

ADULT LITERACY

Tutor Flipbook

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Contents

Adult Literacy Tutor Flipbook

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How To Use This Flipbook

The *Adult Literacy Tutor Flipbook* is intended to be used as a quick reference while tutoring. More in-depth information is available in each skill area through the PA Literacy Corps online Tutor Professional Development Center.

The Flipbook is divided into five sections: Introduction, Reading Instruction, Writing Instruction, Math Instruction, and Teaching/Learning Strategies. Each section includes guidance for teaching a variety of skill topics, including:

- Step-by-step instructional procedures.
- Guided practice exercises.
- Questions (probes) to ask students to help them solve problems and/or develop deeper understanding.
- Cues (written steps or rules) to help students figure out answers to questions.
- Informal assessments.
- English as a Second Language (ESL) notes for English language learners.

Always keep in mind:

"Learning is something students do, not something done to students."
Alfie Kohn, writer

Make the Most of Your Time

Prepare for each tutoring session.

- Plan each lesson, but be willing to be flexible to allow for teachable moments.
- Keep on track and on task by defining learning objectives for each lesson.
- Contextualize instruction to make learning meaningful and relevant to students.
- Have resources available, including authentic materials.

Motivate students to learn; otherwise, the time spent tutoring is wasted.

- Explain the relevance of what you're teaching, and help students connect instruction to their lives and attainment of their goals.

With students, set short- and long-term goals for tutoring sessions.

- Monitor goal attainment.
- Recognize accomplishments.

Use advance organizers to prepare students for learning.

- Help students make connections between their prior knowledge and new information.

Teach at each student's instructional level.

- Find out or assess students' current proficiency levels in order to know where to begin instruction.

Teach strategies.

- Make sure students are aware of each strategy, can name it, and can use it independently.

Model skills as you teach.

- Think aloud to show students how you process information.

Engage students in increasingly higher levels of thinking, using Bloom's *Taxonomy of Cognitive Domains*.

- Recalling information (lowest level of thinking).
- Understanding information.
- Applying information.
- Analyzing information.
- Creating new ideas based on information.
- Judging or evaluating information based on knowledge (highest level of thinking).

Scaffold new skills.

- Provide students with supports to help them gradually master new skills on their own.

Provide guided practice.

- Allow students to practice a new skill with your help, as needed.
- Have students think aloud as they perform tasks.

Encourage metacognitive awareness.

- Help students recognize the processes they employ as they learn new information and skills.

Assess frequently to monitor progress and guide instruction.

- Always provide feedback and reinforce good performance.

Provide opportunities for independent practice.

- Repeat often.

Topic: Instructional Levels

Teach at the student's instructional level—this is where learning can take place. Students have already mastered material at their independent level, and material at their frustration level will be too difficult for learning to occur.

Use informal assessments to determine each student's instructional level. Assess frequently because instructional levels change as students master material.

	Word Recognition	Reading Comprehension	Math Skills	Listening Comprehension
Independent or mastery level	98–100%	90–100%	more than 85% correct	more than 75%
Instructional level	90–97%	80–89%	70–85% correct	70–75%
Frustration level	less than 90%	less than 80%	less than 70% correct	less than 70%

Topic: Lesson Plans

Have a lesson plan for each tutoring or class session.
The essential parts of a lesson plan include:

1. Learning objective: Student will be able to …
   - Connect learning objectives to students' interests and goals to make instruction relevant and meaningful to them.
2. Materials: Books, visual aids, props, supplies, etc. Try to use authentic materials, when possible.
3. Pre-instruction activities to activate students' prior knowledge, and prepare them for reading and learning.
   - Engage students in pre-reading strategies.
   - Review previous lesson or connect to/build on previous lesson, when appropriate.
   - Ask questions to get students thinking about what they already know about the subject.
4. Procedures: Step-by-step guidance for instruction.
   - Pace activities and sequence learning within the lesson timeframe.
   - Incorporate various learning styles to accommodate the learning preferences of students.
   - Teach content vocabulary.
   - Contextualize instruction.
   - Model skills while thinking aloud.
   - Encourage active learning.
5. Guided practice activity.
   - Provide students with a practice activity, and provide corrective feedback and assistance, as needed.
   - Have students think aloud while practicing.
6. Summary of key lesson points.
   - Help students organize new information into a meaningful context in their minds.
   - Engage students in a quick discussion about what they learned, and what it means to them now.
   - Discuss real-life applications of new information and skills.
7. Independent practice, such as homework.
   - Provide a new and different context in which students can practice their new skills.
   - Scaffold activities so students can become independent users of skills and information.
8. Assessment and follow-up.
   - Make sure assessment is based on learning objectives, and assess often to guide instruction (formative and diagnostic assessments).
   - Be sure to review in later lessons.

Reading Instruction

Learning to read is a hierarchy of interrelated skills, including:

- Decoding strategies (phonics), that build on a student's phonemic awareness.
- Fluency, which requires strong decoding skills.
- Comprehension, which occurs when reading is fluent.
- Vocabulary development, which is important throughout reading instruction.

Reading comprehension is different from reading accuracy.

- Reading accuracy is determined by the number of mistakes students make while reading a passage of text—mistakes may reveal where students need help with their decoding strategies.
- Reading comprehension is the reader's level of understanding of the content of the text—comprehension mistakes may reveal where students need help with decoding, fluency, and/or vocabulary development.

Motivate students to read. Talk about the different purposes for reading, including reading on the job and in other adult roles.

Teach at the student's instructional level.

- Independent Level: Students know 98–100% of the words in the passage (reading accuracy), and can answer 90–100% of comprehension questions accurately. Very little, if any, learning can occur at this level because students have already mastered this material.
- Instructional Level: Students know 90–97% of the words in the passage (reading accuracy), and can answer 80–89% of comprehension questions accurately. This is the level that is most likely to produce learning outcomes.
- Frustration Level: Students know less than 90% of the words in the passage (reading accuracy), and can answer less than 80% of comprehension questions accurately. Very little, if any, learning can occur at this level because there are too many unknowns that stand in the way of understanding and learning.

If a student's current reading level is unknown, conduct an informal assessment (such as an informal reading inventory) in order to determine where to begin instruction.

- Have students read a passage of between 200 and 300 words at what you think might be their instructional level.
- Based on the total number of words in the passage, determine the percentage of words they know.
- Ask a few comprehension questions and determine the percentage they answered correctly.

Then:

- If they score at the independent level (98–100% words and 90–100% questions correct) with this particular passage, you need to use a text that is slightly more difficult for instruction.
- If they score at the frustration level (less than 90% words and less than 80% questions correct), you need to use a text that is less difficult for instruction.
- The goal is to use text that is at the student's instructional level (90–97% words and 80–89% questions correct).

ESL Reading Strategies

In general, strategies that are considered best practices for teaching reading skills to native English speakers are also the best practices for English language learners. The following strategies are particularly helpful to students.

1. Read aloud.
   - Have students follow with a copy of the text as you read aloud.
   - Use expression and gestures as you read.
   - Activate students' prior knowledge by talking about the text prior to reading.
   - Have students predict what the text is about; ask them questions.
   - Discuss and teach difficult concepts, terminology, and vocabulary before reading.
   - Monitor students' understanding as you read by stopping periodically to check their understanding.
   - Reread the same text.
   - Have students read with you, using one of the read aloud methods.

2. Preteach difficult vocabulary before students read.
   - Teach idioms.
   - Teach Tier II words.

3. Give students many opportunities to practice vocabulary.

4. Integrate reading and writing activities.
   - Have students write about what they read, and read to help them write on a topic.

5. Use visual prompts or cues.
   - For example, have students make a cue card with sight words or idioms.

Topic: Phonemic Awareness (PA)

Phonemes are the smallest units of sound in spoken language, and phonemic awareness (PA) is the ability to detect those individual sounds within words. There are 44 phonemes in English. Sounds are written as /a/.

- Struggling adult readers typically lack phonemic awareness.
- Beginning readers do not have to have perfect PA before beginning work on decoding skills.
- Teach PA in combination with phonics and other reading skills because the skills reinforce each other.

1. Help students be aware of sounds in spoken language.
   - Model saying a sound several times; ask students to listen carefully and watch your mouth as you say it.
   - Point to several items that begin with that sound, and say the words slowly; ask students to repeat after you.

   Guided Practice:
   - Ask students to tell you the number of sounds in different words, for example:
     /f/ + /l/ + /a/ + /g/ ___ (4)
     /b/ + /a/ + /g/ ___ (3)
     /p/ + /a/ + /n/ + /t/ + /s/ ___ (5)

2. Help students hear rhymes and alliterations.
   - Have students identify and practice the patterns made by rhymes.
   - Expose students to literature that uses alliteration or make up your own. (Eagles eat electric eels easily.)

Guided Practice:
- Give students three consonant-vowel-consonant (CVC) words (such as *but, mat, cat*) and ask which words rhyme.

3. Ask students to tell you the word formed when you blend different phonemes, such as:
   /s/ + /p/ + /e/ + /l/ _____(spell)
   /k/ + /l/ + /o/ + /k/ _____(clock)
   /h/ + /a/ + /n/ + /d/ _____(hand)

Guided Practice:

Ask students:
- What word would you have if you added the sound /b/ to *ring*?
  _____ (bring)
- What word would you have if you added the sound /s/ to *tool*?
  _____ (stool)
- What word would you have if you added the sound /f/ to *lash*?
  _____ (flash)
- What word would you have if you added sound /k/ to *oat*?
  _____ (coat)
- What word would you have if you added the sound /s/ to *truck*?
  _____ (struck)

4. Use the Elkonin technique to show students how to segment words by phonemes. Each box stands for one of the sounds they hear in a word, and should contain the letter(s) that represent the phoneme for which they stand.

S	U	N

Continued

Topic: Phonemic Awareness (PA), continued

Assessment

Ask students:

- What is *gold* without the sound /g/? _____ (old)
- What is *snail* without the sound /s/? _____ (nail)
- What is *price* without the sound /p/? _____ (rice)
- What is *drug* without the sound /d/? _____ (rug)

Ask students to tell you which word does not fit, and why:

- cab, lab, mad _____ (mad)
- pin, big, dig _____ (pin)
- bind, wind, line _____ (line)
- lone, fool, tool _____ (lone)

Ask students what word you have if you:

- Change the /k/ sound in the word *kind* to a /m/ sound. _____ (mind)
- Change the /p/ sound in the word *pail* to a /n/ sound. _____ (nail)
- Change the /h/ sound in the word *hush* to a /r/ sound. _____ (rush)
- Change the /m/ sound in the word *meet* to a /f/ sound. _____ (feet)

ESL Notes

Be aware that some sounds in students' first language (L1) may not be sounds in English or vice versa, and the letter-sound correspondence may not be the same. English language learners must acquire English language sounds before they can make connections between letters and sounds.

Some sounds may be difficult for English language learners to pronounce and distinguish auditorily. Teach sounds in a meaningful context—use familiar words when manipulating sounds.

Begin with the consonants that students are most familiar with, such as those from their names or from common words they know.

Introduce a few sounds at a time. For example:

- Point to the letter *b*, and ask the student, "What letter is this?"
- Say, "The letter is *b*; the sound is /b/".
- Ask, "What is the sound?"

Use modeling, rhymes, and stories to teach phonemic awareness, but be sure activities are appropriate for adult learners.

Assessment Chart

The student is able to:	Yes	No	Sometimes
1. Hear specific sounds in words.			
2. Provide a rhyming word for a pronounced word.			
3. Blend three separate phonemes into a recognizable word.			
4. Divide (segment) words using the Elkonin technique.			
5. Point out a word that begins with a different sound.			

Topic: Phonics Instruction

Use the following sequence for teaching phonics:

- Single consonant sounds
- Consonant blends
- Consonant digraphs
- Short vowels
- Long vowels
- Vowel digraphs
- R-controlled vowels
- Vowel diphthongs

Phonics instruction is guided by rules, but sometimes the rules don't apply—there are many exceptions to the rules because of the many languages from which English has evolved.

1. Discuss vowels and consonants.
   - There are five vowels: *a, e, i, o,* and *u,* and sometimes *y* is also a vowel. These letters represent more than five or six vowel sounds.
   - Consonants are: *b, c, d, f, g, h, j, k, l, m, n, p, q, r, s, t, v, w, x, z,* and sometimes *y*—the letter *y* is a consonant in *yoke,* but a vowel in *myth.*

2. Review consonant sounds.

/b/	bag	/k/	kitchen	/s/	super
/k/	case	/l/	lock	/t/	tent
/d/	danger	/m/	map	/v/	van
/f/	family	/n/	next	/w/	work
/g/	goal	/p/	pay	/ks/	box
/h/	head	/kw/	quality	/y/	yellow
/j/	join	/r/	read	/z/	zip

   The letter c has no sound of its own. Followed by *a, o,* or *u,* it has the sound of *k* (case, cat). Followed by *e, i, or y,* it has the *s* sound (cent, city, cyst).

Guided Practice:

- Have students go through the alphabet to find beginning consonants to use with the following word families to generate three-letter words.
  -ab -ib -ob -ed -ub -ad -id -od -eg -ug -ag
  -ig -og -en -um -am -in -op -et -un

3. Discuss consonant blends.
   A blend is when two or more letters appear together, and you hear each sound that each letter would normally make. For example, the word *blend* has two consonant blends: *bl* (you hear the sounds for both *b* and *l*), and *nd* (you hear the sounds for both *n* and *d*).
   - Write several *tr* words (tray, truck, try), and pronounce them, emphasizing the initial sounds.
   - Talk about the *tr*-blend and have students add *tr* to *ip, ick, ap, ail,* and *ain.*
   - Review other *r*-blends (*br, cr, dr*).
   - Follow with *l*-blends (*bl, cl, fl*), and blends that begin with *s* (*sc, sk, sp, st*).

Guided Practice:

- Have students use the beginning blends below to generate four-and five-letter words; for example, *-ap:* clap, flap, slap, snap, trap, scrap, strap.

L-blends	R-blends	S-blends	3-letter blends
bl	br	sc	scr
cl	cr	sk	spl
fl	dr	sm	spr
gl	fr	sn	squ
pl	gr	sp	str
sl	pr	st	
	tr	sw	

Continued

Topic: Phonics Instruction, continued

- Talk about blends that end words, such as: *ct* (act), *ft* (craft), *ld* (build), *lp* (help), *lt* (melt), *mp* (stamp), *nd* (blend), *nk* (think), *nt* (paint), *pt* (kept), *rd* (word), *rk* (work), *sk* (ask), *sp* (wasp), and *st* (cost). Have students add beginning consonants and beginning blends to the end-blend word families below to generate four- and five-letter words; for example, *-and:* band, hand, land, sand, bland, brand, grand, strand.

