



At Home Learning Resources

Grade 8 - Week 9

Content	Time Suggestions
Independent Reading (Read books, watch books read aloud, listen to a book)	At least 20 minutes daily (Could be about science, social studies, etc)
ELA	45 minutes daily
Math	45 minutes daily
Science	45 minutes daily
Social Studies	45 minutes daily
Arts, Physical Education, or Social Emotional Learning	30 minutes daily

These are some time recommendations for each subject.

We know everyone's schedule is different, so do what you can.

These times do not need to be in a row/in order, but can be spread throughout the day.

Teachers will suggest which parts of the packet need to be completed or teachers may assign alternative tasks.

Grade 8 ELA Week 9

Your child can complete any of the activities in weeks 1-8. These can be found on the Lowell Public Schools website: <https://www.lowell.k12.ma.us/Page/3804> Activities in weeks 7 & 8 are focused on memoir reading and writing and may have resources you can continue to use in Week 9.

This week complete the focus on memoir reading and writing. Your child should be reading, writing, talking and writing about reading, and exploring new vocabulary each week.

Reading: Students need to read each day. They can read the memoir included in this packet and/or read any of the memoir books that they have at home, or can access online at Epic Books, Tumblebooks, the Pollard Library online, or other online books. All resources are on the LPS website. There is something for everyone.

Talking and Writing about Reading: As students are reading, they can think about their reading, then talk about their reading with a family member and/or write about their reading using the prompts/questions included.

Writing: Students will finish working on memoir writing this week. The resources in this packet are the same as the last two weeks. These resources are charts with examples to help your child write. They are available online in an interactive form with video tutorials here: [Memoir Writing Choice Board](#). This writing should occur over multiple days. Students will be planning their writing, then writing, then making it even better by revising, writing some more, and at the end, fixing it up by editing. Your child might write 1 memoir and work to refine it throughout, or might write multiple memoirs, getting better each time. As your child completes their memoir writing, they should be working to revise their piece and edit for publication.

Word Work: Students can work on learning new vocabulary that they encounter in their reading in ELA, Science, or Social Studies. They will infer the meaning of the word in context, use clues in their reading, and use the word in a sentence.

Students in grade 8 have read memoirs this year.

A memoir provides factual information in a narrative style about a significant time, place, person, or event in the author's life, and explains the significance.

Memoirs:

- Tell the story (memoir) of a significant time, place, or person, or event in a subject's life
- Are told by a subject
- Use a narrative structure
- Provide factual information about the subject's life
- Tell why the time or event is important enough to be written about
- Are written in first person
- Have a limited perspective (subjective)

Often:

- Include direct quotes
- Have photographs
- Tell the story at a significant point in subject's life
- Tell the setting and the culture the person lived in and what influenced the subject
- Add factual statements as additional information
- Convey a larger message

The above taken from Genre Study, Fountas & Pinnell

As you are reading and writing memoirs, keep in mind the following questions:

1. Why read memoir?
2. What makes memoir unique?
3. What calls a person to write his or her own story, a memoir?

Excerpt: *How To Be Black* by Baratunde Thurston

Chapter One: Where Did You Get That Name?

Barry. Barrington. Baracuda. Bartuna. Bartender. Bartunda. Bartholomew. Bart. Baritone. Baritone Dave. Baranthunde. Bar—. Brad.

This is a representative sample of the world's attempts to say or recreate my name. For the record, it's Baratunde (baa-ruh-TOON-day).

I've trained for decades in the art of patiently waiting for people to butcher my name. It's often a teacher or customer service official who has to read aloud from a list. I listen to them breeze through Daniel and Jennifer and even Dwayne, but inevitably, there's a break in their rhythm. "James! Carrie! Karima! Stephanie! Kevin!" Pause. "Bar—." Pause. They look around the room, and then look back at their list. Their confidence falters. The declarative tone applied to the names before mine gives way to a weak, interrogative stumbling:

Barry? Barrington? Baracuda? Bartuna? Bartender? Bar-tunda? Bartholomew? Bart? Baritone? Baritone Dave? Baranthunde? Bar—? Brad!!

The person who called me Brad was engaged in the most lazy and hilarious form of wishful thinking, but all the others kind of, sort of, maybe make some sense. This experience is so common in my life that I now entirely look forward to it. Like a child on Christmas morning who hasn't yet been told that Santa is a creation of consumer culture maintained by society to extend the myth of "economic growth," I eagerly await the gift of any new variation the next person will invent. Can I get a Beelzebub? Who will see a Q where none exists? How about some numbers or special characters? Can I get a hyphen, underscore, forward slash? Only after letting the awkward process run its public course do I step forward, volunteering myself as the bearer of the unpronounceable label and correct them: "That's me. It's Baratunde."

I love my name. I love people's attempts to say it. I love that everyone, especially white people, wants to know what it means. So here's the answer:

My full name is Baratunde Rafiq Thurston. It's got a nice flow. It's global. I like to joke that "Baratunde" is a Nigerian name that means "one with no nickname." "Rafiq" is Arabic for "really, no nickname," and "Thurston" is a British name that means "property of Massa Thurston."

In truth, Baratunde is derived from the very common Yorubwa Nigerian name, "Babatunde." A literal translation comes out something like "grandfather returns" but is often interpreted as "one who is chosen." Rafiq is Arabic for "friend or companion." And Thurston, well, that really, probably, is the name of the white guy that owned my people back in the day.

Of all the groups of people who react to my name, I've found that white people are the most curious about its meaning and origin. Upon hearing of its origin, they want to know when I last visited Nigeria. Other non-black people are nearly as curious, assuming "Baratunde" to be a family name that goes back generations, that was passed to me through a series of meticulously traceable Biblical begats. Black Americans, on the other hand, rarely even pause to ponder my name. Considering how inventive black Americans have been with their own names, that's not very surprising.

Where I never expected any particular reaction, however, was from Nigerians themselves. Nigerians have very strong opinions about my name. They don't like it, and they want me to know.

Constantly.

I call this phenomenon The Nigerian Name Backlash. Rarely does a week go by without a Nigerian somewhere on the Internet finding and interrogating me. I first encountered the NNB when I was near twelve years old. I called my Nigerian friend, who went by "Tunde," on the phone, but he wasn't home. Instead, his *extremely* Nigerian father answered, and our interaction proceeded as follows:

"Hello, who is calling?"

"Hi sir, this is Baratunde."

"Where did you get that name!?"

Let's pause the exchange right here, because you need more context. Father Nigeria did not simply ask where I got the name as one might ask, "Oh, where did you get those shoes? They're really nice. They're so nice that I need to know where you got them so I can possibly get myself a pair." No, that was not the tone. The tone was more along the lines of "Who the hell do you think you are coming into my house, stealing my gold, priceless family jewels, my dead grandmother's skeleton, my porridge, and attempting to walk out through the front door as if I would not notice? By all rights, I should kill you where you stand, you thieving, backstabbing boy."

Shocked by the question, but determined to be both honest and respectful, I answered.

"I got it from my parents," I told him.*

"Do you even know what it means?" Father Nigeria asked me in the same way you might ask a dog, "What model iPad do you want?" Fortunately, I knew exactly what it meant, and I proudly answered, "It means grandfather returns or one who is chosen."

He reacted swiftly and loudly. "No! It means grandfather returns or one who is chosen."

As I was about to explain to him that I'd just said the very same thing, he launched into a tirade: "This is the problem with you so-called

African-Americans. You have no history, no culture, no roots. You think you can wear a dashiki, steal an African name, and become African? You cannot!"

Remember, when this self-appointed Father Nigeria decided to indict, judge, and reject all of African America for its attempts to rebuild some small part of the ancestral bridges burned by

America's peculiar institution, I was twelve years old and not in the best position to argue that maybe he should calm down and stop acting like a bully.

His reaction stunned me, but it also prepared me for the regular onslaught from members of the Nigerian Name Backlash community. While he made a sweeping dis against all black Americans who sought cultural identification with Africa, most other Nigerians I've encountered have more technical complaints. Every few weeks a new batch finds me on the Internet, usually Twitter, and swarms with the same basic set of questions and challenges:

"Are you Nigerian?" they excitedly ask.

"No. My parents just wanted me to have an African name."

"You know your name is Nigerian right?"

"Yes."

"But it is wrong, your name. What is this 'Baratunde'? You mean '*Babatunde*' right?"

"No."

"Where did you get that name?"

Sigh.

My name has served as a perfect window through which to examine my experience of blackness. For non-blacks, it marks me as absolutely, positively black. However, most of the vocal Nigerians I've met (which is to say, most of the Nigerians I've met) use my name to remind me that I'm not *that* black.

Excerpted from How To Be Black by Baratunde Thurston. Copyright 2011 by Baratunde Thurston. Excerpted by permission of Harper. All rights reserved. No part of this excerpt may be reproduced or reprinted without permission in writing from the publisher.

How To Be Black

by Baratunde Thurston.

Describe Thurston's relationship with his name

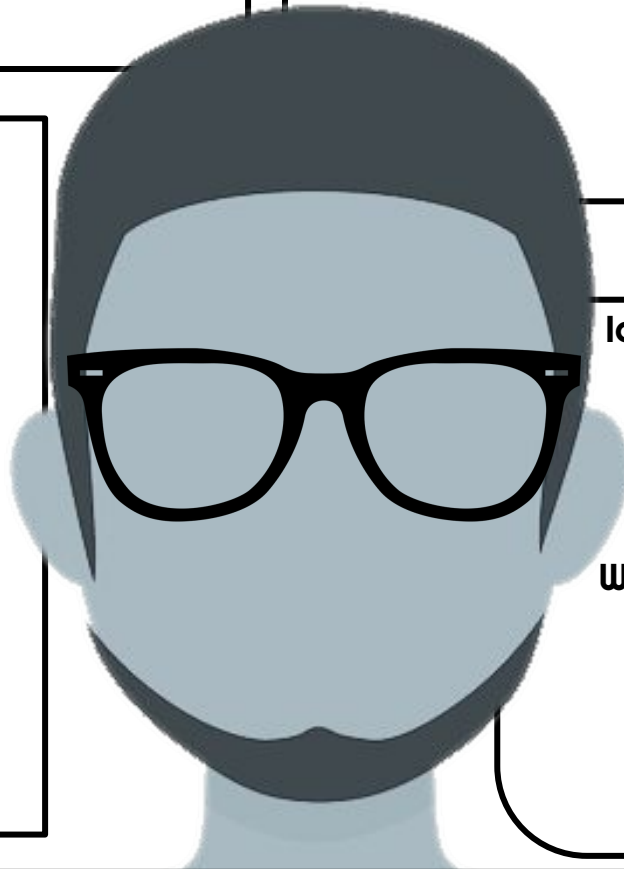
Memorable Quote

Explain why you picked this particular quote

Describe Thurston's intended audience

Identify the various tones of the text

What is the author's purpose?



Explain why Thurston uses humor when discussing serious topics such as racism.



tinyurl.com/yab72tkk

Grades 7 & 8 Memoir Writing Choice Board - Visit the online option for an interactive board with video tutorials. Use the anchor charts to help you write your own memoir.

The choice board contains the following elements:

- Essential Questions** (starburst icon)
- Planning** (rectangle with a thought bubble icon containing "WHAT'S YOUR STORY?")
- Just Focus on Yourself** (cloud icon)
- Types of Structures** (rectangle with a flowchart icon)
- What is Memoir Writing?** (central rectangle)
- List** (rectangle with a checkmark icon)
- Rubric** (rectangle)
- Revise** (rectangle with a pencil icon)
- Editing Strategies** (heart icon)
- Examples** (rectangle with a banner icon containing "Memoir 1, Memoir 2, Memoir 3")
- Growing Our Memoirs** (starburst icon)
- mentor TEXTS** (rectangle with a book icon)

MEMOIR ESSENTIAL QUESTIONS

- How do writers convey what they know?
- How do writers write focused memoirs with a point of view that reveals an important message?
- How do writers use the details of the time period to shape a story?

What is a Memoir?

