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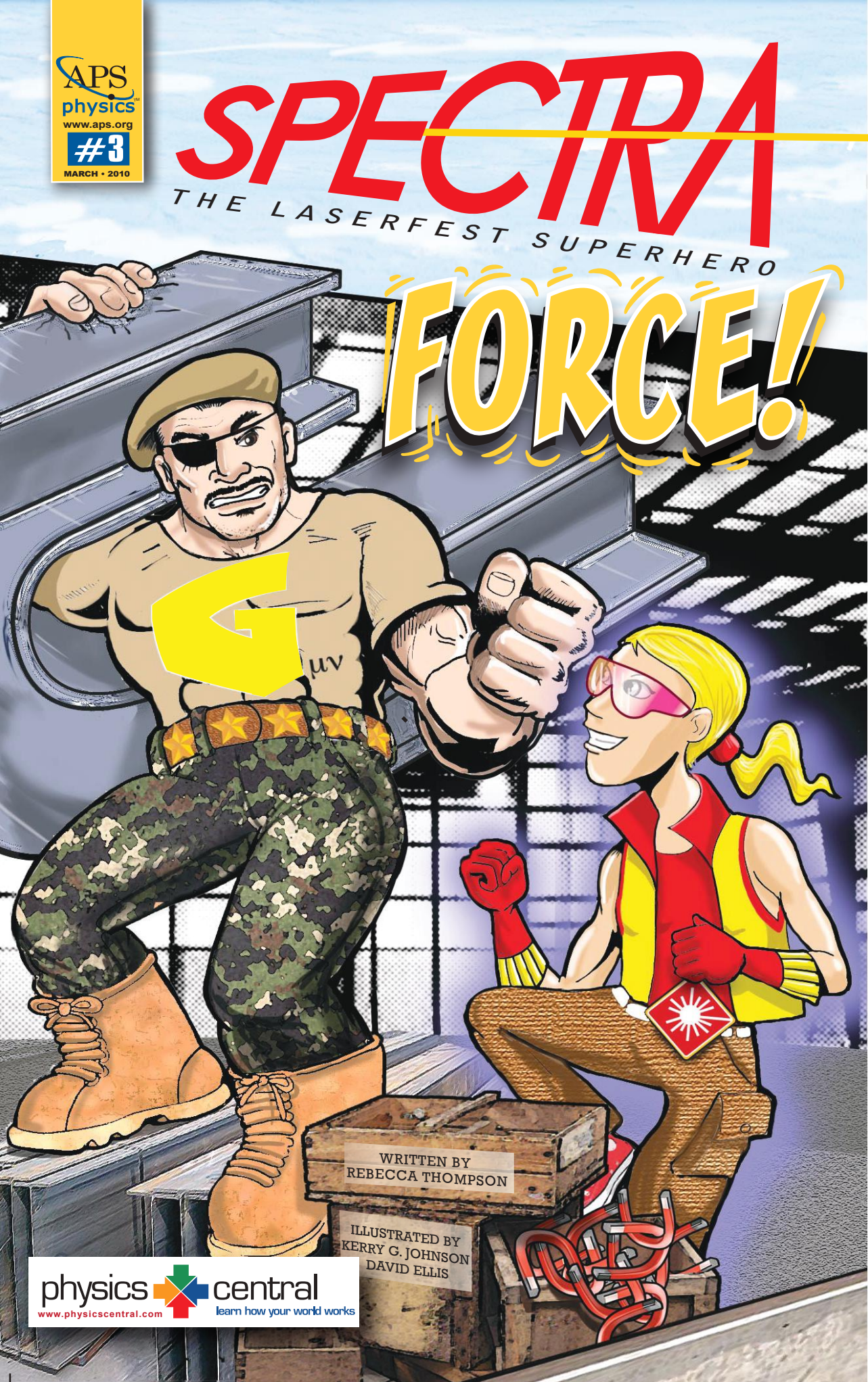
SPECTRA

THE LASERFEST SUPERHERO

FORCE!



WRITTEN BY
REBECCA THOMPSON

ILLUSTRATED BY
KERRY G. JOHNSON
DAVID ELLIS

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FAYE DANIEL

June 27, 1950 - December 24, 2010

DEDICATED TO MY MA,
WHO WAS THE GREATEST TEACHER
I HAVE EVER KNOWN,
BOTH IN A CLASSROOM
AND IN MY LIFE.

– Rebecca Thompson

Written by Rebecca Thompson
Art direction and coloring by Kerry G. Johnson
Illustrations by Kerry G. Johnson *(Part 1)* **and David Ellis** *(Part 2)*
Activity illustrations by Nancy Bennett-Karasik

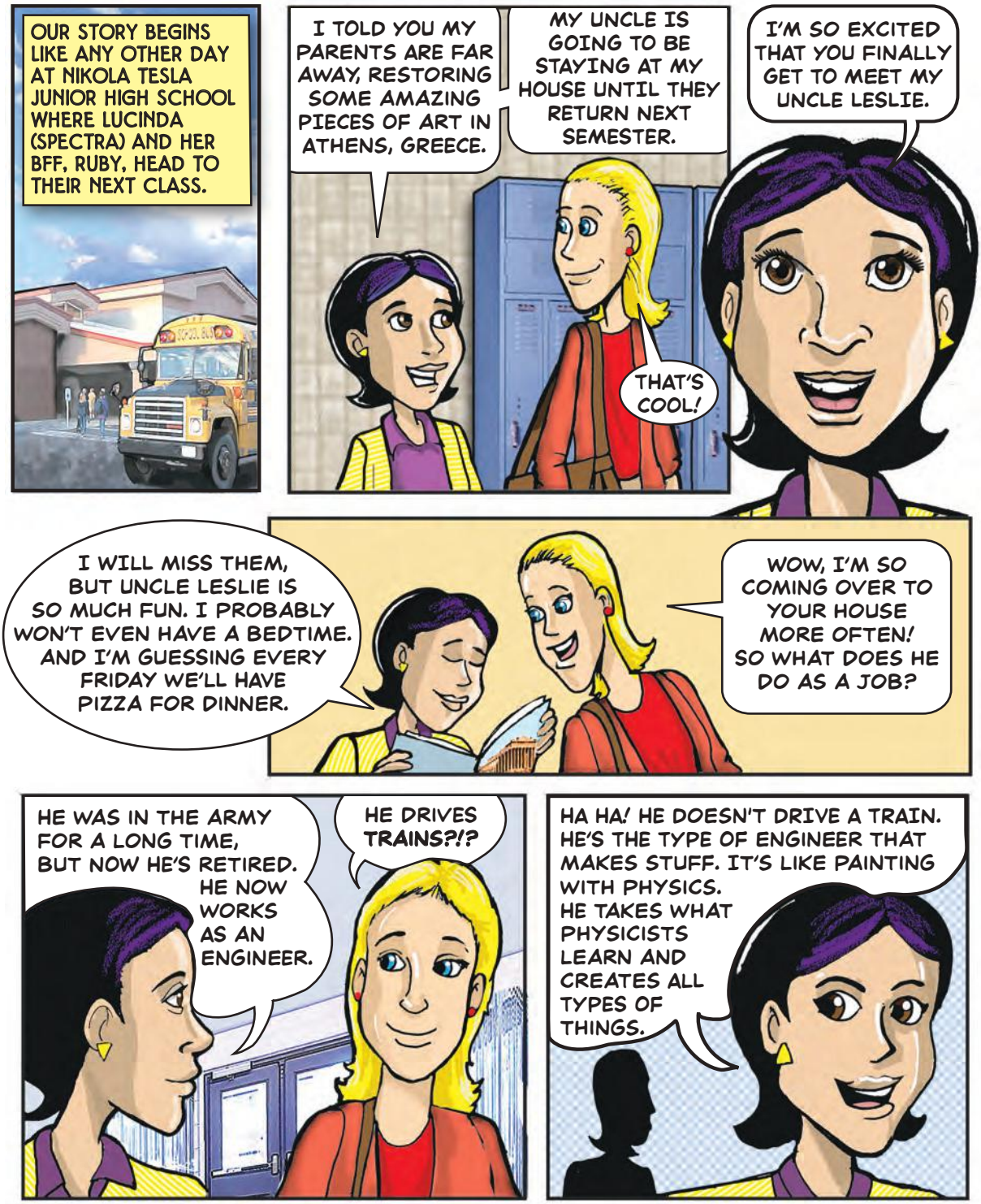
PhysicsQuest 2010: Spectra's Force - Issue #3
is published by the American Physical Society

