DK

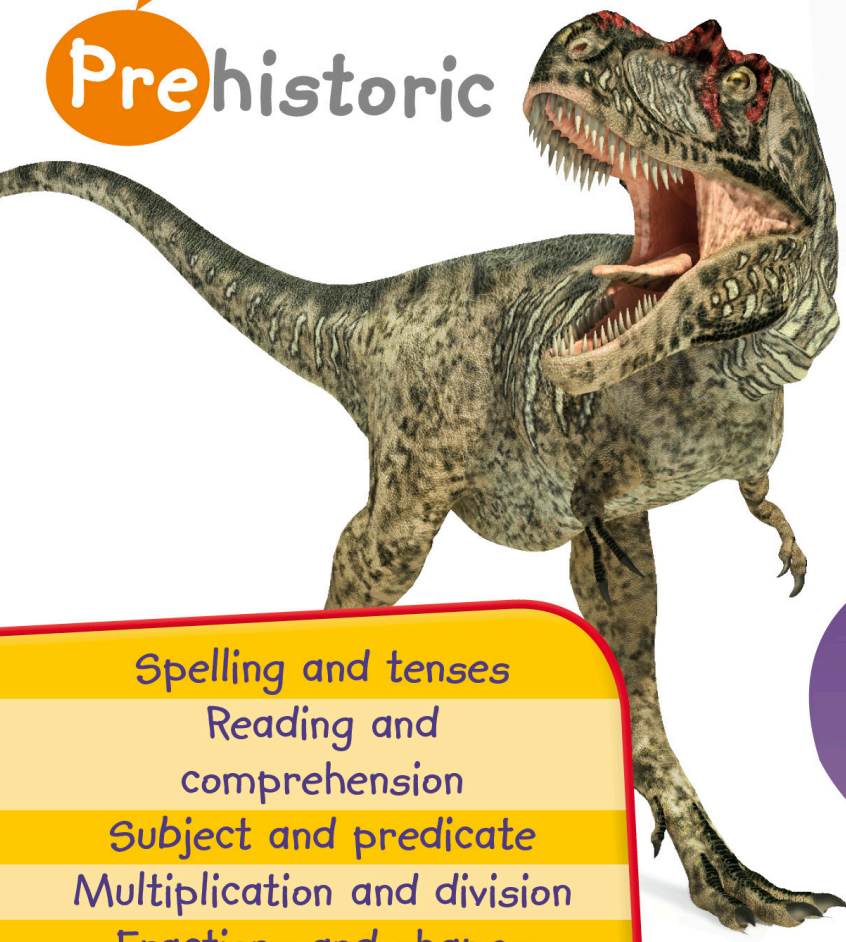
GRADE 3

LANGUAGE ARTS, MATH AND SCIENCE

Workbook

Prefix

Pre historic



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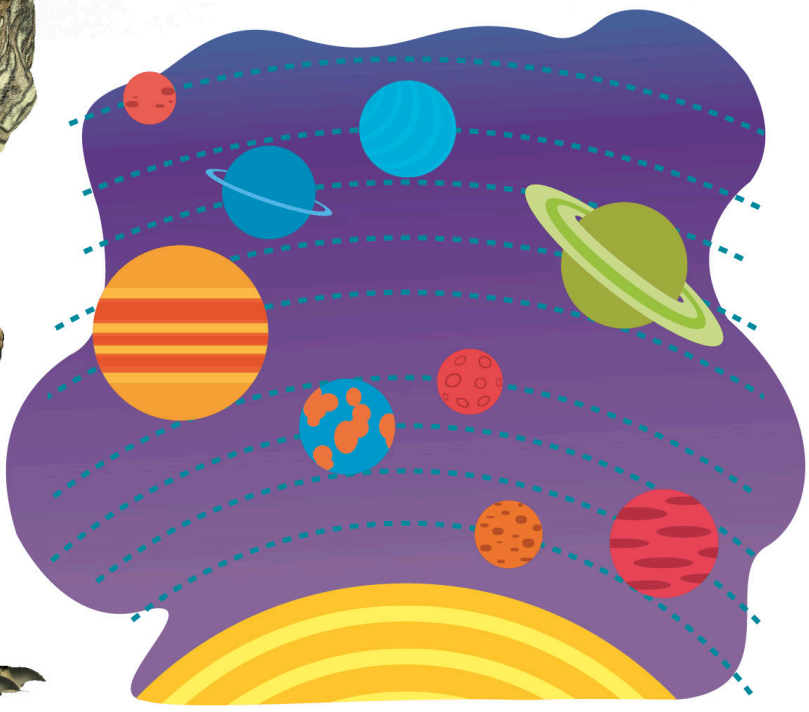

- Spelling and tenses
- Reading and comprehension
- Subject and predicate
- Multiplication and division
- Fractions and shapes
- Tables and graphs
- The Solar System
- Photosynthesis
- Heat, energy, and light

Makes learning easy and fun
Builds and boosts key skills

Content previously published in *DK Workbooks Spelling, Language Arts, Math, Science*

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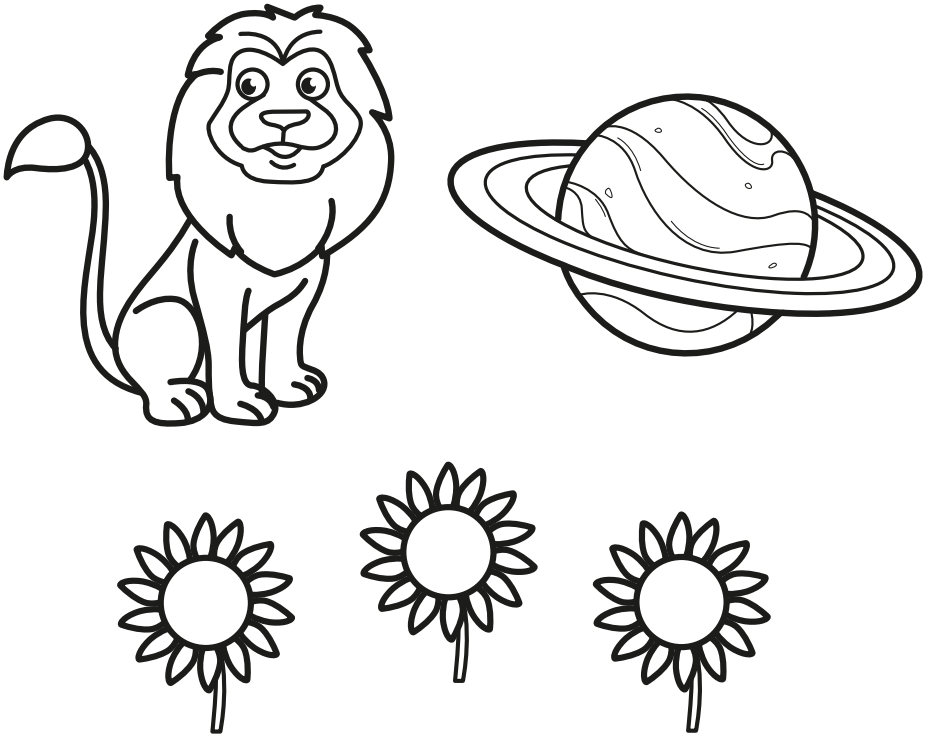
WORKBOOKS

3rd Grade Language Arts, Math and Science

Authors Linda Ruggieri (Spelling, Math),
Anne Flounders (Language Arts),
Hugh Westrup (Science)



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For the curious
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Contents

This chart lists all the topics in the book.

Silent Letters

FACTS

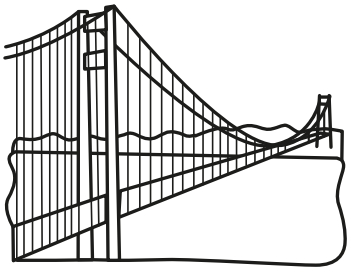
Some words include silent letters. You do not hear the sound of those letters in the words. Examples of silent letters are the letter **b** in "lamb" and **k** in "knife."

Read the poem below. Circle the four words that have silent letters.

Silent letters help spell words.
They don't make a sound, you know,
Like the **k** in "knee" and "knob,"
And the **w** in "grow!"

In the box below are words with silent letters. Choose the correct word to complete each sentence.

science	thumb	bowl	knit	
bridge	sign	lamb	knife	



A young sheep is called a _____.

We had to cross the _____ to get to the park.

While playing volleyball yesterday, Sam hurt her _____.

I had a _____ of soup for dinner last night.

Zack used a _____ to spread butter on the bread.

The _____ in the store window says "Open."

Since childhood, Allen's favorite subject has been _____.

My grandmother loves to _____ sweaters for me.

The Schwa Sound

FACTS

The schwa sound is an unstressed sound pronounced as "uh," as in the first syllable of the word "above." Every vowel can make the schwa sound.

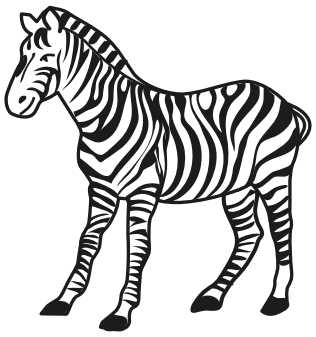
Use the words below to fill in the box, based on the vowel that makes the schwa sound in each of them.