- When working on memoir, you as a writer are more likely to start with some big, important idea that you want to explore and to communicate—something that says to the world, “This is who I am.”
- Your idea will come first, and then you will begin to collect small moments around your idea, you will bring out themes through a variety of narrative and expository techniques you have already learned.
- You will draw on all you know about forwarding meaning through both storytelling and exposition and to weave these two together to craft a text that is ALL ABOUT YOU!
- For this reason you as a writer **do not say that memoir belongs to the narrative genre or the opinion/argument genre**, but rather it is created from the combination of the two.

Mentor Texts

MENTOR TEXTS AND ANTHOLOGIES:

- The Dumbest Idea Ever by Jimmy Gownley
- Brown Girl Dreaming by Jacqueline Woodson
- Enchanted Air: Two Cultures, Two Wings or Soaring Earth by Margarita Engle
- Under the Royal Palms by Alma Flor Ada
- Where the Flame Trees Bloom by Alma Flor Ada
- Marshfield Dreams by Ralph Fletcher
- Life in Motion: An Unlikely Ballerina by Misty Copeland
- Born a Crime by Trevor Noah (YA Version) by Trevor Noah
- When I Was Your Age by Amy Erlich
- El Deafo by Cece Bell
- Real Friends by Shannon Hale
- Guts by Raina Telgemeier



Memoir Structures

- **Chronological** - This is where you tell your story in the order in which it happened.
- **Before and After** - Tell your story as a big event, and explain the significance and impact it had on you.
- **Character Study** - This structure focuses on an important figure in your life. Share several moments that reveal who this person is and what they mean to you.
- **Symbolism** - Anchor you in an item or other symbol. Return to it throughout.
- **The List** - Create a list (of events, items, ideas, etc.) and explore how they are connected.
- **Journey Structure** - Start with an anecdote in which you, the writer, are on the cusp of learning.
- **Circular Structure** - Begin and end with a repeated image, scene or line.

What's your story? Developing your ideas

“Writer’s rely on what they already know.”

To help you:

List out the strategies you’ve learned for collecting small moments

- **First times, last times, important people, places, things, issues**
 - Write these in your notebooks and use these to quickly develop new topics to write about.
- **Other ways to generate ideas include:**
 - “Issues relating to what’s right and wrong, what’s difficult, what’s fair and unfair, or what people should or shouldn’t do”

Just Focus on Yourself

- Finding moments that matter
- Moments that reveal something essential (very important) about who you are
- To think thematically (in a way that relates to you)
- Getting to the heart of it



Growing our Memoirs

Prompts to Push Our Thinking

I used to think...
But now I'm realizing...

My ideas about... are complicated.
On the one hand I think... On the other hand, I think...

Some people think...
But I believe...

When I first...I thought...
But now when I ... I realize that really....

Flashback & flashforward 	Multiple plot lines 	Inner thinking
Dialogue 	Revealing actions 	Multiple points of view
1 st person narrator 	Reader knows MORE than the character 	Description
Metaphor 	Tone 	Symbolism

Revision Strategies

1. Including details in your writing

- One time...
- Hint at the trouble right from the start...
- What were you thinking?
- What was being said?
- What did you do?
- Build out the world of the story. Where were you? What did it sound like? Look like?

2. Reading it out loud to self

- “It helps to read it out loud to hear the sound of each word and rhythm of the sentences.”
- “The sound of our words is powerful. Writer’s communicate with readers by choosing words that convey not only the content but also the mood, the tone, and the feeling they want to convey.”

Example: **Original sentence:** *He was there when I was born I think.*

Listening to my sentence it wasn’t creating the mood I wanted so I reworded: **You were there when I was born, so I’ve been told.**

Editing

Today I want to teach you that a great way to ensure that your editing choices are clear and powerful is to use checklist as your editing guide, zooming especially into the conventions section of your checklist.

Narrative Writing Checklist (continued)

	Grade 7	NOT YET	STARTING TO	YES!	Grade 8	NOT YET	STARTING TO	YES!
	Conventions				Conventions			
Spelling	I used the internet and other sources at hand to check spelling of literary and high-frequency words.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I used the internet and other sources to check the spelling of literary, historical, and geographical words.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Punctuation and Sentence Structure	I varied my sentence structure, sometimes using simple and sometimes using complex sentence structure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I used different sentence structures to achieve different purposes throughout my piece.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	I punctuated dialogue sections accurately.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I used verb tenses that shift when needed (such as when moving from a flashback back into the present tense of the story), deciding between active and passive voice where appropriate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Narrative Writing Checklist

	Grade 7	NOT YET	STARTING TO	YES	Grade 8	NOT YET	STARTING TO	YES
	Structure				Structure			
Overall	I created a narrative that has realistic characters, tension, and change, and that not only conveys, but also develops an idea, lesson, or theme.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I not only created a narrative with well-developed characters who change, I used the story to comment on a social issue, teach a lesson, and/or develop a point of view.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lead	I wrote a beginning that not only sets the story in motion, it also grounds it in a place or situation. It included details that will later be important to the story. These details might point to the central issue or conflict, show how story elements connect, or hint at key character traits.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	In establishing the situation and place, I hinted at a bigger context for the story (revealing issues that have been brewing, showing how the setting affects the character, contextualizing a time in history, and/or developing one out of many points of view).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transitions	I used transitional phrases and clauses to connect what happened to why it happened (if he/she/it ... he might not have, because of, although, little did she know that).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I used transitional phrases and clauses, grammatical structures (for example, paragraphing, descriptive phrases, and clauses) and text structures (such as chapter divisions and extended italics) to alert my reader to changes in the setting, the mood, the point of view, or the time in the story.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ending	I gave the reader a sense of closure by showing clearly how the character or place has changed or the problem has been resolved. If there wasn't resolution, I gave details to leave the reader thinking about a central idea or theme.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I gave the reader a sense of closure by revealing character changes that followed from events in the story, or perhaps a resolution. If there wasn't resolution, I wrote to convey how the events of the story affected the characters, and to circle back to a central idea, issue, or theme.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organization	I used a traditional—or slightly modified—story structure (rising action, conflict, falling action) to best bring out the meaning of my story and reach my audience.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I modified a traditional story structure, dealing with time in purposeful ways, to best suit my genre, bring out the meaning of my story, and reach my audience.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Development				Development			
Elaboration	I developed the action, dialogue, details, and inner thinking to convey an issue, idea, or lesson. I showed what is specific about the central character. I developed the setting and the character's relationship to the setting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I developed complicated story elements; I may have contrasted the character's thinking with his or her actions or dialogue.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					I developed the central character's relationship to other characters. I showed character flaws as well as strengths to add complexity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					My details conveyed meaning and related to or developed a lesson or theme.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Narrative Writing Checklist (continued)

	Grade 7	NOT YET	STARTING TO	YES	Grade 8	NOT YET	STARTING TO	YES
	Development				Development			
Elaboration	I developed the action, dialogue, details, and inner thinking to convey an issue, idea, or lesson. I showed what is specific about the central character. I developed the setting and the character's relationship to the setting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I developed complicated story elements; I may have contrasted the character's thinking with his or her actions or dialogue.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					I developed the central character's relationship to other characters. I showed character flaws as well as strengths to add complexity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					My details conveyed meaning and related to or developed a lesson or theme.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Craft	I developed contradictions and change in characters and situations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I conveyed the pressures characters feel and the dreams they hold. I related these to their actions. I developed complicated characters who change and/or who change others.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	I used specific details and figurative language to help the reader understand the place and the mood (such as making an object or place symbolic, using the weather, using repetition).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I created a mood as well as a physical setting, and showed how the place changed, or its relationships to the characters changed. I used symbols to connect with a theme.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	I varied my tone to match the variety of emotions experienced by the characters across the story.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I varied my tone to bring out different perspectives within the story or to show a gap between the narrator's point of view and that of other characters.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Getting My New Family Member

It was the best day ever! I ran out to the car, jumping up and down like an overexcited rabbit. "Calm down!" my Grandpa said. I could hardly contain my excitement as we got in the car, and drove out of the driveway, towards my new sister!

One and a half hours later, I was at the airport, enjoying delicious chicken and broccoli at a Chinese restaurant. The packed food court was very noisy, and I was starting to get a headache. But that didn't stop me, I was just too excited! It was only 30 minutes until the plane was supposed to

land! All of the sudden, "Crunch! Ouch! Owwwwww!" Yipe! I had just bitten into a

very, very spicy pepper, and I was in tears! I drank all of my orange gatorade, but it didn't help. "Eat some plain rice!" said my Grandpa. Grandpa was right, and soon, I could not taste any more spice at all. "Come on," said my grandpa, "To the waiting area!" When we got there, right at 7:00 p.m. , we heard the very bad news! "Due to storms and bad weather, the flight coming from Detroit has been delayed for the next 2 hrs. We are sorry for the

The time I almost Died

It was the Winter of 2016. My family and I were on our way to have a fun day of snowboarding at Wildcat mountain. As I stepped out of the car a chilling wind struck my face. I waddled over to the trunk, wearing my gear, and hopped onto the tailgate of our Zaffre blue truck. The sides of the truck are heavily dusted with road salt. I pressed my finger against the side of the truck, wiping off the salt and drawing a smiley face, leaving my finger white. My brother moved aside and I stretched into the trunk and yanked my snowboard out from underneath other snowboards and gear. "MOM" My brother called out in his annoying voice, "I need help!". My mom sighed in annoyance and went around the truck to help him. Once we were finally ready to head up to the mountain for a fun day of snowboarding.

Me and my dad were sitting side by side on the rickety chairlift mostly in silence. I looked down at my weird tan colored snowboard dangling from my left foot. Skiers rode quickly below us down the mountain and they occasionally fell and me and my dad both pointed and laughed (I know we are great people). The conditions weren't great. It had rained the night before we went so ice coated the snow, making the snow shine. I was looking around as we slowly traveled up the mountain and I started thinking. "What would happen if you fell off the side of the trail?" I suddenly ask. "You'll die," he responds. A chilling shiver goes up my spine and I almost picture slipping off the edge, slamming into trees until I look consciousness and fall hundreds of feet down. Thankfully the thought disappears faintly as we reach the top. I'm nervous to get off of the lift. It has always been hard for me, I usually fall and panic because the skiers behind me might crash into me. The first time is always a little bit scary, but this time I land directly on my board and the chair pushes me down the small hill. I stumble a little but my dad keeps me from falling. My mom and my brother, Mason, are already at the top because they were on the chair ahead of us. I fall down beside my mom and tighten the bindings onto my feet. I stand up and slide a little bit but I stop myself from going down the mountain. "I'm ready." I announce and we all start heading down the nearest green trail.

The first run is a little bit messy. I only fell a few times but my brother could barely make it 5 feet without face planting into the snow. We do a few runs and we are finally used to it. I make it down without falling and my brother only fell a few times. The next time up we decided to try the blue trail instead. The trail was a lot more icy than the green trail and it was steeper, but the worst part was that it was thinner. My brother and I were still learning so we needed a lot of space to make wide turns. Suddenly the thought returned, *what if I fall off the side of the trail I thought over and over.*

I take one turn a few inches too wide and it feels as if the deep, dark woods that surround the trail suck me right in. I instantly scream in panic and my dad's word replay over and over in my head, *you'll die.* So much was going on at once. Almost before I can even process what is happening I slam into a tree. Thankfully the tree stops me from sliding any further. I can still see the top and the hammering in my heart slows a little. I try to jump, still wearing my board, but I struggle. I try to jump again and I slide right back down, almost passing the tree and sliding down the mountain. Tears fill my eyes and everything turns blurry. My parents were already too far ahead to see or hear me. I scream for help as I start to slide more down the mountain. Nobody stops to help me so I scream louder, when suddenly a small figure appears. It's my brother. For a second it seems like everything was going to be okay, but I forgot one thing, he's an idiot. "What are you doing?" he yells down to me with worry in his voice, making it almost shaky. "I fell!" I cry out. "Take off your board!" He instructed me. "No!" I yell back. Then my brother took off his board and slid down the icy hill. "What are you doing?" I ask, he doesn't respond and then he starts trying to climb back up in his snowboard boots but he keeps sliding back down. Soon we are both screaming until finally my dad comes sprinting up the mountain.