Library of Congress Control Number: 2011902569

SPECTRA'S FORCE

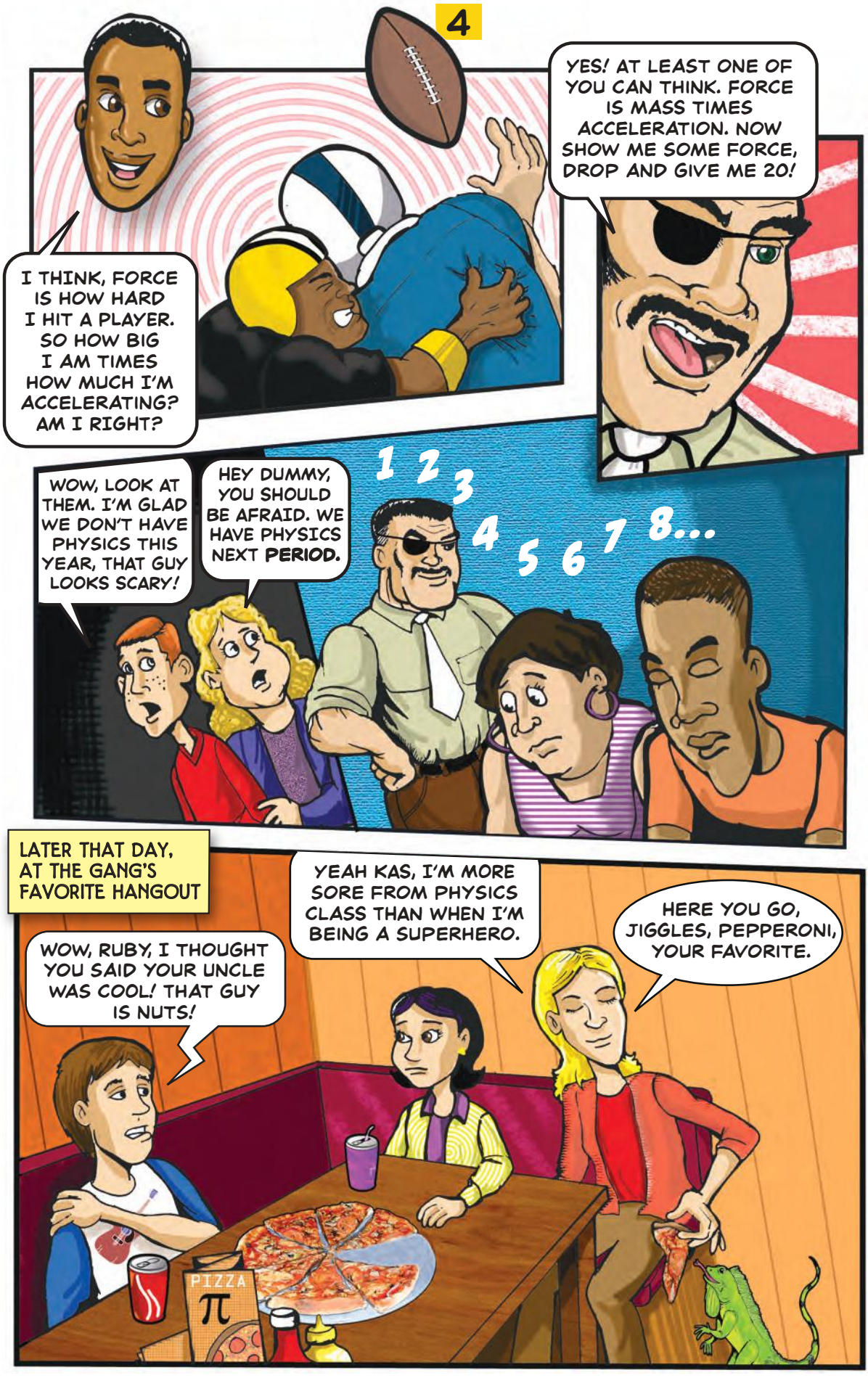
PART 1

WRITTEN BY REBECCA THOMPSON • ILLUSTRATIONS BY KERRY G. JOHNSON




LOOK OVER THERE, IT'S THE GUYS.
KAS AND GORDY, WHERE ARE YOU TWO HEADED?
SAME PLACE YOU ARE, DARK ARTS WITH SLYTHERINE, BETTER KNOWN AS PHYSICS CLASS WITH A NEW TEACHER.
SEEMS LIKE WE CAN'T HANG ON TO A PHYSICS TEACHER. THAT JOB MUST BE CURSED.*
HEY, RUBY!
The quartet of friends make it to the physics class and meet the new teacher.
WHO'S THAT?
UNCLE LESLIE? WHAT ARE YOU DOING HERE?
*Find out what happened to the other physics teacher in Spectra #2. Available online at www.physicscentral.com
AND THE REST OF YOU...
SIT DOWN!!!
HI THERE LITTLE RUBY! I WANTED TO SURPRISE YOU. NOW PLEASE. TAKE YOUR SEAT.


I AM... GENERAL LESLIE J. RELATIVITY
HAH! GIGGLE! HA! HA! HA! HA! HA!
DO YOU THINK MY NAME IS FUNNY? BECAUSE, I'M NOT LAUGHING! I WAS NAMED AFTER MY DEAR OLD GRANDMOTHER.
YOU ALL WILL CALL ME GENERAL!
IF YOU DON'T, YOU WILL DROP AND GIVE ME 20 PUSH UPS.
UM, AH, UM...
FROM WHAT I'VE HEARD, YOU HAVE LEARNED ABOUT LASERS, WHICH ARE NEW AND FANCY, BUT IN MY CLASS WE'RE GOING BACK-TO-BASICS!
YOU THERE, BLONDE GIRL, DEFINE FORCE!
YOU! MR. FOOTBALL PLAYER! SINCE YOU'RE SUCH A HOTSHOT ON THE FIELD, YOU SHOULD KNOW ABOUT FORCE.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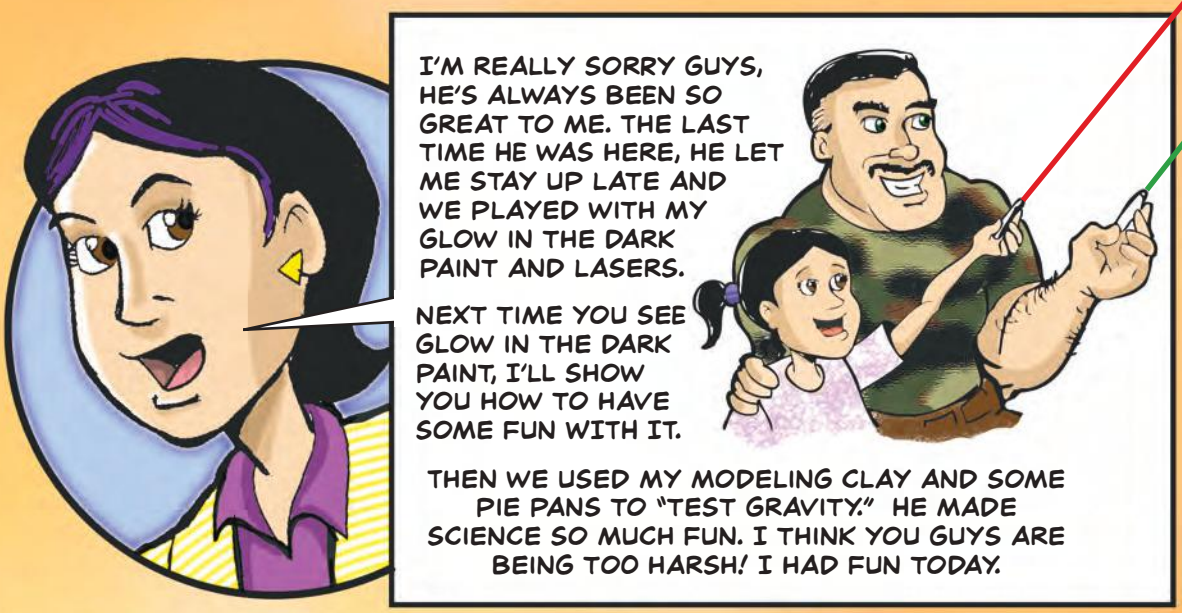
I THINK, FORCE IS HOW HARD I HIT A PLAYER. SO HOW BIG I AM TIMES HOW MUCH I'M ACCELERATING? AM I RIGHT?
YES! AT LEAST ONE OF YOU CAN THINK. FORCE IS MASS TIMES ACCELERATION. NOW SHOW ME SOME FORCE, DROP AND GIVE ME 20!
WOW, LOOK AT THEM. I'M GLAD WE DON'T HAVE PHYSICS THIS YEAR, THAT GUY LOOKS SCARY!
HEY DUMMY, YOU SHOULD BE AFRAID. WE HAVE PHYSICS NEXT PERIOD.
1 2 3 4 5 6 7 8...
LATER THAT DAY, AT THE GANG'S FAVORITE HANGOUT
WOW, RUBY, I THOUGHT YOU SAID YOUR UNCLE WAS COOL! THAT GUY IS NUTS!
YEAH KAS, I'M MORE SORE FROM PHYSICS CLASS THAN WHEN I'M BEING A SUPERHERO.
HERE YOU GO, JIGGLES, PEPPERONI, YOUR FAVORITE.
PIZZA
π

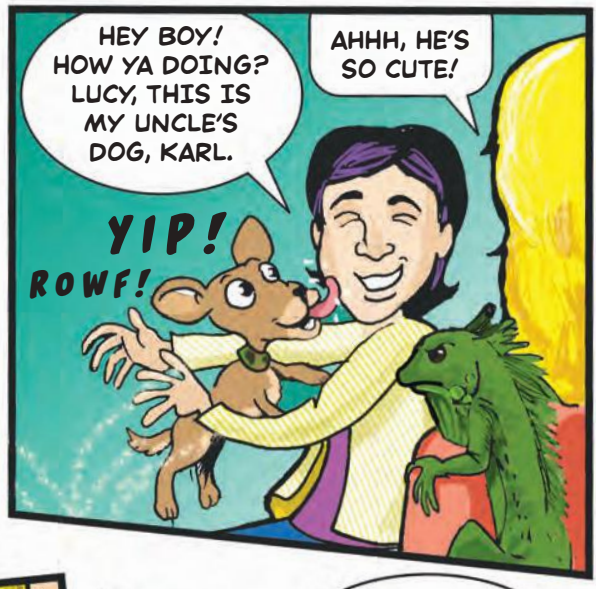

I'M REALLY SORRY GUYS, HE'S ALWAYS BEEN SO GREAT TO ME. THE LAST TIME HE WAS HERE, HE LET ME STAY UP LATE AND WE PLAYED WITH MY GLOW IN THE DARK PAINT AND LASERS.
NEXT TIME YOU SEE GLOW IN THE DARK PAINT, I'LL SHOW YOU HOW TO HAVE SOME FUN WITH IT.
THEN WE USED MY MODELING CLAY AND SOME PIE PANS TO "TEST GRAVITY." HE MADE SCIENCE SO MUCH FUN. I THINK YOU GUYS ARE BEING TOO HARSH! I HAD FUN TODAY.