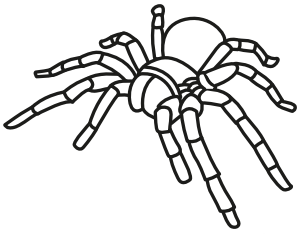
about	garden	circus	above	open
the	easily	carnival	soda	bacon
family	lemon	apron	success	public

a	e	i	o	u
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....

The names of the animals below contain a schwa sound. Read each clue and unscramble the letters to spell the animal's name.

an animal with stripes	barez	.....
a black-and-white bear	aapnd	.....
the fastest cat	eethach	.....
an extinct reptile	ioaudnsr	.....
a large ape	oiallgr	.....
a hairy spider	trntlaaua	.....





Syllables

FACTS

A syllable is a letter or group of letters representing a vowel sound. It may or may not contain one or more consonants. Dividing words into syllables is called syllabication.

Read the words below aloud. Count the number of syllables in each word and then write each word under the correct heading in the table.

quality cough cry empty gopher

closed butterfly enough ordinary walked hurry

helicopter certificate probably spectacular paragraph

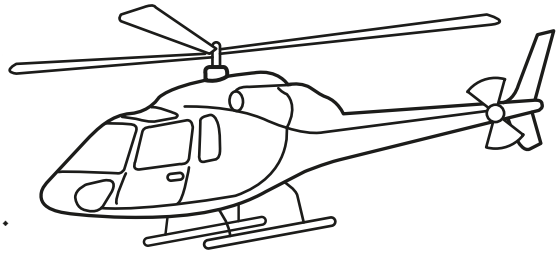
1 Syllable	2 Syllables	3 Syllables	4 Syllables
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

Choose a word from above to complete each sentence below.

The school play was .....!

Did you ever ride in a .....?

So far I have written one .....



A ..... is a rodent that builds tunnels underground.

I will ..... miss practice tomorrow because of my .....

They received a special ..... for their science project.

Counting Syllables

FACTS

Dividing words into syllables makes it easier to read, understand, remember, and spell words.

Count the syllables in the name of each month. Write the number of syllables next to each word.

January ☐	May ☐	September ☐
February ☐	June ☐	October ☐
March ☐	July ☐	November ☐
April ☐	August ☐	December ☐

Read the words below aloud. Then divide each word by drawing a line between each of its syllables. Write the number of syllables in each box.

wonderful ☐	notebook ☐	alphabet ☐
basketball ☐	gorilla ☐	calendar ☐
airplane ☐	earthquake ☐	barefoot ☐
zebra ☐	birthday ☐	giraffe ☐
lion ☐	elementary ☐	another ☐
kangaroo ☐	microchip ☐	vitamin ☐
computer ☐	practice ☐	sometime ☐
dolphin ☐	slippery ☐	apartment ☐
sandwich ☐	about ☐	understand ☐

Commonly Used Words

FACTS

Commonly used words are also called sight words. The best way to remember how to spell those words with irregular spellings is to practice writing them repeatedly.

around	contain	enough	language	object	solution
because	country	example	laugh	phrase	squirrel
found	decided	explain	machine	produce	thought
brought	different	fault	material	quickly	question
night	today	include	mean	scientist	which

Read the commonly used words in the box above. Choose a word from the box to complete each sentence below.

We finally had _____ information to write the report.

We saw a _____ running around the attic.

I would like to learn to speak another _____.

Can you _____ how you solved that problem?

Dad _____ a football to the picnic.

It was difficult to find an answer to Joe's _____.

We _____ to stay home when it started to rain.

My brother wants to become a _____.

You need a passport to go to another _____.

Everyone began to _____ when Zoe cracked a joke.

Commonly Used Words

FACTS

You should know commonly used words by sight. It is useful to be able to read the words automatically, because many of them are not spelled as they sound.

about	better	bring	carry	clean	listen
done	draw	drink	eight	fall	tomorrow
full	got	grow	hold	hole	cried
probably	keep	mountain	match	light	long
much	myself	never	only	own	pick
seven	shall	show	numeral	small	start
melody	today	together	try	warm	write
travel	minutes	nothing	heard	fight	brilliant
north	south	evening	oval	circle	across

Choose words from the box above that match each word or phrase below.

not cool .....

number .....

tune .....

begin .....

egg-shaped .....

sobbed .....

get bigger .....

reveal .....

not short .....

attempt .....

sketch .....

take a trip .....

choose .....

completed .....

a round shape .....

not heavy .....

argue .....

not dirty .....

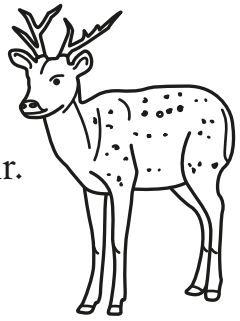
Homophones

FACTS

Homophones are words that sound the same but have different meanings and often different spellings, too.

Choose the correct homophone from the box to complete each sentence below.

flea	flee	dear	deer	rap	wrap
scent	cent	herd	heard	ring	wring
rain	rein	tail	tale	flower	flour
threw	through	some	sum	red	read



We saw a ..... at the park today.

Many people had to ..... their country during the war.

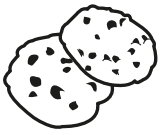
The ground was dry because it did not get any ..... .

The children ran ..... the hall like a ..... of elephants.

We should each carry a ..... to the spring concert.

I love the fairy ..... called *Beauty and the Beast*.

Dad sprinkled ..... on the counter and rolled out the dough.



May I have ..... cookies with the milk, please?

The skunk defends itself by releasing a strong ..... .

Andrew used bright ..... paper to ..... the present.

My mother gave me a silver ..... .

Rhyming Words

FACTS

Words that have the same ending sound are called rhyming words. Often, the ends of these rhyming words are spelled differently.

Read the words in the box. Then write each one under the word it rhymes with in the smaller boxes below.

pear	could	floor	bait	would	flew	bare	store
learn	tough	flight	rough	threw	plate	puff	straight
tear	turn	shore	height	burn	might	stood	knew

door	**stuff**	**bite**	**earn**
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

date	**good**	**wear**	**blue**
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

Find a word from above to complete each sentence below.

A word that means “dish” or “platter” and rhymes with “bait” .....

A word that means “coast” and rhymes with “floor” .....

A word that means “not crooked” and rhymes with “date” .....

A word that names a kind of fruit and rhymes with “bare” .....

A word that means “not smooth” and rhymes with “stuff” .....

Plurals

FACTS

Plural words are words that mean more than one person, place, or thing. Most plural words end in **-s**, **-es**, and **-ies**. When a singular word's last two letters are a consonant followed by **y**, change **y** to **ies** to make it plural. Add **s** when the last two letters are a vowel followed by **y**. For words ending with **s**, **sh**, **ch**, **x**, or **z**, add **es**. When a consonant is followed by an **o**, add **-es**.

Use the suffix **-s** or **-es** to make the plural form for each word below.

pig	piece	door .....
box	month	inch .....
watch	beach	house .....
ostrich	window	coach .....
pear	groom	grape .....

Write the plural form of each word given below.

city	boy	peach .....
baby	day	cave .....
brush	dish	hero .....
video	potato	monkey .....
pearl	globe	hive .....

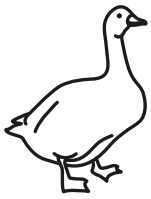
Irregular Plurals

FACTS

Making the plural of a singular word does not always involve just adding **-s** or **-es**. Making the plural of some words requires spelling changes. For example, for most singular words ending with a single **f** or **fe**, change **f** or **fe** to **v** and add **-es.** These words are called irregular plurals.

Choose a plural word from the word box and write it next to its singular form below.

geese	children	wolves	knives	scarves	oxen
men	teeth	mice	shelves	leaves	calves



goose .....

man .....

mouse .....

wolf .....

shelf .....

knife .....

tooth .....

child .....

ox .....

leaf .....

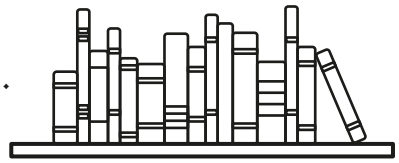
calf .....

scarf .....

Choose a word from above to complete each sentence below.

Some birds, such as ....., fly south for the winter.

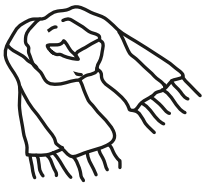
I organized the books on all the .....



At night we could hear ..... howling.

The ..... were tired after a long day out in the sun.

I bought my aunt a colorful ..... for her birthday.



Past Tense of Verbs

FACTS

The suffixes **-ed** and **-d** are added to most verbs to form the past tense. These verbs are called regular verbs.

For each present-tense verb in the first column, write its past-tense form in the second column. Then write the number of syllables in each past-tense verb in the third column.

Present Tense	Past Tense	Number
paint		
play		
carry		
smile		
report		
cook		
arrive		
ask		

Use a past-tense word from above to complete each sentence below.