L end-blends	N end-blends	T end-blends
all	and	ant
alm	ang	art
ill	ank	ast
old	ing	ift
oll	ink	irt
el	int	ist
elp	ond	ort
ull	ong	ost
	end	eft
	ung	elt
	unk	est

4. Explain that a consonant digraph consists of two consonants that form a new sound when combined, such as *ch, sh, th, wh, ng, nk, ph and gh*. You can refer to consonant digraphs as consonant pairs.

Guided Practice:

- Have students underline digraphs in words in text.

5. Teach short vowels using CVC (consonant-vowel-consonant) words. Introduce short vowels in the following order to separate /e/ and/i/ sounds, which can be confusing: *a, i, o, e,* and *u*.

- Short /a/ words include: băg, căn, făn, găs, măn, păn, răg, săd, tăn, văn, wăg.
- Short /e/ words include: bĕt, fĕd, gĕt, jĕt, mĕn, nĕt, rĕd, sĕt, tĕn, vĕt, yĕs.
- Short /i/ words include: bĭg, dĭg, fĭt, hĭm, kĭd, lĭd.
- Short /o/ words include: bŏx, cŏt, gŏt, hŏt, lŏg, pŏt, rŏd, tŏp.
- Short /u/ words include: bŭs, cŭp, dŭg, hŭt, mŭg, rŭg, sŭn, tŭg.

Guided Practice:

- Show students the difference between short- and long-vowel words, such as: fat/fate, hid/hide, not/note, pan/pane, rag/rage, can/cane, and rat/rate.

6. Teach long vowel sounds with one-syllable CVCe (consonant-vowel-consonant-e) words.
   - Long /a/ words: bāke, cāke, dāte, fāde, pāge, lāke, pāne, sāve, tāpe, vāse, wāve.
   - Long /i/ words: bīke, dīve, līfe, mīle, pīpe, sīde, tīme, wīde, wīse.
   - Long /o/ words: bōne, hōme, rōpe, rōse, tōne, vōte, zōne.
   - Long /u/ words: cūbe, cūte, fūse, mūle.

   When you hear the long /e/ sound, it is often spelled *ea* or *ee*. Explain the *Silent-e Rule*: When a one-syllable word ends in *e*, and has the pattern VCE (vowel-consonant-e), the first vowel says its name and the *e* is silent. Remind students that:
   - A vowel by itself says its name: *a, I*.
   - *E* at the end of a short word says its name: *be, me, he, we, she*.
   - O at the end of these words says its name: *no, go, so*.

Guided Practice:

- Have students find words in text with each long-vowel sound.
- Have students find words with each short-vowel sound.

Continued

Topic: Phonics Instruction, continued

7. Teach vowel digraphs. If two vowels are beside each other in a word or syllable, the first vowel is usually long, while the second vowel remains silent. You can refer to vowel digraphs as vowel pairs. Give students the following mnemonic to help them remember the rule: "When two vowels go walking, the first does the talking and the second hides its head in shame."

ai	maid
ee	jeep, heels, sweep
ea	team
oa	coal, boat, goal, road
ay	tray

Guided Practice:

- Have students underline digraphs they find in words in text.

8. Review the r-controlled vowel sounds and their spellings. Explain to students that when a vowel is followed by the letter *r,* the vowel does not make the long or the short sound, and is considered r-controlled. You can refer to them as controlling *r* vowel sounds.

Guided Practice:

- Have students practice the following r-controlled vowel sounds.

/ä/ sounds like *ar,* as in:	car, large, bark, arm, dart
/ô/ as in:	form, port, cord, door, sort
/û/ spellings include *er, ir,* and *ur,* as in:	fern, her, bird, first, fur, curb

9. Review vowel diphthongs. Tell students that vowel diphthongs blend two vowels sounds; usually both vowel sounds are heard and make a gliding sound. Students can refer to them as vowel gliders because they make a gliding sound.

Guided Practice:

- Have students practice the following vowel diphthongs.

/oi/	boy, soil, point, coin, destroy, deploy
/ou/	how, owl, ouch, down, house, flour
/ô/	saw, lawn, cost, fought, haunt, salt, chalk, ball
short /o͝o/	good, cook, foot, could, push, wood
long /o͞o/	new, food, cool, broom, troop, rule, tube

10. Discuss silent-letter spellings and their sounds.

Silent-Letter Spellings and Sounds

Spelling	Sound	Example
tch	/ch/	match
dg	/j/	badge
wr	/r/	wrong
kn	/n/	knee
gn	/n/	sign
mb	/m/	thumb
ps	/s/	psychology
lk	/k/	talk
lm	/m/	palm
wh	/h/	who

Guided Practice

- Have students underline silent letters in words in text.

Continued

Topic: Phonics Instruction, continued

Assessment

1. Have students underline the short-vowel sounds (a, e, i, o, u) in words, such as *industry* and *assistant*.
2. Have students underline the long-vowel sounds (a, e, i, o, u) in words such as *occupation* and *employee*.
3. Have students spell the words *daily*, *float*, and *wheat*, and then use them in a sentence. Have them tell you the rule for vowel pairs.
4. Have students spell the words *compound*, *oil*, and *allow*, and then use them in a sentence. Have them tell you the rule for vowel gliders.
5. Have students spell the words *guitar, spider,* and *pier,* and then use them in a sentence. Have them tell you the rule for controlling *r* vowel sounds.

Topic: Word Families

Tell students that word families are made up of words which have the same ending—they help students decode unknown words by comparing them to known words.

Guided Practice:

- Have students see how many words that can make from the word family *-ack*.

back	jack	lack	Mack	pack
quack	rack	sack	tack	black
crack	shack	snack	stack	track

Assessment

Give students the following chart of commonly used word families, and have them create groups of words for several different word families.

ab	ack	ad	ag	ail	ake	ale	all	am	an
and	ap	ape	ar	are	ast	at	ate	aw	ax
ay	eal	ean	ear	eat	ed	eel	een	eep	eet
eg	ell	en	end	ent	erry	es	est	et	ew
ex	ice	ick	ide	ig	ight	ill	ime	in	ine
ng	ink	ip	ish	it	oat	oo	oot	op	ot
ow	ub	uck	ug	un	ut				

Topic: Root Words and Affixes

Teach root words and affixes (prefixes and suffixes).

- A *root* is the main part of a word, and usually comes in the middle.
- *Pre* means *before* and, as such, a prefix comes before the root word.
- *Suf* means *after* and, as such, a suffix comes after the root word.

Root Words: Discuss common root words, such as: *bio* (life), *astro* (star), *chron* (time), *geo* (earth), *hydro* (water), *man* (hand), *tele* (far), *scope* (see), and *port* (carry).

Prefixes: Tell students that a prefix is a group of letters that goes in front of a root word, and changes the meaning of the word. Often the final letter of a prefix is changed or eliminated when attaching it to a root word. Alert students that not all words that start with what looks like a prefix actually have a prefix; for example, the word *read*. *Re* is one of the most frequently used prefixes, but it is not a prefix in the word *read*. The way to check is by removing the prefix—if a root word is left, it is a prefix. In the case of the word *read*, when you remove *re*, no root word remains.

- Teach the following 13 prefixes first: *un* (not); *re* (again); *in*, *im*, *ir*, *il* (not); *dis* (opposite); *en*, *em* (make); *non* (not); *in*, *im* (into); and *over* (too much).
- Then teach: *mis*, *sub*, *pre*, *inter*, *fore*, *de*, *trans*, *super*, *semi*, *anti*, *mid*, and *under*.

Suffixes: Tell students that a suffix does not have meaning by itself, and needs to be connected to a root word. It tells the quality, action, or relation of the root word, and it can determine whether the word is a noun, adjective, verb, or adverb.

Explain that words can have more than one prefix or suffix. For example:

- Two prefixes: *in/sub*/ordination, which means *not/under/* order (*ord* is the root word).
- Two suffixes: beauti/*ful/ly*. *Beauty* is the root word, and *ful* and *ly* are suffixes.

Assessment
Have students identify and define the root word, prefix, and suffix for each word.

- unbeatable
- unemployment
- transportation
- submarine

Resources: Many websites list common root words, prefixes, and suffixes.

Topic: Sight Words

Sight words are words that readers should recognize instantly. They make up between 50% and 75% of all words that beginning readers are likely to encounter. Many sight words do not sound as they are spelled, making them difficult to sound out using phonics. There are two commonly used sight words lists: the *Dolch List of Basic Sight Words* and *Fry's 300 Instant Sight Words*.

Practice is the key to learning sight words.

- Teach a few at a time so students can practice them often.
- Develop activities that involve students in saying, hearing, reading, and writing sight words.
- Have students play games and figure out puzzles that use sight words.

The 100 Most Frequently Used Words in the English Language

the	he	be	but	which	out	into	no	made	long
of	for	this	what	their	them	has	make	over	little
and	was	from	all	said	then	more	than	did	very
a	on	I	were	if	she	her	first	down	after
to	are	have	when	do	many	two	been	only	words
in	as	or	we	will	some	like	its	way	called
is	with	by	there	each	so	him	who	find	just
you	his	one	can	about	these	see	now	use	where
that	they	had	an	how	would	time	people	may	most
it	at	not	your	up	other	could	my	water	know

ESL Notes

English language learners may need help with sight words because so many are difficult to sound out.

- Have students make flash cards, and then use them to quiz students.
- Make crossword puzzles using sight words, and have students complete them.

Topic: Fluency

Fluency is the ability to read a text with expression, accuracy, appropriate speed, and comprehension. Fluent readers recognize words automatically and group (chunk or phrase) words quickly to help them gain meaning from what they are reading. *Guided repeated oral reading strategies* improve fluency and overall reading achievement.

Phrasing
Demonstrate the difference between choppy reading and smooth, expressive reading by reading a sentence aloud in a word-by-word manner, and then rereading it with expression while grouping words into phrases.

- Have students practice phrasing with the alphabet. Group letters, and have students recite the alphabet in chunks (ABC DE FGH IJK LM NOP QRS TUV W XYZ).
- Once students understand the concept of phrasing, help them chunk text into noun phrases, verb phrases, and prepositional phrases.
- Review the purpose of commas and periods, and demonstrate how punctuation can help them group words.

Guided Practice:

- Have students place slash marks between phrases in written text.
- Put single slashes (/) to denote short phrases and short pauses, and double slashes (//) to denote the end of sentences and longer pauses.
- Have students read aloud the chunked passages.
- Have students read the passage without the slash marks, using expression and proper phrasing.

Guided Repeated Oral Reading
Model guided repeated oral reading using the following procedures. Select a book you will enjoy reading with your student repeatedly. The book should be somewhat challenging for the student to read.

- Read the story aloud, slowly and with hesitations and errors (miscues).
- After reading, talk about parts that were "difficult" to read, and model how to reread sentences to improve reading accuracy.
- Read the story a second time; reduce the number of miscues, and read with more expression.
- Then, read a passage aloud in unison with your student. At any point, if the student is reading comfortably, simply stop reading. If the student begins to struggle, resume reading. Your role is to provide a model for fluent, expressive reading, and to provide any words the student can't quickly identify.
- Repeat reading until the student is reading with accuracy and expression, and can answer comprehension questions correctly.
- Then, begin work on another passage that is slightly more difficult to read.

Note: You can vary read-aloud methods. For example, after the first reading, the student can echo read (repeat) the way you chunk language into thoughts (phrases).

Topic: Fluency, continued

Assessment
Assess fluency when students can decode and group (chunk) words as they read. If you try to assess fluency too early, students will be frustrated by their reading rate and the number of errors they make, and their comprehension will be minimal. When they are ready:

- Have students read a passage, silently and orally, at their current reading level, for a period of one minute.
- Count the number of words they read. This gives you their word per minute (wpm) reading rate.
- Count the number of words students missed or errors they made (miscues) as they read aloud. Calculate the percentage of miscues, based on the total number of words read, to determine their reading accuracy.
- Ask comprehension questions, and calculate the percentage they answered correctly.
- To be considered fluent reading this text, they need to score 98% or higher on reading accuracy and 90% or higher on reading comprehension.

Oral Reading Rates
People tend to read slightly faster when they read silently. These reading rates are typical, but not considered adequate in today's society.

Do not refer to grade-level equivalents when talking with students.

wpm	Grade Level
1–100	1–2 and below
100–200	3–6
200–250	7–8
250–350	High School

Instruction Guidance

- If students are reading below 70 words correct per minute (wcpm), work on word recognition (decoding) skills and fluency.
- If students are reading between 70 and 120 wcpm, focus on fluency instruction and provide lots of opportunities for reading practice.
- If students are reading more than 120 wcpm, work on increasing vocabulary and comprehension.

Miscue Analysis a.k.a. Error Marking System
Following on your own copy of the text, discreetly mark errors (miscues) as students read aloud. For each type of error, use one particular mark (circle it, underline it, write it above the words in the text, cross it out, etc.). Think about what students' errors tell you in terms of the reading instruction/practice they need. Common miscues include:

- **Unknown words:** student doesn't know the word, and can't decode it.
- **Omission:** student leaves out a word.
- **Substitution:** student reads a different, but similar, word than in the text.
- **Insertion:** student inserts a word not in the text.
- **Repeats:** student repeats words already read.
- **Self-correction:** student corrects own miscues while reading. Self-correction indicates a perceived miscue. If it is a miscue, self-correction demonstrates an awareness of reading errors, which is good. If it isn't a miscue, self-correction may indicate students are nervous or possibly don't know the next word, and are having difficulty with continuing to read.

Topic: Vocabulary Development

Teach deep: Have students spend time learning about individual words.

- For example, have students research word origins, divide words into syllables, or sort and categorize words.

Teach wide: Expose students to lots of words.

- Encourage students to read poetry, nonfiction, literature, newspapers, magazines, etc.

Use direct instruction methods to teach vocabulary, such as using context clues, word relationships, analogies, and how to use a dictionary.

Use indirect instruction methods to teach vocabulary, such as encouraging conversation and oral language practice, reading to students, and having students read often.

Teach new meanings for known words.

- For example, the mud was *caked* on his boots. (The word *cake(d)* is used as a verb.)

Teach the meaning of a new word with a known concept.