KAS, GET OFF RUBY'S CASE! THE GENERAL TAUGHT ME A LOT ABOUT FOOTBALL AND PHYSICS.
YEAH, BECAUSE YOU'RE THE ONLY ONE WHO DOESN'T HAVE TO ICE WHEN YOU GET HOME!


I'VE HAD ENOUGH "UNCLE BASHING". C'MON LUCY, LET'S GO TO MY HOUSE AND SPEND SOME TIME WITH MY COOL UNCLE LESLIE!.


UNCLE LESLIE? I'M HOME AND I BROUGHT MY FRIEND LUCINDA.


???


HEY BOY! HOW YA DOING? LUCY, THIS IS MY UNCLE'S DOG, KARL.
AHHH, HE'S SO CUTE!
YIP!
ROWF!

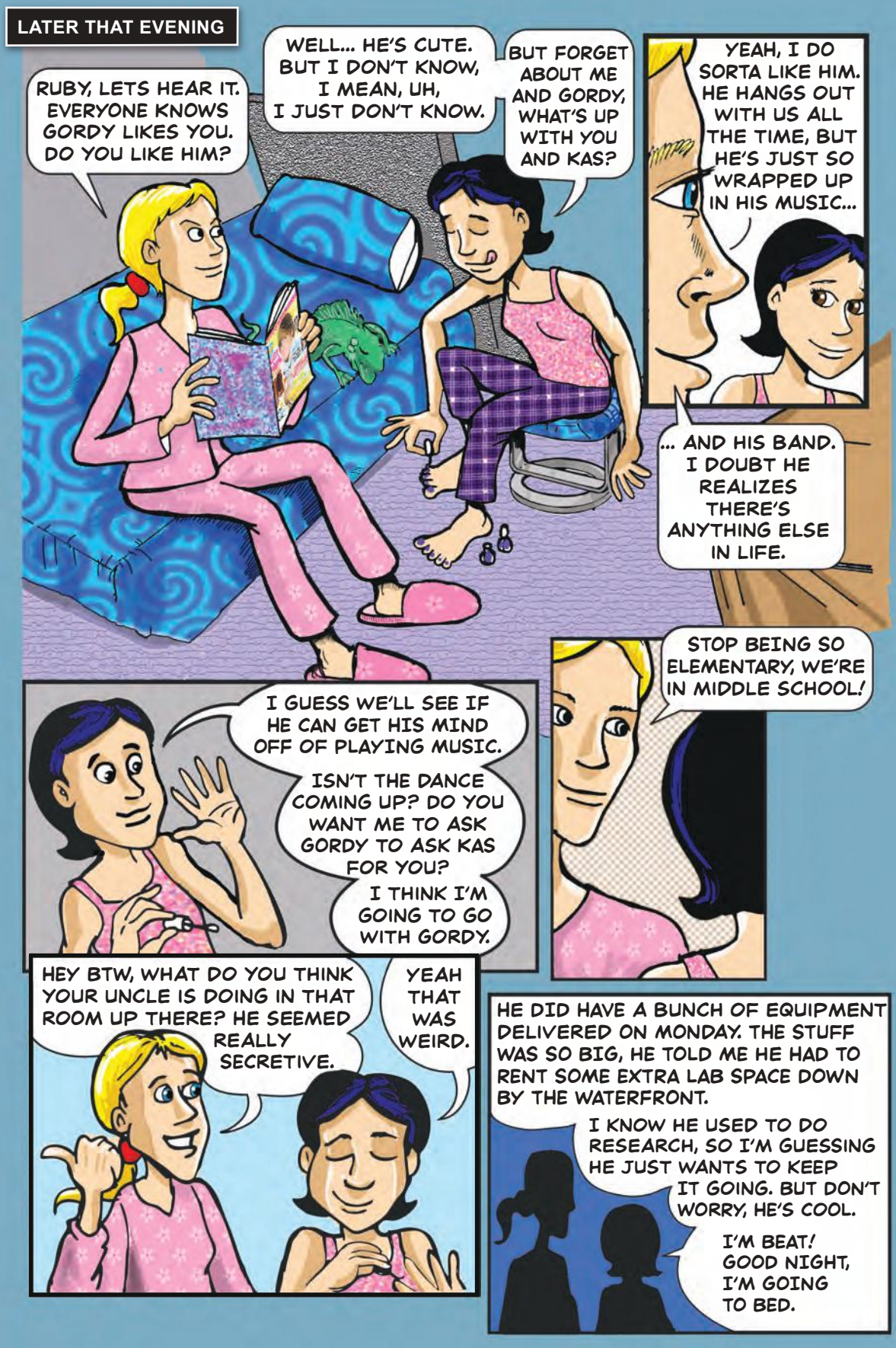

HISS SS!!
GRRRR

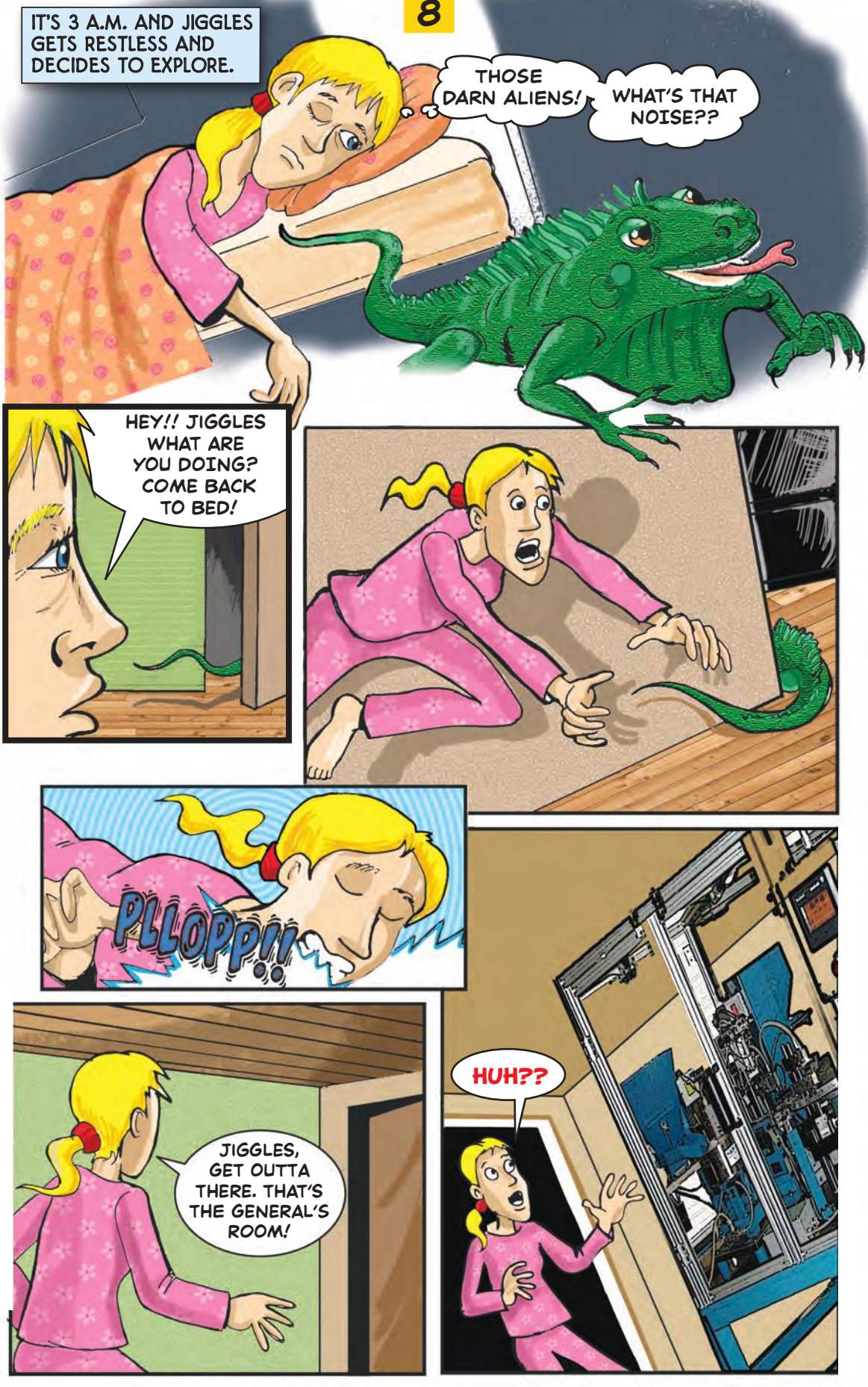

AHHHH! RUBY! DON'T LET KARL HURT JIGGLES!!
KARL, SETTLE DOWN!