Finally, the train _____.

The band _____ jazz all night.

Dad _____ dinner for us.

Jack _____ his mom for permission to attend the party.

Shannon _____ her pet hamster in a cage to the vet.

Past Tense of Verbs

FACTS

Irregular verbs are spelled differently in the past tense. They do not follow the rule of adding just the suffix **-ed** or **-d**.

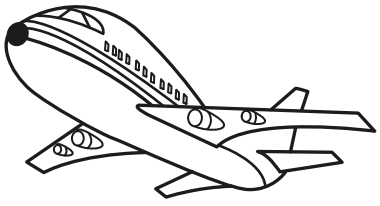
Circle the correct verb for each pair of sentences.

The pitcher catched caught the ball.
Then, he threw throwed the ball to first base.

The teacher sayed said to read the whole chapter.
She left leaved a note on the board.

The girl losed lost her backpack.
Then she found finded it in the gym.

We seed saw goats at the farm.
One goat drinked drank water from a bowl.



We flyed flew from New York to Texas.
My father slept sleeped on the plane.

He goed went to the museum last Sunday.
He felt feeled tired on the train.

Irregularly Spelled Words

FACTS

Many words are not spelled the way they are pronounced.
These words have irregular spellings.

Read about Lily in the sentences below. Circle the word in each sentence that is spelled incorrectly. Then write the correct spelling of the word.

Lily was knew to her school. .....

She had been againsed moving. .....

But her father's company had moved acros town. .....

He was a lawya. .....

She was hoping to make new freinds at school. .....

Lily was good at math and compleated the multiplication problems quickly. .....

One day, she helped Pat anser her math problems. .....

The next day, she heard a nock on her door. .....

It was Kate. She had a math qwestion. .....

Lily helped her and new that she had made two friends. .....

FACTS

Knowing the meanings of prefixes helps us to understand words.

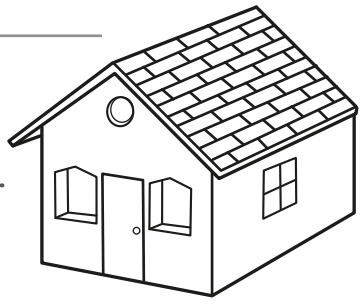
Read the story and then answer the questions below.

Laura's father unlocked the cottage door. Whew, it was dusty! Laura was unprepared for all the dirt and dust. She had agreed to help her father get the cottage ready for the summer. She was unsure, however, that they could get all the work done in one weekend. Laura thought it would be fun, but she disliked getting dirty. She was excited about one thing: repainting the porch furniture. The next day, her father worked outside in the yard. She helped him. They had to replant the flowers that were overgrown with weeds. She had to dig up the flowers carefully, and he replanted them. When they finished, they were covered in mud.
"That was a muddy job," her dad said. "We'll repaint the furniture tomorrow!"

Find words from the story that contain prefixes, and write them under the prefix headings in the columns below.

un-	re-	dis-	over-

Fill in the blanks.



Where does the story take place? .....

Who goes to the cottage? .....

What is Laura excited about? .....

Why might the cottage need so much work? .....

.....

Reading and Comprehension

FACTS

Careful reading of written text helps you spot errors, such as spelling mistakes.

Read the text carefully, and answer the questions below.

Spectacular Spiders

Many people fear spiders, but these creepy-crawly creatures are not all harmful. In fact, some spiders contain poisson that helps cure diseases. Spiders have eihgt legs and can feel vibrations through the tiny hairs on their legs. Most spiders eat insects and are skilled at builting intricate webs. They watch and weight for the web to vibrate, which means that the prey has been captured.

Not everyone dislikes spiders. Some people like spiders enough to keep them as pets. A favorite pet spider is the tarantula. It can live up to 25 years in captivity. People eat spiders, too! In Southeast Asia, street vendors sell fried spiders. Do you feel like a snack? Some people say fried spiders taste nutty, like peanut butter.

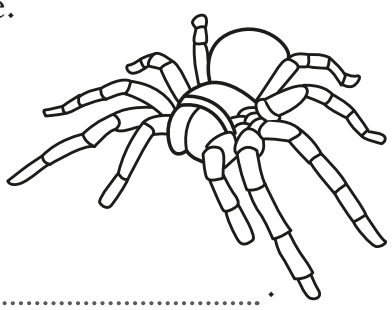
Four words in the first paragraph above are spelled incorrectly. Find the words and write their correct spellings in the blanks below.

....

Write any four words that contain suffixes.

....

Complete these sentences with words from the text above.



The word that means "to be caught" is .....

Some people keep spiders as .....

When an insect is caught in a spider's web, the web will .....

Tarantulas can live up to ..... years in captivity.

FACTS

Recognizing correctly spelled words and understanding their meanings help you get the most out of a piece of writing.

Read the text. Then answer the questions below.

Giant Pandas

Giant pandas are bears with black-and-white fur. They have short hind legs and pigeon-toed feet. They cannot run quickly. Instead, they move along on their front paws. As they take a step, their whole foot touches the ground. That is similar to the way other bears and humans walk. Other animals, such as dogs and cats, walk on their toes.

Pandas live in the forests of China. They need to live in places where bamboo grows. They eat an amazing amount of it—about 30 pounds a day! They can peel, chew, and swallow a bamboo stalk in 40 seconds. In the past few years, pandas have had trouble finding enough food. They used to be able to migrate to other forests to find bamboo. But this has become difficult. Why? People have been building farms and homes in the panda's habitat. Scientists are trying to find ways to protect giant pandas.

Which word in the third sentence contains a suffix?

.....

Which word from the story names a panda's habitat?

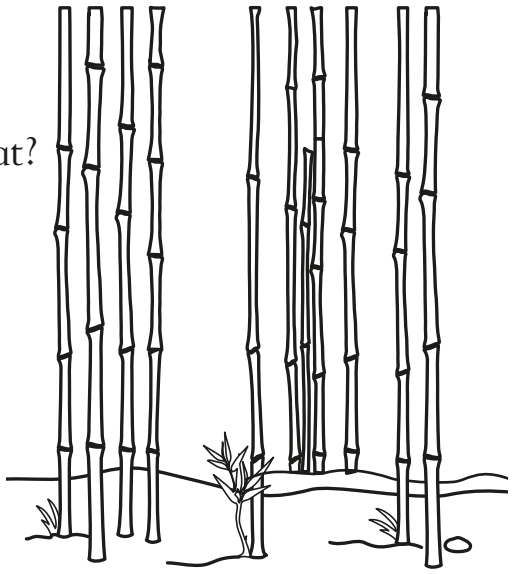
.....

Which word from the story means "surprising"?

.....

Circle the word below that means "migrate."

run climb move



Prefixes

FACTS

Adding a prefix to the beginning of a word changes the meaning of the orignal word.

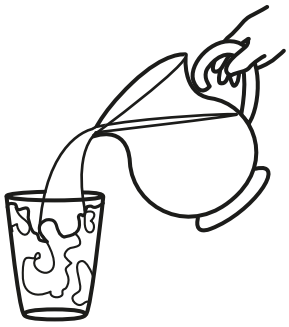
Look at each set of words. Based on the meanings of the words, write what you think each prefix means.

agree — disagree
appear — disappear

Dis- means .....

read — misread
spell — misspell

Mis- means .....

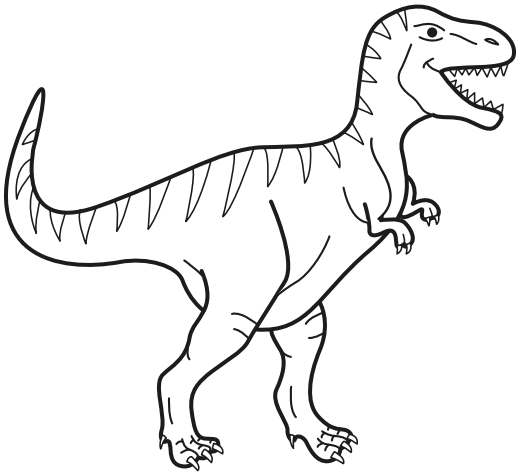


fill — refill
send — resend

Re- means .....

possible — impossible
proper — improper

Im- means .....



kindergarten — prekindergarten
historic — prehistoric

Pre- means .....

FACTS

Adding a suffix to the end of a word changes the meaning of the original word.

Look at each set of words. Based on the meanings of the words, write what you think each suffix means.

care	careful
pain	painful

-ful means .....

care	careless
fear	fearless

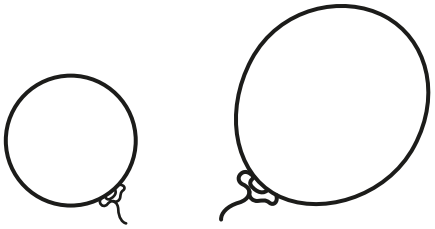
-less means .....

bake	baker
teach	teacher

-er means .....

low	lowest
high	highest

-est means .....



big	bigger
small	smaller

-er means .....

Subject and Predicate

FACTS

The subject of a sentence tells who or what the sentence is about. The simple subject is usually a single noun. The predicate of a sentence tells what the subject is or does. The simple predicate is usually a single verb.