He looked as worried as he did the day that I ran into his room yelling "FIRE!". He saw us down the hill and immediately tried to help us. My mom came running up a little later but by then my dad had already helped us up. Now I never go near the edges and I realize now that the only reason that I was so scared was because my dad told me that I would die if I fell off the edge.

The Most PhenomeNiall Surprise

It was a normal day after school, and I was up in my room. The exact day? I can't remember. I think it was in September, maybe October. Anyway, I was in my room, doing anything I could to skip homework. Most likely looking at something One Direction related on Instagram. As I scrolled through the endless abyss, I could suddenly hear loud rock music playing outside. I could immediately tell that it was my uncle, he always has music playing in his car. I usually go downstairs to see him, but I don't know, I was apparently too busy to go down to see him right away. So I just stayed where I was, looking at my phone.

Not too long after my uncle had arrived, I heard him call my name. I have a feeling that I was probably comfortable where I was, and didn't want to move, but I did anyway. When I got downstairs I could see him standing in the doorway between the kitchen and the porch. He said "hi" and I said "hi" back, and I walked out into the porch where him and my mom were. I automatically sensed that something was going on because of the look on my mom's face. She was smiling, but not like she normally would. It was like the smile she had when she was lying or trying to hide something. Clearly she didn't do a good job. I knew something was up. I was a little worried actually. I don't think I questioned it though, I knew they would tell me eventually.

After a while of talking to my mom and uncle, my mom was still smiling like an idiot. I tried to ignore it, but it was quite annoying. Then my uncle turned his head and looked outside. "Oh, it looks like someone threw some trash in the yard." He said, glancing at my mom. "Go pick it up before Paul gets upset." Oh yeah, like this wasn't suspicious at all. I looked at him with a questioning look, and stepped outside toward whatever my uncle had planted in the yard (I knew it wasn't trash). As I got closer, I realized it looked familiar.

On multiple occasions, all of my family members have gone to concerts. A lot of those times, I had seen the tickets when they arrived at the house. All of them had been in the same thin envelope, that was much bigger than the tickets themselves. As I approached the object that was sitting in the yard up against the fence, I realized why it looked so familiar. I suddenly became very hopeful. This couldn't actually be what I think it is, could it?

I picked up the object, and sure enough it was the same envelope that I had seen a few times before. This one however, was folded. Probably to make me think that it was just trash that has been thrown into the yard. I still knew what it was though, despite this. I mean there was a part of me wondering what concert tickets were inside, but I had a feeling of who it was. "Oh, uh, why don't you open it? I mean I don't know, there could be something interesting in there." Said either my mom or uncle, I can't remember. I smiled because one, I knew what was in the envelope, and two, because of how bad they were at trying not to give it away.

I unfolded the envelope, and began to open it. I stuck my hand into the cardboard envelope but at first didn't feel anything. It's not like what was in it was very big and obvious to find, it's pieces of paper. Eventually I found what was inside, down near the bottom. I pulled them out, smiling. I could sense that my mom and uncle were smiling too. There was a lot of small words printed on the tiny rectangular pieces of paper, but the only ones I really noticed were "NIALL HORAN" printed in all caps. Even though I expected this since I recognized what was in the yard, I was still shocked. It never really expected to get tickets since they had sold out so fast!

I didn't know how to react. I've always felt weird with people watching me when opening presents, like on Christmas or my birthday. My family always expects big reactions to things, but as long as people are watching me, I'll most likely stay silent. Obviously on the inside I was extremely happy. I'm going to see Niall Horan, why wouldn't I be?! But of course, me being me, with people watching, I didn't really show how happy I was. I remember shaking a little bit, but I didn't scream or cry or anything. I basically just stood there staring at the tickets and smiling.

After I had realized that I did in fact actually have tickets to see my favourite One Direction member in concert, and my uncle explained some non-important stuff, I ran to my phone. That's when I really showed how happy I was. I was jumping around in the living room, trying to put my password into my phone. The first thing I did was text my friend Christina, in all caps, misspelling pretty much every word. Despite all the spelling mistakes, she knew what was happening and responded in all caps as well. After I was done screaming at Christina, I told my other friend Amanda, with the same amount of spelling mistakes. She was just as happy as me and Christina were. Maybe a little more, since she wanted me to be able to go to the concert so bad too.

The next day at school I told the rest of my friends who I didn't already tell. Some of them were happy for me, some of them told me I was crazy. Either way, I was still happy and very excited for the concert, that was months away.

Name _____

Date _____

Word	Inferred Meaning	Clues	Sentence

Lesson Summary

Some proportions are linear equations in disguise and are solved the same way we normally solve proportions.

When multiplying a fraction with more than one term in the numerator and/or denominator by a number, put the expressions with more than one term in parentheses so that you remember to use the distributive property when transforming the equation. For example:

$$\frac{x + 4}{2x - 5} = \frac{3}{5}$$

$$5(x + 4) = 3(2x - 5).$$

The equation $5(x + 4) = 3(2x - 5)$ is now clearly a linear equation and can be solved using the properties of equality.

Problem Set

Solve the following equations of rational expressions, if possible. If an equation cannot be solved, explain why.

1. $\frac{5}{6x - 2} = \frac{-1}{x + 1}$

6. $\frac{2x + 5}{2} = \frac{3x - 2}{6}$

2. $\frac{4 - x}{8} = \frac{7x - 1}{3}$

7. $\frac{6x + 1}{3} = \frac{9 - x}{7}$

3. $\frac{3x}{x + 2} = \frac{5}{9}$

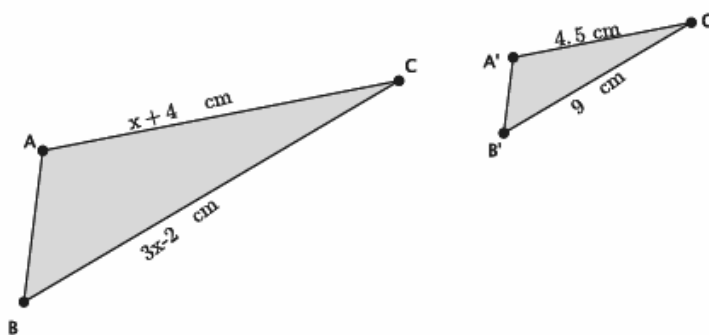
8. $\frac{\frac{1}{3}x - 8}{12} = \frac{-2 - x}{15}$

4. $\frac{\frac{1}{2}x + 6}{3} = \frac{x - 3}{2}$

9. $\frac{3 - x}{1 - x} = \frac{3}{2}$

5. $\frac{7 - 2x}{6} = \frac{x - 5}{1}$

10. In the diagram below, $\triangle ABC \sim \triangle A'B'C'$. Determine the lengths of \overline{AC} and \overline{BC} .



Lesson Summary

Average speed is found by taking the total distance traveled in a given time interval, divided by the time interval.

If y is the total distance traveled in a given time interval x , then $\frac{y}{x}$ is the average speed.

If we assume the same average speed over any time interval, then we have constant speed, which can then be used to express a linear equation in two variables relating distance and time.

If $\frac{y}{x} = C$, where C is a constant, then you have constant speed.

Problem Set

- Eman walks from the store to her friend's house, 2 miles away. It takes her 35 minutes.
 - What fraction represents her constant speed, C ?
 - Write the fraction that represents her constant speed, C , if she walks y miles in 10 minutes.
 - Write and solve a proportion using the fractions from parts (a) and (b) to determine how many miles she walks after 10 minutes. Round your answer to the hundredths place.
 - Write a two-variable equation to represent how many miles Eman can walk over any time interval.
- Erika drives from school to soccer practice 1.3 miles away. It takes her 7 minutes.
 - What fraction represents her constant speed, C ?
 - What fraction represents her constant speed, C , if it takes her x minutes to drive exactly 1 mile?
 - Write and solve a proportion using the fractions from parts (a) and (b) to determine how much time it takes her to drive exactly 1 mile. Round your answer to the tenths place.
 - Write a two-variable equation to represent how many miles Erika can drive over any time interval.
- Darla drives at a constant speed of 45 miles per hour.
 - If she drives for y miles and it takes her x hours, write the two-variable equation to represent the number of miles Darla can drive in x hours.
 - Darla plans to drive to the market 14 miles from her house, then to the post office 3 miles from the market, and then return home, which is 15 miles from the post office. Assuming she drives at a constant speed the entire time, how long will it take her to run her errands and get back home? Round your answer to the hundredths place.
- Aaron walks from his sister's house to his cousin's house, a distance of 4 miles, in 80 minutes. How far does he walk in 30 minutes?

Lesson Summary

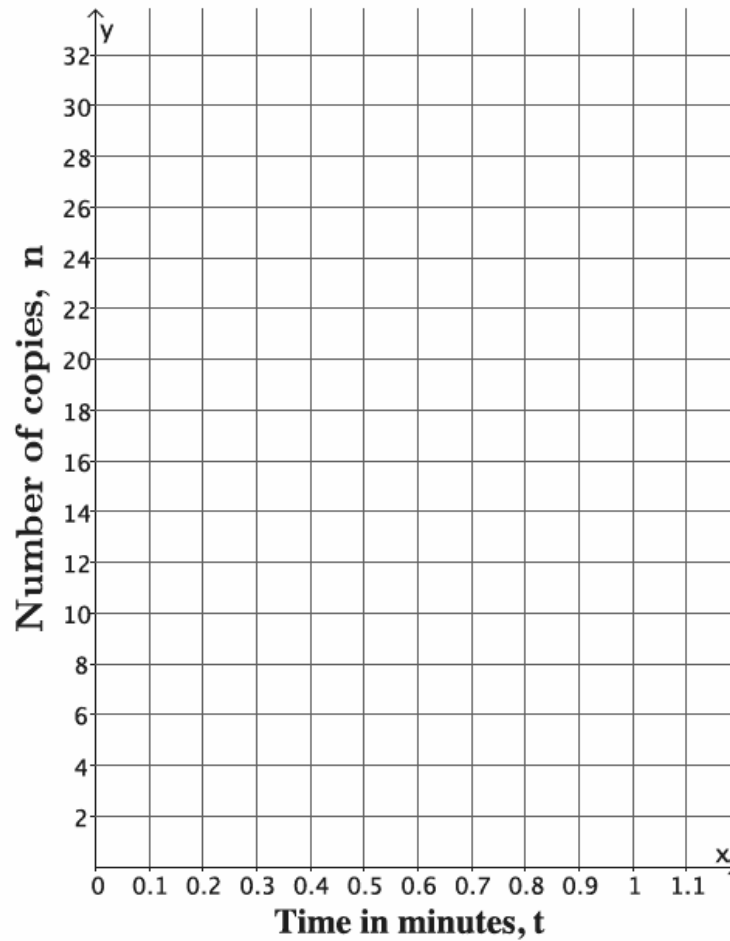
When constant rate is stated for a given problem, then you can express the situation as a two-variable equation. The equation can be used to complete a table of values that can then be graphed on a coordinate plane.

Problem Set

- A train travels at a constant rate of 45 miles per hour.
 - What is the distance, d , in miles, that the train travels in t hours?
 - How many miles will it travel in 2.5 hours?
- Water is leaking from a faucet at a constant rate of $\frac{1}{3}$ gallon per minute.
 - What is the amount of water, w , in gallons per minute, that is leaked from the faucet after t minutes?
 - How much water is leaked after an hour?
- A car can be assembled on an assembly line in 6 hours. Assume that the cars are assembled at a constant rate.
 - How many cars, y , can be assembled in t hours?
 - How many cars can be assembled in a week?
- A copy machine makes copies at a constant rate. The machine can make 80 copies in $2\frac{1}{2}$ minutes.
 - Write an equation to represent the number of copies, n , that can be made over any time interval in minutes, t .
 - Complete the table below.

t (time in minutes)	Linear Equation:	n (number of copies)
0		
0.25		
0.5		
0.75		
1		

- c. Graph the data on a coordinate plane.

