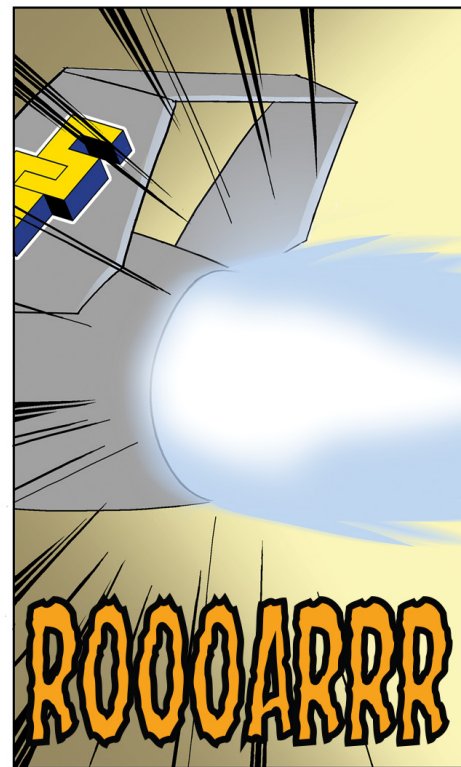
Atomic batteries
to *power*.

Turbines
to *speed*.

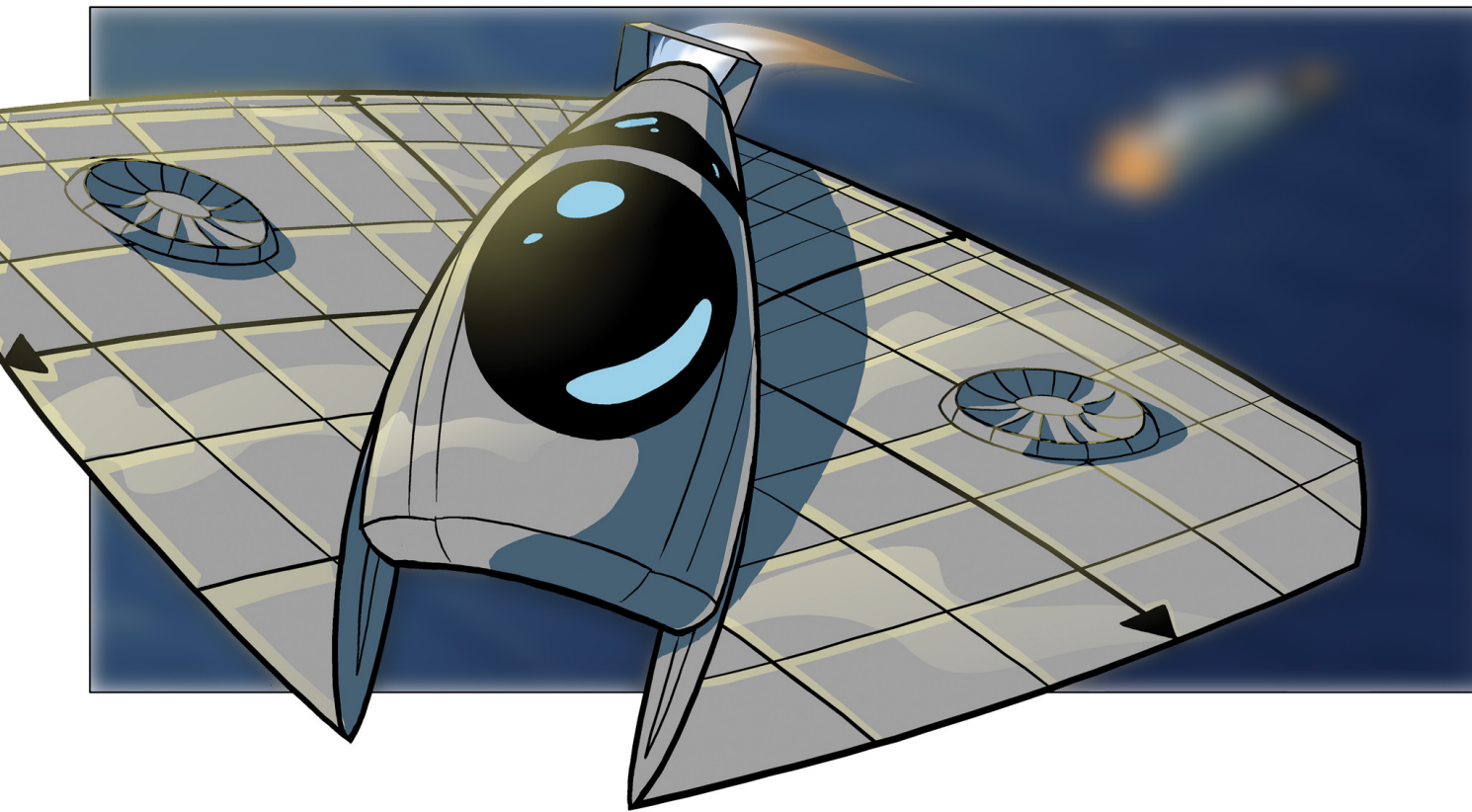
Acknowledged.