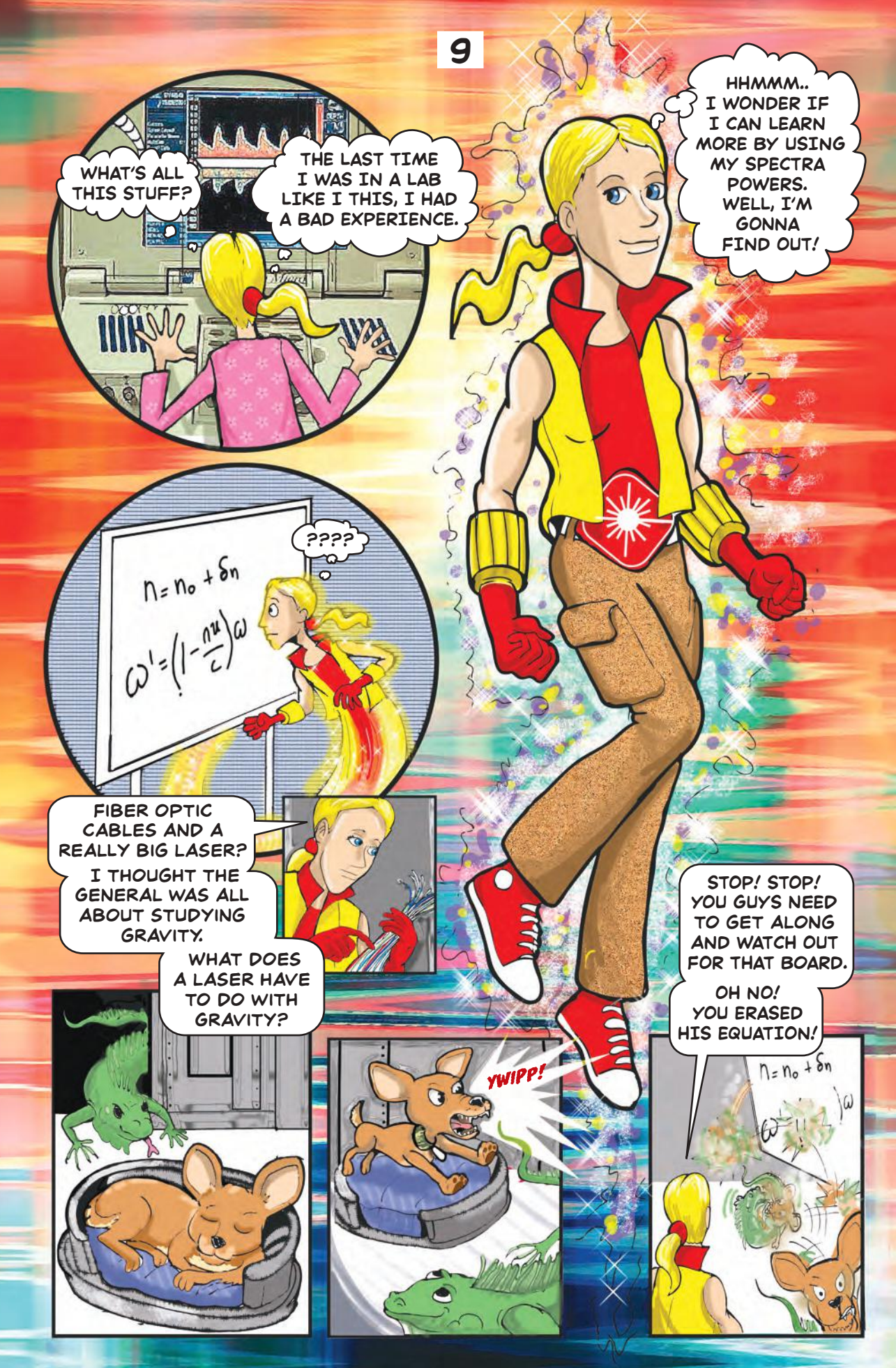

HI GIRLS, I DIDN'T EXPECT YOU TO BE HOME SO SOON. I SEE KARL HAS MET A NEW FRIEND.
ARE YOU STAYING WITH US TONIGHT LUCY?
YES SIR!

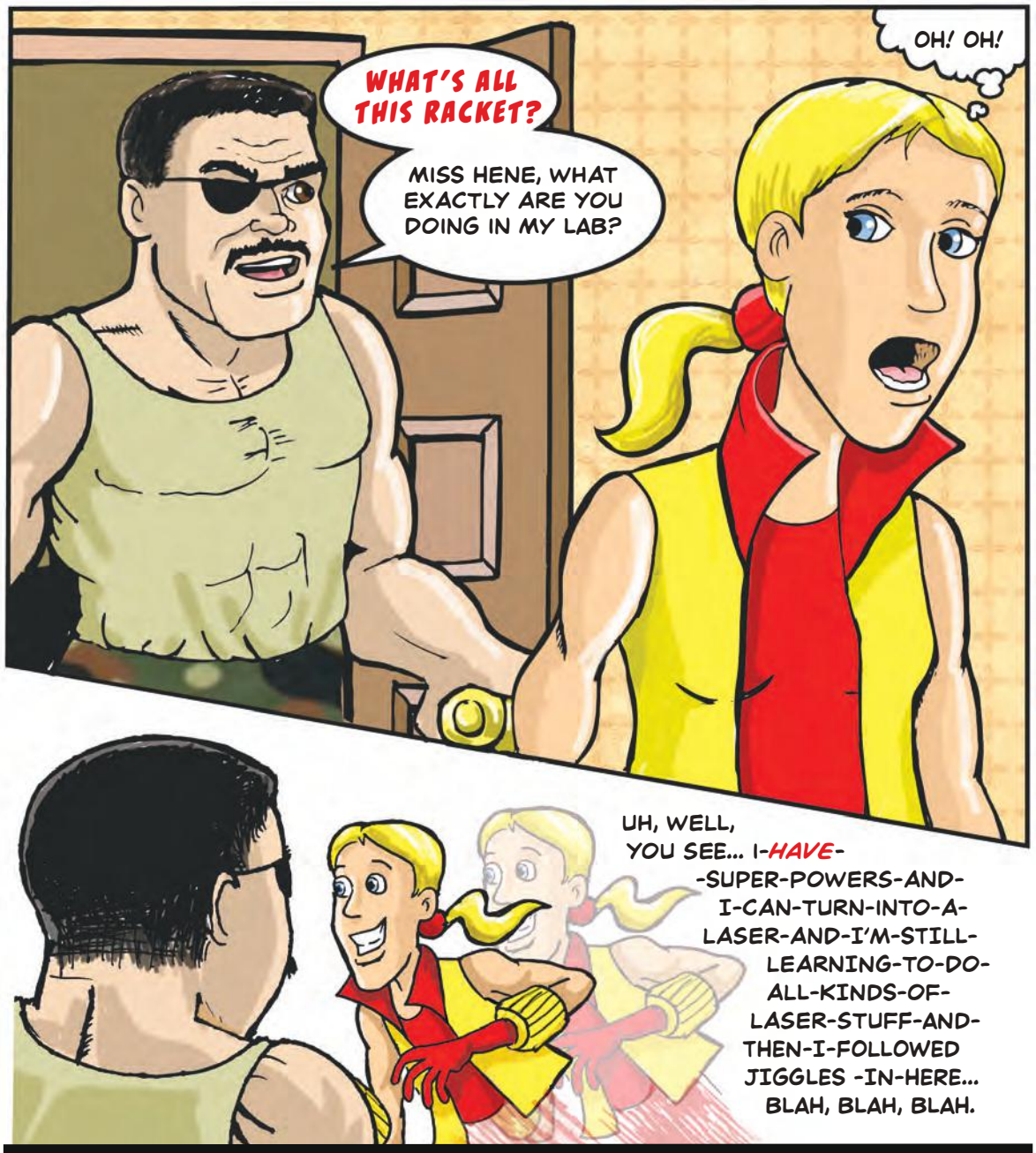

NO PROBLEM; GLAD TO HAVE YOU. YOU GIRLS HAVE FUN, THERE'S ICE CREAM IN THE FREEZER. I'LL BE IN MY ROOM.