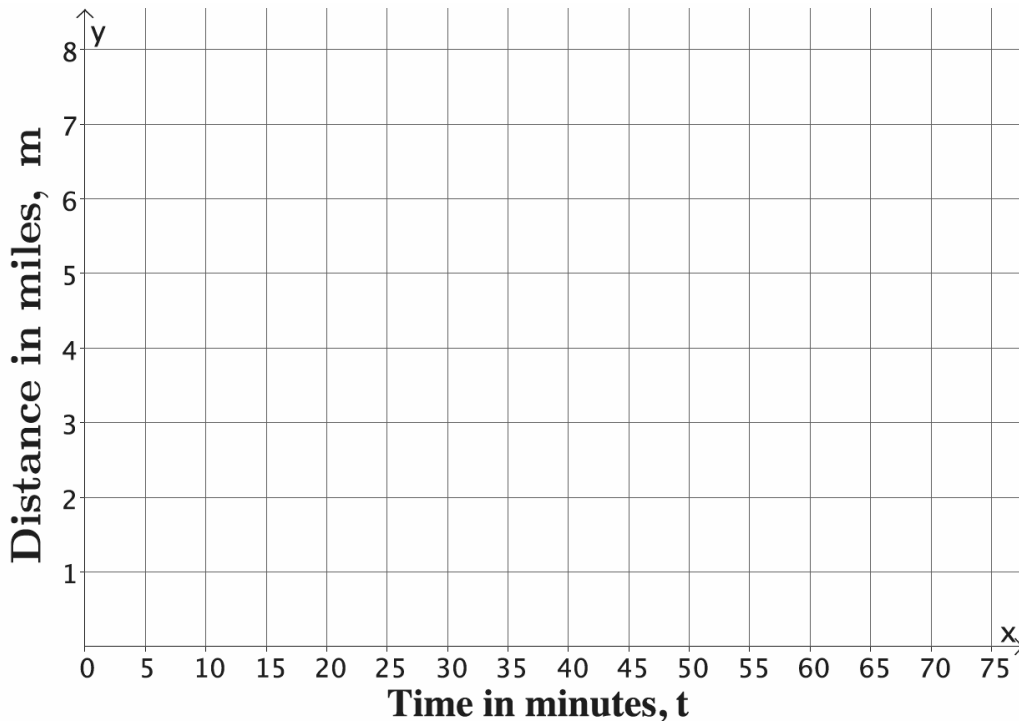


- d. The copy machine runs for 20 seconds and then jams. About how many copies were made before the jam occurred? Explain.

5. Connor runs at a constant rate. It takes him 34 minutes to run 4 miles.
- Write the linear equation in two variables that represents the number of miles Connor can run in any given time interval in minutes, t .
 - Complete the table below. Use a calculator, and round answers to the tenths place.

t (time in minutes)	Linear Equation:	m (distance in miles)
0		
15		
30		
45		
60		

- Graph the data on a coordinate plane.



- Connor ran for 40 minutes before tripping and spraining his ankle. About how many miles did he run before he had to stop? Explain.

Learn About Comparing Proportional Relationships

Read the problem below. Then explore different ways to compare two different proportional relationships.

Jalen is choosing between two printers for his computer. The number of pages printed per minute is shown as a table on Printer A and with an equation on Printer B. What is the difference between the per page rate of the two printers? Which printer is faster?

Printer A				
Number of Minutes	1	2	3	4
Number of Pages Printed	40	80	120	160

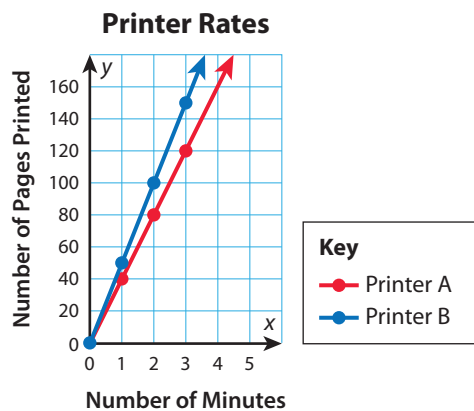
Printer B's printing rate is defined by the equation $y = 50x$, where x is the number of minutes and y is the number of pages printed.

 **Picture It** You can use the equation for printer B to make a table of values.

Equation: $y = 50x$

Printer B				
Number of Minutes	1	2	3	4
Number of Pages Printed	50	100	150	200

 **Graph It** You can use the tables to graph the proportional relationships.



Connect It Now you can use the different representations on the previous page to compare the proportional relationships.

7 Explain how to use the tables to find the two unit rates for pages printed per minute.

8 Write an equation that shows the number of pages printed in x minutes for printer A.

How do both equations show the unit rates? _____

9 What is the slope of each line on the graph? _____

10 What is the difference between the per page rate of the two printers? Which is faster?

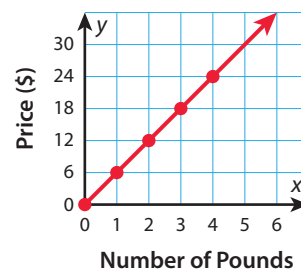
Explain how you got the answer. _____

11 How can you compare unit rates when proportional relationships are represented in different ways? For example, if one relationship is represented by a table and another

by a graph? _____

Try It Use what you just learned about comparing proportional relationships to solve this problem. Show your work on a separate sheet of paper.

12 The price for x pounds of almonds at the Snack Shack is represented by $y = 6.5x$, and the cost at the Almond Emporium is shown in the graph. Which store sells almonds at a lower unit cost? How much lower?

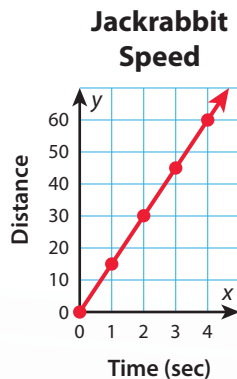


Practice Finding Proportional Relationships

Study the example below. Then solve problems 13–15.

Example

Corey researched some animal speed records. He found that a horse ran at a rate of 16.5 meters per second. A jackrabbit's rate is shown in the graph. Which animal ran at a faster rate? How much faster per second?



Look at how you could show your work by comparing unit rates.

horse's rate: $16.5 \frac{m}{s}$

jackrabbit's rate: 30 m in 2 s, or $15 \frac{m}{s}$

$16.5 - 15 = 1.5$

Solution The horse ran $1.5 \frac{m}{s}$ faster than the jackrabbit.



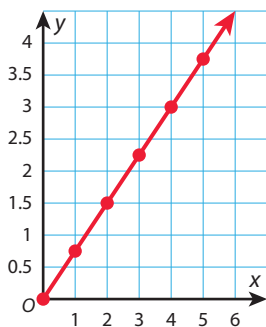
The student used the graph to find the unit rate and then compared unit rates.

Pair/Share

Express each rate as kilometers per hour.

13 What is the slope of the graph?

Show your work.



It may be helpful to look at points that fall directly on horizontal lines in the graph.

Pair/Share

What are some other names for slope?

Solution _____

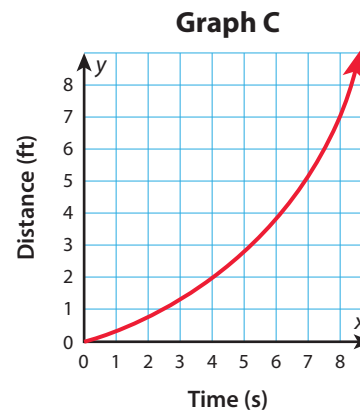
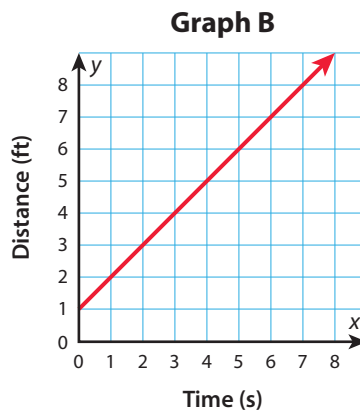
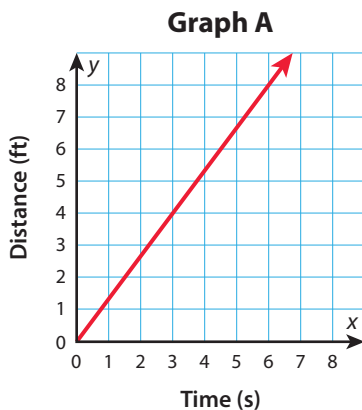
Practice Finding Proportional Relationships

Solve the problems.

- 1** Find the equation that shows the relationship between the number of pens, p , and the total cost, c .

Number of Pens (p)	5	10	15	20
Cost (c)	\$3.95	\$7.90	\$11.85	\$15.80

- A** $c = 1.27p$ **C** $c = 3.95p$
B $c = 0.79p$ **D** $c = 5p$
- 2** Which of the following is the fastest unit rate? (1 mile = 1,760 yards = 5,280 feet)
- A** 30 miles per hour **C** 700 yards per minute
B 40 feet per second **D** 2,200 feet per minute
- 3** Look at the three graphs below.



Based on the graphs, choose *True* or *False* for each statement.

- a.** Graph B shows a proportional relationship between distance and time. True False
- b.** In Graph A, the constant of proportionality between distance and time is $\frac{4}{3}$. True False
- c.** Graph C shows an object that speeds up over time. True False
- d.** The unit rate in Graph B is 2 feet per second. True False
- e.** An object represented by Graph A is moving faster than an object represented by Graph B. True False

- 4** A grocery store sells Brand A olive oil in a 33-fluid-ounce bottle for \$16.50. The store also sells Brand B olive oil in a large dispenser that customers can buy for \$4.80 per cup. Represent the cost of each brand in the same way, on a graph or with equations. Explain where the unit rate is shown in your representation. Which brand of olive oil is the better buy? Why?

1 cup = 8 fluid ounces

Show your work.

Answer _____

- 5** A craft store buys 50 yards of ribbon for \$13.50. The store sells 5 feet of ribbon to customers for \$0.80. The craft store sells 45 yards of ribbon. How much profit does the craft store earn?

Show your work.

Answer _____

 **Self Check** Go back and see what you can check off on the Self Check on page 103.

Lesson Summary

A linear equation in two-variables x and y is in standard form if it is of the form $ax + by = c$ for numbers a , b , and c , where a and b are both not zero. The numbers a , b , and c are called constants.