- For example, "I know what a ball is, so I can understand the meaning of *sphere*."

Teach Tier II words.

- Students will learn Tier I words through daily exposure to them.
- Teach Tier III words when relevant.

Preview content vocabulary to determine which words to teach prior to presenting students with a text to read.

1. Read the title to students, and have them think about what the text is about.
2. Have students make a list of words they think they may encounter while reading the text.
3. Pre-assess students' word recognition.
4. Give students a list of vocabulary from the text, and have them check the appropriate descriptor below:
   ☐ I've never heard the word.
   ☐ I've heard it, but don't know what it means.
   ☐ I think I know what the word means or what it is related to.
   ☐ I know the word.

Have students keep vocabulary logs, which can be in the form of a chart or journal. Either way, students should:

- Write the definition from a dictionary, and use the word in a sentence.
- Include synonyms, antonyms, and an illustration or example of the word.

Note: employability word logs or journals are a great way to prepare students for work, while learning work-related vocabulary.

- Have students collect words from their current job or from a job they would like to obtain.
- Give students vocabulary words they need for a job search (application, résumé, interview, etc.).

Guided Practice:

Have students write 7-Up Rule sentences for vocabulary words.

- The 7-Up Rule says that all sentences must have at least 7 words and must be perfect in terms of spelling, capitalization, and punctuation.

Continued

Topic: Vocabulary Development, continued

Have students create Hink Pinks, which are one-syllable word answers to riddles that are in the form of pairs of words that rhyme. Variations include Hinky-Pinky (answers contain two syllables) and Hinkety-Pinketies (answers contain three syllables).

What is a library burglar?	book crook
What is an unhappy father?	sad dad
What is a strong beautiful plant?	power flower
What is an overweight cat?	fat cat
What is a cave slogan	grotto motto

Have students write cinquains, which are five-line nonrhyming poems.

Line 1: One noun that tells what your poem is about.
Line 2: Two adjectives that describe what you're writing about.
Line 3: Three verbs or *-ing* participles that describe what your poem is about.
Line 4: A four-word feeling or observation that tells more about what you're writing about.
Line 5: A synonym for Line 1.

Dessert
cold, creamy
eating, melting, licking
cone with three scoops
ice cream

ESL Notes

English language learners need to know how to pronounce the word, the connotations of the word, if there are multiple meanings of the word, and in what contexts the word is used.

Topic: Context Clues

One way to figure out an unknown word is by its context. Context clues may be in the same sentence as the unknown word, or in the sentence before or after it. Context clues can be synonyms, comparisons, contrasts, definitions, descriptions, or examples. Some are direct, in that the explanation is given in the sentence. Others are indirect, and you may have to infer or guess the meaning. Students need to be aware that not all contexts are helpful; some give little information about a word's meaning. So, students should use context clues as only one of several strategies to figure out an unknown word.

Teach the steps:

Step 1: When you encounter an unfamiliar word, reread the sentence and substitute a word that seems to make sense in the context.

Step 2: If the word you substituted does not make sense in the context of the rest of the paragraph, try again.

Step 3: If the second try fails, look for synonym, comparison, contrast, definition, description, and example clues. For example:

- Synonym: The store carried different styles of *trousers*; the pants varied in price. (*pants* is a synonym for trousers)
- Comparison (often uses the words: *as, same, same as, similar to,* and *other*): The *vehicle was similar to* other cars on the lot.
- Contrast (often uses the words: *although, but, though, on the other hand, however, yet, unlike, different from, in contrast to, not,* and *as opposed to*): The building was *vacant, unlike* five years ago when all its offices were rented.
- Definition or description: The floor is made of *granite. The grained rock contains* quartz, which is durable and a good material for floors.
- Example: The cupboard was full of *toxic* materials, *such as poisonous* cleaning supplies.

Guided Practice:

Write a sentence using a word that students don't know, and guide them in trying to figure out the meaning. The following is an example using the word *fantasy*.

- Have students read the sentence, "For most people, winning the lottery isn't real; it's just a fantasy."
- Ask if there are any clues in this sentence that tell them anything about the word *fantasy*.
- Ask if there are any other words that might sound right in this sentence instead of the word *fantasy*.
- Have students try out words to see if they make sense.

Assessment

Have students figure out the meaning of the words in italics, and discuss how they did it.

- The events for the conference were listed in *chronological* order. The schedule began with the first event of the day and ended with the closing ceremony in the evening.
- *Projectiles* include those items that are shot forward, such as a cannon shell, bullet, or rocket.
- A *sleuth*, such as Sherlock Holmes, can be very helpful in solving crimes.
- The tornado *annihilated* the whole town to the point that nothing was left standing.

Topic: Word Relationships

Word relationships include synonyms, antonyms, and homophones; they help students understand and remember the meanings of words.

Teach synonyms: Tell students that the first three letters in the word *synonym*, *syn*, mean *something equal* (explain that *syn* is a prefix), and *nym* means *name* (explain that *nym* is a root word). Ask students to guess what the word *synonym* means, based on knowing what *syn* and *nym* mean.

- Synonyms are different words with identical or similar meanings. When writing a sentence, we can usually replace a word with its synonym, depending upon how important it is to be exact.

Guided Practice:

- Ask students to give you a synonym for the words: *job*, *workplace*, *salary*, *chef*, and *laborer*.
- Discuss when we need to be careful about using synonyms. For example, is a cook always the same as a chef? When might it be important to know the difference between a cook and a chef?

Teach antonyms: Tell students that the prefix *anto* means *something opposite or opposing*, and remind them that the root word *nym* means name. Ask them to guess the meaning of the word *antonym*, based on knowing what the prefix and root word mean.

- Antonyms are words having a meaning opposite to that of another word. Prefixes can create antonyms, such as *employed* and *unemployed*.

Guided Practice:

- Ask students to give you an antonym for the words: *cold*, *high*, *empty*, *over*, and *last*.

Teach homophones: Tell students that the prefix, *homo*, means *the same*, and the root word *phone* means *sound*. Ask them to guess what the word *homophone* means.

- A homophone is a word that is pronounced the same as another word, but differs in meaning.
- Homophones may be spelled the same, such as *rose* (flower) and *rose* (past tense of *rise*), or differently, such as *two*, *to*, and *too*.
- *Ceiling* and *sealing*, and *plum* and *plumb* are work-related homophones.

Guided Practice:

- Have students give you the homophone for the following words: knight, eye, by, sea, hear, where, and flower.

ESL Notes

Teach cognates: Cognates are words that are similarly spelled and pronounced, and have the same meaning in two different languages. *False friends* is the term used to describe words that look or sound the same, but have different meanings. You can find lists of cognates on the Internet.

Assessment

- Have students write synonyms for: *caution*, *danger*, *categorize*, *liberty*, *stream*, *argue*, *hurry*, *damp*, *paste*, *harm*, *odd*, *cover*, *rapid*, *create*.
- Have students write antonyms for: *different*, *loosen*, *expensive*, *messy*, *release*, *end*, *yell*, *sharp*, *lost*, *heavy*, *nervous*, *bright*, *give*, *sloppy*.
- Have students write homophones for: *red*, *know*, *write*, *meat*, *suite*, *ant*, *prey*, *fir*, *feat*, *idol*, *wring*, *heard*, *beau*, *blew*, *tow*, *tier*, *leek*, *cell*.

Topic: Analogies

An analogy is a comparison of certain similarities between things, which are otherwise unlike. Word analogies are beneficial because they help students acquire more extensive knowledge of word meanings.

Explain that analogies are usually presented as follows:
[word 1] : [word 2] : : [word 3] : [word 4]

This means:
[word 1] is to [word 2] as [word 3] is to [word 4]

For example:
water : liquid : : ice : solid

This means:
"Water is to liquid as ice is to solid."

Discuss different types of analogies, such as:

- Synonyms — car : automobile : : world : earth
- Antonyms — happy : sad : : beautiful : ugly
- Part/whole relationship — house : room : : book : chapter
- Category — animal : horse : : plant : tomato

Guided Practice:

Have students write and describe the following as analogies.

- December is to winter as July is to summer.
- Milk is to refrigerator as ice cream is to freezer.
- Rain is to drop as snow is to flake.
- Supervisor is to worksite as teacher is to classroom.
- Boss is to workplace as principal is to school.
- Harley-Davidson : motorcycle : : Nike : sneakers.
- McDonalds : hamburgers : : KFC : fried chicken

Assessment

Have students create analogies for the following:

- Job/worker
- Workers/tools used
- Tool/object used on
- Tool/function

Topic: Dictionary Skills

Examine and discuss the way a dictionary is organized. Discuss the main parts of a dictionary.

- *Guide words* are found at the top of each page in the dictionary (some dictionaries place them on the far left and right of two facing pages). They tell the first and last words found on that page.
- *Entry words* are in boldface type—these are the words you want to define.
- Symbols are used to show how to pronounce the word properly (the sounds the symbols represent are shown in the pronunciation key).
- Definitions are numbered and give the various meanings of the word.
- A sentence shows how a word is used.
- Derivation is where the word comes from, usually written at the end of the definition in brackets.

Tell students that in order to use a dictionary, they are two things they need to be able to do.

- They need to know and be able to use proper alphabetical order.
- They need to be able to use guide words to find entry words.

Alert students that they may need to try several possible spellings before finding the word.

Tell students to check the meaning they find for the word in the sentence in which it is used.

- Tell them to be sure that they select the most appropriate meaning, not the first one they find.

Guided Practice:

- Have students look up ten words in the dictionary, and record the dictionary page number, and the guide words on the page where the word is found.

Assessment

Have students look up the following words in the dictionary, and answer the following questions.

- *Ebullient*, *laconic*, *discreet*, *ingenuous*, *tenacious*, *impecunious*, *decorous*, *petulant*, *diffident*, *affinity*, *propensity*, *antipathy*, and *remiss*.
- What do the letters *Z-I-P* in *ZIP code* stand for?
- What is a *shaddock*?
- What does the word *somnambulate* mean, and what part of speech is it?

Topic: Syllables

A syllable is a letter, or combination of letters, said together as a chunk within a word. Every syllable must contain a vowel.

Show students four ways to break words into syllables.

1. Divide between two middle consonants; for example: hap/pen, let/ter, and din/ner. The only exceptions are the consonant digraphs that can't be split because they represent only one sound (*th*, *sh*, *ph*, *th*, *ch*, *wh*).
2. Usually divide before a single middle consonant; for example: o/pen, i/tem, and re/port. The only exceptions are when the first syllable has an obvious short sound, as in cab/in.
3. Divide before the consonant before the *-le* syllable; for example: a/ble and mum/ble. The only exceptions are *ckle* words, like tick/le.
4. Divide off any compound words, prefixes, suffixes, and root words which have vowel sounds.

Guided Practice:

- Have students break the following words into syllables: computer, safe, student, hospital, fold, folder, friend, information, disappointments, preparation, possible, impossible, carefully, and supercalifragilisticexpialidocious (extra credit).

ESL Notes

Be aware that English language learners may have difficulty and may need extra practice with multisyllabic words.

Assessment

Use job search or workplace materials to find words for students to break into syllables.

Topic: Compound Words

A compound word is made when two words are joined to form a new word, such as: newspaper, sandpaper, handbag, eyebrow, and thumbprint.

Guided Practice:

- Have students categorize compound words. Lists of compound words are available on the Internet.

Assessment

Have students separate and discuss the meaning of each of the following compound wordd: overalls, bartender, skyscraper, seatbelt, windshield, screwdriver, bedtime, workplace, cleanup, workload, proofread, pothole, somewhere, and copperhead.

Topic: Reading Comprehension

Comprehension is the purpose and goal of reading. Teaching reading comprehension skills involves:

- Modeling directed reading strategies, cognitive strategies, and comprehension monitoring and repair strategies. Think aloud as you model each strategy.
- Guided practice, as students use a strategy or try to figure out which strategy to use, while thinking aloud, and with corrective feedback.
- Independent practice, including application of strategies in real-world reading situations, such as reading an employee handbook.

Directed Reading Strategies

Directed reading strategies can be used before reading, during reading, and after reading to help students understand the text.

Directed pre-reading strategies include determining the purpose for reading, previewing the text, understanding the author's language and writing style, activating prior knowledge, and predicting meaning. These strategies prepare students for reading a particular text, and enhance comprehension.

- Ask students why they read particular print materials—what information do they need or want?
- Show students how to preview a passage, while thinking aloud:
  (1) skim the text, including the table of contents, headings, captions, and graphics;
  (2) read headings and captions:
  (3) read the first sentence of each paragraph; and
  (4) scan the passage to see if a key word is repeated.
- Discuss the author's language and writing style—for example, is the author trying to persuade readers?
- Talk about what the student already knows about this subject or topic.
- Ask students to predict the main ideas or key vocabulary. During or after reading, they can check their predictions.

During reading, directed reading strategies include monitoring reading comprehension and solving comprehension problems as they occur with repair strategies.

- Read a passage to students and think aloud as you process the information.
- Pose problems with understanding the text, and express confusion.
- Stop to reread or restate a difficult section of text.
- Summarize long sentences and put them in your own words.
- Look back in the text to locate the information or person to whom a pronoun refers.
- Identify important information.
- Use various strategies to determine the meaning of an unknown word (such as context clues).
- Ask *who*, *what*, *when*, *where*, and *why* questions after each section or page. Act as if you can't answer these questions, and stop and reread.

Directed reading activities that follow reading include:

- Recalling, retelling, and restating facts, main ideas, and details.
- Determining the chronology or sequence of events.
- Inferring information about characters, settings, locations, times, and places described in the text.
- Finding evidence to support or contradict their predictions.

Continued

Cognitive Comprehension Strategies

- **Predicting**: Show students how to use clues from the text, with their own background knowledge, to forecast what will happen or what information the text will contain. Have students confirm, reject, or adapt their predictions as they read.
- **Making connections:** Help students connect the text to their own experiences (text-to-self), something they have read (text-to-text), or something they have seen or heard about (text-to-world).
- **Questioning:** Think aloud as you read to show students how to ask themselves questions about the text as they read. Questioning will help them understand the text and self-monitor their comprehension as they read.
- **Visualizing:** Think aloud as you read to show students how to visualize what you are reading—explain that they can use their senses to vicariously experience what they are reading.
- **Summarizing:** Show students how to glean the essence of the text and report only the essential parts.
- **Synthesis:** Show students how to integrate and use multiple strategies.

Comprehension Monitoring and Repair Strategies
Tell students that they need to stop reading periodically in order to:

- Be aware of what they do understand.
- Identify what they do not understand.