Draw one line under the subject of each sentence.
Draw two lines under the predicate of each sentence.
Circle the simple subject and the simple predicate.

Erica knitted a wool scarf.

My grandfather collects toy trains.

Jason went to the beach.

The fluffy cat stretched its legs.

Minnesota has many lakes.

The crooked swing hangs from the tree.

The jolly farmer sang while he worked.

The soccer fans shouted loudly when their team scored.

Sally Ride was the first American woman in space.

The capital of Colorado is Denver.

FACTS

Sometimes a sentence can have a compound subject, or more than one subject. A sentence can also have a compound predicate.

Read each sentence. Determine whether the underlined part of each sentence is a compound subject or a compound predicate. Some sentences have both! Circle the correct answer.

John **and** Tara enjoy swimming in the summer.

Compound subject | Compound predicate | Both

Mary opened her locker **and** looked for her science book.

Compound subject | Compound predicate | Both

The train will stop in Philadelphia **and** continue on to Baltimore.

Compound subject | Compound predicate | Both

Tom **and** his dad went fishing in the creek.

Compound subject | Compound predicate | Both

Jack **and** Mary spoke with the teacher and the principal.

Compound subject | Compound predicate | Both

Birds **and** butterflies are pretty to see **and** help flowers grow.

Compound subject | Compound predicate | Both

The actors **and** the dancers performed wonderfully **and** made the audience clap and cheer.

Compound subject | Compound predicate | Both

Choosing Words

FACTS

Writers look for words that will make their writing interesting and give more information.

Read the words in the word gallery. Choose two words from each set and write a sentence with the words. If you are not sure exactly what each word means, use a dictionary to find the meaning.

Instead of "good," use:

delightful excellent admirable

splendid satisfying talented

.....

.....

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.....

Instead of "bother," use:

annoy pester trouble

disturb nag

.....

.....

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.....

.....

.....

Instead of "go," use:

flee run escape plod wander scurry roam

.....

.....

.....

.....

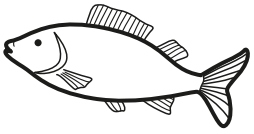
FACTS

Similes are phrases that compare one thing to another using the words "like" or "as."

Complete the similes in each sentence using one of the words from the word bank.

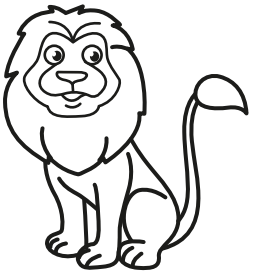
fish	honey	lion	mice	peacock	tack

Justin swam like a _____.



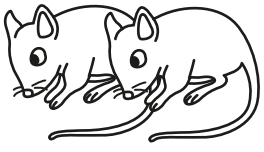
The thorns on the rose were as sharp as a _____.

My dog thinks he is as powerful as a _____.



You should be as proud as a _____ of all the work you have done.

Let's be quiet like _____ while the baby sleeps.



The poem that Sam wrote his mom for Mother's Day was as sweet as _____.

Adverbs

FACTS

An adverb describes a verb (an action or state of being). It tells how, where, when, how often, and why something is done.

In each sentence, underline the adverb. Then circle the verb it describes.

The fox ran quickly into its den.

I swallowed the medicine easily.

The actor performed well.

The patient rested comfortably in bed.

Theo accidentally tripped on the stairs.

I will read that book soon.

Sandra usually walks to school.

The soccer player never misses a practice.

The snake hid underground.

The class waited impatiently for the bell to ring.

Conjunctions

FACTS

A conjunction is a word that is used to join sentences, ideas, phrases, or words.

Choose the conjunction from the conjunction bank that best completes each sentence.

and	but	or	so	because	unless

We won't go to the baseball game ..... it stops raining.

Hannah is good at drawing, ... she has won many drawing contests.

I like chocolate, ... I prefer vanilla.

Dave forgot to put on sunscreen, ... he got a sunburn.

Do your chores, ... you won't get to play outside.

I am going to bed ..... I am tired.

Write three sentences using conjunctions.

.....

.....

.....

Times Tables

GOAL

Learn the multiplication facts for 3, 4, 6, and 8.

Write the missing number in each box.

3 x 1 = ☐	4 x 1 = ☐	6 x 1 = ☐	8 x 1 = ☐
3 x 2 = ☐	4 x 2 = ☐	6 x 2 = ☐	8 x 2 = ☐
3 x 3 = ☐	4 x 3 = ☐	6 x 3 = ☐	8 x 3 = ☐
3 x 4 = ☐	4 x 4 = ☐	6 x 4 = ☐	8 x 4 = ☐
3 x 5 = ☐	4 x 5 = ☐	6 x 5 = ☐	8 x 5 = ☐
3 x 6 = ☐	4 x 6 = ☐	6 x 6 = ☐	8 x 6 = ☐
3 x 7 = ☐	4 x 7 = ☐	6 x 7 = ☐	8 x 7 = ☐
3 x 8 = ☐	4 x 8 = ☐	6 x 8 = ☐	8 x 8 = ☐
3 x 9 = ☐	4 x 9 = ☐	6 x 9 = ☐	8 x 9 = ☐
3 x 10 = ☐	4 x 10 = ☐	6 x 10 = ☐	8 x 10 = ☐
3 x 11 = ☐	4 x 11 = ☐	6 x 11 = ☐	8 x 11 = ☐
3 x 12 = ☐	4 x 12 = ☐	6 x 12 = ☐	8 x 12 = ☐

More Times Tables

GOAL

Learn the multiplication facts for 7, 9, 11, and 12.

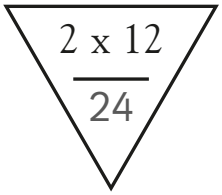
Fill in the missing numbers to complete the times tables.

7 x 1 = ☐	9 x 1 = ☐	11 x 1 = ☐	12 x 1 = ☐
7 x 2 = ☐	9 x 2 = ☐	11 x 2 = ☐	12 x 2 = ☐
7 x 3 = ☐	9 x 3 = ☐	11 x 3 = ☐	12 x 3 = ☐
7 x 4 = ☐	9 x 4 = ☐	11 x 4 = ☐	12 x 4 = ☐
7 x 5 = ☐	9 x 5 = ☐	11 x 5 = ☐	12 x 5 = ☐
7 x 6 = ☐	9 x 6 = ☐	11 x 6 = ☐	12 x 6 = ☐
7 x 7 = ☐	9 x 7 = ☐	11 x 7 = ☐	12 x 7 = ☐
7 x 8 = ☐	9 x 8 = ☐	11 x 8 = ☐	12 x 8 = ☐
7 x 9 = ☐	9 x 9 = ☐	11 x 9 = ☐	12 x 9 = ☐
7 x 10 = ☐	9 x 10 = ☐	11 x 10 = ☐	12 x 10 = ☐
7 x 11 = ☐	9 x 11 = ☐	11 x 11 = ☐	12 x 11 = ☐
7 x 12 = ☐	9 x 12 = ☐	11 x 12 = ☐	12 x 12 = ☐

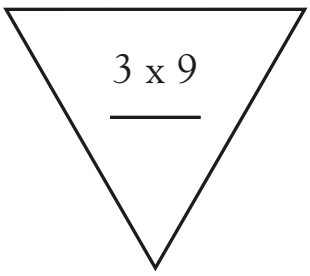
Practice Times Tables

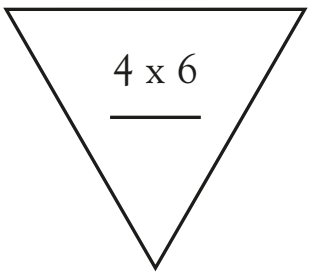
GOAL

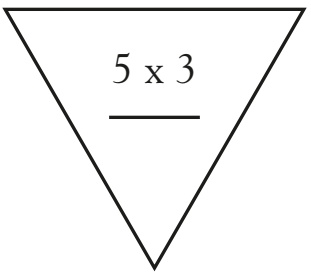
Practice multiplication facts.

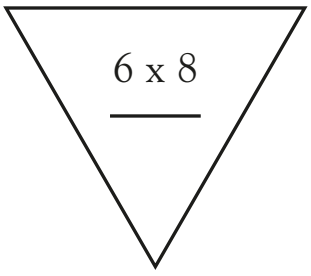


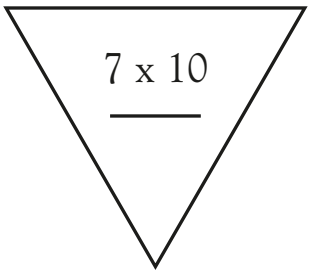
Multiply the numbers at the top of each triangle.
Write the answer under the line.