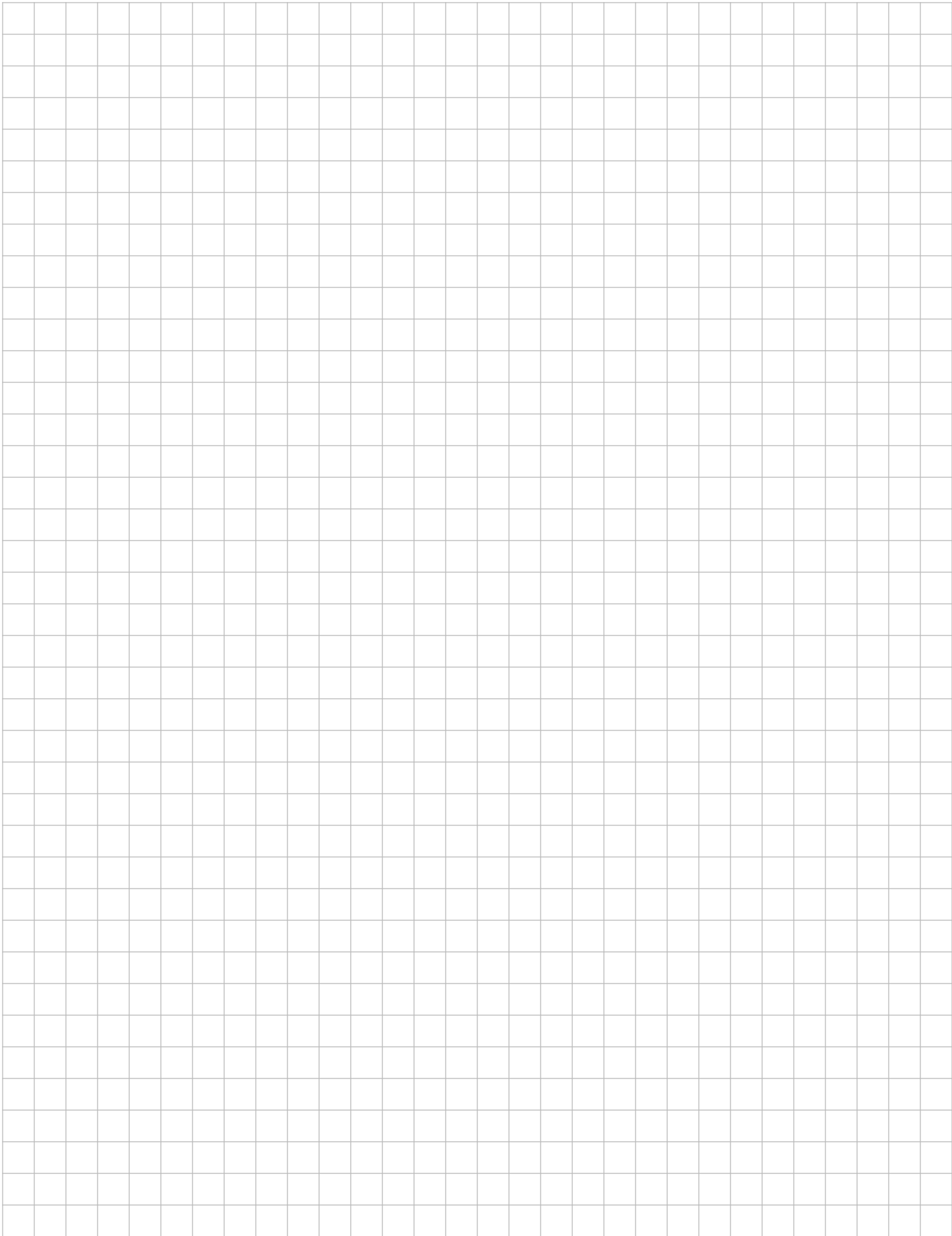
A solution to a linear equation in two variables is the ordered pair (x, y) that makes the given equation true. Solutions can be found by fixing a number for x and solving for y or fixing a number for y and solving for x .

Problem Set

- Consider the linear equation $x - \frac{3}{2}y = -2$.
 - Will you choose to fix values for x or y ? Explain.
 - Are there specific numbers that would make your computational work easier? Explain.
 - Find five solutions to the linear equation $x - \frac{3}{2}y = -2$, and plot the solutions as points on a coordinate plane.

x	Linear Equation: $x - \frac{3}{2}y = -2$	y

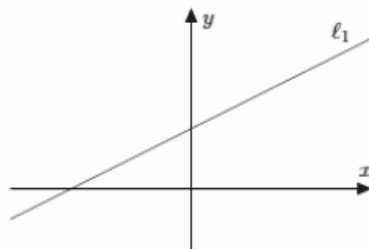
- Find five solutions for the linear equation $\frac{1}{3}x + y = 12$, and plot the solutions as points on a coordinate plane.
- Find five solutions for the linear equation $-x + \frac{3}{4}y = -6$, and plot the solutions as points on a coordinate plane.
- Find five solutions for the linear equation $2x + y = 5$, and plot the solutions as points on a coordinate plane.
- Find five solutions for the linear equation $3x - 5y = 15$, and plot the solutions as points on a coordinate plane.



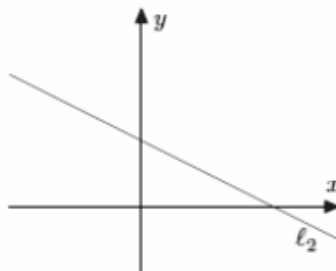
Lesson Summary

Slope is a number that can be used to describe the steepness of a line in a coordinate plane. The slope of a line is often represented by the symbol m .

Lines in a coordinate plane that are *left-to-right inclining* have a positive slope, as shown below.

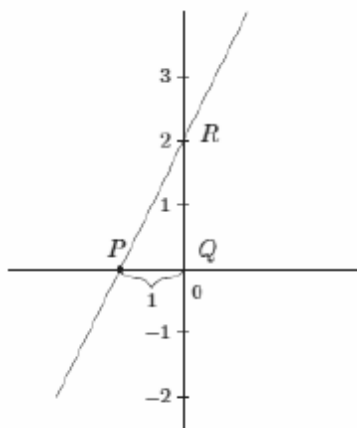


Lines in a coordinate plane that are *left-to-right declining* have a negative slope, as shown below.



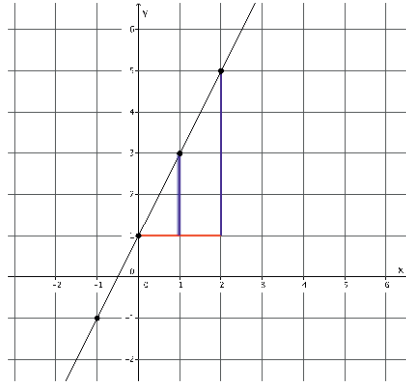
Determine the slope of a line when the horizontal distance between points is fixed at 1 by translating point Q to the origin of the graph and then identifying the y -coordinate of point R ; by definition, that number is the slope of the line.

The slope of the line shown below is 2, so $m = 2$, because point R is at 2 on the y -axis.



Lesson Summary

The slope of a line can be calculated using *any* two points on the same line because the slope triangles formed are similar, and corresponding sides will be equal in ratio.



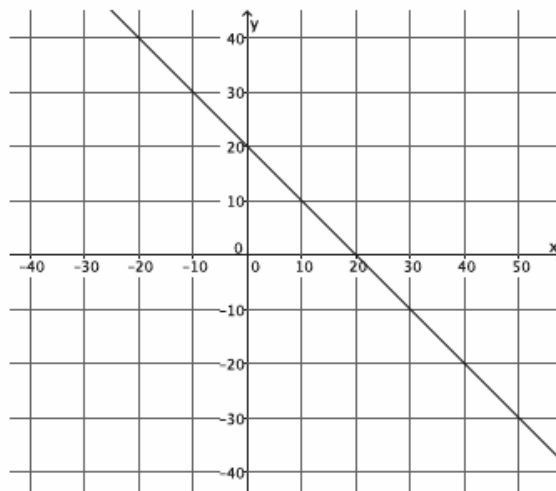
The *slope* of a non-vertical line in a coordinate plane that passes through two different points is the number given by the difference in y -coordinates of those points divided by the difference in the corresponding x -coordinates. For two points $P(p_1, p_2)$ and $R(r_1, r_2)$ on the line where $p_1 \neq r_1$, the slope of the line m can be computed by the formula

$$m = \frac{p_2 - r_2}{p_1 - r_1}.$$

The slope of a vertical line is not defined.

Problem Set

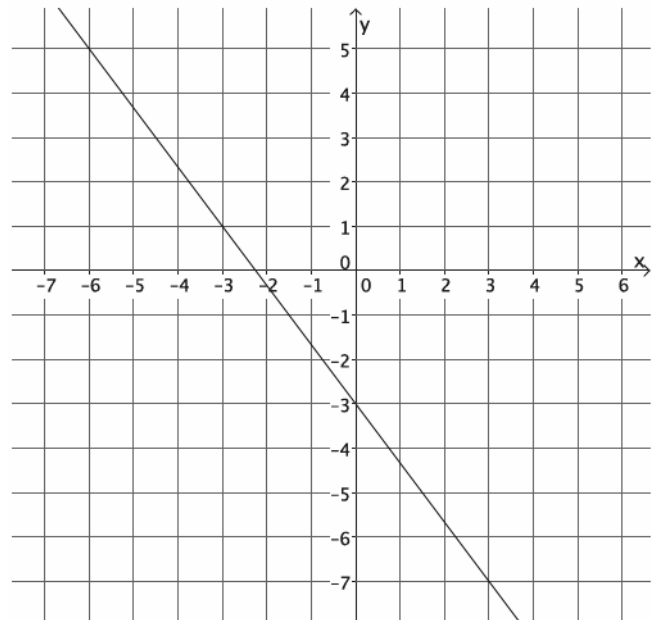
- Calculate the slope of the line using two different pairs of points.



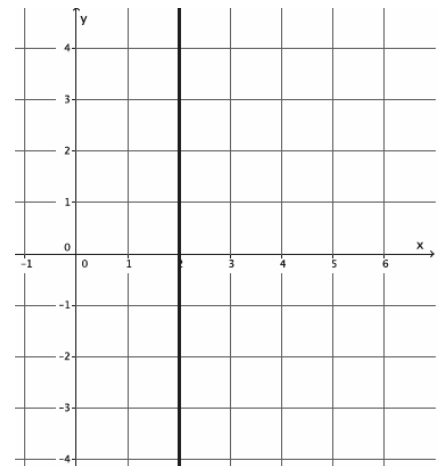
8. Your teacher tells you that a line goes through the points $(-6, \frac{1}{2})$ and $(-4, 3)$.
- Calculate the slope of this line.
 - Do you think the slope will be the same if the order of the points is reversed? Verify by calculating the slope, and explain your result.

9. Use the graph to complete parts (a)–(c).

- Select any two points on the line to calculate the slope.
- Compute the slope again, this time reversing the order of the coordinates.
- What do you notice about the slopes you computed in parts (a) and (b)?
- Why do you think $m = \frac{(p_2 - r_2)}{(p_1 - r_1)} = \frac{(r_2 - p_2)}{(r_1 - p_1)}$?



10. Each of the lines in the lesson was non-vertical. Consider the slope of a vertical line, $x = 2$. Select two points on the line to calculate slope. Based on your answer, why do you think the topic of slope focuses only on non-vertical lines?



Challenge:

11. A certain line has a slope of $\frac{1}{2}$. Name two points that may be on the line.

Lesson Summary

The line joining two distinct points of the graph of the linear equation $y = mx + b$ has slope m .

The m of $y = mx + b$ is the number that describes the slope. For example, in the equation $y = -2x + 4$, the slope of the graph of the line is -2 .

Problem Set

1. Solve the following equation for y : $-4x + 8y = 24$. Then, answer the questions that follow.
 - a. Based on your transformed equation, what is the slope of the linear equation $-4x + 8y = 24$?
 - b. Complete the table to find solutions to the linear equation.

x	Transformed Linear Equation:	y

- c. Graph the points on the coordinate plane.
- d. Find the slope between any two points.
- e. The slope you found in part (d) should be equal to the slope you noted in part (a). If so, connect the points to make the line that is the graph of an equation of the form $y = mx + b$ that has slope m .
- f. Note the location (ordered pair) that describes where the line intersects the y -axis.

2. Solve the following equation for y : $9x + 3y = 21$. Then, answer the questions that follow.
- Based on your transformed equation, what is the slope of the linear equation $9x + 3y = 21$?
 - Complete the table to find solutions to the linear equation.

x	Transformed Linear Equation:	y

- Graph the points on the coordinate plane.
 - Find the slope between any two points.
 - The slope you found in part (d) should be equal to the slope you noted in part (a). If so, connect the points to make the line that is the graph of an equation of the form $y = mx + b$ that has slope m .
 - Note the location (ordered pair) that describes where the line intersects the y -axis.
3. Solve the following equation for y : $2x + 3y = -6$. Then, answer the questions that follow.
- Based on your transformed equation, what is the slope of the linear equation $2x + 3y = -6$?
 - Complete the table to find solutions to the linear equation.

x	Transformed Linear Equation:	y

- Graph the points on the coordinate plane.
- Find the slope between any two points.
- The slope you found in part (d) should be equal to the slope you noted in part (a). If so, connect the points to make the line that is the graph of an equation of the form $y = mx + b$ that has slope m .
- Note the location (ordered pair) that describes where the line intersects the y -axis.