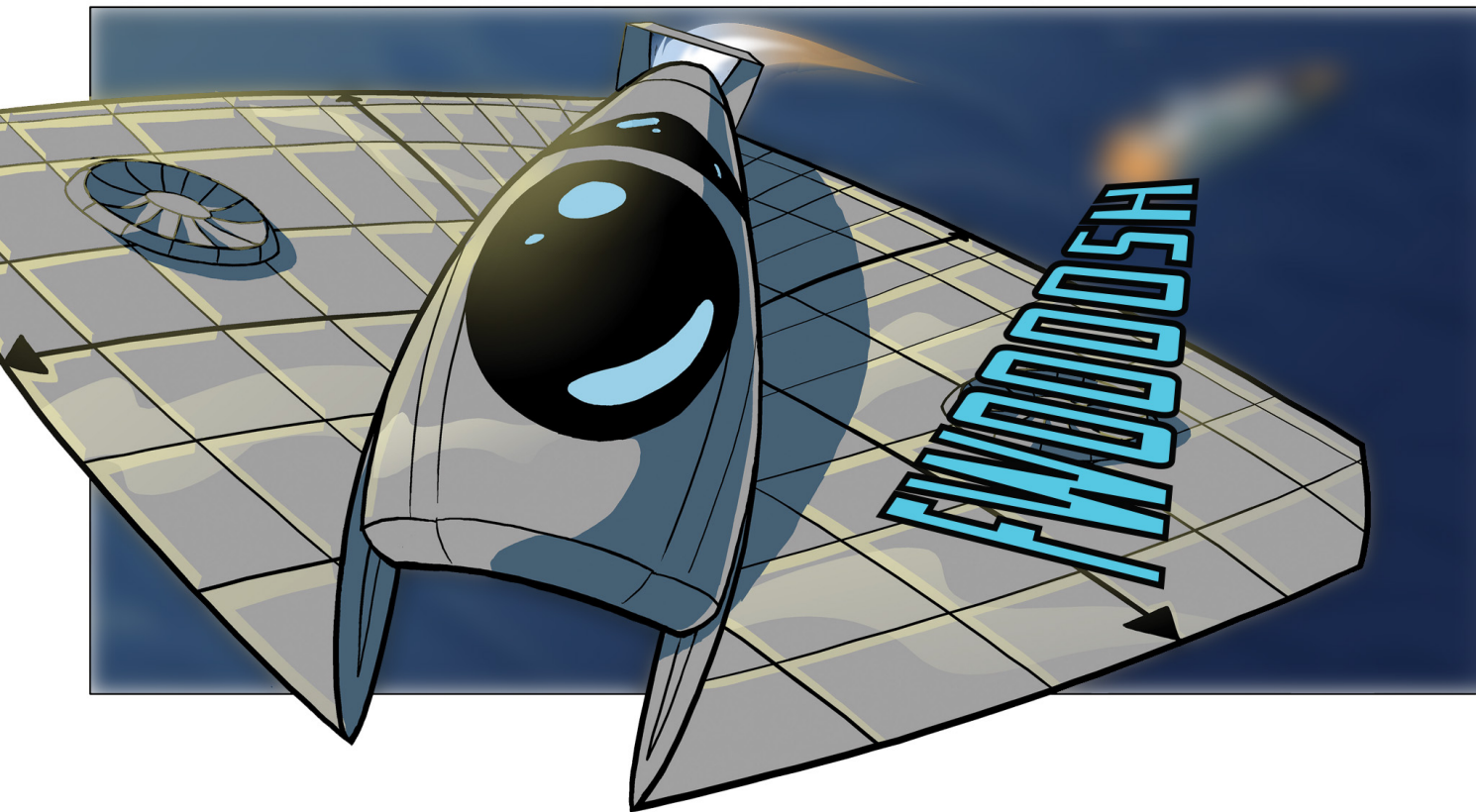
WHIIIRRRRR





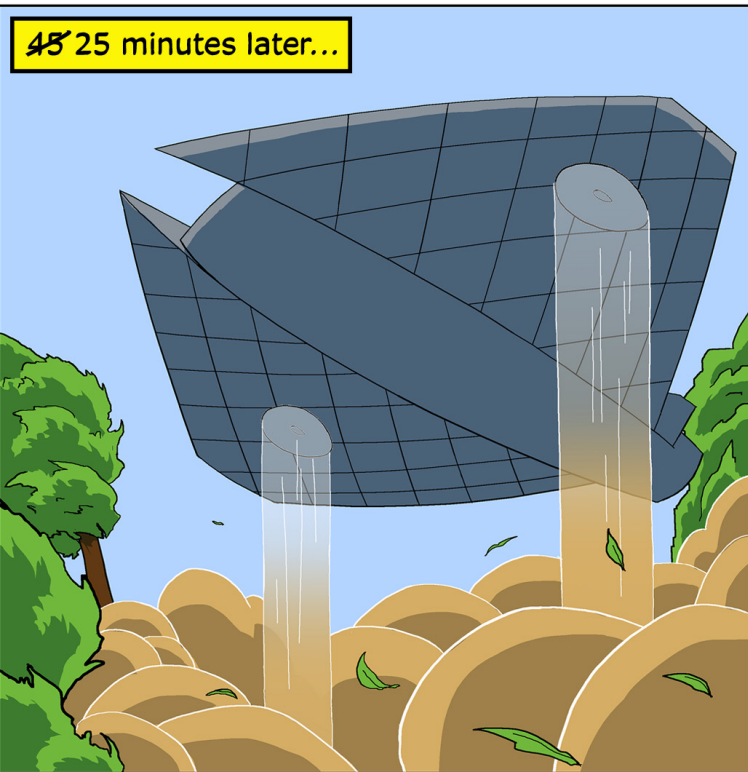








45 25 minutes later...



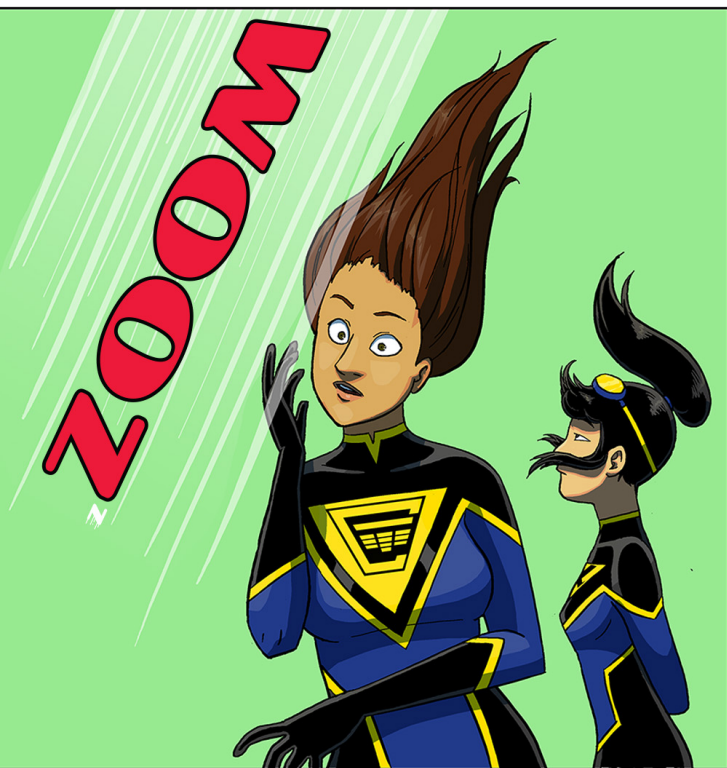
Your flight test
was multiple choice,
wasn't it?















Two seconds later, Ordinate hovers 35 meters over the grounds of the Crescent City Museum of Natural History...

My sister's right, La Calculadora. Whatever it is, it looks like it drove itself here and stopped. You don't suppose...





Dora, we need
to get the civilians
to safety!





Dora, we need
to get the civilians
to safety!

Abscissa's on
it. Take a quick
scan of the device
and get back
down here!

Acknowledged.

Give me a few seconds to analyze this data, team.

Go ahead, girl, we got this.



Give me a few seconds to analyze this data, team.

Go ahead, girl, we got this.

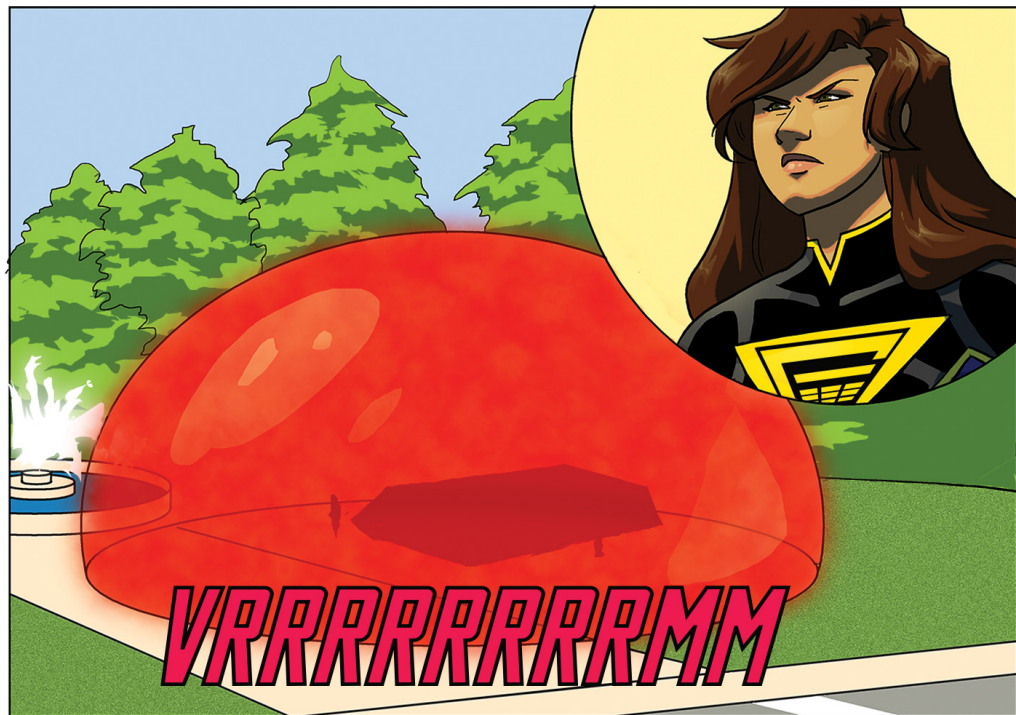
Hmm...What does this do?