Model how to use appropriate repair strategies to resolve reading comprehension problems.

- Reread when you don't understand.
- Look forward or go back in the text for more information, or to clarify information.
- Use graphic organizers or semantic charts to clarify information.

Guided Practice:

- With students, work through the following typical comprehension problems.

Comprehension Problem 1: "I don't know what this word means."
Have students:

- Read the entire sentence to see if they can make a guess about the meaning of the word, based on context clues. (Not all words can be figured out with context clues, but it is a good place to begin.)
- Use context clues to decide what kind of word it is—is it a verb, a noun, an adjective, or an adverb?
- Determine if the word has any prefixes or suffixes they know or any familiar word parts. Then, try to use those, along with context clues, to figure out the meaning.
- Decide if they must understand this word to understand the text. If not, they can skip it now and look it up in a dictionary later. If the word is important, they need to look up the meaning in a dictionary or ask someone.

Comprehension Problem 2: "I'm confused. I don't get it. This doesn't make sense. This doesn't fit with anything I know."
Have students:

- Reread the sentence or passage.
- Continue reading to see if more information helps them understand the meaning.
- Try reading aloud.
- Look at the words in the confusing part of the text—the words may be unknown or used in an unfamiliar way.
- Check confusing or unknown words in a dictionary or ask someone.

Correcting Reading Errors
Think about how to correct errors students make while reading. Ignore errors that don't change the meaning of the text.

- Teach at key places where students can learn what they most need to know in order to understand the text.
- Tell students the unknown word after a few unsuccessful attempts at trying to figure it out themselves, or if the word is not in their oral vocabulary.

Topic: Literal Comprehension

Explain to students that comprehension involves identifying facts, details, and relationships between ideas (such as comparison, contrast, sequence of events, or cause and effect) that are stated directly in the passage.

Think aloud while you model literal reading comprehension strategies, including retelling a passage, summarizing, and TTQA.

- Teach students how to retell a passage. A retelling is a reader's own version of the text, based on how the reader understood what the author wrote.
- Teach students how to summarize as a way to clarify and organize their understanding of the text. A summary is a short version of the text that tells the most important points. It answers the question, "What is the text about?"
- Teach students the Turn the Question Around (TTQA) strategy to help them answer literal comprehension questions from a text.
  Have students:
  1. Read the question, and think about what the question is asking.
  2. Find the key words in the question, and the same key words in the text.
  3. Underline the words they will use in their answer.
  4. Write the answer, using some key words.
  5. Reread and edit their answer.

Guided Practice:

Provide students with opportunities to practice retelling, summarizing, and using the TTQA strategy by asking literal comprehension questions that require them to provide information stated directly in the text, including:

- Main ideas.
- Information about characters, the setting, time, or location.
- Details of an action or event described in the text, and descriptions of a sequence of events or a list of items.
- Likenesses or differences described in the text.
- Cause and effect situations described in the text.

ESL Notes

ESL Dictoglos

- Have students listen to a passage, as you read it aloud twice, and make a list of words and phrases they understand.
- Have them retell the passage, using the words and phrases they listed.
- Help them compare their retelling with the actual text.

Topic: Inferential Comprehension

Discuss the meaning of the word *infer,* and talk about how we make inferences daily. Explain that inferential comprehension is reading between the lines. Much of what we understand—whether when listening or reading—we understand indirectly, by inference.

Tell students that when reading, we can often infer:

- Details about characters and settings, including time of day and year.
- Details about actions or events.
- Cause and effect relationships.
- Motives and intentions.

Talk about jumping to conclusions. It is said that evidence implies and readers infer. So, not everyone will reach the same conclusion. However, the more evidence we find within the text and the more carefully we reason, the more valid our inferences will be.

- For example, if we see someone with an open umbrella, we might think it must be raining. But, one could also think the umbrella is being used for protection from the sun. The weather would provide evidence. We need to be careful that we don't jump to conclusions.

Guided Practice:

Have students consider the following classic example:
The Senator admitted owning the gun that killed his wife.

- Talk about what we actually know from the sentence.
- Talk about what we can infer from the sentence.
- Discuss the possible dangers of jumping to conclusions in this example.

Topic: Coding Text

Teach students how to code text while reading. Show them that a simple code can help them make quick responses to the text. If writing in a book is not an option, students can use small sticky notes. Show students the *Interactive Notation System for Effective Reading and Thinking* (INSERT) method.

=	I agree
×	I thought differently
+	New information
!	WOW
?	I don't get it
*	I know this is important

Guided Practice:

- Give students a text to code using the INSERT system.

Topic: Assessing Comprehension

You can assess comprehension at several different levels by having students retell and summarize the text, answer questions about the text, and write in response to the text. An informal reading inventory can be used to assess comprehension, and can also guide instruction.

Informal Reading Inventory (IRI)
An IRI gives a picture of an individual student's reading strengths and challenges, and can help you identify specific difficulties a student may be having while reading.

- Select a passage that you have been using during instruction, and explain the IRI process to the student.
- Give the student the passage and have her/him read it orally while you mark miscues on your own copy of the passage (see reading fluency). Allow students to take a minute to apply pre-reading strategies before reading the entire text.
- Remove the student's copy of the passage and ask comprehension questions.
- Give the student a copy of a different passage at the same level and have her/him read it silently.
- Remove the student's copy of the passage and ask comprehension questions.
- Calculate the percentage of comprehension questions answered correctly.
- If the student has recognized 98–100% words correctly and has answered 90% or more comprehension questions correctly, the passage is at the student's independent reading level, and you can repeat the process with a slightly more difficult passage. Continue until you reach the student's instructional level (90–97% of words recognized correctly and 80–89% comprehension questions answered correctly). If the student fails to recognize at least 90% of words or answer at least 80% of questions correctly, the passage is too difficult (frustration level), and you need to provide instruction at a less difficult level (instructional level).

Comprehension questions may ask students to describe or write a description of:

- The main point of the passage.
- Information explicitly stated in the passage, such as details about characters, events, actions, settings, problems, and outcomes.
- Information or ideas implied or suggested by the author, including inferences and feelings.
- The function of a particular word in relation to a larger segment of the passage.
- The relationships among various ideas in the passage.
- The author's logic, reasoning, or persuasive techniques.

Metacognitive Knowledge and Comprehension Assessment
Metacognitive knowledge relates to a student's ability to understand and use reading comprehension strategies, including comprehension monitoring and repair strategies. There are four levels of readers' use of metacognitive knowledge; Level 3 is the initial goal, although Level 4 is the highest level and ultimate goal. Having students think aloud as they read can give you an idea of their metacognitive knowledge. You can also have students describe how/when to use reading comprehension strategies.

- Level 1: Tacit readers lack awareness of their thinking as they read.
- Level 2: Aware readers know when their understanding breaks down, but do not have strategies to repair their comprehension.
- Level 3: Strategic readers know when their understanding breaks down, and have strategies to repair their comprehension.
- Level 4: Reflective readers intentionally apply strategies to deepen their understanding, in addition to using strategies when their understanding breaks down.

Many students experience writing anxiety, often because they are afraid or embarrassed to make mistakes. They need to be assured that being a good writer does not mean having everything right the first time, and that writing is a process that involves revising and rewriting.

Begin by talking about the different purposes or reasons for writing. Is there a difference in how we should write information based on its purpose and intended audience? Discuss when to use a formal writing style, as opposed to informal writing and language. Talk about when and why it matters.

Discuss writing in terms of being an employment skill, and that most jobs include tasks that require writing. Most employers want their employees to be able to communicate ideas clearly, concisely, accurately, and logically through writing. Most companies report that applicants who can't write and communicate clearly are unlikely to be hired. Writing is important when completing a job application, as well as when writing a business letter.

Talk about how research is often a part of writing. Discuss how to use and cite reference materials appropriately. Note-taking and being able to develop an outline are important research and writing skills, as well. Provide students with instruction and opportunities to do both.

Spelling is an important writing tool. Teach students spelling strategies, and how to use a dictionary. Be sure to warn students that computer spelling tools do not determine if the word is correct—they only catch spelling errors.

ESL Writing Strategies

In general, what are considered to be best practices for teaching writing skills to native English speakers are also best practices for English language learners.

- Expose students to a wide variety of writing experiences, including: journal writing, letter writing (both formal and informal), persuasive essays, fiction, poetry, and nonfiction reports.
- Teach students how to organize their thoughts, and plan and draft their writing.
- Concentrate first on content, rather than writing mechanics; allow students to develop ideas before focusing on grammar.

Show students how to revise and proofread:

- Help students work on correcting sentence-level errors a little at a time; pay attention to errors that appear most frequently in their writing.
- Provide students with checklists and cue cards to help them with grammar and other writing conventions.
- Help students identify the types of errors they make most often, and show them how they can correct them on their own.

  For example, you might say:

  "There are three past tense errors in this paragraph. Can you find them?"

  "I notice that you often have trouble with subject-verb agreement. Why don't you go through the paper and see if you can find the mistakes?"

  "Try reading this paper aloud to yourself to see how many grammatical errors you can find."

  "When you turn in the next draft, indicate how many errors you corrected on your own."

Topic: Punctuation

Teach or review the following punctuation:

- Period: At the end of a sentence and after abbreviations or initials in a name.
- Question mark: At the end of a sentence that expresses a question.
- Exclamation point: At the end of a sentence that expresses emotion.
- Comma: To separate complete thoughts in a sentence, adjectives that describe the same noun, and items on a list.
- Colon: Means a list or series will follow.
- Semicolon: Can be used instead of a conjunction.

Topic: Capitalization

Teach or review when to use capital letters, including:

- The first word in a sentence.
- The pronoun *I*.
- Proper nouns (specific names of people, places, and things).
- Days of the week.
- Names of countries, cities, and other locations.
- Trademarks, such as Coke and Pepsi.

Topic: Parts of Speech

Teach or review parts of speech, including articles, nouns and pronouns, verbs, direct objects, indirect objects, adjectives, adverbs, prepositions, and conjunctions.

Articles are adjectives that always go with a noun. There are only two articles, *the* and *a*, or *an*. *An* is used when the next word begins with a vowel.

Nouns and Pronouns

- Common nouns are general names of a person, place, or thing, such as *workplace*, *machine*, and *worker*.
- Proper nouns are names of a particular person, place, or thing, such as John Smith, Acme Manufacturing, and Washington.
- Nouns can be plural or singular. (Employers look for a skilled worker.)
- Nouns can be possessive. (The mechanic's tools were on the bench.)
- Personal pronouns tell gender and number, and take the place of nouns. (She hired them to do the job.)
- Subject pronouns can be used as the subject. (*I*, *you*, *he*, *she*, *it*, *we*, *they*)
- Object pronouns can be used as a direct or indirect object, or as the object of a proposition (*me*, *you*, *him*, *her*, *it*, *us*, *them*).
- Possessive pronouns show ownership and replace a noun. (*my*, *your*, *his*, *her*, *its*, *their)*. They can be plural (*mine*, *yours*, *hers*, *ours*, *theirs*). They do not use apostrophes, except for *one's*. The words *hers*, *ours*, *yours*, and *theirs* do not have apostrophes.

Continued

Topic: Parts of Speech, continued

Verbs express action or being. (The employer gave everyone a raise.) Keep the tense the same throughout a sentence. Tense refers to time—when an action takes place.

- Simple present: They walk (action taking place now).
- Present perfect: They have walked (action began in the past, but continues into the present).
- Simple past: They walked (action took place before now).
- Past perfect: They had walked (action had occurred before another action in the past).
- Future: They will walk (action has not yet happened).
- Future perfect: They will have walked (action that will have been completed at a specified time in the future).

Direct objects are the nouns or pronouns that receive the action. (The carpenter sawed the wood.)

Indirect objects tell to whom or for whom the action of the verb is done. (The nurse helped the patient stand up.)

Adjectives describe a noun or pronoun—*what kind, how many,* or *which one*?

Adverbs describe *how, when, where,* or *to what extent* about a verb.

Prepositions show the relationship of a noun or pronoun to another word, or indicate location in a sentence. Common prepositions include: *about, along, among, beneath, with, before, behind, at, during, for, from, on, by, through, of, off, until, into, to, under, beneath, between,* and *over.*

Conjunctions join words and ideas together, such as the words: *and, or, but, if, yet, nor,* and *so.*

ESL Notes

Help English language learners with:

- Pronouns: Try a Venn diagram to describe a male and female character, or an oral cloze activity where students fill in the appropriate pronoun.
- Plural endings and forming negatives.
- Verb tenses, especially irregular forms. English tenses may not have translations in an English language learner's first language.
- Past tense inflections: *-ed* sounds, including *talk(t), rain(d),* and *want(id).*
- Present tense and present progressive tense: *He walks,* instead of *he walking.*

Topic: Sentences

Teach or remind students that sentences contain a subject and a verb. The verb is the action of the sentence.

- The subject is the "doer" of an action, and can be a noun, pronoun, or proper name.
- A noun can also serve as the receiver of the action—as the object of the sentence.
- Sentences may also have adjectives, adverbs, prepositional phrases, and indirect objects.

Make students aware of the order of words in a sentence, and how sentences work together. For example, read the following two sentences:

Time flies. You can't; they fly too quickly.

At first, these two sentences don't seem to make sense together. But, if you look at the word *time* as a verb and *flies* as a noun, suddenly they do make sense.

Discuss the purpose of a sentence, and how that determines if it is a declarative, interrogative, exclamatory, or imperative statement.

- A declarative sentence is the most common. Its purpose is to simply state a fact. It ends with a period.
- An interrogative sentence asks a direct question and always ends in a question mark.
- An exclamatory sentence, or exclamation, is a more forceful version of a declarative sentence, and has an exclamation mark at the end.
- An imperative sentence gives a direct command to someone, and can end either with a period or with an exclamation mark.

Explain to students that effective writing contains a variety of sentence types. Sentences can be simple, compound, or complex.

- An example of a simple sentence is: *He works in the city*. It has one main clause.
- An example of a compound sentence is: *He works in the city, but he lives in the suburbs*. It contains two complete thoughts (independent clauses), using a conjunction to connect them. There are two subjects and two verbs.
- An example of a complex sentence is: *When he works long hours, he stays with friends in the city*. It contains two clauses.

A clause is a group of related words containing a subject and a verb. Clauses can be independent or dependent. This means that some clauses can stand by themselves, as separate sentences, and some can't.