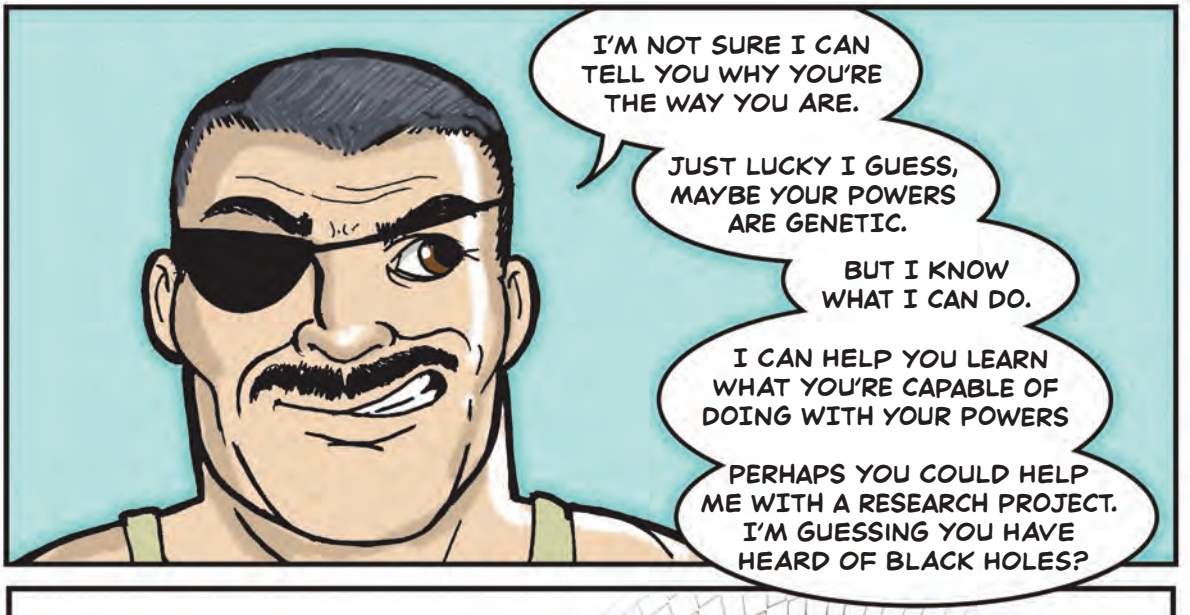

SLAM!
DO NOT DISTURB

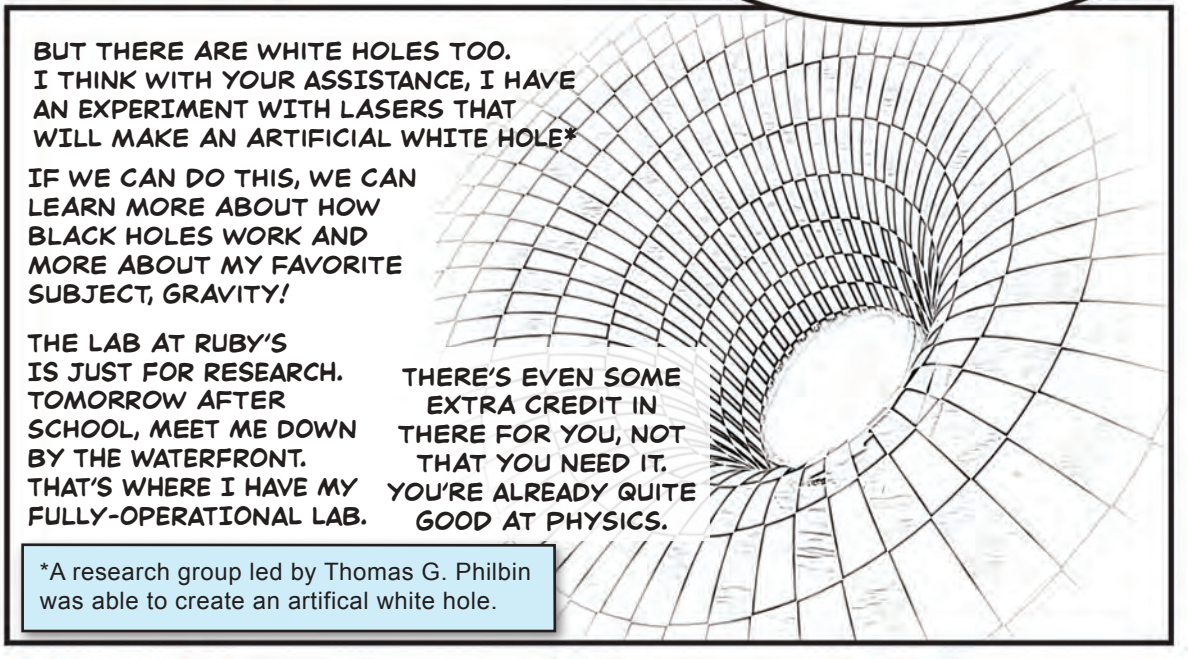

LATER THAT EVENING
RUBY, LETS HEAR IT. EVERYONE KNOWS GORDY LIKES YOU. DO YOU LIKE HIM?
WELL... HE'S CUTE. BUT I DON'T KNOW, I MEAN, UH, I JUST DON'T KNOW.
BUT FORGET ABOUT ME AND GORDY, WHAT'S UP WITH YOU AND KAS?
YEAH, I DO SORTA LIKE HIM. HE HANGS OUT WITH US ALL THE TIME, BUT HE'S JUST SO WRAPPED UP IN HIS MUSIC...
... AND HIS BAND. I DOUBT HE REALIZES THERE'S ANYTHING ELSE IN LIFE.
STOP BEING SO ELEMENTARY, WE'RE IN MIDDLE SCHOOL!
I GUESS WE'LL SEE IF HE CAN GET HIS MIND OFF OF PLAYING MUSIC.
ISN'T THE DANCE COMING UP? DO YOU WANT ME TO ASK GORDY TO ASK KAS FOR YOU?
I THINK I'M GOING TO GO WITH GORDY.
HEY BTW, WHAT DO YOU THINK YOUR UNCLE IS DOING IN THAT ROOM UP THERE? HE SEEMED REALLY SECRETIVE.
YEAH THAT WAS WEIRD.
HE DID HAVE A BUNCH OF EQUIPMENT DELIVERED ON MONDAY. THE STUFF WAS SO BIG, HE TOLD ME HE HAD TO RENT SOME EXTRA LAB SPACE DOWN BY THE WATERFRONT.
I KNOW HE USED TO DO RESEARCH, SO I'M GUESSING HE JUST WANTS TO KEEP IT GOING. BUT DON'T WORRY, HE'S COOL.
I'M BEAT! GOOD NIGHT, I'M GOING TO BED.


IT'S 3 A.M. AND JIGGLES GETS RESTLESS AND DECIDES TO EXPLORE.
THOSE DARN ALIENS!
WHAT'S THAT NOISE??
HEY!! JIGGLES WHAT ARE YOU DOING? COME BACK TO BED!
PLLOPP!!
JIGGLES, GET OUTTA THERE. THAT'S THE GENERAL'S ROOM!
HUH??

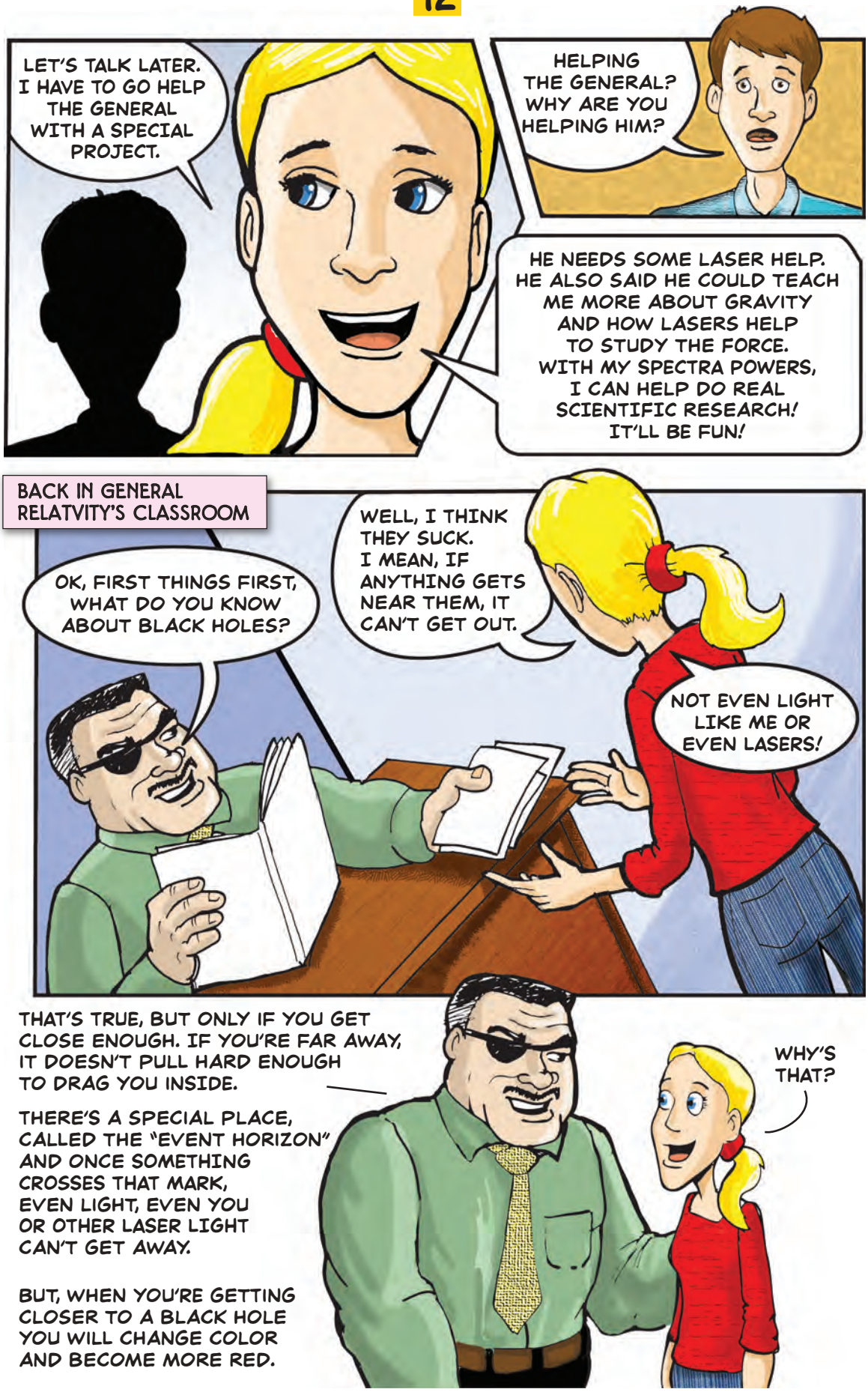

HHMMM.. I WONDER IF I CAN LEARN MORE BY USING MY SPECTRA POWERS. WELL, I'M GONNA FIND OUT!
WHAT'S ALL THIS STUFF?
THE LAST TIME I WAS IN A LAB LIKE I THIS, I HAD A BAD EXPERIENCE.
????
FIBER OPTIC CABLES AND A REALLY BIG LASER?
I THOUGHT THE GENERAL WAS ALL ABOUT STUDYING GRAVITY.
WHAT DOES A LASER HAVE TO DO WITH GRAVITY?
YWIPP!
STOP! STOP! YOU GUYS NEED TO GET ALONG AND WATCH OUT FOR THAT BOARD.
OH NO! YOU ERASED HIS EQUATION!