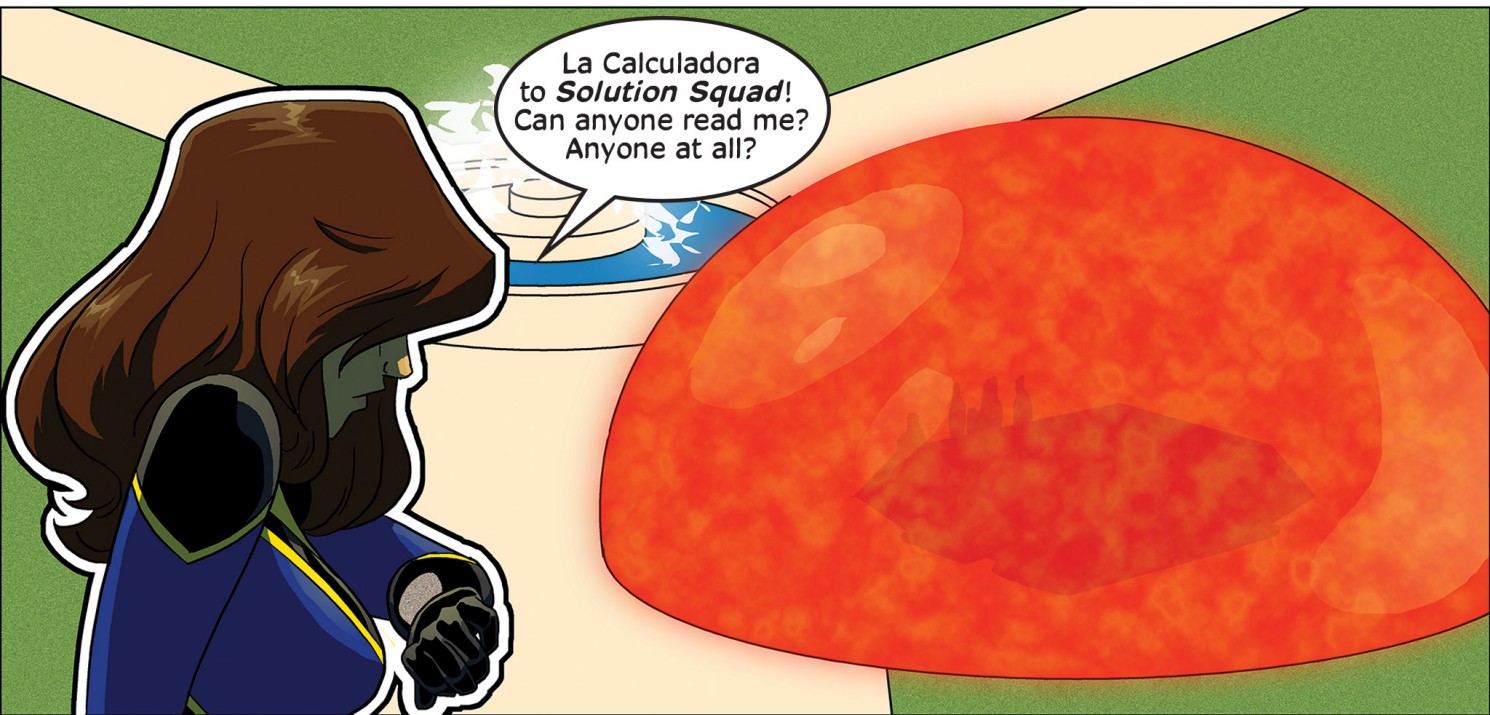














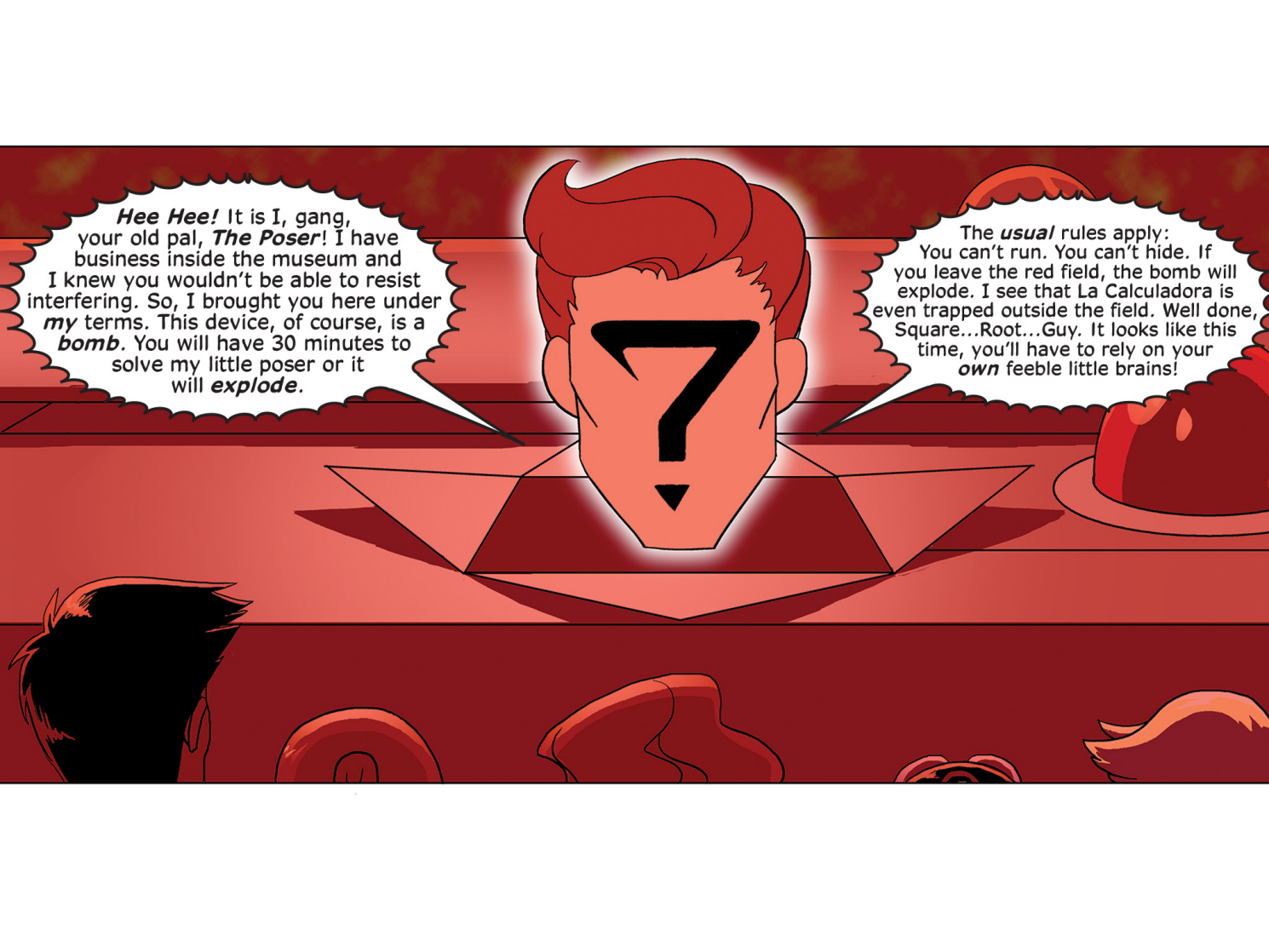






Hee Hee! It is I, gang,
your old pal, *The Poser!* I have
business inside the museum and
I knew you wouldn't be able to resist
interfering. So, I brought you here under
my terms. This device, of course, is a
bomb. You will have 30 minutes to
solve my little poser or it
will *explode*.





Hee Hee! It is I, gang,
your old pal, *The Poser!* I have
business inside the museum and
I knew you wouldn't be able to resist
interfering. So, I brought you here under
my terms. This device, of course, is a
bomb. You will have 30 minutes to
solve my little poser or it
will *explode*.