Lesson Summary

The graph of a linear equation is a line. A linear equation can be graphed using two-points: the x -intercept point and the y -intercept point.

Example:

Graph the equation: $2x + 3y = 9$.

Replace x with zero, and solve for y to determine the y -intercept point.

$$2(0) + 3y = 9$$

$$3y = 9$$

$$y = 3$$

The y -intercept point is at $(0, 3)$.

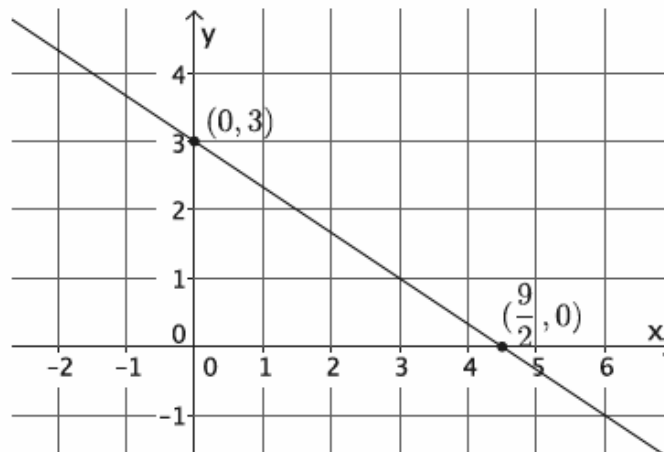
Replace y with zero, and solve for x to determine the x -intercept point.

$$2x + 3(0) = 9$$

$$2x = 9$$

$$x = \frac{9}{2}$$

The x -intercept point is at $(\frac{9}{2}, 0)$.



Problem Set

Graph each of the equations in the Problem Set on a different pair of x - and y -axes.

1. Graph the equation: $y = -6x + 12$.
2. Graph the equation: $9x + 3y = 18$.
3. Graph the equation: $y = 4x + 2$.
4. Graph the equation: $y = -\frac{5}{7}x + 4$.
5. Graph the equation: $\frac{3}{4}x + y = 8$.
6. Graph the equation: $2x - 4y = 12$.
7. Graph the equation: $y = 3$. What is the slope of the graph of this line?
8. Graph the equation: $x = -4$. What is the slope of the graph of this line?
9. Is the graph of $4x + 5y = \frac{3}{7}$ a line? Explain.
10. Is the graph of $6x^2 - 2y = 7$ a line? Explain.

Lesson Summary

Let (x_1, y_1) and (x_2, y_2) be the coordinates of two distinct points on a non-vertical line in a coordinate plane. We find the slope of the line by

$$m = \frac{y_2 - y_1}{x_2 - x_1}.$$

This version of the slope formula, using coordinates of x and y instead of p and r , is a commonly accepted version.

As soon as you multiply the slope by the denominator of the fraction above, you get the following equation:

$$m(x_2 - x_1) = y_2 - y_1.$$

This form of an equation is referred to as the *point-slope form* of a linear equation.

Given a known (x, y) , then the equation is written as

$$m(x - x_1) = (y - y_1).$$

The following is slope-intercept form of a line:

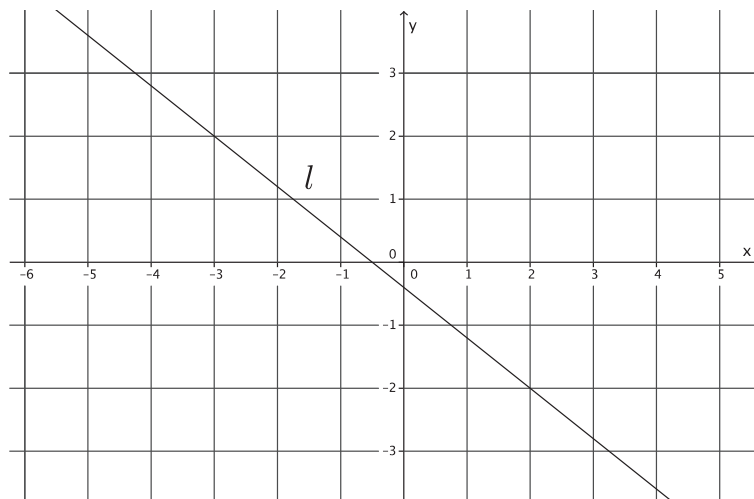
$$y = mx + b.$$

In this equation, m is slope, and $(0, b)$ is the y -intercept point.

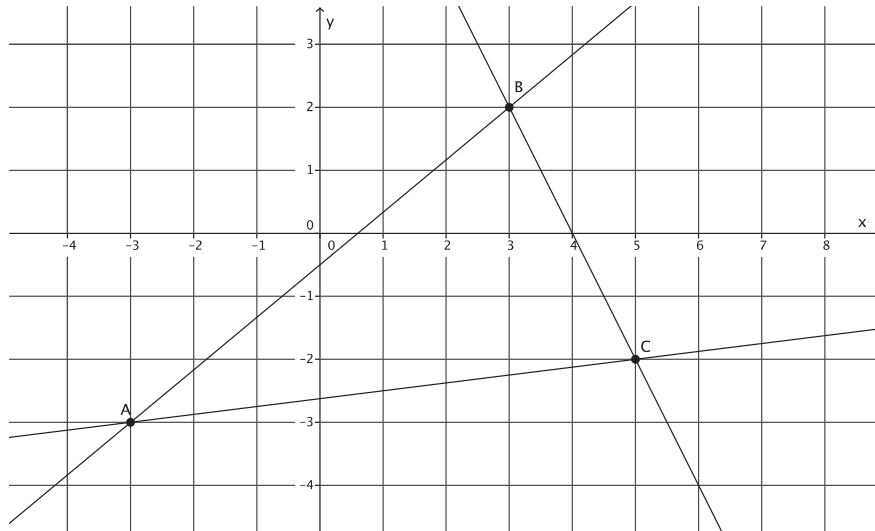
To write the equation of a line, you must have two points, one point and slope, or a graph of the line.

Problem Set

- Write the equation for the line l shown in the figure.



4. Triangle ABC is made up of line segments formed from the intersection of lines L_{AB} , L_{BC} , and L_{AC} . Write the equations that represent the lines that make up the triangle.



5. Write the equation for the line that goes through point $(-10, 8)$ with slope $m = 6$.
6. Write the equation for the line that goes through point $(12, 15)$ with slope $m = -2$.
7. Write the equation for the line that goes through point $(1, 1)$ with slope $m = -9$.
8. Determine the equation of the line that goes through points $(1, 1)$ and $(3, 7)$.

8.EE Cell Phone Plans

Task

You are a representative for a cell phone company and it is your job to promote different cell phone plans.

a. Your boss asks you to visually display three plans and compare them so you can point out the advantages of each plan to your customers.

- Plan A costs a basic fee of \$29.95 per month and 10 cents per text message
- Plan B costs a basic fee of \$90.20 per month and has unlimited text messages
- Plan C costs a basic fee of \$49.95 per month and 5 cents per text message
- All plans offer unlimited calling
- Calling on nights and weekends are free
- Long distance calls are included

b. A customer wants to know how to decide which plan will save her the most money. Determine which plan has the lowest cost given the number of text messages a customer is likely to send.



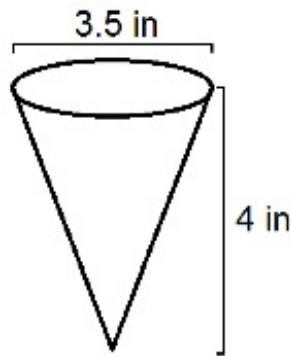
8.EE Cell Phone Plans

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8.G Comparing Snow Cones

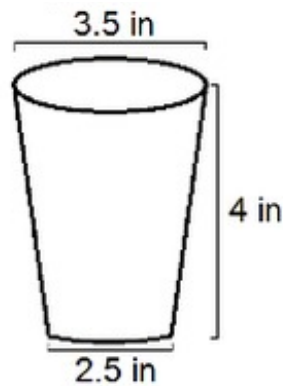
Task

Pablo's Icy Treat Stand sells home-made frozen juice treats as well as snow-cones. Originally, Pablo used paper cone cups with a diameter of 3.5 inches and a height of 4 inches.



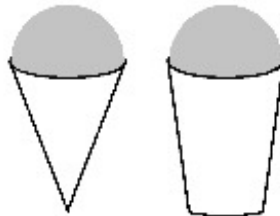
Conical Cup A

His supply store stopped carrying these paper cones, so he had to start using more standard paper cups. These are truncated cones (cones with the "pointy end" sliced off) with a top diameter of 3.5 inches, a bottom diameter of 2.5 inches, and a height of 4 inches.