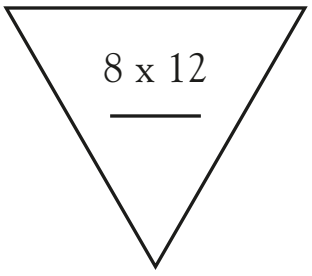


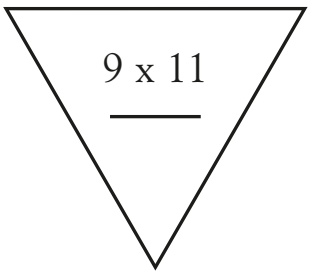


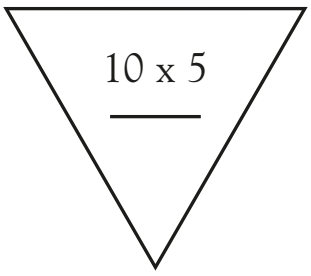


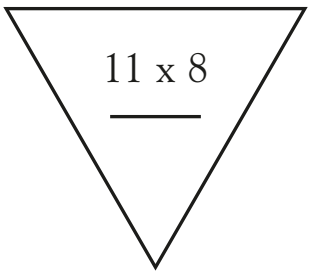


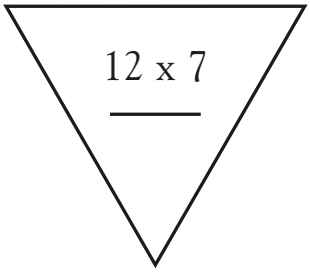


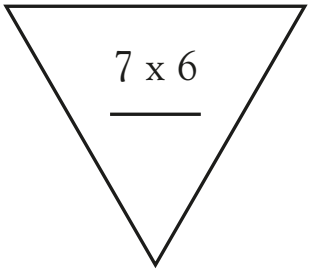


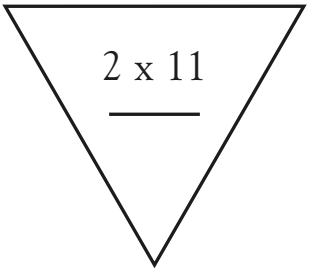












More Multiplication

GOAL

Learn to multiply by two-digit numbers by multiplying by the tens and ones separately, and then adding the answers.

5 x 15 = 75	Step 1 5 x 10 = 50	Step 2 5 x 5 = 25	Step 3 50 + 25 = 75

What is the product of each multiplication equation? **Remember**: Multiply by the tens and ones separately and add their answers.

	Step 1	Step 2	Step 3
5 x 21			
3 x 14			
2 x 22			
5 x 33			
2 x 63			
4 x 13			
6 x 18			
8 x 52			
9 x 32			
7 x 42			

Multiply single-digit numbers by three-digit numbers.

2 x 101 = ☐ 3 x 115 = ☐ 5 x 230 = ☐

Division

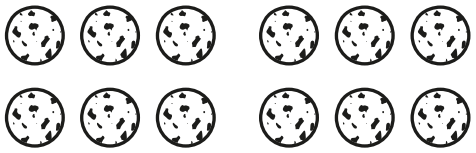
GOAL

Learn to divide. The number you are dividing is called the dividend. The number you are dividing by is called the divisor. The answer is the quotient.

Dividend → 10 ÷ 5 = 2 ← Quotient

Divisor

Divide these 12 cookies into 4 sets.
Now you have 4 sets of 3 cookies.
That is the same as 12 ÷ 4 = 3



There are three ways to show division:

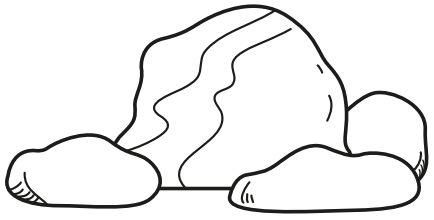
1. $4\overline{)12}$ 2. 12 ÷ 4 3. 12/4

Figure out the answers to these division problems.

$\square\overline{)9}$	$\square\overline{)6}$	$\square\overline{)56}$	$\square\overline{)35}$
14 ÷ 2 = ☐	18 ÷ 3 = ☐	8 ÷ 2 = ☐	45 ÷ 9 = ☐
15/3 = ☐	24/4 = ☐	63/7 = ☐	36/9 = ☐

Read the problem. Then do the division to find the answer.

Ken was showing his friends 36 rocks in his collection. He gave an equal number of rocks to 9 friends in his class.



How many rocks did each student receive? 36 ÷ 9 = ☐

More Division

GOAL

Learn to divide and find remainders.

Ms. Dolan had 5 books for 3 children. She gave one book to each child. How many books were left with Ms. Dolan?

5 ÷ 3 or 5/3 = 1R2 1R2 means 1 book per child, remainder 2

Answer the division questions below.
Show remainders where necessary.

$2\overline{)14}$	$10\overline{)20}$	$3\overline{)27}$	$7\overline{)42}$
$5\overline{)23}$	$6\overline{)31}$	$7\overline{)25}$	$3\overline{)20}$

Write the answers to these division questions.

60 ÷ 10 =	8 ÷ 4 =	44 ÷ 11=	28 ÷ 7 =
32 ÷ 4 =	56 ÷ 8 =	72 ÷ 6 =	63 ÷ 9 =

Answer these division questions.

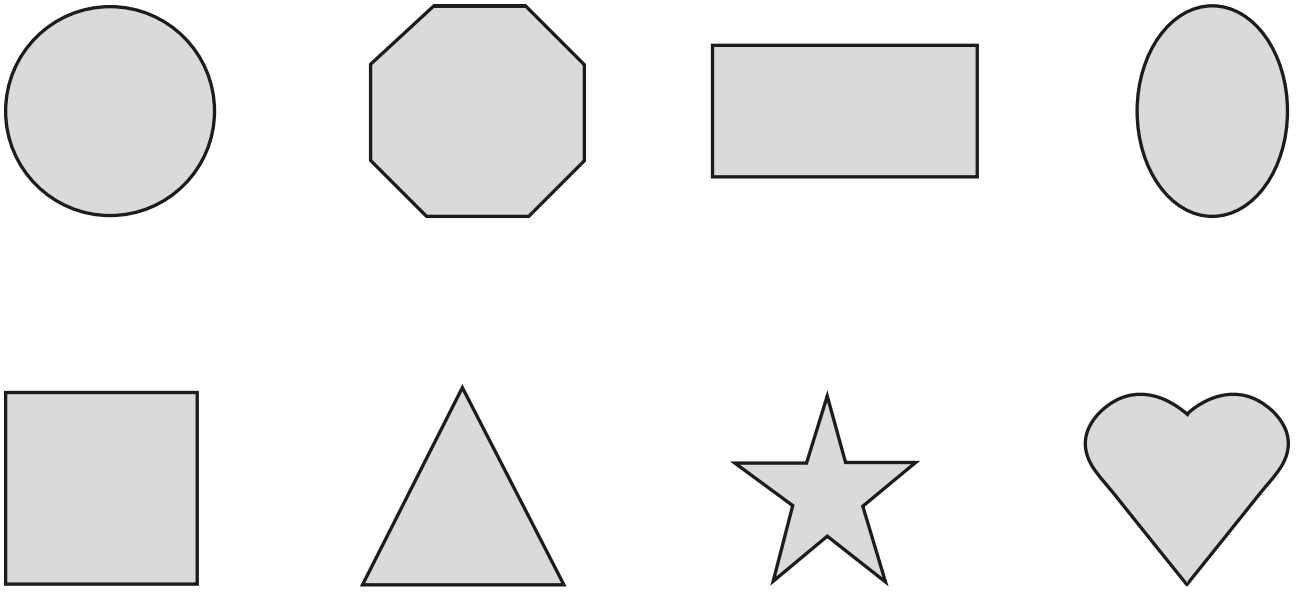
12/3 =	24/6 =	83/9 =	48/8 =
66/3 =	15/6 =	40/8 =	64/8 =

Half of a Shape

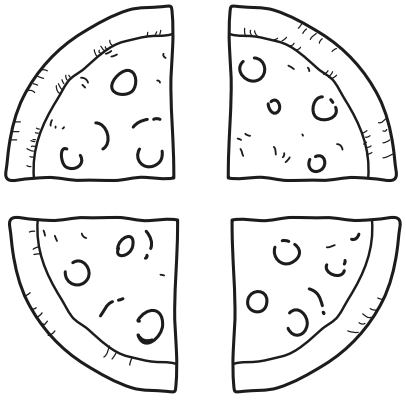
GOAL

Learn to divide shapes in half.
Half is shown as $\frac{1}{2}$, or one half.

Look at these shapes. Draw a line through each to show the shape divided into two equal halves.



This pizza is divided into quarters.
How many equal quarters does the pizza have? ☐
Circle two shares of the pizza.

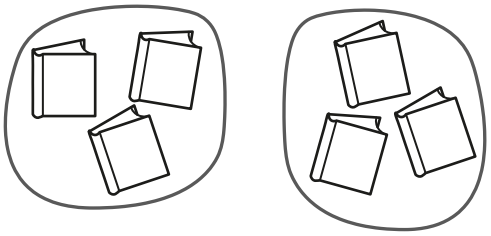


Half of an Amount

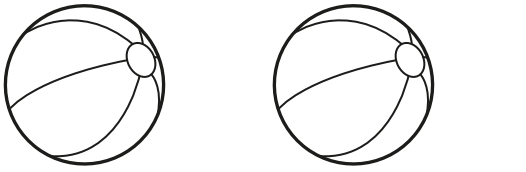
GOAL

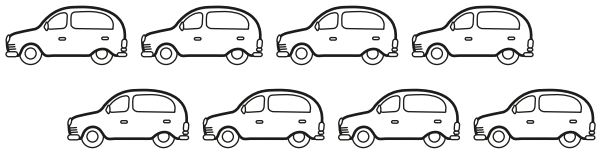
Learn to divide amounts in half.