- An independent clause is a group of words that contains a subject and verb, and expresses a complete thought. An independent clause can be a sentence.
- A dependent clause is a group of words that contains a subject and verb, but does not express a complete thought. A dependent clause cannot be a sentence. Often a dependent clause begins with: *after, although, as, as if, because, before, even if, even though, if, in order to, since, that, though, unless, until, whatever, when, whenever, whether,* and *while*.

Sentence fragments are incomplete thoughts that are treated as a complete sentence. You can combine a fragment with another sentence to make a complete thought or remove words that make it an incomplete thought, such as the word *because*. For example, the fragment *Because I was late for work* can be written as a sentence by doing one of the following

- Because I was late for work, I didn't have time to pack my lunch. (add a sentence)
- I was late for work. (remove the word *because*)

Continued

Topic: Sentences, continued

Guided Practice:

Discuss the following sentences, and have students identify the clauses.

- *Her boss told Marie to take the order.* The sentence has one independent clause. There is only one subject-verb relationship in this sentence: *boss told*.
- *The machinist was worried that the machine was getting too hot.* The sentence has one independent clause. The part of the sentence *that the machine was getting too hot* cannot stand by itself because of the word *that*. *The machinist was worried* is the independent clause.
- *He has a hard time sitting at a desk; he really likes being outside.* The sentence has two independent clauses connected by a semicolon. On either side of the semicolon, you see a clause that could stand by itself, as its own sentence.

Discuss subject-verb agreement.

- When the subject of a sentence is singular, the verb must also be singular.
- When the subject is plural, the verb must be plural, as well.

ESL Notes

- Use sentence starters to help students write sentences:
  "My favorite foods are …"
  "I am good at …"
- Practice word order.

General Word Order Rule

subject	verb	indirect object	direct object	place	time

Assessment

Have students read sentences in a magazine, and have them:

- Determine if they are simple, compound, or complex sentences.
- Determine if they are declarative, interrogative, exclamatory, or imperative sentences.
- Identify the subject, verb, and objects.
- Identify the clauses.

Have students make up a variety of sentences that you might hear in the workplace, or in other contexts, that include:

- Simple, compound, and complex sentences.
- Declarative, interrogative, exclamatory, and imperative sentences.

Then have them underline the subject, verb, and objects.

- Put clauses in parentheses, and label them as independent (I) or dependent (D).
- Check subject and verb for agreement.

Topic: Paragraphs

Tell students that paragraphs have a topic sentence, main idea, supporting details, and a closing sentence.

- The topic sentence introduces the main idea of the paragraph. It tells the reader what the paragraph is about.
- Supporting details make up the body of the paragraph. They develop the main idea of the paragraph with facts, details, and examples.
- The closing sentence is the last sentence of a paragraph. It restates the main idea of the paragraph, using different words.

Discuss the main idea of a paragraph. The main idea is why the author is writing; it is the main point the writer is trying to make to the reader. It is important that learners see the difference between the main idea and the subject or topic of the paragraph. The main idea says something about the subject or makes an assertion about the subject.

- Show students how the main idea holds the paragraph together, and how all sentences in the paragraph relate to the main idea and provide details and supporting evidence. The main idea encompasses all of the sentences in the paragraph.
- Show students the topic sentence of a paragraph and how it states the main idea. Explain that the rest of the sentences are supporting sentences that contain evidence, and further explain, prove, or give examples of the main idea. The topic sentence is usually the first sentence, although it is sometimes the last sentence, or can be anywhere in the middle of the paragraph.

Guided Practice:

Tell students that you are going to write a six-sentence paragraph together. Select a topic they know something about.

- Brainstorm: Ask students what they know and/or how they feel about the topic, and write down those things.
- Use a concept map to help students think about and organize their ideas and details.
- Determine if you need more information.
- Identify the main idea.

Write the numbers 1 through 5 on a piece of paper.

- Next to #1, write the main idea in a sentence.
- Next to #2, write one detail in support of the main idea, in a sentence.
- Next to #3, write another detail in support of the main idea, in a sentence.
- Next to #4, write a third detail in support of the main idea, in a sentence.
- Next to #5, rephrase your main idea from #1, in a sentence.
- Write a topic sentence and then add sentences 1 through 5 to create a six-sentence paragraph.

Topic: Writing Techniques

Students often have a difficult time getting started when faced with a writing assignment, or they get stuck while writing. They need to understand that most people have the same problems, even professional writers get writers' block. The good news is that there are strategies they can use to help them begin or continue writing.

Try the following strategies with students. Discuss what happened with each strategy, and how it might help them with a writing assignment.

1. **Freewriting** is a method for developing a topic; it is similar to brainstorming. It is also a great way to develop writing fluency. There is only one rule with freewriting—the writer can't stop writing. The idea behind freewriting is to write without thinking. Ideas often emerge from this process.
   - Tell students to write anything that comes to mind.
   - Use your judgment to determine how long students should write; you might want to start by giving them about five minutes.
   - If students stop writing, encourage them to continue until the end of the time period.
   - Ask students to write flowing sentences—freewriting looks like paragraphs, not like a list.
   - Tell students not to worry about correct punctuation, grammar, or spelling.
   - When the time period is over, tell students they may stop when they get to the end of the idea or sentence they are writing.

2. **Focused writing** can be helpful when students need to come up with ideas for first drafts. Like freewriting, there is only one rule—no stopping.
   - Students are to write ideas related to a specific word or phrase.
   - Students are to write flowing sentences—not a list.
   - Tell students not to worry about correct punctuation, grammar, or spelling.
   - When the time period is over, tell students they can stop when they get to the end of the idea or sentence they are writing.

3. **Loop writing** is a way of helping students link paragraphs together to form a coherent text.
   - Students summarize the first paragraph in one sentence, and use it to start the second paragraph.
   - Students write a sentence to summarize the second paragraph, and use it to start the third paragraph, and continue on in that way.
   - When they are finished, students read what they have written, and check their writing as a whole text.

4. **Speedwriting** develops fluency; students need to concentrate on ideas, not on language, grammar, and punctuation.
   - Tell students they have only 15 minutes to write on a specific topic. They need to write as quickly as possible and should not stop.
   - Students are not allowed to cross anything out or correct mistakes during this time.
   - Let them know when time is up.
   - Have students read aloud what they have written and, then, let them correct mistakes.

Continued

Topic: Writing Techniques, continued

5. **Cubing** is a pre-writing technique that guides students in exploring various aspects of a topic; it encourages them to think and rethink a topic. Explain that a cube has six sides and, if you had to describe a cube, you would need to describe all its sides. Each side can be thought of as a perspective. Cubing follows that same process, and examines various perspectives of an idea or topic.
   - Have students select a topic to write about.
   - Tell them that they are to describe six perspectives/aspects of their topic by filling in the following six boxes.
   - They should have equal time to write on each perspective or aspect (approximately three to five minutes per perspective).
   - They can begin with any box, and proceed in any order they wish.
   - Before students begin, discuss what they should write in each box.

Describe the topic: What does it look like, sound like, smell like, etc.?
Compare: How is your topic similar to other topics or things? How is it different?
Associate: What other topic or thing does your topic make you think of? Can you compare it to anything else in your experience?
Analyze: Look at your topic's components. How are these parts related? How is it put together? Where did it come from? Where is it going?
Application: What can you do with your topic? What uses does it have?
Argue: What arguments can you make for or against your topic?

Guided Practice:

Writing practice is important. Play writing games or give students writing assignments so they can practice their skills. Always have students prepare a draft, revise, proofread, and rewrite. To motivate students, make writing practice interesting and fun, for example:

- Write a three-word sentence, and ask students to rewrite the sentence, adding one word. Continue adding words, until no one can think of anything more to add.
- Help students write an autobiography consisting of short essays about meaningful times or events in their lives.
- Have students make a list of related ideas about a particular subject and, then, develop an outline for an essay or narrative.
- Ask students to write a description of their neighborhood or workplace.
- Ask students to write a newspaper article about a current event.
- Cut out cartoons from the newspaper and, using whiteout, cover the dialog. Have students write their own dialog.
- Give students a half-completed sentence, and have them finish it.

Topic: The Writing Process

Tell students that there are four stages in the writing process. Discuss each one.

Step 1: Planning
Explain that before you start writing you have to think about what you want to say. You need to think about why you are writing and your audience. It's a good idea to create an outline, make a list, or write notes as you plan.

Step 2: Drafting
Explain that when you write your first draft, begin putting all your ideas into sentences, and then organize sentences in paragraph form.

- Concentrate on explaining and supporting your ideas fully.
- Begin to connect your ideas and supporting points.
- Don't pay too much attention to grammar, punctuation, and spelling at this stage.

Step 3: Revising
Explain that, after you have written your draft, it is time to revise your writing. Revising focuses on the meaning of your writing, not on grammar, spelling, and punctuation—they come later. You want to make sure your writing says what you intend to say.

Show students how they can mark their draft as they read for the purpose of revising their writing.

- Draw a straight line under words that strike you as effective, such as specific vocabulary, strong verbs and specific details.
- Draw a wavy line under words that are weak or unconvincing, words you repeat too often, and ideas that seem vague or unnecessary.
- Put brackets around sentences or groups of sentences that you think could be combined.
- Put parentheses around sentences that are awkward or don't make sense.

Step 4. Proofreading
Explain that the last stage checks for grammar, spelling, and/or punctuation errors.

- Proofread for only one kind of error at a time. It's easier to catch grammar errors if you aren't checking punctuation and spelling at the same time.
- Read slowly, and read every word. Try reading out loud, which forces you to say each word, and also lets you hear how the words sound together. When you read silently or too quickly, you may skip over errors or make unconscious corrections.
- Circle every punctuation mark. This forces you to look at each one. As you circle, ask yourself if the punctuation is correct.

Writing Checklist

Use this checklist to help revise and proofread a piece of writing.

Overall
Is the purpose of your writing clear?

Main Ideas and Supporting Points
☐ Does your writing accurately state your main idea(s)?
☐ Are your main ideas completely supported in the body of your writing?
☐ Is there any information that contradicts the main idea(s)?
☐ Are all of the supporting points clearly related to the main ideas? If some points are not relevant, can they be deleted?
☐ Do any ideas seem vague?
☐ What can you explain more thoroughly to help the reader understand what you are trying to say?
☐ Do you need more supporting points?

Structure
☐ Is there a structure to your writing? Is it organized in a logical way?
☐ Is there an introduction? Does it give the reader clues about your topic?
☐ Is there a conclusion? Does the conclusion refer back to the introduction?
☐ Are ideas easy to follow?
☐ Do transitions between sentences and paragraphs help connect ideas?
☐ Are sentences well constructed? Did you use different types of sentences to make reading interesting?
☐ Are paragraphs well constructed? Do they have topic sentences and conclusions?

Vocabulary, Mechanics, and Grammar
☐ Are the words you used interesting and appropriate?
☐ Are words spelled correctly?
☐ Did you check punctuation?
☐ Are proper nouns capitalized?
☐ Did you check grammar?

Style
☐ Is the style appropriate for the intended audience?
☐ Is the paper interesting?
☐ Are there sections of the paper that are better written than others? If yes, why, and how can you improve your writing in all sections?

Topic: Five-Paragraph Essay

Tell students that the five-paragraph essay follows a specific format, but before they begin to write they need to think about the purpose of their essay.

- Do they want to inform readers?
- Do they want to persuade readers?

They also need to think about their readers.

- Who is the intended audience?
- What do they know about the topic?
- What do they want or need to know about the topic?

Paragraph 1
The first paragraph is the introductory paragraph, and is where writers introduce the reader to the topic.

- This is where you get the reader's attention.
- This is where you briefly introduce the main ideas.

Paragraphs 2–4
The second through fourth paragraphs are the body of the essay.

- They are all similarly constructed.
- Their topic sentences are restatements of the main ideas presented in the first paragraph.
- They contain facts, examples, and details that support the main ideas–these are the supporting points.

It is important to point out to students that each paragraph is joined to the one before and after it by a transition word, phrase, or sentence. Transitions help the reader to follow the flow of ideas from paragraph to paragraph.

Paragraph 5
The fifth paragraph is the summary or concluding paragraph.

- This is where writers restate their main ideas and supporting points in an original and powerful manner.

Guided Practice:
Have students select one of these topics or one of their own. With students, go through the process of planning and drafting a five-paragraph essay.

Sample topics:

- The influence of the Internet: More harm than good or vice versa?
- We are becoming overwhelmingly dependent on computers. Is this dependence on computers a good thing?

Topic: Spelling

Learning to spell is part of the developmental process of learning to write, and improving spelling is an ongoing activity.

- Encourage students' attempts to spell words. Let them approximate—especially when they are trying to use new words. Point out the parts they have spelled correctly. Use the parts they have misspelled as a focus for teaching spelling.
- Determine what students already know about spelling, and show them how they can build on that knowledge.
- Encourage students to analyze new words, look at their structure, and relate this to word meanings.
- When proofreading, have students underline words they think might not be correct, even when they don't know how to correct the words. Knowing when a word looks wrong, is the first step toward getting it right.

1. Have students:
   - Look at the word, write the word, say the word, and listen to the beginning and ending sounds of the word.
   - Think about its meaning. Does its meaning give any clues to spelling patterns?
   - Write the word syllable-by-syllable, and make sure that each sound is represented with a letter or letters.
   - Try to think of another word which is similar.

2. Use mnemonics to help students remember how to spell words. For example:
   - PIEce of PIE.
   - There is a LIE in believe.
   - Wherever there's a Q there is U, too.
   - Island: An island is land.

3. Help students find words within words. Remembering the little words will help them remember the big words.
   - Father — *fat, her, he*
   - Believe — *be, lie, eve*
   - Have students see how many new words they can find within the word INFORMATION.

4. Alert students that sounding-out words as a spelling strategy doesn't work with certain words. For example:
   - *Wednesday,* which puts the *nz* sound before the *d*.
   - Words like *often* and *handsome,* in which the *t* and *d* sounds have disappeared.

ESL Notes

Realize that English has 1,100 different ways to spell its 44 sounds—more than any other language. In addition, English has:

- Words that have the same sounds, but are spelled differently.
- Words that contain letters that have nothing to do with the way the words are pronounced.
- Words that contain silent letters.

Topic: Business Letters and Memos

Business Writing
Discuss how business writing varies, from informal e-mail messages and memos to formal, legal-style writing found in contracts.

- Writing for a business audience should be specific and accurate.
- Assume that your audience has limited time in which to read something and is likely to skim what you have written.
- A writing style somewhere between e-mail writing and contract writing is appropriate for most business letters.