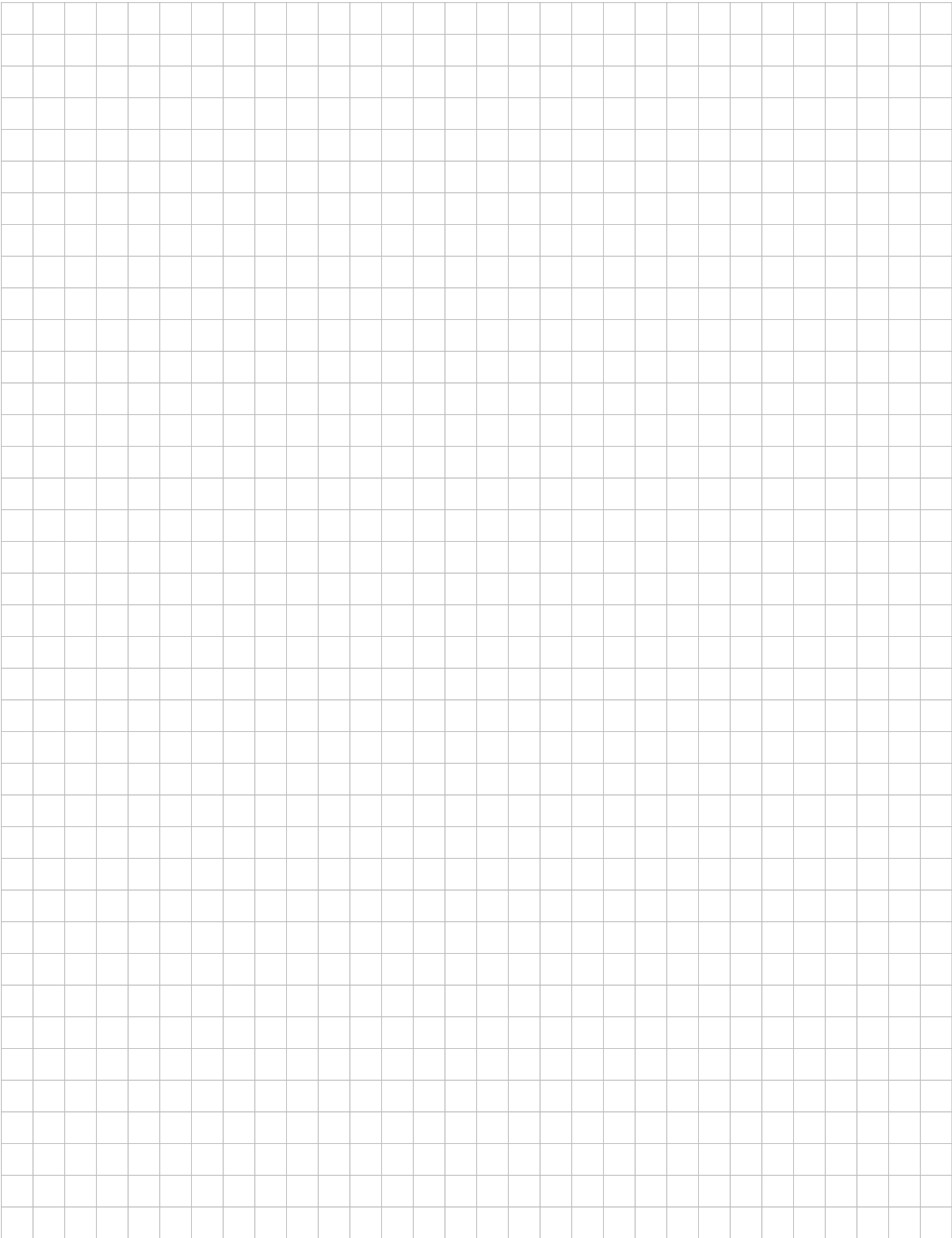
Cup B

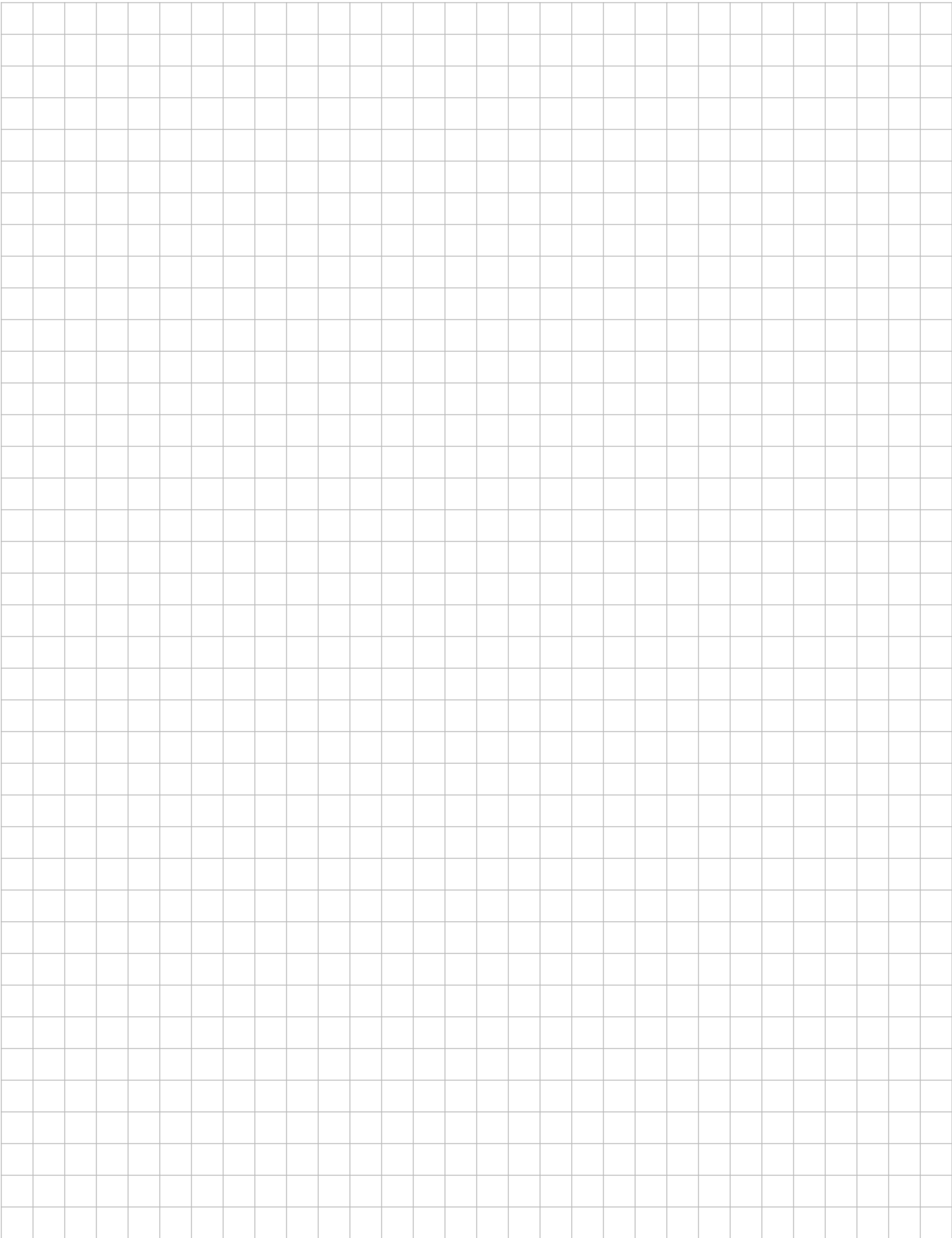
Because some customers said they missed the old cones, Pablo put a sign up saying "The new cups hold 50% more!" His daughter Letitia wonders if her father's sign is correct. Help her find out.

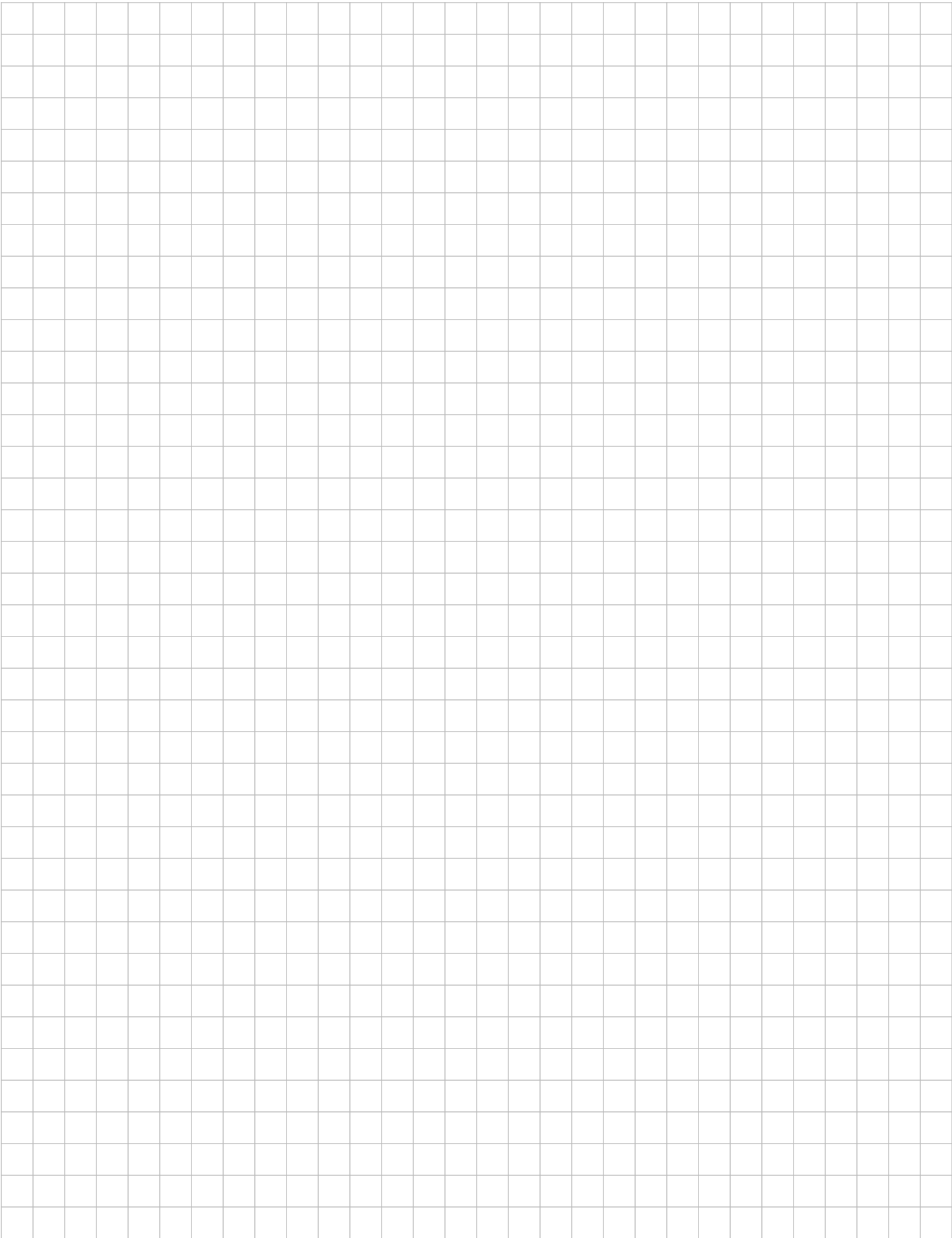


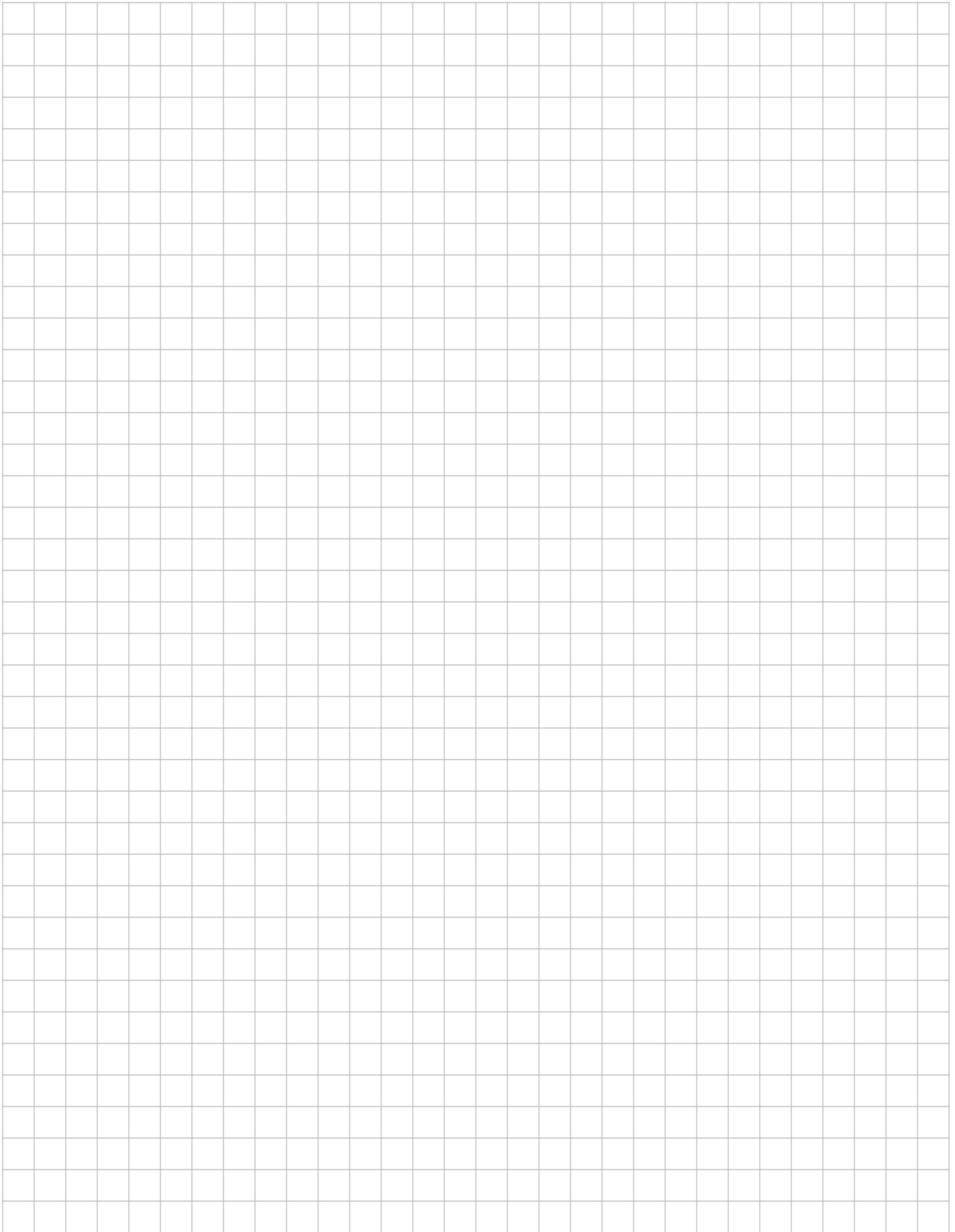
- How much juice can cup A hold? (While cups for juice are not usually filled to the top, we can assume frozen juice treats would be filled to the top of the cup.)
- How much juice can cup B hold?
- By what percentage is cup B larger in volume than cup A?
- Snow cones have ice filling the cup as well as a hemisphere of ice sticking out of the top of each cup. How much ice is in a snow cone for each cup?
- By what percentage is the snow cone in cup B larger than the snow cone in conical cup A?
- Is Pablo's sign accurate?