The *usual* rules apply:
You can't run. You can't hide. If
you leave the red field, the bomb will
explode. I see that La Calculadora is
even trapped outside the field. Well done,
Square...Root...Guy. It looks like this
time, you'll have to rely on your
own feeble little brains!

He was a jack of all trades; the greatest at none.
His peers called him "Beta." His reputation, hard won.
He invented a method for sizing the Earth
using geometry and shadows to measure its girth.
His name will free you from destruction's path.
This librarian was a polymath.*



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*A *polymath* is someone
who is good at a number
of different subjects.



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of different subjects.



11-61-2-71-47-67-71-19-11-43-11-67

47-13

5-97-61-11-43-11





11-61-2-71-47-67-71-19-11-43-11-67

47-13

5-97-61-11-43-11



11-61-2-71-47-67-71-19-11-43-11-67

47-13

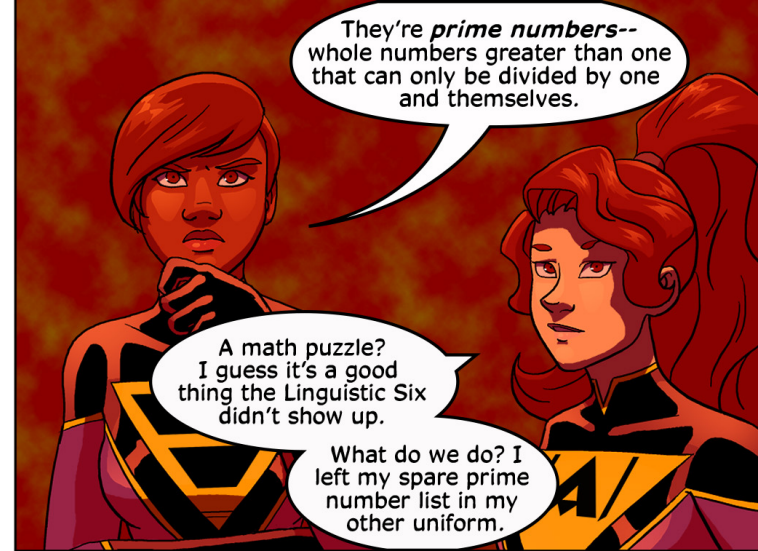
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11-61-2-71-47-67-71-19-11-43-11-67

47-13

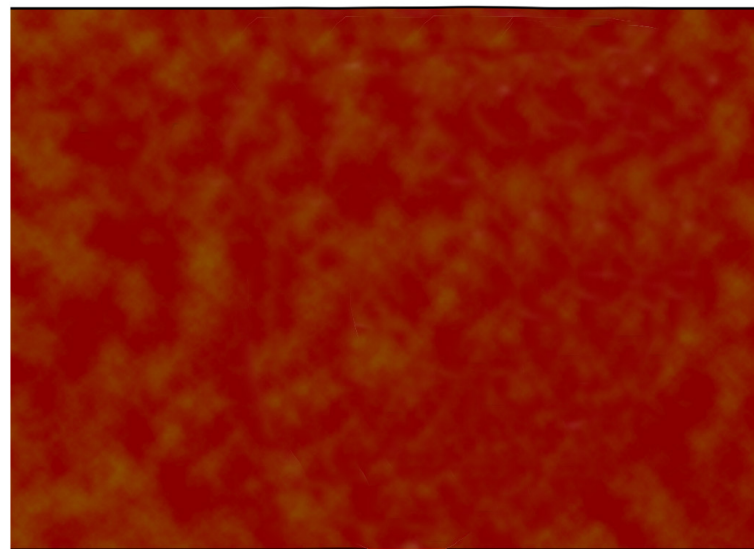
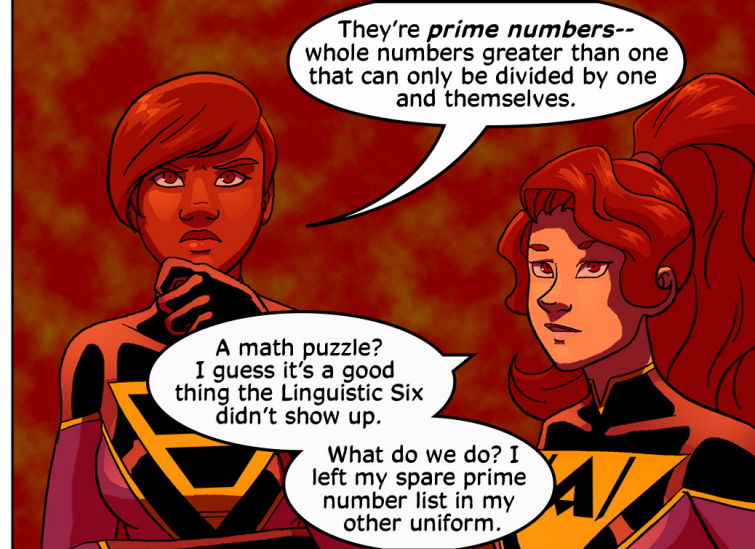
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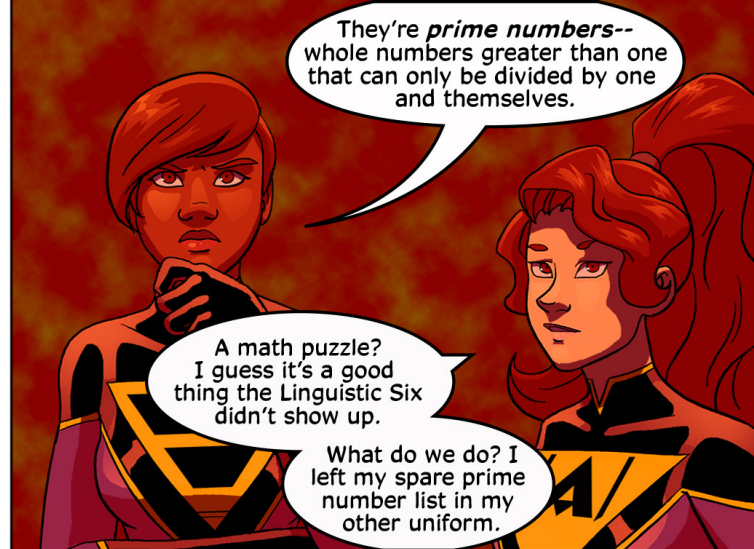


11-61-2-71-47-67-71-19-11-43-11-67

47-13

5-97-61-11-43-11








A **prime number sieve** is a mathematical process that works like a pasta strainer. You pour the water and the pasta together into the sieve and the water falls through the holes, leaving only the pasta behind.

My mom **totally** has one of those!

Good! So you understand how it works! We're going to make one out of numbers. Xiao, would you clear some ground over there and write the whole numbers from 2 through 100 in the dirt, please?


I'm on it!





Good! So you understand how it works! We're going to make one out of numbers. Xiao, would you clear some ground over there and write the whole numbers from 2 through 100 in the dirt, please?


I'm on it!



See, Radical, we're going to strain out the numbers that are not prime numbers. They're called **composite numbers**. We're going to eliminate them like water falling through a sieve.

You got it!

So, like, the prime numbers stay behind like pasta?



Let's start with two. Since two can only be divided by one and itself, it's a **prime number**! We'll circle it and keep it.

The other multiples of two, though, are all composite because they have two as a factor! Xiao, go ahead and stomp them out.

"It should be easy. They
all end in 2, 4, 6, 8, and 0!"

	2	3	5	7	9
11		13	15	17	19
21		23	25	27	29
31		33	35	37	39
41		43	45	47	49
51		53	55	57	59
61		63	65	67	69
71		73	75	77	79
81		83	85	87	89
91		93	95	97	99



"It should be easy. They all end in 2, 4, 6, 8, and 0!"

Woohoo! I took out 49 composite numbers just on the first pass! That's a lot of water through the sieve!