Business Letter Format
A good business letter is brief, straightforward, and polite. If possible, it should be limited to one single-spaced page. Use the correct format.

- Use block style, which means align all elements on the left margin. Skip a line between, but do not indent paragraphs.
- After the address, double space and include the date. Always spell out the month and include the day, a comma, and the year.
- Double space and finish the letter with *Sincerely*.
- Drop down four lines, and type your full name and title.
- Sign the letter between *Sincerely* and your typed name and title.

Typical business letter format

Your street or box number
City, State, ZIP code

Date

Contact's name
Contact's title
Organization name
Street address
City, State, zip code

Dear Mr. or Ms. (person's last name only):

Paragraph 1:
Paragraph 2:
Paragraph 3:
Paragraph 4:

Sincerely,

Your signature (leave four blank lines for this)

Typed name and title

Memos
Explain that a memo is short and stays inside the company. Letters go outside the company. Memos are written to get someone to do or understand something—for example, to spend money, meet a deadline, constructively criticize, or to say yes or no.

Typical memo format:

To:
From:
Date:
Subject:

Body ...

Topic: Résumés

Explain that a résumé is a concise document that presents, and effectively sells, your most relevant and positive credentials for employment.

- An effective résumé may get you an interview, but not necessarily a job.
- An employer will usually spend 15 to 20 seconds reviewing your résumé, so the content must be clear, concise, and targeted to the job.
- A typo or grammatical error will probably be noticed by an employer, and is a way to weed you out of the applicant pool.
- Your résumé may be the only chance you get to make an impression, so make it a good one.

Show students the format of a chronological résumé.

- Header with personal information (name, address, phone numbers, e-mail).
- Objective statement (if included).
- Career and skills summary (if included).
- Reverse chronological career listings (include employer names and locations).
- List what you achieved in different positions, not what your job responsibilities were.
- Educational background (school name, location, degree or credential).

Discuss other things to do when writing a chronological résumé.

- Highlight why you are qualified for the position.
- Keep it to one to two pages.
- Design your résumé to fit the job you are pursuing, instead of using a "one-size-fits-all" model.
- Remove extraneous information. Do not detail every job experience you have had if it does not relate to the job you're pursuing.
- Be honest. It is better to address any gaps in employment than to try to hide them.
- Be professional. If your e-mail address is funny, but unprofessional, it may turn off potential employers.
- Use easy-to-read fonts and a clear design to make your résumé more appealing.
- A simple left-justified résumé is easiest to read. Do not use perfumed paper or ornate fonts or formatting.
- Unless specifically requested to do so by the job posting, do not include references on a résumé.
- Use action verbs, rather than passive terms. Some examples of action verbs (in past tense) that are useful on a résumé include:

accomplished	converted	negotiated
achieved	created	overhauled
activated	customized	performed
adapted	delegated	persuaded
allocated	designed	planned
analyzed	devised	prescribed
applied	diagnosed	processed
appraised	directed	questioned
approved	enforced	regulated
arbitrated	estimated	responded
briefed	evaluated	scheduled
budgeted	facilitated	screened
calculated	generated	simulated
cataloged	implemented	supervised
chaired	innovated	tracked
charted	inspected	transcribed
coached	judged	transmitted
communicated	measured	validated
compared	monitored	verified

Topic: Taking Notes

Talk about why taking notes is an important skill for educational activities, job training, meetings, and personal use.

Review basic note taking procedures:

- Take notes consistently, and selectively. Do not try to write down every word. Remember that the average speaker talks at approximately 125–140 words per minute, and the average notetaker writes at a rate of about 25 words per minute.
- Translate ideas into your own words.
- Organize notes into some sort of logical form.
- Be brief. Write down only the major points and important information.
- Write legibly so you can read them later, but don't be concerned with spelling and grammar.

Assessment
Have students take notes during tutoring sessions, and check the quality of their notes frequently.

Topic: Outlines

Show students how to set up an outline.

Write the Roman numerals I, II, and III down the left side of the page.

- Next to each Roman numeral, write the main ideas or the main points.
- Under each Roman numeral, write A, B, and C down the left side of the page.
- Next to each letter, write the facts or information that support that main idea.
- The numbers, 1, 2, 3, and so on, follow.
- The letters a, b, c, and so on, come next.

Guided Practice:

- Have students create an outline of material presented in a nonfiction text.

Assessment
Have students create an outline for a writing assignment.

Math Instruction

Students learn math best when:

- They are given challenging work that they can accomplish successfully with reasonable effort.
- Instruction is relevant and perceived as worth their time.
- Instruction focuses on making sense of problems, solving problems, and building skills.
- Instruction allows them to make connections and organize knowledge, build on what they already know, and take advantage of their informal, everyday knowledge of math.
- Instruction is not overly abstract and does not proceed too quickly.
- Instruction does not rely on rote memorization.
- They are shown the value of using multiple ways to solve problems, and given the freedom to explore different problem-solving methods.
- They are shown how to use manipulatives to make connections between the object, the math symbol, and the idea that each represents.
- They are encouraged to think about math principles and patterns as they learn.
- They are encouraged to model, explore, argue, predict, and test math ideas and solutions.
- They are asked to explain their thought processes, such as:
  - What were you thinking?
  - Did/could you solve this in a different way?
  - How do you know this is true?
  - Does this always work?

ESL Math Strategies

Some English language learners already have a good grasp of mathematical knowledge, but need support to read word problems or to express their thinking in English. Others are still learning basic math concepts.

Link math instruction to language. Keep word problems simple.

- Teach math vocabulary.
- Use vocabulary the student already knows.

Model strategies students can use to explain their thinking as they solve problems.

- Draw pictures, use number lines, use symbols, or use dots or tallies.
- Provide opportunities for students to listen to other students explain their strategies and mathematical thinking.
- Use manipulatives to explain concepts.
- Provide prompts or have students create cue cards to help them explain their thinking.

Continued

Math Instruction, continued

Teach at the Student's Math Instructional Level
To assess a student's math instructional level, use a math probe. Math probes are scored by the number of correct answers or steps in a problem. Typically, 70% to 85% known items (numbers, fractions, decimals, math problems, etc.) represent the student's instructional level. You can graph the number of correct answers over time to show students how they are progressing. This information can also be used to guide instruction. The following probes are at a 5th-grade level.

Numeration: Read and write numbers from .001 to 1 billion, such as: 1,739,451,276; 0.025; 1,107,251,602; 122,620,015; 0.135.

Subtraction: Subtract 3 digits from 3 digits with regrouping, such as:

600	700	900	500	300
– 485	– 326	– 671	– 218	– 149

Square numbers 1–12, such as: 2, 12, 9, 10, 7.

Multiplication:

- Multiply 50 facts with 80% accuracy.
- Multiply 3-digit by 1-digit numbers, such as:

234	376	185	478	167
× 4	× 2	× 3	× 2	× 4

- Multiply 3-digit by 2-digit numbers, such as:

486	493	786	639	793
× 35	× 65	× 94	× 87	× 59

Division:

- Divide 3 digits by 1 digit with remainders, such as:

291 ÷ 4 = 265 ÷ 3 = 463 ÷ 5 = 299 ÷ 8 = 137 ÷ 2 =

- Divide 3 digits by 2 digits with remainders, such as:

293 ÷ 42 = 674 ÷ 81 = 230 ÷ 38 = 524 ÷ 79 = 427 ÷ 84 =

Decimals:

- Multiply decimals by numbers 1–9, such as:

(1) .042 × 2 =
(2) .5 × 6 =
(3) .25 × 8 =
(4) .333 × 9 =
(5) .04 × 1 =

- Divide decimals by numbers 1–9, such as:

(1) .5 ÷ 2 =
(2) .025 ÷ 1 =
(3) .623 ÷ 5 =
(4) .75 ÷ 9 =
(5) .133 ÷ 4 =

Fractions–Lowest Common Denominator (LCD):
Write in lowest terms, such as: $\frac{5}{10}$; $\frac{6}{8}$; $\frac{4}{16}$; $\frac{3}{18}$; $\frac{2}{12}$

Fractions:

Add:
$\frac{1}{12} + \frac{10}{12} =$ $\frac{3}{10} = \frac{5}{10} =$ $\frac{3}{14} + \frac{4}{14} =$ $\frac{4}{15} + \frac{3}{15} =$ $\frac{4}{8} + \frac{3}{8} =$

Add:
$\frac{3}{16} + \frac{2}{10} =$ $\frac{4}{15} + \frac{3}{9} =$ $\frac{1}{18} + \frac{2}{12} =$ $\frac{3}{4} + \frac{5}{6} =$ $\frac{5}{16} + \frac{2}{6} =$

Subtract:
$\frac{8}{9} - \frac{3}{9} =$ $\frac{7}{10} - \frac{5}{10} =$ $\frac{9}{12} - \frac{4}{12} =$ $\frac{11}{15} - \frac{7}{15} =$ $\frac{6}{11} - \frac{5}{11} =$

Subtract:
$\frac{3}{5} - \frac{1}{3} =$ $\frac{1}{2} - \frac{2}{5} =$ $\frac{3}{4} - \frac{5}{9} =$ $\frac{1}{2} - \frac{2}{13} =$ $\frac{5}{6} - \frac{1}{5} =$

Continued

Math Instruction, continued

Word Problems: Solve grade-level word problems such as the following:

1. A tea company produced 6,792 tea bags in one day. If they put 24 tea bags in each box, how many boxes do they need?

2. One truck has 854 cartons of tea to deliver. Another has 783 cartons. How many cartons are to be delivered in all?

3. There are 2,772 boxes of tea ready to be put into cartons. If there are 12 boxes in a carton, how many cartons are needed?

4. Twelve stores ordered a total of 6,300 boxes of tea. If each store ordered the same number of boxes, how many boxes does each receive?

5. The delivery truck traveled 634 miles one week and 586 miles another week. How much farther did it travel the first week?

Use what you learn from a math probe to figure out where students have problems with math concepts and operations. For example, problems might be related to:

- An inability to recall basic number facts.
- Easily forgetting rules, procedures, formulas, or where they are or what they are doing when solving problems.
- Not writing numerals clearly or misreading operation signs in a problem.
- An inability to connect abstract or conceptual representations with concrete representations or reality.
- An inability to connect math to real-life experiences.
- Difficulty with the language, including math terms that are not used in everyday language.
- Difficulty with following directions.
- Organization of multi-step problems.
- Difficulty identifying relevant information in word problems.

Key Math Words

Addition

increase	more	mark-up	plus	sum
total	both	add	raise	combined
in all	altogether	additional	as well as	entire

Subtraction

discount	difference	deduct	left over	less than	off
reduced	reduced by	remainder	mark down	more than	decrease
lost	left	remain	dropped	fell	change

Multiplication

product	times	each of	as much	at (6 cans at $.12 a can)
multiplied	double	triple	total	of (1/2 of 8, 50% of 100)
pair	twice	by	every	

Division

divide	quotient	share	equally	how many	split
divided equally	part of	each	cut	among/between	distribute
average	equal pieces	in fourths	in half	in thirds	every

Topic: Algebraic Concepts and Thinking

It is important to help students develop an understanding of algebraic concepts and thinking, while learning even basic math operations. This does not mean teaching algebra, but rather helping students make generalizations about math facts, relationships, and principles. Discuss math facts and principles, such as the following.

78 + 0 = 78: What is the math fact/principle?
When you add 0 to a number, you get the number you started with.

96 × 0 = 0: What is the math fact/principle?
When you multiply a number times 0, you get 0.

65 × 54 = 54 × 65: What is the math fact/principle?
When you multiply two numbers, you can change the order of the numbers.

Equal Sign
Tell students that one of the most important algebraic concepts to understand is that the equal sign represents a relationship.

8 + 4 = ____ + 5

- Introduce the equal sign with number sentences, such as 6 = 6 and 8 = 7 + 1.
- Eventually, you want students to be able to see 397 + 248 = 396 + t , as 397 is one more than 396, so t has to be one more than 248. This gives students a way to express math ideas and moves them toward algebraic thinking.

Math Expressions
Explain that an expression is a mathematical term, or a sum or difference of mathematical terms, that may use numbers, variables, or both. An expression can be thought of as a math "phrase" that stands for a single number. As such, it can be a single number or variable, since they have a numerical value. Tell or remind students that a variable is a symbol that represents a number, such as the letters *n*, *x*, or *y*.

- Talk about examples of expressions, such as: 2, x, 3 + 7, 2 × y + 5, and z + 3 × (8 – z)

Order of Operations
Tell students to follow the correct order of operations when simplifying a math expression.

1. Perform any calculations inside the parentheses.
2. Next, perform all multiplication and division, working from left to right.
3. Next, perform all addition and subtraction, working from left to right.

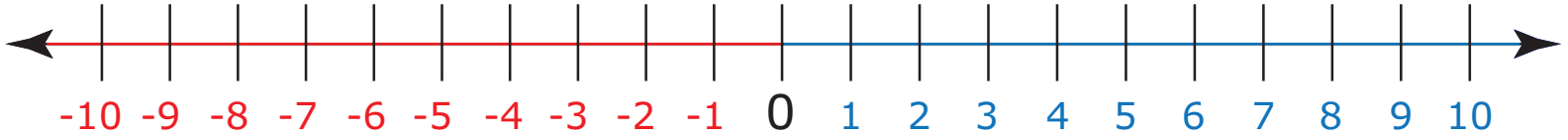
Math Equations
Explain that an equation has two expressions that are separated by an equal sign. An equation can be thought of as a math "sentence".

- One or both expressions may contain a variable. You can add, subtract, multiply, or divide each side of the equation with the same number and get the same solution.

Note: You might want to continue using language terms, and describe a variable as a math "pronoun" that stands for some value.

Topic: Place Value

Discuss place value using a number line.



Negative Numbers

- Integers to the right of 0 on the number line are positive.
- Integers to the left of 0 on the number line are negative.
- When two numbers are on a number line, the one farthest to the right is greater.
- The sum of two negative numbers is a negative number.
- When adding a negative and a positive number, the sign is the same as the integer farthest from 0; then, subtract.
- When adding more than two integers, group negatives and positives separately; then, add.
- The product and the quotient of two integers with different signs are negative.

Topic: Addition

Without carrying:

- Line up numbers on right side, and add ones first.

With carrying:

- Line up numbers on right side, and add ones first.
- If the ones add up to more than 9, carry the ten to the tens place.
- Add the numbers in the tens place, including the number you carried.