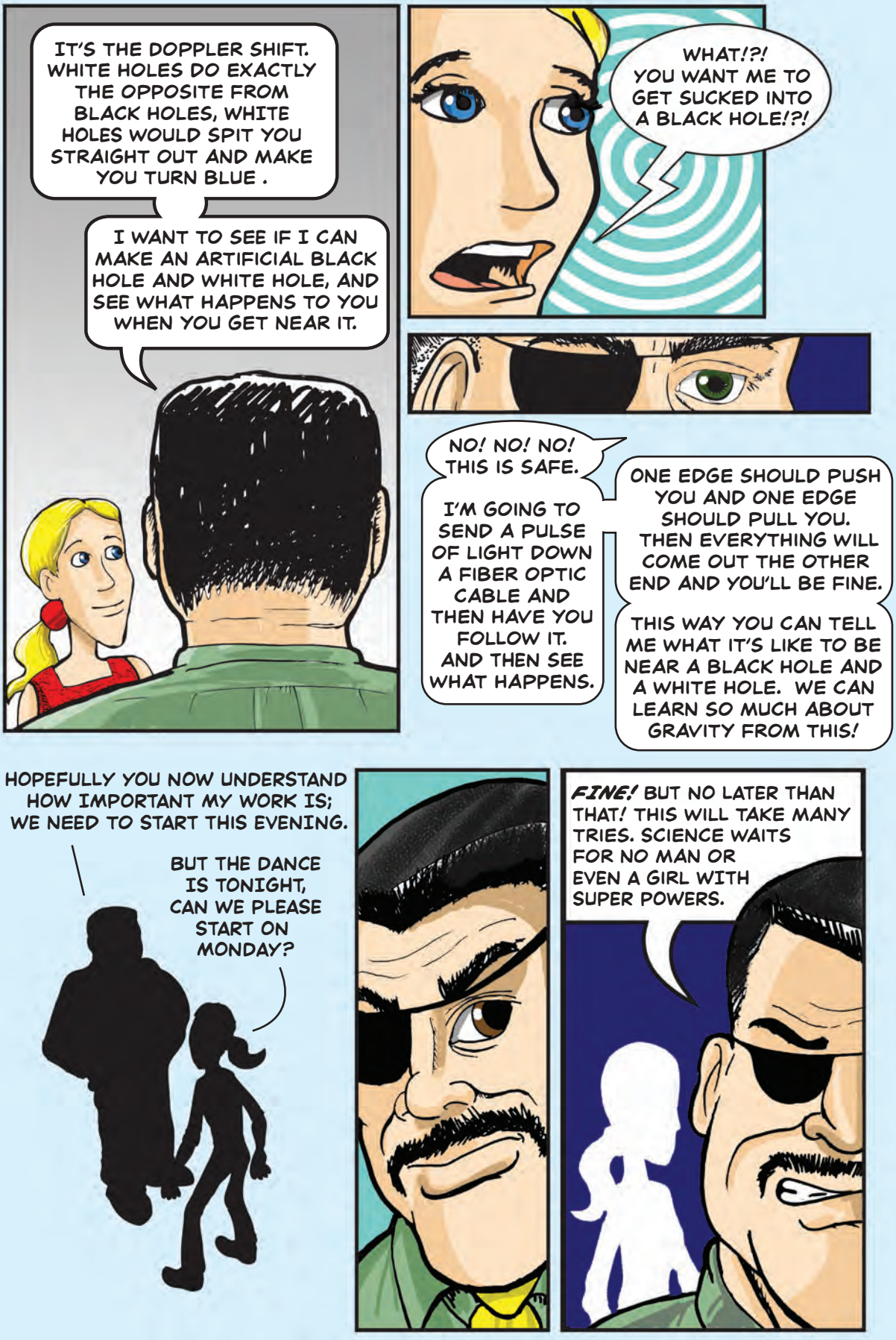

OH! OH!
WHAT'S ALL THIS RACKET?
MISS HENE, WHAT EXACTLY ARE YOU DOING IN MY LAB?
UH, WELL, YOU SEE... I-HAVE--SUPER-POWERS-AND-I-CAN-TURN-INTO-A-LASER-AND-I'M-STILL-LEARNING-TO-DO-ALL-KINDS-OF-LASER-STUFF-AND-THEN-I-FOLLOWED JIGGLES -IN-HERE... BLAH, BLAH, BLAH.
WOW, I WOULD NEVER HAVE THOUGHT THAT WAS POSSIBLE. DOES RUBY KNOW ABOUT YOUR POWERS?
AGAIN AND MORE IMPORTANTLY, WHAT ARE YOU DOING IN MY LAB?
AND SPEAK A BIT SLOWER THIS TIME.
I CHASED MY IGUANA, IN HERE. AFTER SEEING ALL YOUR STUFF, I WAS TRYING TO FIGURE OUT WHAT YOU'RE DOING IN HERE.
LIKE I SAID, I CAN TURN INTO A LASER AND I WAS WONDERING IF YOUR EQUIPMENT COULD HELP ME FIGURE OUT WHY I HAVE THESE POWERS AND ALL THE THINGS I CAN DO.

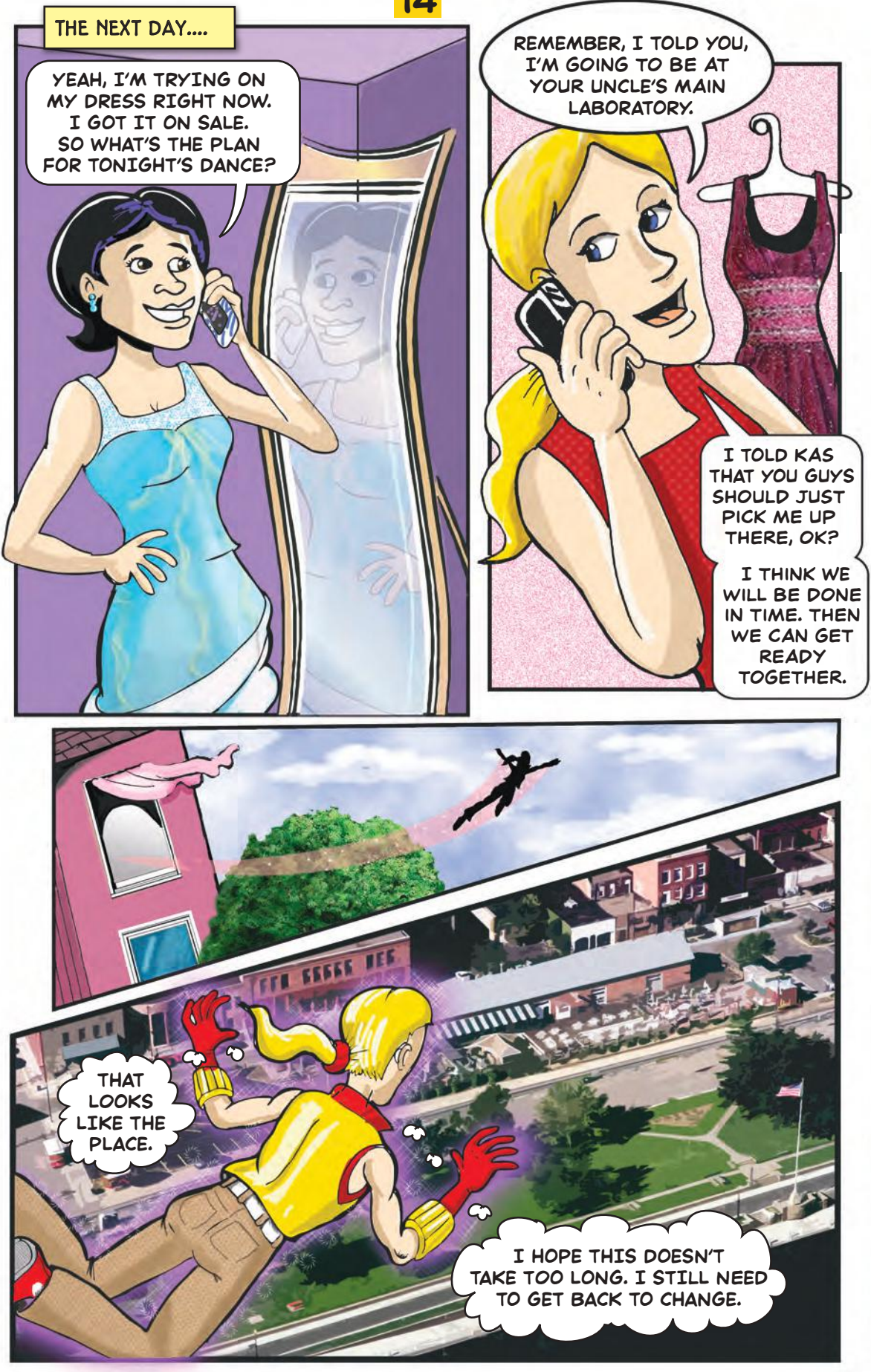




*A research group led by Thomas G. Philbin was able to create an artifical white hole.