	2	3	5	7	9
11		13	15	17	19
21		23	25	27	29
31		33	35	37	39
41		43	45	47	49
51		53	55	57	59
61		63	65	67	69
71		73	75	77	79
81		83	85	87	89
91		93	95	97	99



"Three's prime, too.
Once we've circled it
we have to eliminate all
of its multiples as well!"



"Three's prime, too.
Once we've circled it
we have to eliminate all
of its multiples as well!"



Half of them were
already gone because
they were multiples of two
as well! I only got rid
of 16 that time!

2 3 5 7
11 13 17 19
23 25 29
31 35 37
41 43 47
53 55
61 65 67
71 73 77 79
83 85 89
91 95 97

"The next prime is five.
All the multiples of five
end in either five or zero.
Since the ones that end
in zero are already gone,
just drop straight down
the five column!"



(2) (3)

(5)

7

19

17

29

37

47

49

59

67

77

79

89

97

53

61


71

73

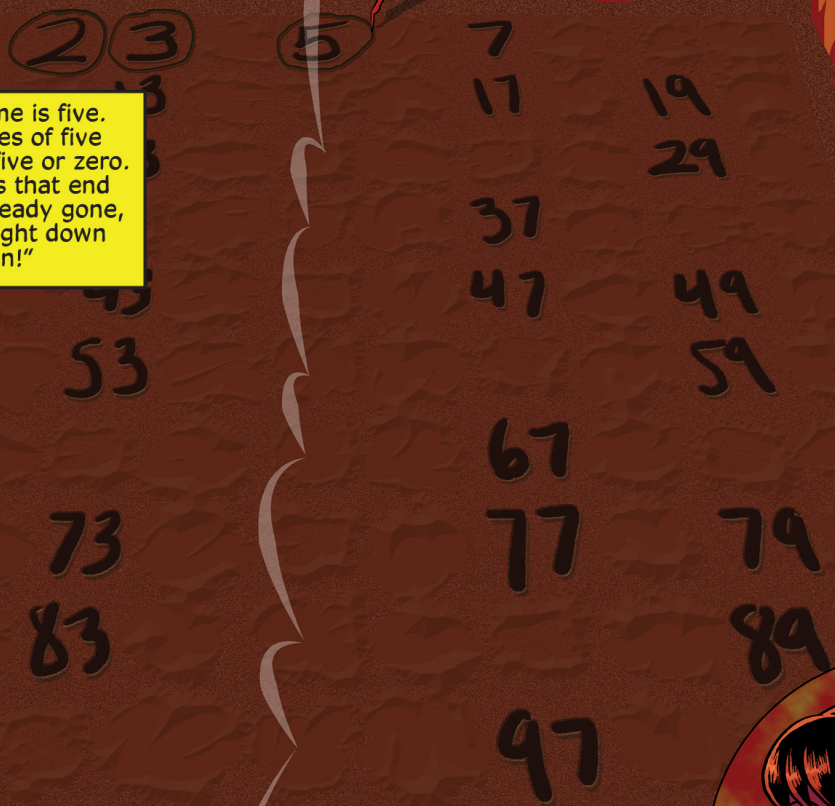
83

91






"The next prime is five.
All the multiples of five
end in either five or zero.
Since the ones that end
in zero are already gone,
just drop straight down
the five column!"




Only six were
eliminated that time!
What happens when
they're all gone?






When all the
composites are gone,
the remaining numbers will
be prime numbers!

It shouldn't be
long now, then. There
were only three multiples
of seven that weren't
already gone: 49,
77, and 91!



When all the
composites are gone,
the remaining numbers will
be prime numbers!

It shouldn't be
long now, then. There
were only three multiples
of seven that weren't
already gone: 49,
77, and 91!



"We only need to check the numbers
up to 10, dudes. Factors pair up
centered around the square root. The
square root of 100 is 10. So, once you
have all the factors under the square
root, all their partner factors will be
accounted for."

Let's put
Radical's theory
to the test. 11
is next!

11

2 3

5

7

13

17

19

23

29

37

41

43

47

53

59

61

67

71

73

79

83

89

97



Let's put
Radical's theory
to the test. 11
is next!



→Gaspé Radical is
right! There's nothing
left! All the multiples of
11 were eliminated in
previous runs!



Abscissa,
would you--

I got the
rest of the
prime numbers!
There are only
25, though.

The code
didn't have
any numbers
higher than
100, though,
so it's okay.



11

2 3

5

7

17

19

29

23

31

37

41

43

47

53

59

61

67

71

73

79

83

89

97



So if 2 is A,
3 is B, and 5 is C, then
the solution to the
puzzle is...

Who is *that*?
Are you sure you
typed it in *right*?

I *think* so.


Let's
hope so!



Guys! I saw
the puzzle! Was the answer
Eratosthenes* of Cyrene? He's
the ancient Greek mathematician who
invented the very prime number sieve you
used to solve it! That's why it's called
the Sieve of Eratosthenes! I did
it in my head, of course, but
you guys did ***great***!




*Pronounced era-TOSS-the-knees.



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you guys did ***great!***

*Pronounced era-TOSS-the-knees.




How did
you--?

Amazing.


Showoff.

I had read that
there was an Eratosthenes
display at the museu--



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*Pronounced era-TOSS-the-knees.



How did
you--?

Amazing.

Showoff.

I had read that
there was an Eratosthenes
display at the museu--

ALERT



COMMUNICATIONS
MONITORED







GAH!














And I spent those days plotting my revenge! I have a plan for dealing with each and every one of you!

Absolutia, are you huffing all right? The temperature in the room just jumped 32.7 degrees!

No.






And I spent those days plotting my revenge! I have a plan for dealing with each and every one of you!

Absolutia, are you huffin' all right? The temperature in the room just jumped 32.7 degrees!

No.



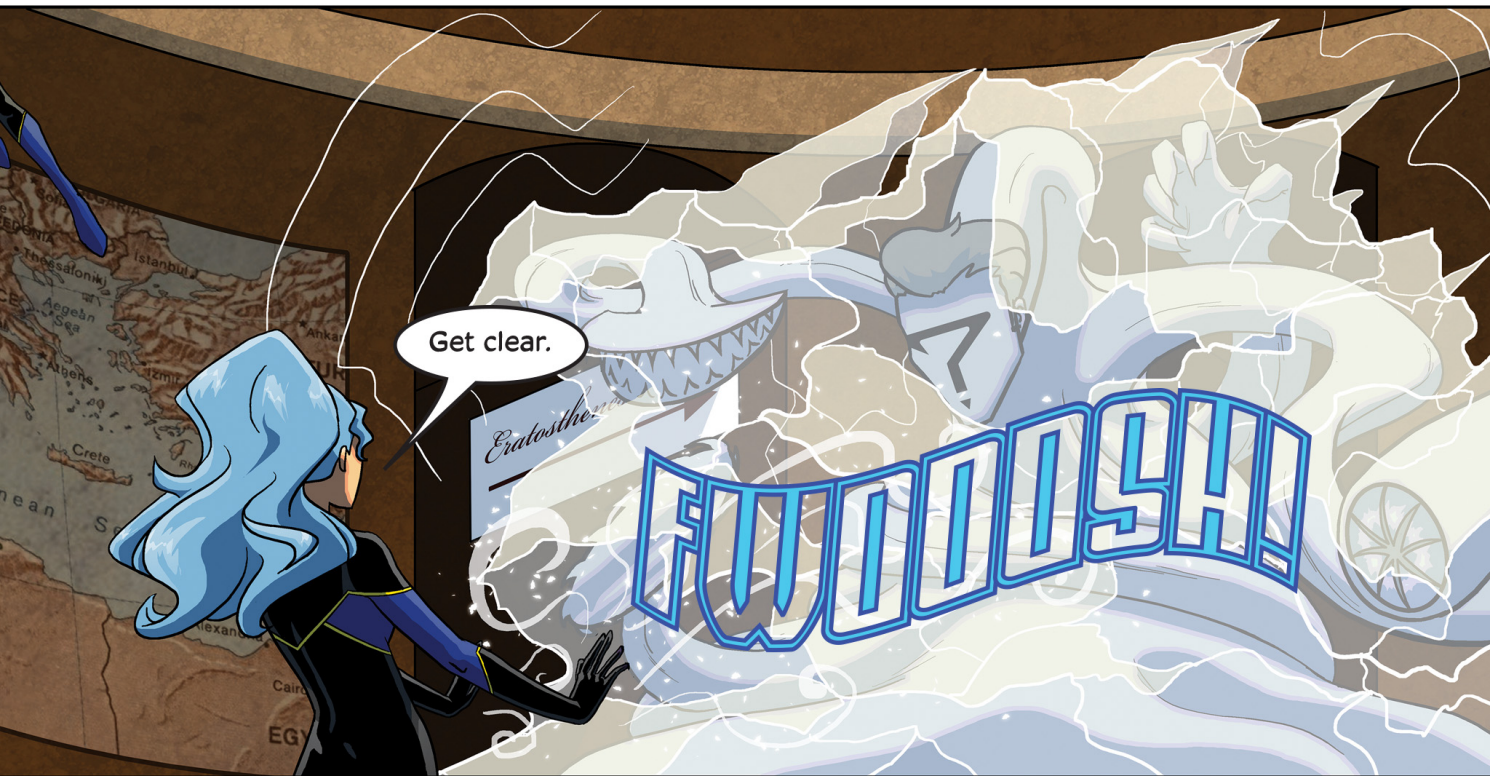
No, I'm not all right. I'm a *long way* from being all right.