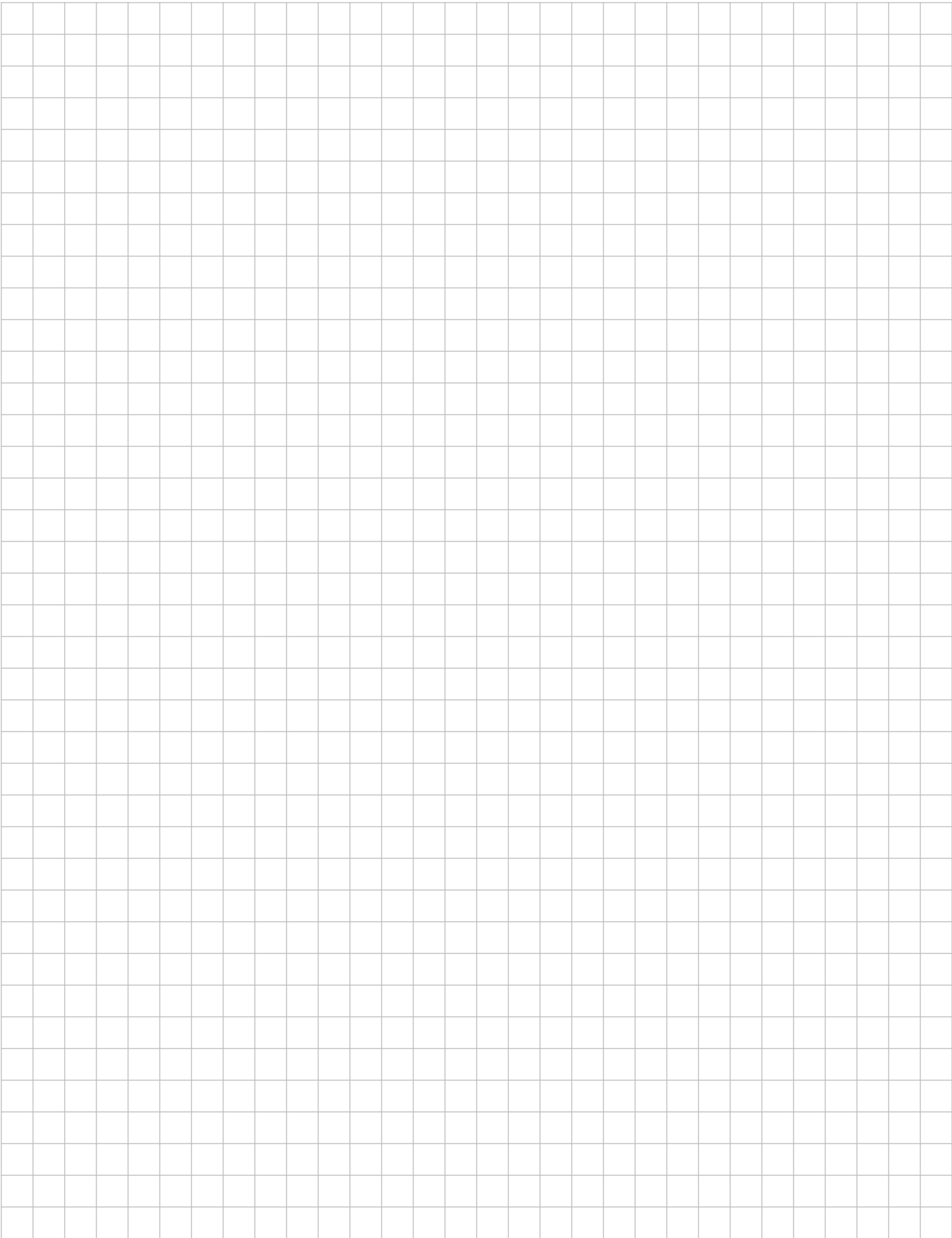












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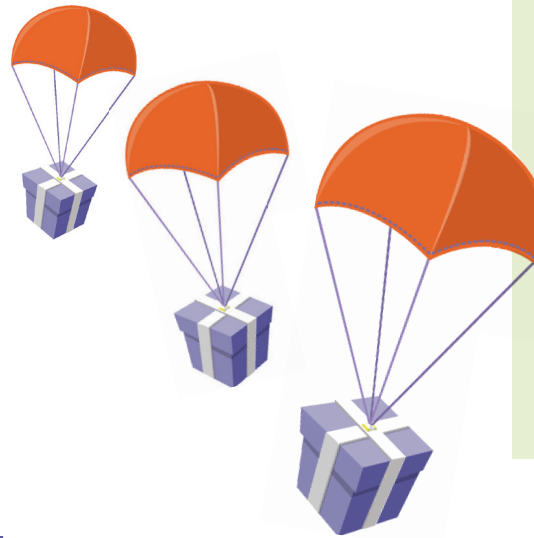
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YOUR CHALLENGE

Design and build a way to protect a container so its contents aren't damaged when dropped to the ground.

DEFINE THE NEED

In some situations, the only way for people to get essential supplies like food and medicine is when they are **airdropped** (dropped to the ground from a plane). Can you think of situations when an airdrop might be necessary? The job of an engineer is to make sure that containers of important supplies aren't damaged when dropped from great heights.



MATERIALS (per person)

- 1 or 2 pieces of cardboard
- 1 small paper or plastic cup
- 1 Ping Pong ball
- scissors
- masking tape
- ruler

You'll need some but not all of these materials:

- a plastic shopping bag
- string
- index cards
- plastic straws
- cotton balls
- rubber bands

BRAINSTORM & DESIGN

You are challenged to build and design a way to protect a Ping Pong ball inside of a cup as it's dropped from a height of at least 1 foot/30 centimeters. Think of the Ping Pong ball as medicine or other important supplies and the cup as your container. To succeed:

- the cup must land upright
- the ball can't fall out
- you can't make a cover for the cup!

Here are some ways an engineer might protect a container that's dropped to the ground.

- Slow the fall with a parachute.
- Cushion the fall with a shock absorber (a device that absorbs shocks and jolts, like the impact of something hitting the ground). Springs and cushions are good shock absorbers.

Brainstorm ways you might use a parachute or shock absorber to protect your cup and ball.



BUILD, TEST, EVALUATE, & REDESIGN

- Build your design.
- Test it by dropping your design from a height of 1 foot /30 centimeters.
- Use the ruler to measure the height.
- Observe any problems and redesign if needed.
- Once you're successful, try it from an even greater height.



Problem-Solving Tips

WHAT IF THE CONTAINER . . .

- . . . **tips over when it drops?** Make sure your design is level when you release it. You can also add a cardboard base under the cup to stabilize it. Make sure the cup is centered on the base.
- . . . **bounces instead of landing softly?** Add shock absorbers to cushion the fall.

ENGINEERING AND INVENTION IN ACTION

When Haiti was hit by a massive earthquake in 2010, it was too dangerous for aid workers to bring in supplies. Instead, thousands of pounds of food and clean water were airdropped to the people on the island.

Credit: Sgt James L. Harper, Jr.



An airdrop of humanitarian aid in Haiti.



DESIGN SQUAD GLOBAL is produced by WGBH Boston

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Why do we have seasons?

First, watch this animation from PBS Learning Media's NASA Planetary Sciences Collection:

http://d3tt741pwxqwm0.cloudfront.net/WGBH/npls13/npls13_int_seasons/index.html

Then make a physical model of the Earth to demonstrate how the angle of sunlight striking Earth's surface varies for different locations in Earth's orbit.

1. Find a foam or clay ball, and place a lamp without its shade in the center of the room to represent the Sun. (You can use the homemade modeling clay recipe on the next page.)
2. Make lines to identify the following latitude lines: Equator, Tropic of Cancer, Tropic of Capricorn, Arctic Circle, Antarctic Circle.
3. Place a short stick at each end of Earth's axis (the imaginary line upon which Earth spins.)
4. Place short sticks at various locations on the model's surface.
5. Move the model Earth around the lamp in a darkened room (maintaining Earth at the same height above the floor.) Make sure the axis is always tilted about 23.5 degrees and pointed in the same direction. The intensity of sunlight is indicated by the shadows of the sticks – the more direct the light, the shorter the shadows.
6. By rotating the globe on its axis, you can also illustrate sunrise/sunset and the duration of daylight.

Have someone at home take a video of you demonstrating your model and send it to your teacher! Be sure to explain how the tilt of Earth's axis of rotation affects the sunlight striking a particular location.

Homemade Modeling Clay

Materials:

2 cups salt
2/3 cups water
saucepan
1 cup cornstarch
1/2 cup cold water

Procedure:

1. Stir salt and water in a saucepan over heat 4-5 minutes.
2. Remove from heat; add cornstarch and cold water.
3. Stir until smooth; return to heat and cook until thick.
4. Allow the clay to cool, then shape as desired.
5. Store unused clay in a Ziploc bag.

Name:
Date:

Things Change, Things Stay the Same

Resource: Women’s Suffrage Timeline: <https://newseumed.org/tools/timeline/womens-suffrage-timeline?unlock=DAHt7BHISb6k1jsZvr>

Circle the time period assigned to your group.

1776 – 1844 1848 – 1866 1868 – 1871 1872 – 1890 1893 – 1912 1913 – 1923

Use the information on NewseumED’s women’s suffrage timeline, including descriptive text, photographs and historical newspapers/periodicals, to answer the questions below.

Key people: _____

Strategies used by suffragists (methods of communicating with supporters and potential supporters, methods to change the law, etc.):

Arguments used by suffragists (specific ideas and reasoning used to convince people to support woman suffrage):

Conflicts within the movement (arguments among groups and individuals, disagreements over strategies and goals):

Name:
Date:



Obstacles faced by the movement (anti-suffrage groups, individuals, social pressures, etc.):

Arguments used by anti-suffragists (specific ideas and reasoning used to convince people not to support the right of women to vote):

ESL at Home 6-8 Weeks 9-10

Use notebook paper to complete these activities. Do one each day!

Monday	Tuesday	Wednesday	Thursday	Friday
<p>Choose a TV Show or Movie and write a review for it! Include a summary and if you would recommend it to someone.</p> <p>First, ____. Next, ____. Last, ____. You should/should not watch this because ____. Another reason ____.</p>	<p>Use things in your home to create a kind of store (clothing, furniture, etc.). Write what you will sell and what it will cost! "Sell" items to your family and add their totals!</p> <p>Example: Red t-shirt: \$10 Jeans: \$17.99 Gold necklace: \$4.50</p>	<p>Create a cooking show! Choose something to make with your family! Explain the steps of how to make the dish while you are cooking together!</p>	<p>Go on a walk outside. What are some natural resources that you see? What are some physical features of your area? Sketch and label.</p> <p>Natural resources: water, plants, sunlight. Physical Features: Mountain, hill, river.</p>	<p>Imagine you were an animal (Example: horse, cow, pig, chicken) that lived on a farm where all the animals could talk. Write and draw about your adventure with your animal friends.</p>
Monday	Tuesday	Wednesday	Thursday	Friday
<p>Find items around your house and create an instrument. Come up with a song and write lyrics to it. Make sure you use imagery!</p>	<p>Pick a character from a TV show, movie, or book. Write and describe the character traits of that character.</p> <p>Example: Batman is wearing black. He is kind because he saves others.</p>	<p>Read a story or chapter aloud to someone, but don't read the end (or what happens next). Have them predict what will happen. Then read it to them and see if they were correct!</p>	<p>Interview your parents or grandparents about their life when they were your age. Write about how your life is similar and different to theirs!</p>	<p>List four things in your home that produce light energy. List four things in your home that produce heat energy. List four things in your home that reflect light.</p>