LET'S TALK LATER. I HAVE TO GO HELP THE GENERAL WITH A SPECIAL PROJECT.
HELPING THE GENERAL? WHY ARE YOU HELPING HIM?
HE NEEDS SOME LASER HELP. HE ALSO SAID HE COULD TEACH ME MORE ABOUT GRAVITY AND HOW LASERS HELP TO STUDY THE FORCE. WITH MY SPECTRA POWERS, I CAN HELP DO REAL SCIENTIFIC RESEARCH! IT'LL BE FUN!
BACK IN GENERAL RELATVITY'S CLASSROOM
OK, FIRST THINGS FIRST, WHAT DO YOU KNOW ABOUT BLACK HOLES?
WELL, I THINK THEY SUCK. I MEAN, IF ANYTHING GETS NEAR THEM, IT CAN'T GET OUT.
NOT EVEN LIGHT LIKE ME OR EVEN LASERS!
THAT'S TRUE, BUT ONLY IF YOU GET CLOSE ENOUGH. IF YOU'RE FAR AWAY, IT DOESN'T PULL HARD ENOUGH TO DRAG YOU INSIDE.
THERE'S A SPECIAL PLACE, CALLED THE "EVENT HORIZON" AND ONCE SOMETHING CROSSES THAT MARK, EVEN LIGHT, EVEN YOU OR OTHER LASER LIGHT CAN'T GET AWAY.
BUT, WHEN YOU'RE GETTING CLOSER TO A BLACK HOLE YOU WILL CHANGE COLOR AND BECOME MORE RED.
WHY'S THAT?

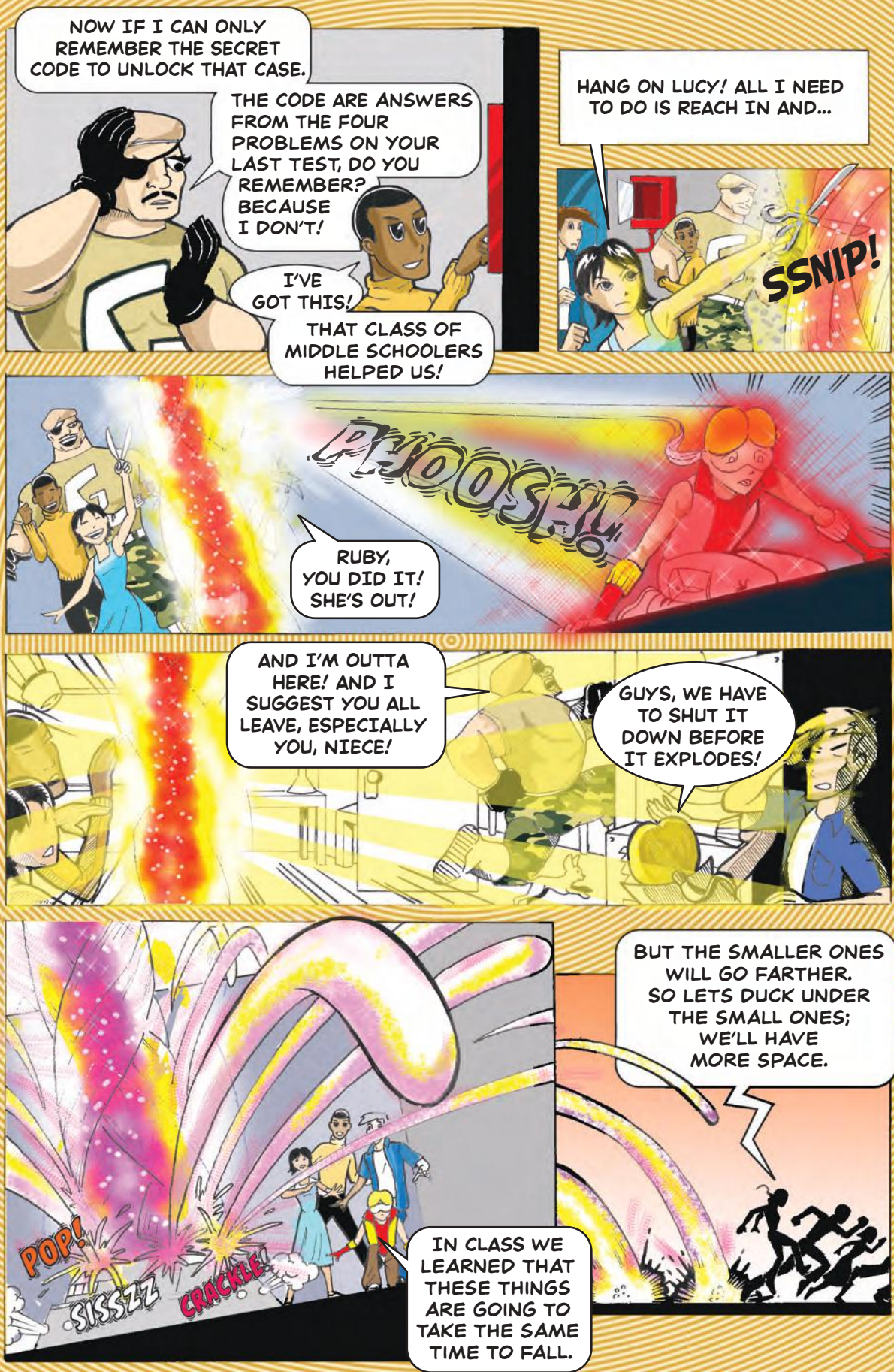

IT'S THE DOPPLER SHIFT. WHITE HOLES DO EXACTLY THE OPPOSITE FROM BLACK HOLES, WHITE HOLES WOULD SPIT YOU STRAIGHT OUT AND MAKE YOU TURN BLUE .
I WANT TO SEE IF I CAN MAKE AN ARTIFICIAL BLACK HOLE AND WHITE HOLE, AND SEE WHAT HAPPENS TO YOU WHEN YOU GET NEAR IT.
WHAT!?! YOU WANT ME TO GET SUCKED INTO A BLACK HOLE!?!
NO! NO! NO! THIS IS SAFE.
I'M GOING TO SEND A PULSE OF LIGHT DOWN A FIBER OPTIC CABLE AND THEN HAVE YOU FOLLOW IT. AND THEN SEE WHAT HAPPENS.
ONE EDGE SHOULD PUSH YOU AND ONE EDGE SHOULD PULL YOU. THEN EVERYTHING WILL COME OUT THE OTHER END AND YOU'LL BE FINE.
THIS WAY YOU CAN TELL ME WHAT IT'S LIKE TO BE NEAR A BLACK HOLE AND A WHITE HOLE. WE CAN LEARN SO MUCH ABOUT GRAVITY FROM THIS!
HOPEFULLY YOU NOW UNDERSTAND HOW IMPORTANT MY WORK IS; WE NEED TO START THIS EVENING.
BUT THE DANCE IS TONIGHT, CAN WE PLEASE START ON MONDAY?
FINE! BUT NO LATER THAN THAT! THIS WILL TAKE MANY TRIES. SCIENCE WAITS FOR NO MAN OR EVEN A GIRL WITH SUPER POWERS.