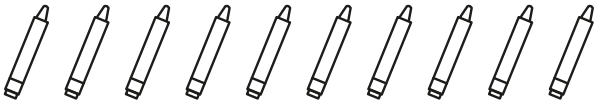
Circle two equal groups of books.
This is the same as dividing the collection of books into two halves.

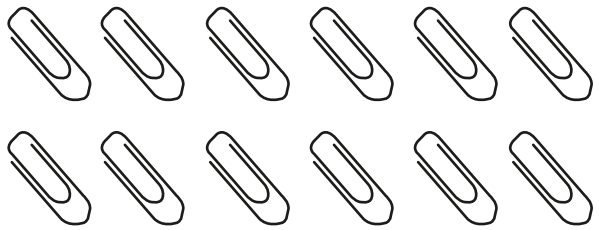


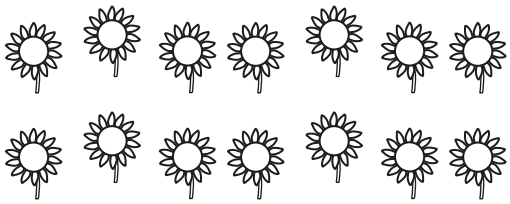
Look at the objects below. Circle two equal groups of each object.

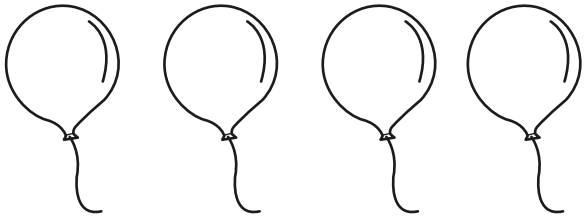






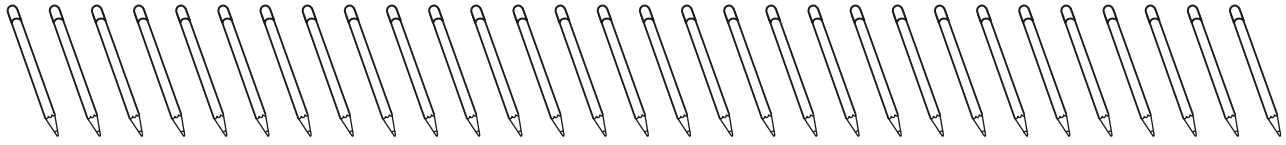






Count the pencils below and write the total number.

Circle two equal groups of pencils. How many pencils are there in each group?

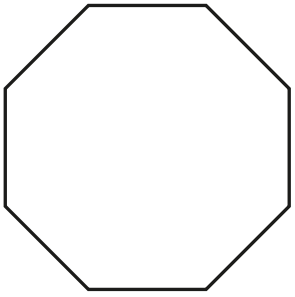


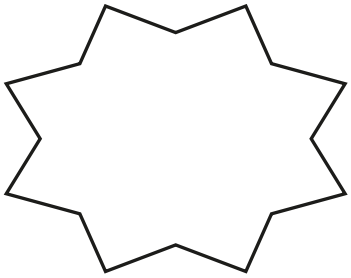
Quarters

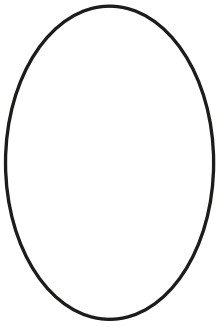
GOAL

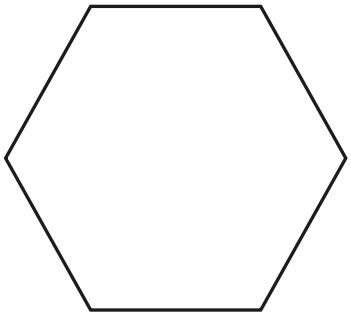
Learn quarters of shapes. A shape is divided into quarters when it is divided into four equal parts. One quarter is written as $\frac{1}{4}$.

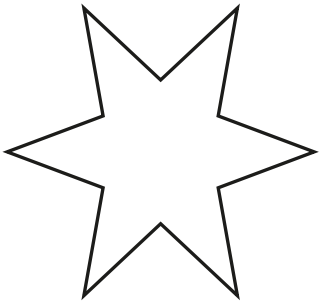
Draw lines through each shape to divide it into four equal parts or quarters. Then color one quarter, or $\frac{1}{4}$, of each shape.

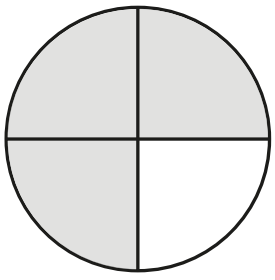












This circle is divided into four parts. Three of the four parts are shaded. How much of the circle is shaded? Circle the correct fraction.

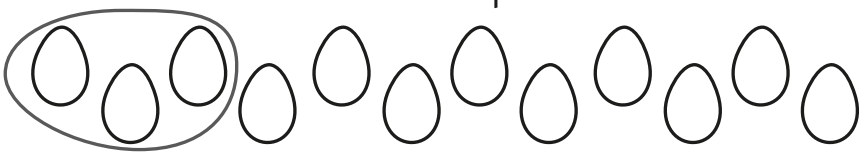
$\frac{1}{2}$ $\frac{1}{4}$ $\frac{3}{4}$

Quarters of Amounts

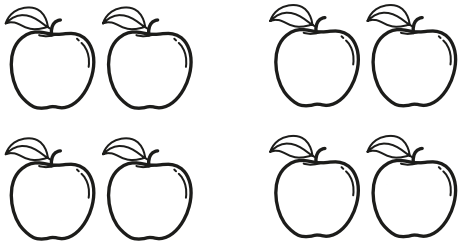
GOAL

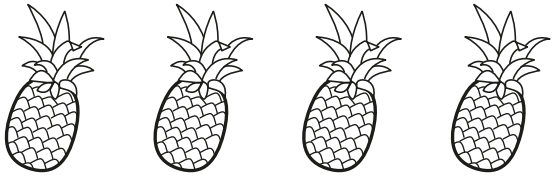
Learn to find a quarter, or $\frac{1}{4}$, of amounts.

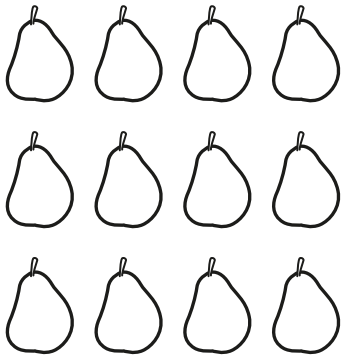
Count the eggs. Circle $\frac{1}{4}$ of the eggs.

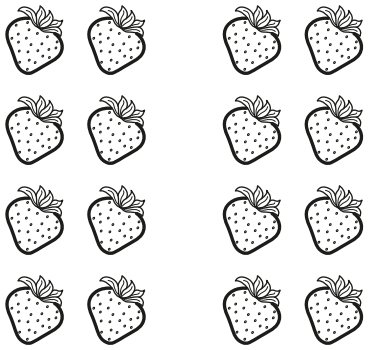


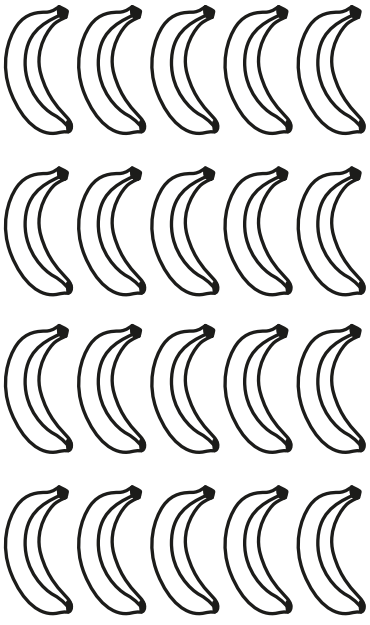
Look at the groups of objects. Circle $\frac{1}{4}$ of the objects in each set.

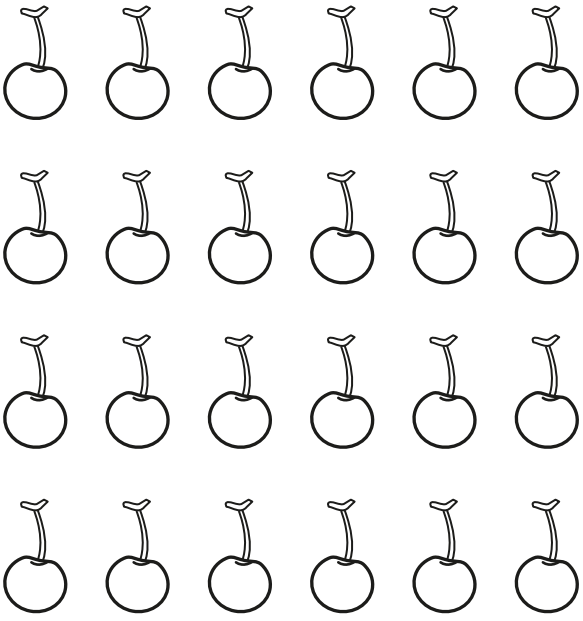












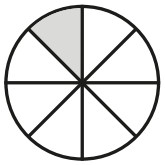
More Fractions

GOAL

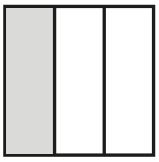
Learn more about the fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, and $\frac{1}{8}$.