We *can't* keep him in prison and he'll keep coming back. Partially melting him didn't do it, so I'm going to do what I *should* have done a long, *long* time ago!

Ashley! *No!*
He's not worth it!







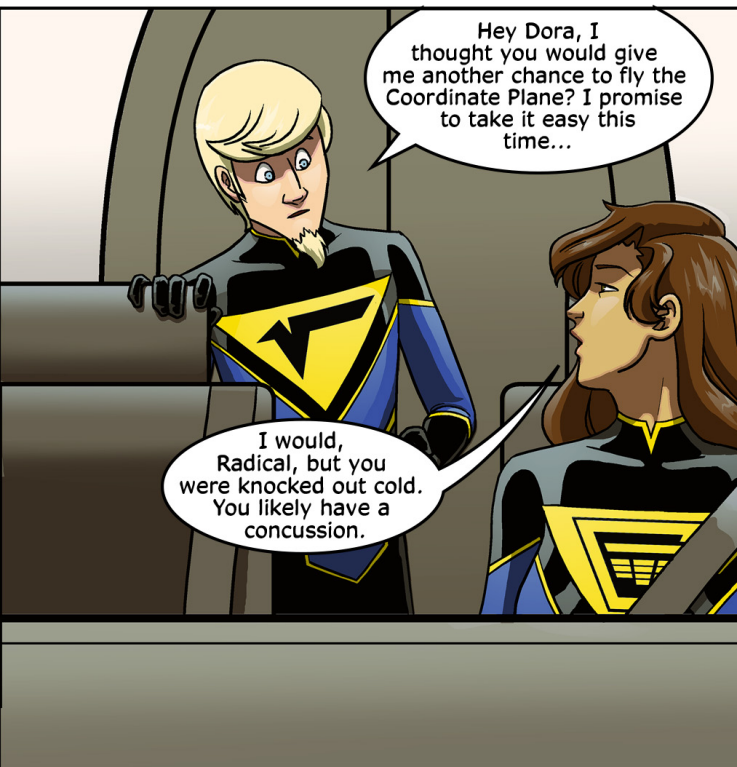
Later, after the bomb has been disposed of and the appropriate authorities have been summoned...

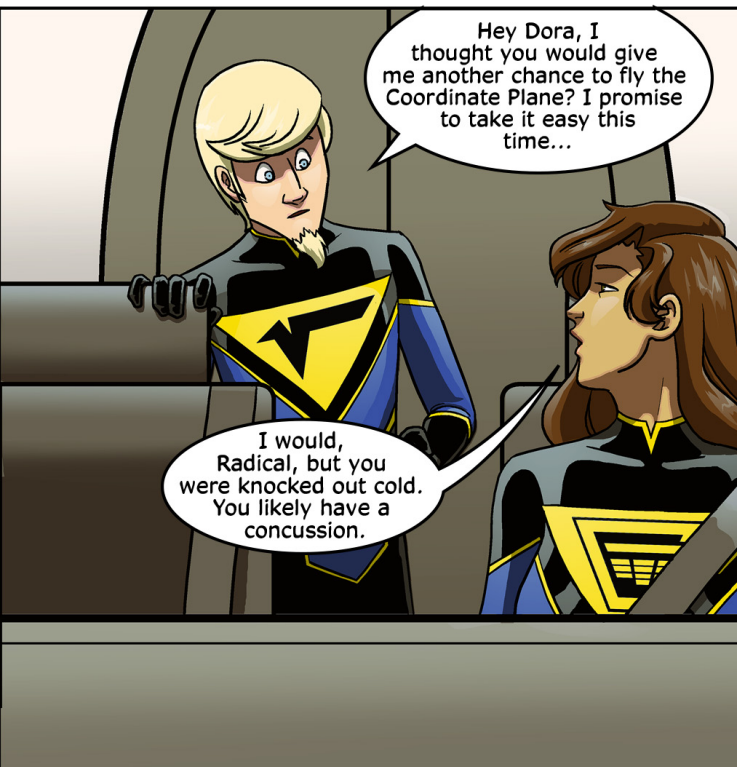


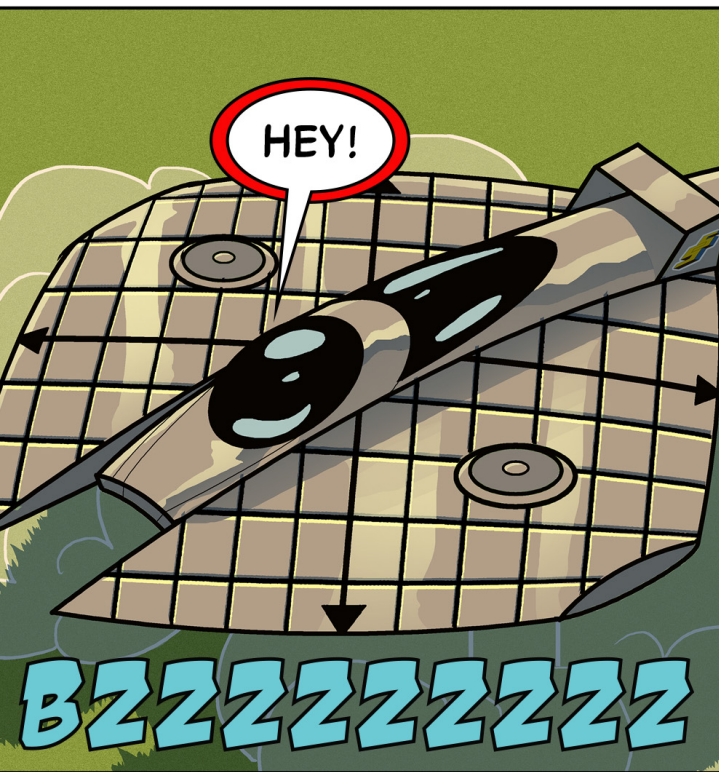
Later, after the bomb has been disposed of and the appropriate authorities have been summoned...

Holy hypotenuse!
What did this guy
eat, anyway?