Topic: Subtraction

Without borrowing:

- Line up numbers on right side, and subtract ones first.

With borrowing:

- Line up numbers on right side.
- Check to see if the bottom number in the ones place can be subtracted from the top number.
- If you can't subtract the bottom number from the top number, borrow ten from the tens place.
- Subtract the numbers in the ones place.
- Subtract the numbers in the tens place.

Topic: Measurement

Explain that measurements help us describe something by its size, and are important because they mean the same thing to everyone. Americans typically use the English measurement system in daily life; other countries tend to use the metric system. Review or teach the following common English system measurements:

- Length, height, width, and depth, which are typically measured in inches, feet, yards, or miles.
- Perimeter (distance around something) and circumference (distance around a circular object), which are typically measured in inches, feet, yards, or miles.
- Diameter (length of a straight line that divides a circle in half) and a radius (half the length of a diameter), which are typically
  measured in inches, feet, yards, or miles.
- Area (the size of a surface), which is typically measured in square inches or square feet.
- Weight, which is typically measured in ounces, pounds, and tons.
- Volume (how much an object can hold), which is typically measured in teaspoons, tablespoons, cups, pints, quarts, and gallons.
- Speed (how fast something travels in one direction in a specific amount of time), which is typically measured in miles per hour.
- Temperature (how hot or cold), which is typically measured in degrees Fahrenheit or Celsius.

Talk about the relative sizes of things:

- A man's size 10½ shoe is about a foot long. A woman's size 8 shoe is about 10 inches long. Have students approximate lengths using their shoes.
- A dollar bill is 2½ × 6 inches. Have students approximate the size of a curved surface with a dollar bill.
- Have students measure the span from their pinkie to the tip of their thumb, and use their hand to measure a surface.

Topic: Graphs

Show students a simple graph, and help them:

- Read the title
- Understand the meaning of the numbers, and study the data.

Have students read common types of graphs, including:

- Bar graphs, which compare information.
- Line graphs, which show relationships and changes between quantities.
- Circle graphs, which show relationships between parts to whole, or parts to each other.

Show students how to plot points on graph paper.

- The point of origin is where the two axes intersect—point (0, 0).
- The x-coordinate of a point is the value that tells you how far from the point of origin the point is on the horizontal, or x-axis.
- The y-coordinate of a point is the value that tells you how far from the point of origin the point is on the vertical, or y-axis.

Topic: Estimation

Have students look up and discuss the meaning of the word *estimate*. Talk to students about how they estimate while doing daily tasks. Do they estimate the total cost when they're buying groceries? Do they estimate how long it will take to complete something, or how far away something is located? Did they really need the exact amounts to get the information they needed or were the estimates sufficient?

Explain that estimating is finding an approximate answer, rather than an exact answer. It is a useful way of making numbers easier to understand when we don't need to have an exact answer. Ask students to think about when it is appropriate to estimate, and when it isn't a good idea.
For example:

- Is it a good idea to estimate if you have to make copies of the agenda for everyone attending a meeting, and you're not sure exactly how many are going to attend?
- Is it a good idea to estimate if you need to order a particular type of hardware that is expensive and nonreturnable?

Give students the following problem: A glass company owner believes there has been a waste of expensive glass. He is afraid glass cutters have been estimating lengths instead of measuring every time. He needs to show them that estimating is not a good choice for this task. Discuss how he can do this.

- Give students six pre-cut colored construction paper strips that have been cut into a variety of lengths from 1 to 12 inches, to represent pieces of glass.
- Have students estimate the length of each strip, and then check their estimates with a ruler.
- Ask students how they estimated the length of their strips.
- How many estimates were exactly correct?
- Ask students to explain how this might help the glass workers see the importance of measuring accurately.

Guided Practice:

- A theater has 45 rows of seats that need to be recovered, and each row has 32 seats. If it takes 4 yards of material to cover each seat, how many yards will the upholsterer need?

Rounding
Tell students that rounding is a type of estimating—rounded numbers are approximations that make it easier to work with numbers. But, before you talk about rounding, tell students that you want to review place value.

Ask students to read the following numbers and determine the place value held by the number 3.

463,889
4,227,309
17,326,010
2,110,753,000

Go over the steps for rounding:

1. First, find the rounding digit, which is the place value you want. (Be sure students understand the math vocabulary: digit and rounding digit.)
2. Look at the digit one place to the right.
3. If that digit is less than 5, do not change the rounding digit and change all the digits to the right of the rounding digit to 0.
4. If that digit is 5 or more, round up by adding one digit to the rounding digit and changing all the digits to the right of the rounding digit to zero.

Explain to students that, when you round numbers, usually about half the differences between rounded and true numbers are negative and half are positive—they usually cancel each other out.

Discuss how you might use rounding to balance a checkbook quickly, and the benefits and potential problems of using rounded numbers.

Topic: Multiplication

To multiply by one digit:

- Line up numbers on the right.
- Multiply ones.

To multiply by two digits:

- Line up numbers on the right.
- Multiply ones first.
- Multiply tens next.
- Add the two products.

Multiplication Teaching Techniques

- Use a chart with 100 cells to mark off multiplication facts, as they are mastered.
- Make sure students understand that multiplication is communicative. This means that, if they know that $3 \times 7 = 21$, they know what 7×3 equals, and so on.
- Show students that they can find the 9 times table by subtracting from the 10 times table.
- Practice by playing games: Mark dice with 4, 5, 6, 7, 8, and 9, or use playing cards (take out jacks and kings, and make aces = 1 and queens = 10). Take turns rolling the two dice or drawing two card. Multiply the two numbers together, and keep adding the products until first person reaches a given number. If a wrong answer is given—no points.

Topic: Division

Students should know their multiplication tables before they learn to divide.

- Have students practice their multiplication facts backwards: 2 times what equals 6?
- Explain that they have divided: $6 \div 2 = 3$.

Teach the steps:

- Divide, multiply, subtract, and begin again.
- Remainders must be less than the divisor.

Long Division

Long division involves dividing, multiplying, subtracting, and bringing down.

Have students create a mnemonic to remember the steps, such as *Don't Mind Sandy Beach*.

- Have students follow the steps, checking off each one as they complete it.

Topic: Ratio

Explain that a ratio is used to compare two numbers or groups of objects, A ratio tells us how much of one thing we have in relation to another thing. For example, if there are 25 crew members and one supervisor on the job, the ratio of supervisors to crew members is 1 to 25, 1:25, or $\frac{1}{25}$.

To compare ratios, write them as fractions. The ratios are equal if they are equal when written as fractions; for example:

- If you travel 60 miles in 2 hours, we can write that as a ratio: 60 miles/2 hours. And we can simplify that ratio, using the same techniques you've learned for simplifying fractions: 30 miles/1 hour.
- If you travel 120 miles in 4 hours, is that the same ratio as 60 miles in 2 hours?

Guided Practice:

- If an employee worked in the plant 200 days, and on a job site 50 days, what is the ratio of being in the plant to being on the job site?

Topic: Proportion

Explain that a proportion is an equation with a ratio on each side. It is a statement that two ratios are equal, and can be written as $\frac{2}{4} = \frac{1}{2}$ or 1:2 = 2:4. When two ratios are equal, the cross-products of the ratios are equal: A:B = C:D, so, $A \times D = B \times C$.

Tell students that you can use cross-products to find a missing term in a proportion. For example, if we know that 20 inches = 50 feet, how tall is a building if the model is 30 inches tall?

- First, write the proportion, using a letter to stand for the missing term: $\frac{20}{50} = \frac{30}{x}$.
- Find the cross-products by multiplying 20 times x, and 50 times 30: 20x = 1500.
- Then divide to find x.
- Divide both sides of the equation by 20; the building is 75 feet tall.

Topic: Statistics

Tell students that statistics involve gathering and recording data, which are number facts about events or objects.

Mean, Median, and Mode

Discuss the differences among *mean*, *median*, and *mode*, and then everyday uses for each. Be sure students know that *terms* refers to the numbers you're working with. For example, if you have 6, 3, 14, and 7, you have four terms.

- *Mean* is just a fancy word for average. You add up all the numbers and divide by the number of terms. It is not always a value in the list.
- *Median* is the term in the middle. You have to have an odd number of terms to have a true median.
- *Mode* is the term that shows up the most. If your list is made up of 25, 4, 6, 25, 8, 19, then the mode is 25.

Have students find the mean, median, and mode for the following list of values: 13, 18, 13, 14, 13, 16, 14, 21, 13.

Probability

Explain that probability is how likely it is for an event to occur. It can be written as a fraction, ratio, decimal, or percentage.

$$\text{Probability} = \frac{\text{number of ways a certain outcome can occur}}{\text{number of possible outcomes}}$$

For example: If you toss a coin, what is the probability of it being heads? The probability of a coin landing on heads is ½.

$$\frac{\text{1 favorable outcome (heads)}}{\text{2 possible outcomes (heads or tails)}}$$

Guided Practice

- If a person rolls two dice, what is the probability of getting a 5 as the sum of the two dice?
- There are four ways to get a 5, and each of these combinations has a probability of 1/36 of happening; so the probability of rolling a 5 is 4/36, which is 1/9.

Topic: Fractions

Explain that a fraction is a part of a whole.

- Use a clock to illustrate how we are reading a fraction when we read the hands of a clock.
- Discuss how we use fractions daily. Emphasize that we use them often, and sometimes we don't realize it.
- Ask students to think about how fractions are used at a workplace; for example, how carpenters, chefs, architects, healthcare workers, firefighters, construction workers, and flight attendants might use fractions.

Explain that a fraction consists of two numbers, one on top of the other. Show students that one-half is written as ½.

The top number is called the numerator, and is the number of parts you are talking about.

- The bottom number is called the denominator, and is the total number of parts in the whole.
- The line separating the numerator and denominator is a division symbol.

$$\frac{\text{numerator}}{\text{denominator}}$$

Discuss types of fractions.

- *Like fractions* have the same denominator.
- *Unlike fractions* have different denominators.
- *Equivalent fractions* are equal, even though they may look different. For example, ½, ¾, and ⅝ are equivalent because they have the same value. To make equivalent fractions, multiply the numerator and denominator by the same number.
- *Proper fractions* have a numerator that is smaller than the denominator, and have a value of less than 1.
- *Improper fractions* have a numerator that is larger than the denominator, and have a value of more than 1. (They are often changed to whole or mixed numbers.)

To simplify fractions: Explain that simplifying a fraction (reducing it to its lowest terms) may make it easier to use, and is the preferred form in an answer. To simplify:

- Locate the factors of both the numerator and denominator. (A factor is a number that can be divided evenly into another number.) Find the largest factor they share, and divide both the numerator and denominator by this factor.
- The fraction ⅘ can be simplified because both 4 and 6 can be divided by the factor 2, which reduces the fraction to ⅔.

To compare fractions: If the denominators are the same, the fraction with the larger numerator is the larger fraction.

To find the common denominator: To change unlike fractions to like fractions, it is necessary to find a common denominator, and it is usually advantageous to find the lowest common denominator (LCD). This is the least common multiple of the denominators.

Begin by explaining how to multiply the two denominators to get a common denominator; for example, the common denominator of ½ and ⅔ is 6. Then, what was done to the denominator to get 6 must be done to the numerator, so you have ⅗ and ⅘.

The LCD is found by figuring out the smallest number that is a multiple of the denominators; this is called the least common multiple.

Remind students that multiples of a number are what you get when you multiply it by other numbers. For example, the multiples of 3 are 6, 9, 12, 15, 18, etc.

Continued

Topic: Fractions, continued

If you have two or more numbers, you can check through their multiples to find a common multiple. For example:

- The multiples of 4 are 8, 12, 16, 20, 24, 28, 32, 36, 40, etc.
- The multiples of 5 are 10, 15, 20, 25, 30, 35, 40, etc.
- The numbers 20 and 40 are on both lists and, therefore, are common multiples of 4 and 5. The least common multiple is 20 because it is the smallest number.

Once you know the least common multiple, it becomes the least common denominator. Change each fraction to make their denominators the same as the least common denominator, and multiply their numerators by the same number you multiplied each denominator.

Assessment
Have students find the least common multiple of each set of fractions: 7 and 8; 12 and 15; 11 and 13; 12, 15, and 20; 10, 20, and 25.

Adding and Subtracting Fractions

- Like fractions: Add or subtract their numerators.
- Unlike fractions: Change to like fractions, and then add or subtract.

Multiplying Fractions
Multiply the numerators by each other, and multiply the denominators by each other.

Dividing Fractions
Multiply by the reciprocal of the divisor. The reciprocal is the fraction turned upside down: $\frac{2}{5}$ and $\frac{5}{2}$. The divisor is to the right of the division sign (÷). For example: $\frac{1}{4} \div \frac{1}{3} = \frac{1}{4} \times \frac{3}{1} = \frac{3}{4}$.

Assessment

$\frac{1}{3} + \frac{1}{6} =$	$\frac{1}{3} + \frac{1}{5} =$	$\frac{1}{2} + \frac{4}{5} =$	$\frac{5}{7} + \frac{1}{2} =$	$\frac{2}{9} + \frac{3}{12} =$
$\frac{4}{5} - \frac{2}{3} =$	$\frac{2}{3} - \frac{3}{6} =$	$\frac{5}{8} - \frac{1}{4} =$	$\frac{5}{7} - \frac{1}{2} =$	$\frac{5}{9} - \frac{1}{6} =$
$\frac{1}{5} \times \frac{2}{3} =$	$\frac{3}{4} \times \frac{2}{3} =$	$\frac{5}{8} \times \frac{4}{10} =$	$\frac{1}{8} \times \frac{1}{2} =$	$\frac{5}{6} \times \frac{3}{8} =$

Topic: Mixed Numbers

Explain that mixed numbers are made up of a whole number and a fraction.

To make a mixed number an improper fraction:

- Multiply the whole number by the denominator, and add the numerator.
- Write that sum as the numerator of the improper fraction. The denominator stays the same.
- For example, 4½:
  $4 \times 2 = 8 + 1 = 9$
  Write 9 as the numerator and the denominator stays the same.
  $4\frac{1}{2} = \frac{9}{2}$

To make an improper fraction a mixed number:

- Divide the numerator by the denominator.
- Write the quotient as a whole number.
- Write the remainder as the numerator of the fraction, and the denominator stays the same.