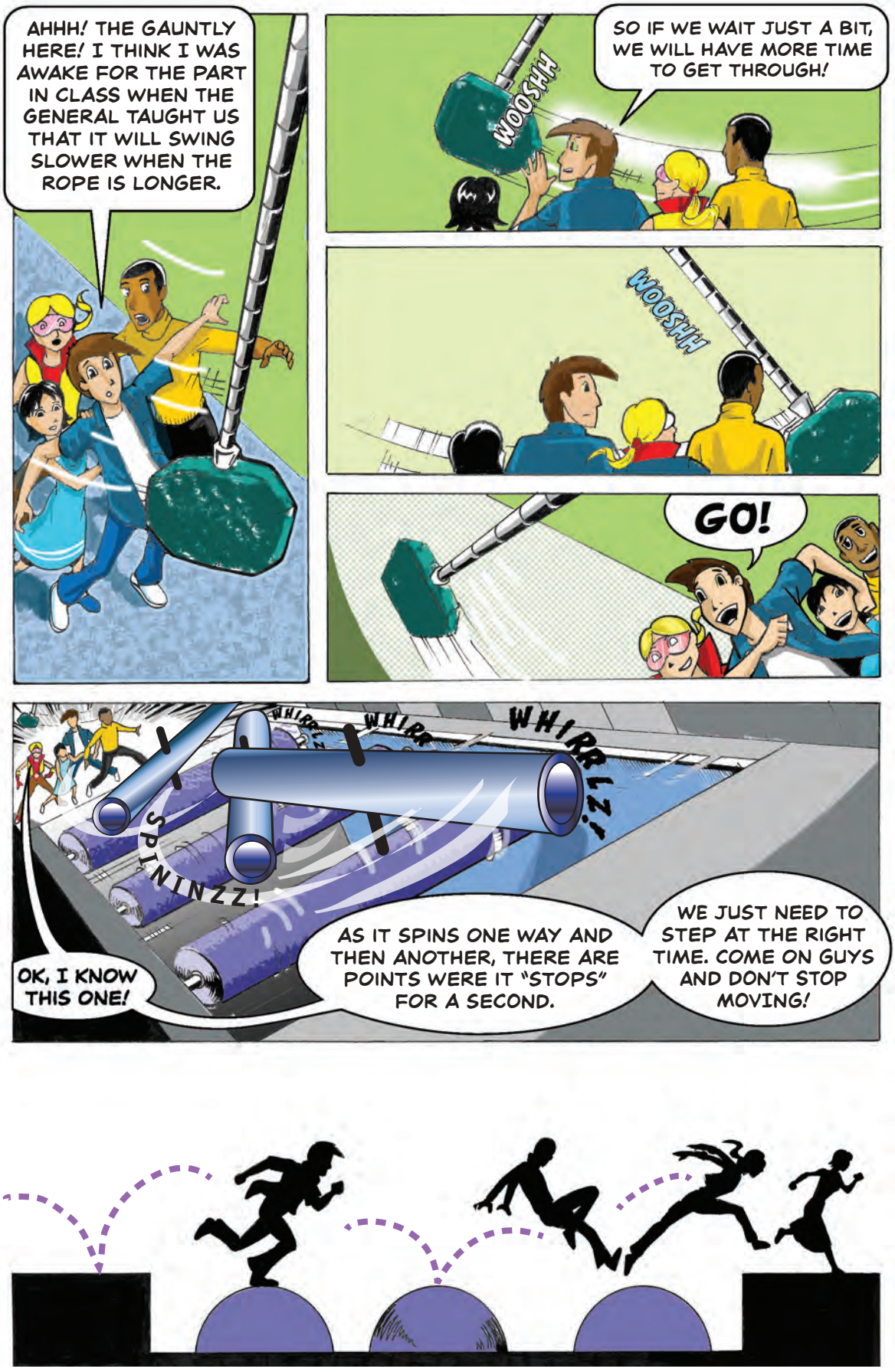

THE NEXT DAY....
YEAH, I'M TRYING ON MY DRESS RIGHT NOW. I GOT IT ON SALE. SO WHAT'S THE PLAN FOR TONIGHT'S DANCE?
REMEMBER, I TOLD YOU, I'M GOING TO BE AT YOUR UNCLE'S MAIN LABORATORY.
I TOLD KAS THAT YOU GUYS SHOULD JUST PICK ME UP THERE, OK?
I THINK WE WILL BE DONE IN TIME. THEN WE CAN GET READY TOGETHER.
THAT LOOKS LIKE THE PLACE.
I HOPE THIS DOESN'T TAKE TOO LONG. I STILL NEED TO GET BACK TO CHANGE.

PART 2

WRITTEN BY REBECCA THOMPSON • ILLUSTRATED BY DAVID ELLIS


I THINK I AM CLOSE ENOUGH, I'M STARTING TO SHIFT, RED AND BLUE. YOU DID IT GENERAL! THIS MUST BE LIKE A BLACK HOLE!
SUCCESS!!!
OUCH! YOU SAID I COULD GET OUT!?
WHERE'S THE END!!!!
I'M BEING STRETCHED TOO MUCH, I CAN'T HANDLE THIS, IT HURTS!
UNCLE LESLIE, WHAT'S GOING ON? WHERE'S LUCY?
BUT HERE ON MY DIAGRAM. OH NO! SOMETHING MUST HAVE GONE WRONG! THIS ISN'T RIGHT. I DON'T KNOW HOW TO GET YOU OUT!
RUBY, SHE'S IN DANGER! QUICK, GRAB THAT EMERGENCY SHUT-OFF DEVICE, I HAVE TO CUT THE CABLE!

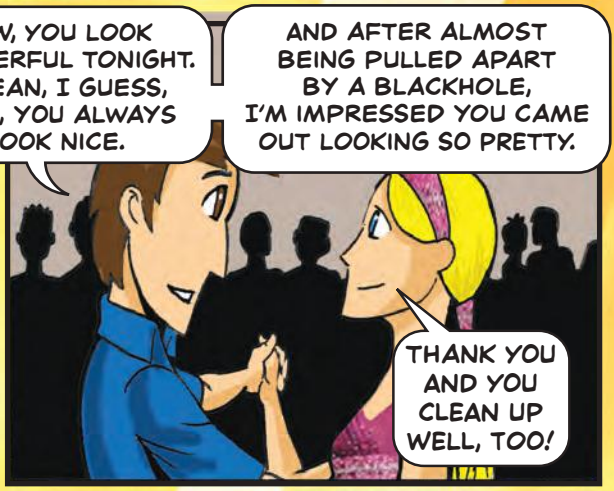

NOW IF I CAN ONLY REMEMBER THE SECRET CODE TO UNLOCK THAT CASE.
THE CODE ARE ANSWERS FROM THE FOUR PROBLEMS ON YOUR LAST TEST, DO YOU REMEMBER? BECAUSE I DON'T!
I'VE GOT THIS!
THAT CLASS OF MIDDLE SCHOOLERS HELPED US!
HANG ON LUCY! ALL I NEED TO DO IS REACH IN AND...
SSNIP!
PYOOSH!
RUBY, YOU DID IT! SHE'S OUT!
AND I'M OUTTA HERE! AND I SUGGEST YOU ALL LEAVE, ESPECIALLY YOU, NIECE!
GUYS, WE HAVE TO SHUT IT DOWN BEFORE IT EXPLODES!
POP!
SISSZZ
CRACKLE!
IN CLASS WE LEARNED THAT THESE THINGS ARE GOING TO TAKE THE SAME TIME TO FALL.
BUT THE SMALLER ONES WILL GO FARTHER. SO LETS DUCK UNDER THE SMALL ONES; WE'LL HAVE MORE SPACE.


AHHH! THE GAUNTLY HERE! I THINK I WAS AWAKE FOR THE PART IN CLASS WHEN THE GENERAL TAUGHT US THAT IT WILL SWING SLOWER WHEN THE ROPE IS LONGER.
WOOSH!
SO IF WE WAIT JUST A BIT, WE WILL HAVE MORE TIME TO GET THROUGH!
WOOSH!
GO!
WHIRRLZ!
SPINNZZ!
OK, I KNOW THIS ONE!
AS IT SPINS ONE WAY AND THEN ANOTHER, THERE ARE POINTS WERE IT "STOPS" FOR A SECOND.
WE JUST NEED TO STEP AT THE RIGHT TIME. COME ON GUYS AND DON'T STOP MOVING!


WOW, THAT WAS CLOSE. I'M SUPER GLAD UNCLE LESLIE TAUGHT US ABOUT FORCE AND MOTION THIS YEAR!
AND THAT THOSE KIDS KNEW THE CODE TO SHUT OFF THE EXPERIMENT!
DO YOU THINK WE WILL EVER HAVE A PHYSICS TEACHER THAT DOESN'T TRY TO USE SPECTRA?
I SURE HOPE NOT. I'M GLAD THAT WE'RE ALL SAFE...
... LOOK AT THE TIME!
WE CAN STILL GET TO THE DANCE! LET ME GO QUICKLY CHANGE. BACK IN A FLASH SO TO SPEAK!
SHORTLY AFTERWARDS
DANCE


KAS, I WONDER WHY NO ONE IS A DANCING? THIS IS ONE OF MY FAVORITE SONGS.
HUH, I NEVER UNDERSTOOD WHY PEOPLE LIKE THIS FLUFFY MUSIC.
BUT FOR YOU, I'LL LISTEN TO ANYTHING. UHH, WOULD YOU LIKE TO DANCE?


I WOULD LOVE TO DANCE.


BTW, YOU LOOK WONDERFUL TONIGHT. I MEAN, I GUESS, UHHH, YOU ALWAYS LOOK NICE.
AND AFTER ALMOST BEING PULLED APART BY A BLACKHOLE, I'M IMPRESSED YOU CAME OUT LOOKING SO PRETTY.
THANK YOU AND YOU CLEAN UP WELL, TOO!


THE END

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THE SPECTRA ISSUE #3 TEAM

REBECCA THOMPSON is the Head of Public Outreach at APS and the co-creator of Spectra. She often travels all over the world to research and write comics. With her PhD in physics and Ironman finisher's medal, she has the smarts and endurance to reach out to the world proselytizing physics while tanning.

KERRY G. JOHNSON is the Art Director at APS and the co-creator of Spectra. His artwork has been published in various newspapers, books, magazines and web sites. He also enjoys illustrating caricatures and joking with his family and friends when he's not drawing the Spectra comics.

DAVID ELLIS works in the APS Editorial Offices in Ridge, NY developing electronic and graphic design projects. A comic book fan his entire life, David considers drawing Spectra the perfect combination of his day job and his dream job.

NANCY BENNETT-KARASIK works as a graphic designer at APS. Her design work encompasses publications, marketing support materials and illustration. In her spare time she enjoys drawing, reading and making decorative costumes.

Spectra Issue #3: Spectra's Force is published by the American Physical Society

IN THIS THIRD INSTALLMENT OF THE SPECTRA SERIES, OUR LASER-POWERED MIDDLE SCHOOL HERO TRIES TO PREVENT HER BEST FRIEND'S UNCLE FROM ACCIDENTALLY DESTROYING THE WORLD! HELP SPECTRA AND HER CREW BY LEARNING ABOUT GRAVITY, FORCE AND MOTION IN PHYSICSQUEST 2010 ***SPECTRA'S FORCE.***

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