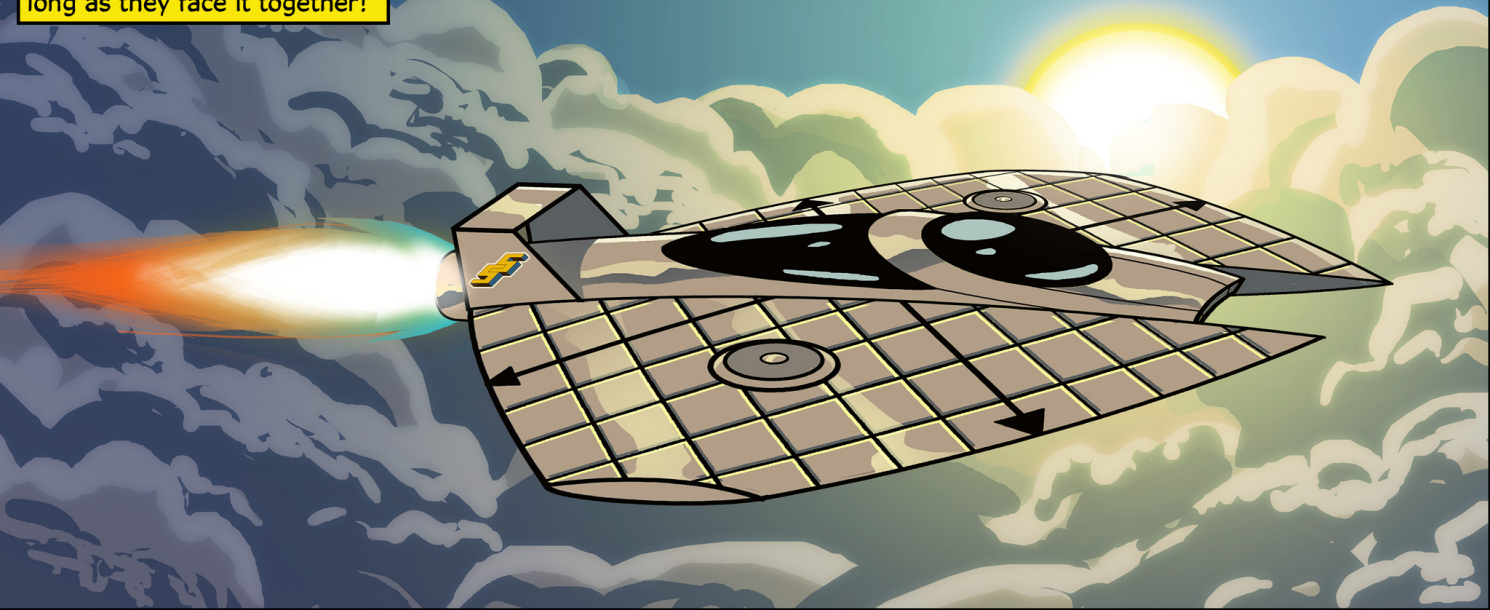






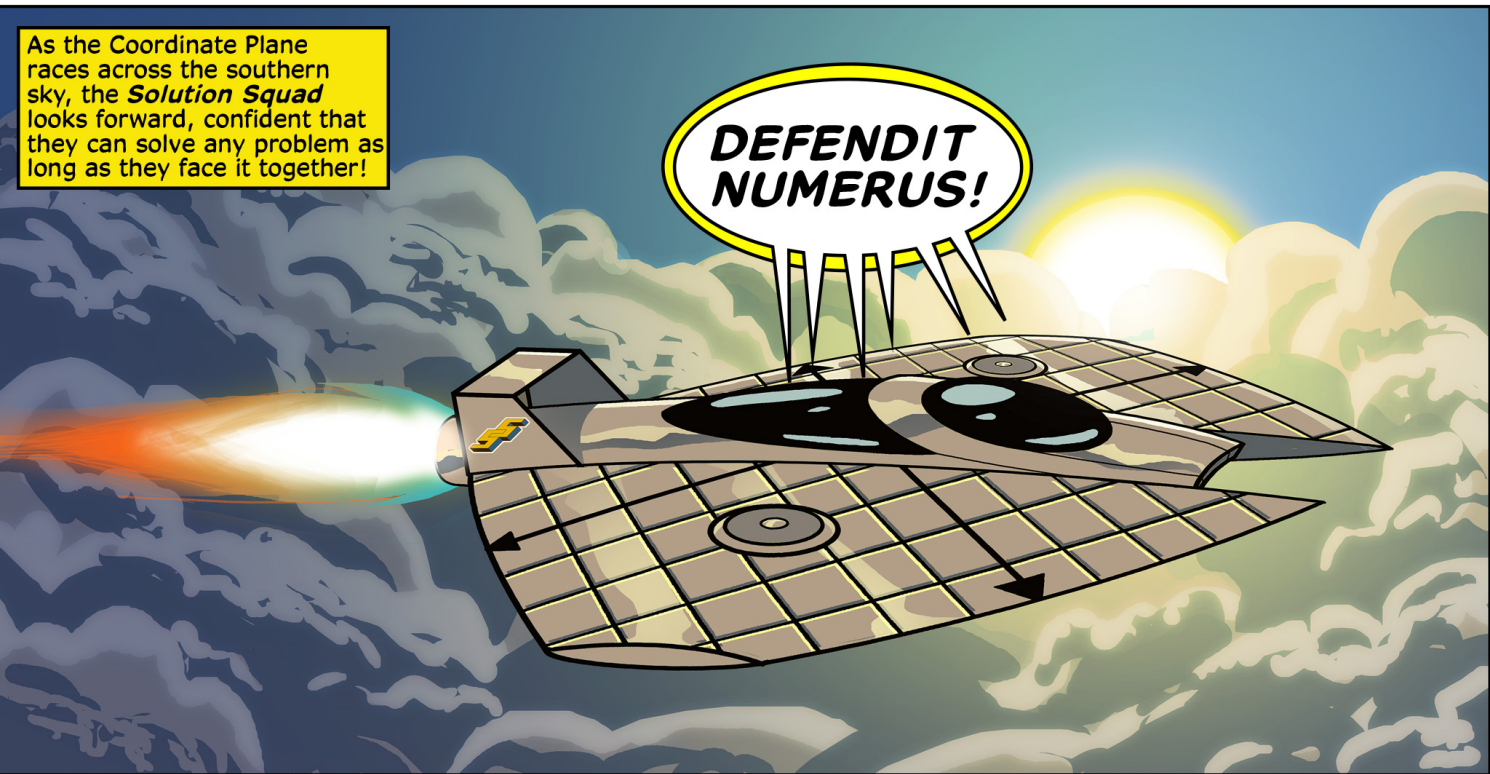


As the Coordinate Plane races across the southern sky, the ***Solution Squad*** looks forward, confident that they can solve any problem as long as they face it together!



As the Coordinate Plane races across the southern sky, the *Solution Squad* looks forward, confident that they can solve any problem as long as they face it together!