For example, $\frac{9}{2}$:
$9 \div 2 = 4$ with remainder of $1 = 4\frac{1}{2}$

To add or subtract mixed numbers, simply convert the mixed numbers into improper fractions, then add or subtract as fractions.

To multiply mixed numbers, convert them to improper fractions and multiply.

To divide two mixed numbers:

- Convert each mixed number to an improper fraction.
- Invert the improper fraction that is the divisor.
- Multiply the two numerators together.
- Multiply the two denominators together.
- Convert the result back to a mixed number, if it is an improper fraction.
- Simplify the mixed number.

Assessment

Make each mixed number an improper fraction:
$2\frac{1}{2}$, $3\frac{3}{4}$, $4\frac{5}{8}$, $5\frac{3}{5}$, $6\frac{7}{8}$

Do the following calculations:

$6\frac{2}{8} \times 3\frac{5}{9} =$	$7 \times 3\frac{1}{2} =$	$5\frac{2}{3} \times \frac{1}{4} =$	$30 \times 2\frac{1}{2} =$
$6\frac{2}{8} \div 3\frac{5}{9} =$	$7 \div 3\frac{1}{2} =$	$5\frac{2}{3} \div \frac{1}{4} =$	$30 \div \frac{1}{2} =$

Topic: Decimals

Begin by explaining that a decimal is similar to a fraction in that it is not a whole number—it is a part of a whole.

- Discuss how we would have to use decimals all the time if fractions didn't exist. We use decimals most often when we are talking about money.

Tell students that decimals are a way of writing parts of a whole without writing a fraction.

- Decimals are always based on the number 10.

The value of a decimal depends on its place. Review place value, and discuss the meaning of a decimal point.

- It is a period at the right of the ones place.
- The figures left of the period represent whole numbers, as 1.05.

	tens	ones	decimal point	tenths	hundredths	thousandths	ten thousandths	hundred thousandths	millionths
5.6		5	.	6					
3.123		3	.	1	2	3			
.0087		0	.	0	0	8	7		
.25055		0	.	2	5	0	5	5	
15.000766	1	5	.	0	0	0	7	6	6

To read decimals: The decimal point is read as "and", and the part of the decimal following the decimal point is read as a fraction. For example, 5.689 is read as 5 and 689 thousandths.

To compare decimals: Decimals are either greater than, less than, or equal to another number. Review the equal and inequality signs:

= equal sign
< less than
> greater than

Explain that:

- The larger the whole number, the larger the decimal. If the whole numbers are the same, the place value determines which is larger.
- For example, to compare 1.861 and 1.849: the whole numbers and tenths are the same, but the hundredths are different and 6 is greater than 4, so 1.861 is the larger number.

Tell students that to compare decimals, they need to make both numbers the same length by adding zeros to the end of the shorter number. So, if you want to compare 9.5 and 9.005, you add two zeros to 9.5, making it 9.500. Then, you can compare 9.500 and 9.005—which is larger?

To convert fractions to decimals: Divide the numerator of the fraction by the denominator: $\frac{1}{8} = 0.125$. Round the answer to the desired precision.

To convert decimals to fractions: Show how to express 0.4 as a fraction: Use 4 as the numerator, and 10 becomes the denominator: $.4 = \frac{4}{10}$, which is $\frac{2}{5}$ when simplified.

- Show how to express 0.17 as a fraction: $.17 = \frac{17}{100}$.
- Show how to express .0251 as a fraction: $.0251 = \frac{251}{1000}$.

To round decimals: Round to a certain place value—round to the nearest tenth, etc., or round as whole numbers (round up when digit is five or greater, round down when four or less).

To add and subtract decimals: Line up decimal points in columns. Add zeroes to the right, if one number has more places than another.

To multiply decimals: Multiply as whole numbers. Count the total number of numbers to the right of the decimal point (total of both numbers). Using that total, place the decimal point that many positions from the right end of the product.

To divide decimals: If the divisor is not a whole number, move the decimal point to the right to make it a whole number, and move the decimal point in the dividend the same number of places.

Topic: Percentages

Discuss the following:

- Percents describe part of a whole. The word *percent* means out of 100. Talk about the % sign. We use it to say 5 out of 100, or 5 percent.
- A percent is a ratio that represents the whole as 100. A percent problem is actually a proportion problem.
- The *part* is always compared to the *whole*, and the rate is always compared to 100.

Percent Strategy: The Grid Method

In a percent problem, one of these elements is missing: the part, the whole, or the percent.

- Draw a grid.
- Label the quadrants.

Part or difference	%
Whole or original amount	100

Then:

- Decide which element is missing—what does the problem ask for?
- Write the two known elements in the grid.
- Solve by cross multiplying and then dividing the answer by the remaining number.

Guided Practice:

- Jill makes 40% commission on the cosmetics that she sells. How much commission did she earn on sales that totaled $120?

Part or difference	% (40)
Whole or original amount (120)	100

- Solve: Cross-multiply $40 \times 120 = 4800$. Then divide $^{4800}\!/_{100} = \$48$

Assessment

- Bob wants to buy a computer that costs $2,574. If he pays cash, he will save 15%. How much will he save?
- A quarterback threw 35 passes and 28 were caught. What percent were caught?
- A rancher has 350 horses and wants to sell 40% of them. How many horses will he sell?
- A car costs $6,000. If a down payment of 20% is required, how much is the down payment?

To Change Percents to Decimals to Fractions

1. Changing percents to decimals:
   Move the decimal point two places to the left, adding a zero, if necessary.

Percent	Move Two Decimal Places	Decimal
5%	5 add a zero	.05

2. Changing percents to fractions:
   Write the percent as a fraction with a denominator of 100. Reduce, if possible.

Percent	Fraction	Reduce
25%	$^{25}\!/_{100}$ divide by 25	$^{1}\!/_{4}$

3. Changing fractions to decimals:
   To change a fraction to a decimal, divide the denominator into the numerator. To divide, add a decimal point and zeros to the numerator.

4. Changing fractions to percents:
   To change a fraction to a percent, divide the denominator of the fraction into the numerator and move the decimal point two places to the right.

Continued

Topic: Percentages, continued

Commonly Used Decimals, Percents, and Fractions

0.1	10%	1/10
0.2	20%	1/5
0.3	30%	3/10
0.4	40%	2/5
0.5	50%	1/2
0.6	60%	3/5
0.7	70%	7/10
0.8	80%	4/5
0.9	90%	9/10
.01	1%	1/100
.25	25%	1/4
.75	75%	3/4
1.0	100%	1/1

Discounts and Sale Prices

Discuss the following:

- Discount = Regular Price – Sale Price.
- Discount = Rate of Discount × Regular Price
- Sale Price = (1 – Rate of Discount) × Regular Price

Discuss shortcuts:

- 50% off = ½ (divide original price by 2).
- 33⅓% off = ⅓ (divide original price by 3).
- 20% off = ⅕ (divide original price by 5).
- 10% off = 1/10 (divide original price by 10).
- 5% off = 1/20 (divide original price by 20)

Continued

Topic: Percentages, continued

Other Percentage Problem Strategies

1. Strategy: % = Part/Whole (Percent equals the part divided by the whole)
   Phillip's budget allows him to save 20% of his weekly pay for a new car. If he receives $850 a week, how much is he able to save?
   20% = part or .20 = part
   850 = whole
   To solve:
   20% = part/850 or .20 = part/850
   Cross-multiply .20 × $850 = $170

2. Strategy: Percent Triangle Rules
   - To solve for PART = Multiply the percent and the whole
   - To solve for PERCENT = Divide the part by the whole
   - To solve for WHOLE = Divide the part by the percent

   Example: On a test, Andrew correctly answered 44 out of 50 questions. What percent did he answer correctly?

   To solve: $^{44}/_{50}$ = .88
   Since we want our answer expressed as a percent, we move the decimal two places to the right, this is multiplying by 100. = 88%

Simple Interest Problems

This type of word problem is not difficult. Just help students remember the formula and make sure they plug in the right values.

- Alert them that the rate is usually given in percent, which they will need to change to a decimal value.

Simple interest problems can involve borrowing or lending; the same formulas are used for both.

- When money is borrowed, the total amount to be paid back equals the principal borrowed plus the interest charged.

The formula for simple interest is: i = prt

- i is the interest generated.
- p is the principal amount that is either invested or owed.
- r is the rate at which the interest is paid.
- t is the time that the principal amount is either invested or owed.

Discuss other variations:
p = i/rt
r = i/pt
t = i/pr

Usually, money is paid back monthly: monthly payment amount = p + i/t (loan period) in months. Ask students what the formula would be if money is paid back weekly.

Guided Practice

Interest Rate: 1% each year
- Starting Balance: $147
- Time Passed: 6 years

How much interest has accrued if we are using simple interest?
What is the new total balance?

Assessment

1. Interest Rate: 2% each year
   - Starting Balance: $839
   - Time Passed: 15 years

   How much interest has accrued if we are using simple interest?
   What is the new total balance?

2. How much simple interest will you receive if you invest $1,000. at 4.25% simple interest for 4 years?

3. Robert's lawn business has a bank loan at 4% per year. After half a year, he has paid $45 as interest. How much money does he owe the bank?

Topic: Geometry

Basic Principles

- Everything in geometry is built on points.
- A point has no length, width, or height—it is a location in space.
- A line can be drawn through two points.
- A line has no end and goes on forever in two opposite directions.
- A line segment begins at one point and ends at another point.
- A ray is like half a line and begins at one point (endpoint) and goes on forever in one direction.
- A line create a dimension and is one-dimensional.
- Points outside the line add width and create a two-dimensional plane.
- A plane is like a piece of paper that goes on forever in all directions.
- If you add a point above or below a plane, you add a third dimension: height.
- All objects have three dimensions.

Pairs of Lines

- Intersecting lines touch at some point.
- If lines never touch, they are parallel.
- Perpendicular lines are at right angles to each other.

Angles

- An angle is formed by two rays that have a common end-point or vertex.
- Angles are measured in degrees, based on a circle that has 360 degrees.
- Acute angles are more than 0 degrees, but less than 90 degrees.
- Right angles are exactly 90 degrees.
- Obtuse angles are more than 90 degrees but less than 180 degrees.

Polygons

- Polygons include all flat shapes made up of straight sides (triangles, squares, and rectangles). They can have any number of sides.
- Quadrilaterals have four sides and four angles and include: parallelogram, rectangle, square, trapezoid, and rhombus.

Circles

- A circle is a set of points in a plane that are at a fixed distance from a given point, called the center.
- The distance around a circle is called the circumference.
- The distance across a circle, through its center, is called the diameter.
- The radius of a circle is the distance from the center to a point on the circle (½ the length of its diameter).

Triangles

- A triangle that has three equal sides is called an equilateral triangle.
- A triangle that has two equal sides is called an isosceles triangle.
- A scalene triangle has no matching sides.
- All angles in an acute triangle are under 90 degrees.
- A right triangle has one right angle.
- An obtuse triangle has one obtuse angle.

Solids are three-dimensional shapes. There are two types.

1. Polyhedrons
   - Polyhedrons have polygons as faces.
   - A prism is a polyhedron and has two parallel faces (bases).
   - A pyramid has three or more triangular faces that share a common vertex.

2. Cones, Cylinders, and Spheres
   - Have curved surfaces.
   - Cylinders have two circular bases.
   - A cone is a pyramid with a circular base.
   - A sphere is a perfectly round three-dimensional shape.

Math Formulas

Area of a:	How to calculate area:
square	Area = side^2
rectangle	Area = length × width
parallelogram	Area = base × height
triangle	Area = ½ × base × height
circle	Area = π × radius^2; π is approximately equal to 3.14

Perimeter of a:	How to calculate perimeter:
square	Perimeter = 4 × side
triangle	Perimeter = side 1 + side 2 + side 3
rectangle	Perimeter = 2 × length + 2 × width

Circumference of a:	How to calculate circumference:
circle	Circumference = π × diameter; π is approximately equal to 3.14

Volume of a:	How to calculate volume:
cube	Volume = edge^3
rectangular solid	Volume = length × width × height
cylinder	Volume = π × radius^2 × height π is approximately equal to 3.14

Mnemonic Devices

Mnemonic devices are memory techniques that can help students remember information.

Some mnemonic devices are understood by everyone, while others make sense only to a particular individual. When developing a mnemonic device, we need to be sure that it (1) clearly relates to the thing we are trying to remember and (2) is memorable by:

- Using positive, pleasant images—the brain often blocks out unpleasant images.
- Using humor or clever arrangements of words—funny or peculiar things are easier to remember.
- Using colorful images that are easier to remember than drab ones.
- Using smells, sounds, tastes, and textures in an image.
- Using rhyme.

Examples of common mnemonic devices:

Every Good Bird Does Fly.

- To remember the five lines on the treble clef of a musical staff: EGBDF

Spring ahead, fall back.

- To remember how to change a clock.

I before E, except after C.

- A rhyme to remember a spelling rule.

Thirty days hath September.

- A rhyme to remember number of days in a particular month.

In fourteen hundred ninety-two, Columbus sailed the ocean blue.

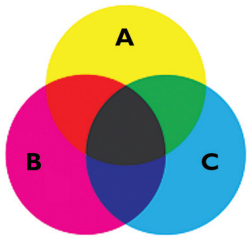
- A rhyme to remember a particular date.

Graphic Organizers

Graphic organizers include various types of maps, webs, matrices, and charts. They can be used to sort, analyze, compare, and understand information. They are helpful when trying to solve problems, make decisions, or visualize ideas.

1. **Concept maps and webs** show the relationships among things and ideas. They are usually made by joining boxes or circles by linking lines that show relationships. There is often a central idea to which all others are linked.

2. A **Venn diagram** is made by two or three overlapping circles. It enables us to make comparisons by organizing similarities and differences visually.



3. In a **matrix**, items are put in rows and columns. One type is a compare/contrast matrix, which is used to show similarities and differences. The following compares the salary, hours, chances for advancement, and benefits of two jobs—driving a bus and being a mechanic.

	Bus driver	Mechanic
Salary		
Hours		
Chance for advancement		
Benefits		

4. A **flow chart** shows a process or stages of a project, using certain basic shapes that represent specific activities, steps, directions, processes, or components.

5. A **spider map** is used to describe a central idea, which can be a thing, a process, or a concept.

6. An **attribute chart** helps students compare information. List characteristics and indicate with a plus or minus sign if each object has that attribute. Attribute charts are particularly effective with English language learners.

Characteristics	Object 1	Object 2
Characteristic A	+	–
Characteristic B	–	–
Characteristic C	+	+