Read the fractions. Draw a line from each fraction to the shape that shows corresponding shading.

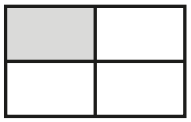
$\frac{1}{3}$



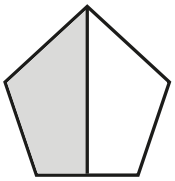
$\frac{1}{2}$



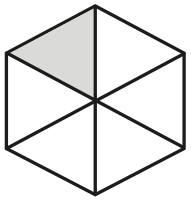
$\frac{1}{5}$



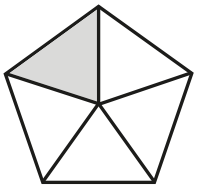
$\frac{1}{6}$



$\frac{1}{4}$



$\frac{1}{8}$



Reducing Fractions

GOAL

Learn to reduce fractions. The top number of a fraction is called a numerator. The bottom number of a fraction is called a denominator. To reduce fractions, divide the numerator and denominator by the greatest common factor. The greatest common factor is the highest number both the numerator and denominator are divisible by.

$\frac{3}{4}$ ← numerator
$\frac{3}{4}$ ← denominator

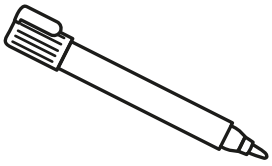
$\frac{2}{8} \div \frac{2}{2} = \frac{1}{4}$

Reduce these fractions.

$\frac{3}{9} = \frac{\quad}{\quad}$ $\frac{8}{10} = \frac{\quad}{\quad}$ $\frac{6}{18} = \frac{\quad}{\quad}$

$\frac{21}{36} = \frac{\quad}{\quad}$ $\frac{18}{27} = \frac{\quad}{\quad}$ $\frac{15}{30} = \frac{\quad}{\quad}$

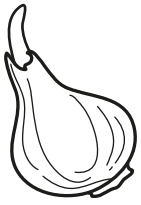
Solve these word problems. **Remember:** Reduce the fractions in each problem.



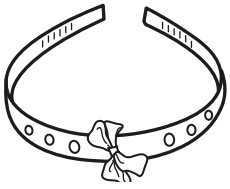
Jim had 25 markers. He gave 5 of the markers to Luke. What fraction of the markers did he give to Luke?

$\frac{\quad}{\quad}$

Annie had 40 tulip bulbs. She planted 10 bulbs in front of the school building. She planted the others near the playground. Write the fraction to show how many of the bulbs she planted in the front.



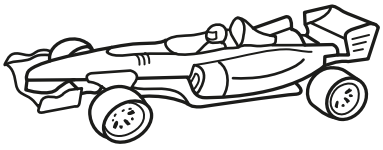
$\frac{\quad}{\quad}$



Jenny is selling 36 headbands to raise money for a school trip. She sold 9 of them. What fraction of the headbands did she sell?

$\frac{\quad}{\quad}$

Dan had 45 toy cars. He gave 9 to Jill. What fraction of his toy cars did he give her?



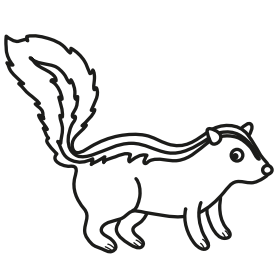
$\frac{\quad}{\quad}$

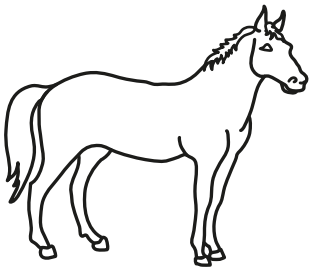
Estimating Mass

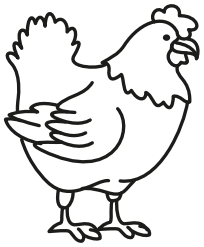
GOAL

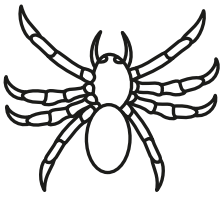
Learn to estimate mass. To estimate means to make a good guess using clues. Mass is a measure of how much matter an object has. Weight is a measure of how strongly gravity pulls on that matter.

Circle the animal that is probably heavier in these pairs.

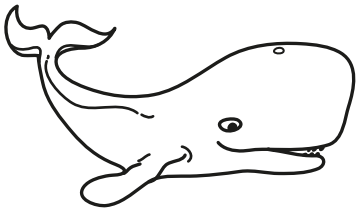


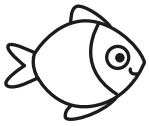


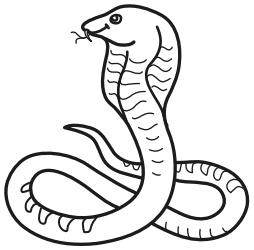




Circle the animal that is probably lighter in these pairs.







Circle the correct ending to each story.

Jack and John went to the farmers' market. Jack bought a bag of apples. John bought a bag of string beans. Both bags were the same size. The bag of apples probably weighed:

more than the bag of string beans

less than the bag of string beans

about the same as the bag of string beans

Ally and Laura carried books to the library. They each had five large books. Laura's books probably weighed:

about the same as Ally's books

more than Ally's books

less than Ally's books

Mass Problems

GOAL

Learn to solve problems about mass and weight.

oz = ounce lb = pound g = gram kg = kilogram

1 lb = 16 ounces 1 kg = 1,000 grams

Read each problem and find the answer. Show your work in the box.

Grams and kilograms

One bag of sugar weighs 2 kg.
How many kilograms is 4 bags of sugar?

A baseball has a mass of about 145 g.
What is the mass of 10 baseballs?

Mara's pumpkin has a mass of 2 kg.
Selia's pumpkin has a mass of 3 kg.
Whose pumpkin has the greater mass?
What is the difference in mass between the two pumpkins?

Ounces and pounds

Gary weighs 72 pounds. Tiko weighs 66 pounds. Ed weighs 68 pounds.
How much do they weigh altogether?

Gail bought a pumpkin. It weighs 320 oz. How many pounds is that?

Estimating Volume

GOAL

Learn to estimate the volume of liquids.

Cup

Pint

Quart

Gallon

Standard System

1 cup	=	$\frac{1}{2}$ pint	2 cups	=	1 pint
4 cups	=	1 quart	2 pints	=	1 quart
4 quarts	=	1 gallon	8 pints	=	1 gallon

Metric System (estimates)

1 cup	=	240 milliliters (mL)	2 cups	=	500 mL
1 pint	=	500 mL	4 cups	=	1 liter
1 quart	=	1 liter	2 pints	=	1 liter
4 quarts	=	3.7 liters	1 gallon	=	3.7 liters

Using the information in these charts, match the quantity in the first column to the estimated volume in the second column.

1 cup of tea	2 liters
1 gallon of juice	240 mL
1 pint of cream	3.7 liters
2 quarts of water	500 mL

In each row, circle the name of the person who has more.

Jack has 1 gallon of juice.	Julie has 1 quart of juice.
Maggie has 2 cups of milk.	Milo has 1 liter of milk.
Arun has 1 quart of water.	Annie has 500 mL of water.

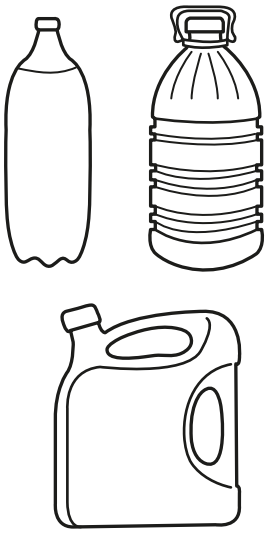
Solving Volume Problems

GOAL

Learn to solve volume problems using measures in ounces, pints, quarts, and gallons.

Metric System (estimates)

1 teaspoon	=	5 milliliters (mL)		
1 cup	=	240 mL		
2 cups	=	500 mL		
1 pint	=	500 mL		
4 cups	=	1 liter	=	1,000 mL
1 quart	=	1 liter	=	2 pints
4 quarts	=	3.7 liters	=	1 gallon



Using the information given above, solve these word problems.

Josh has a pitcher with 2 liters of juice. He uses 500 mL for breakfast. How much juice is left in the pitcher?

Jen needs 2 cups of frosting to make cupcakes. She has 1 liter of frosting. After using 2 cups, how much frosting will she have left? Circle the answer.