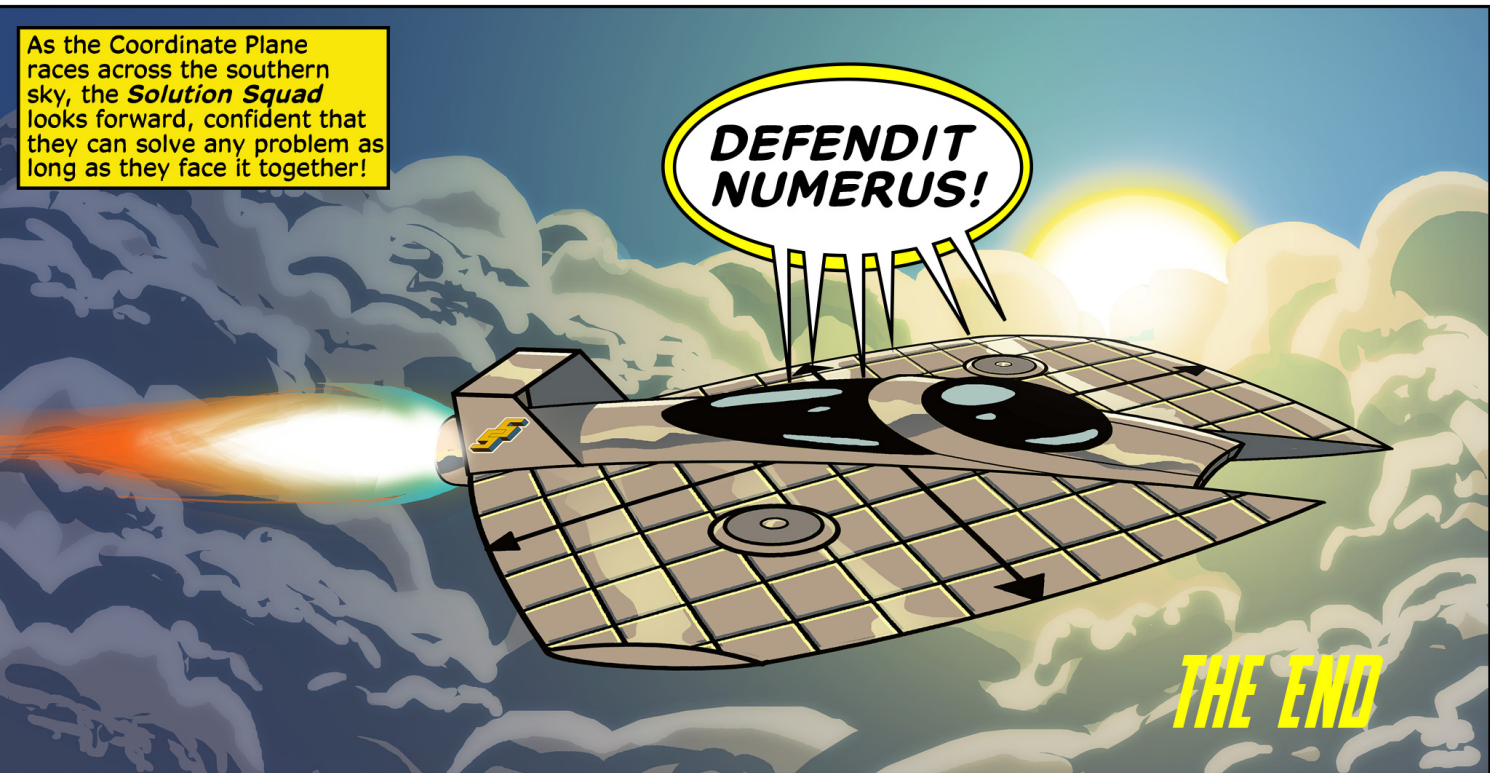
**DEFEND IT
NUMERUS!**

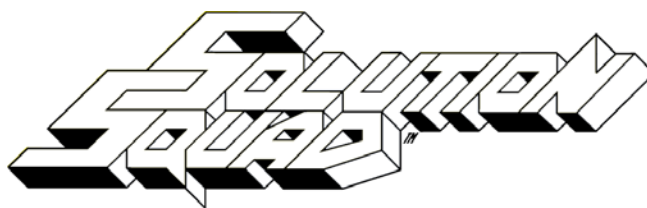


As the Coordinate Plane races across the southern sky, the *Solution Squad* looks forward, confident that they can solve any problem as long as they face it together!

**DEFEND IT
NUMERUS!**

THE END





THE PRIME NUMBER SIEVE ACTIVITY

Common Core State Standards:

CCSS.MATH.CONTENT.4.OA.B.4

Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.

The corresponding Indiana standard says the same thing without explicitly mentioning prime or composite numbers.

Introduction

Solution Squad is a superhero team made up of heroes whose powers and abilities are based on mathematics. Their leader, La Calculadora, excels at mental math and computation processes. She is the host of this activity.

Here are some tips to make things go smoothly:

While viewing the **digital comic** as a class, you have a couple of options; either read it yourself to the class, or allow the students to read parts like a play. In your PDF reader, press ctrl + L to make it full screen. Advance the slides using the arrow keys. With either of the reading options, you control the pace of the story. With that in mind, you should stop just after the Solution Squad is trapped inside the force field and the prime number puzzle is revealed. When Equality explains to Radical what a prime number sieve is, and Radical reacts with, "My mom totally has one of those," stop reading the comic and hand out the **Prime Number Sieve** activity page (a separate file due to formatting), and allow students to work through the activity while La Calculadora guides them. When finished, return to the comic and the answer will be revealed as the team works their way through the same process. It's

okay if they don't know who Eratosthenes of Cyrene is. That's what Google is for. It's also explained a little later in the story!

When La Calculadora writes her encoded message in the dirt, stop and allow the students to use their key code to decode the message to anticipate what the Squad does next! That will allow you to check for understanding to ensure that students can substitute the appropriate letters for the numbers in the code. When they have successfully completed that, turn the page to where they break through the skylight. "Skylight" is the answer to the encoded message. Then continue and finish reading the comic.



THE PRIME NUMBER SIEVE

"Hola! I'm La Calculadora, the leader of the math-based hero team, Solution Squad! My team is trapped inside a force field, trying to solve a puzzle made of prime numbers! There's not a whole lot I can do from out here, and the Poser's too tough for me to handle on my own, so let's try to figure out the puzzle together.

"A **prime number** is defined as a whole number greater than one that is divisible only by one and itself. A whole number that is not prime is called a **composite number**. The prime number sieve eliminates composite numbers until only prime numbers are left behind.

"If we can figure out which letter each prime number stands for, we can decode the Poser's secret message.

"Follow these steps to get a list of all the prime numbers through 100:

1. Check 2 to see if it is prime. Since 2 is only divisible by one and itself. It is the first prime number, so circle it over there on the chart.

I can see that they're doing the same thing inside the force field, so they're doing well. Since any number that divides by 2 must be composite, cross out all the multiples of 2. That's every even number higher than 2!

2. Check 3. It is the next prime number. Circle 3 and cross out all the other multiples of three. You will notice that some of them are already crossed out. Why is that? That's right, because they're also multiples of two! So, if they're multiples of both two and three, that means they're multiples of what?

3. Since 4 was eliminated as a multiple of 2, check 5. It is the next prime number, so circle it. Then cross out all the multiples of 5. You will notice that you crossed out fewer numbers this time than you did in the previous two steps.

4. Repeat this process until no more numbers are eliminated. When you have accomplished that, the remaining numbers will be prime numbers!

5. Circle all the remaining prime numbers and you will have a list of all the primes from 2-100!



THE PRIME NUMBER SIEVE

	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

"Now make a key to the code! The first number you circled is A, the second one is B, and the third one is C and so forth. I'll just go ahead and tell you that Z is 101. You can check it if you want. It doesn't divide by 2, 3, 5, or 7, either.

A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
												101

"And now you can solve the puzzle. Not only that, but now you can write encoded messages to your friends if they also know the code! Oops! Looks like my team is about to solve the puzzle. See you later!"

_____-_____-_____-_____-_____-_____-_____-_____-_____- / _____-_____-
 _____-_____-_____-_____-_____-_____-_____-

THE PRIME NUMBER SIEVE

ANSWER KEY

	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

"Now make a key to the code! The first number you circled is A, the second one is B, and the third one is C and so forth. I'll just go ahead and tell you that Z is 101. You can check it if you want. It doesn't divide by 2, 3, 5, or 7, either.

A	B	C	D	E	F	G	H	I	J	K	L	M
2	3	5	7	11	13	17	19	23	29	31	37	41
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
43	47	53	59	61	67	71	73	79	83	89	97	101

"And now you can solve the puzzle. Not only that, but now you can write encoded messages to your friends if they also know the code! Oops! Looks like my team is about to solve the puzzle. See you later!"

E-R-A-T-O-S-T-H-E-N-E-S / O-F

C-Y-R-E-N-E