6 cups none 2 cups

A container holds 10 mL of liquid. Circle the equivalent volume.

1 cup 1 pint 2 teaspoons

Kip has to buy 20 liters of soda for a party. How many 2-liter containers should he buy? Circle the answer.

10 2-liter containers 5 2-liter containers

Looking at 2-D Shapes

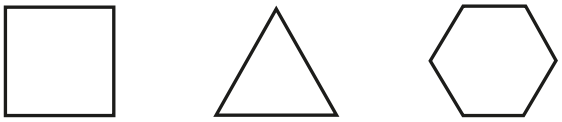
GOAL

Learn to recognize two-dimensional (2-D) shapes.
Two-dimensional shapes are made up of straight or curved lines.
All the lines are connected.

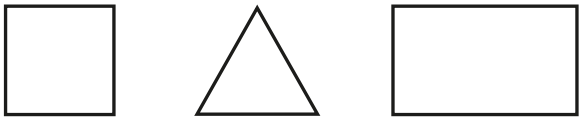
Circle the shape that has three sides.

Figure out the answers to these questions on shapes.

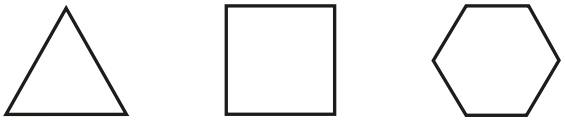
Circle the shape with four sides that are equal in length.



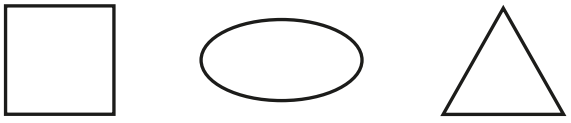
Circle the shape that has four sides, with two sides shorter than the other two.



Circle the shape that has six sides.



Circle the shape that has more than three sides.



How many sides does a triangle have? Circle the answer.

2 3 6

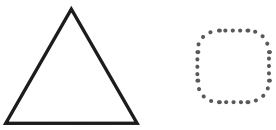
How many sides does a pentagon have? Circle the answer.

2 5 6

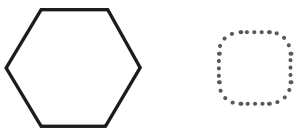
How many sides do each of these shapes have? Write the answer in the box.

Rectangle

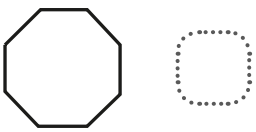
Square



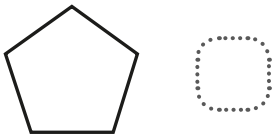
Triangle



Hexagon



Octagon



Pentagon

2-D and 3-D Shapes

GOAL

Learn about 2-D and 3-D shapes. Edges are the sides of a shape. Faces are flat surfaces of shapes.

2-D shapes are flat shapes that have width and length.

Circle	Square	Triangle	Rectangle	Oval
				
0 sides	4 sides	3 sides	4 sides	0 sides
Pentagon	**Hexagon**	**Heptagon**	**Octagon**	**Right triangle**
				
5 sides	6 sides	7 sides	8 sides	3 sides

3-D shapes have height, width, and depth.

Sphere	Cube	Cylinder	Cone
			
0 flat faces: no edges or corners	6 flat faces: all the same size	2 flat faces	1 flat face
Triangular prism	**Triangular-based pyramid**	**Square-based pyramid**	**Octagonal prism**
			
5 faces: 2 triangular, 3 squares or rectangles	4 faces: all triangular	5 faces: 4 triangular, 1 square	10 faces: 2 octagons, 8 squares or rectangles

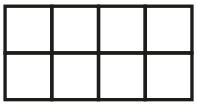
Based on the information above, circle the correct answer to each question.

Which shape has more edges?	Square	Octagonal prism
Which shape has 6 flat faces with all the same size?	Square	Cube

Rectangular Arrays

GOAL

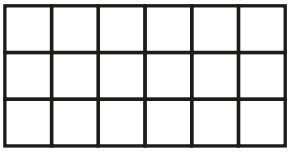
Learn to recognize rectangular arrays to show multiplication.
A rectangular array is a pattern of items, such as dots or boxes, arranged in rows and columns.



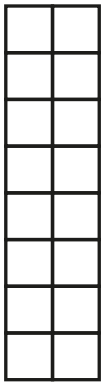
This rectangular array has two rows and four columns.

2 x 4 = 8

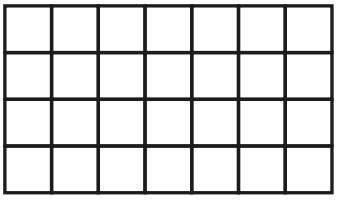
Count the rows and columns. Then write the multiplication sentence.



☐ rows and ☐ columns ☐



☐ rows and ☐ columns ☐



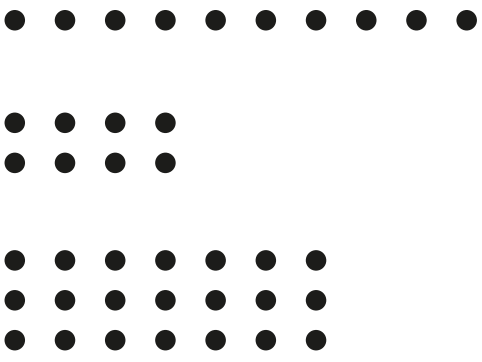
☐ rows and ☐ columns ☐

Connect the words on the left with the matching picture on the right.

3 rows and 7 columns

1 row and 10 columns

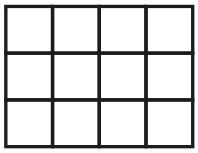
2 rows and 4 columns



Areas of Shapes

GOAL

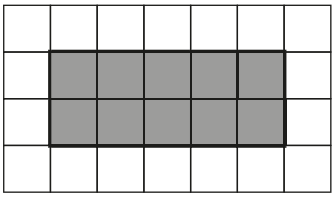
Learn about the areas of shapes. You can measure the areas of shapes by using squares. Each square is a square unit.



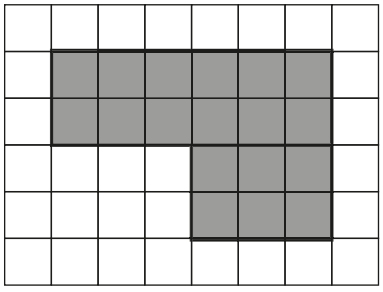
What is the area of this rectangle?

4 x 3 = 12 square units

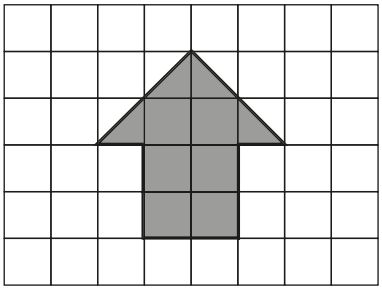
Measure the areas of these shapes. You can multiply the length and width, or you can count the number of square units.



The area of the rectangle is ☐ square units.

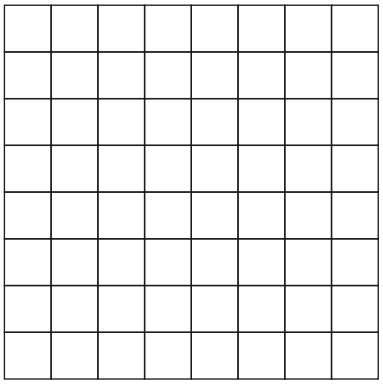


The area of this L-shape is ☐ square units.



The area of the arrow is ☐ square units.

Sam and Avi drew a picture of their yard. It was 4 square units wide and 6 square units long. Draw a picture of their yard on this graph paper. What is the area?



☐ square units

Reading Tables

GOAL

Learn to use a table.

Read the information in the table given here. Circle the answers to the questions. **Remember:** A table shows information across in rows or down in columns.

Animals and Their Coverings		
Type of Animal	**Example**	**Body Covering**
Amphibians	Frog	Slimy skin
Birds	Blue jay	Feathers
Fish	Salmon	Wet scales
Mammals	Polar bear	Fur
Reptiles	Turtle, Lizard	Shell, Scales

What does the first column of the table show?

Type of animal Examples of animals Body coverings

What animal is shown as an example of a fish?

Turtle Salmon Frog

How many types of animal are shown in the table?

Three Four Five

What covers the body of a salmon?

Slimy skin Wet scales Fur

How many examples of reptiles are there in the table?

One Two Three

GOAL

Learn to use a pictograph.

Look at the information given on the pictograph below.
Answer the questions that follow.

The members of the Smith family are planning to go on a picnic and discuss their favorite fruits. The children make a pictograph to show how many people like each fruit.

The Smiths' Favorite Fruit

☺ = 1 family member

Apples	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺
Bananas	☺ ☺ ☺ ☺ ☺ ☺
Grapes	☺ ☺ ☺ ☺ ☺
Oranges	☺ ☺ ☺
Strawberries	☺ ☺

How many family members like apples best? ☐

How many kinds of fruit are shown on the graph? ☐

How many people like oranges best? ☐

How many people like strawberries best? ☐

How many more people chose bananas than chose grapes? ☐

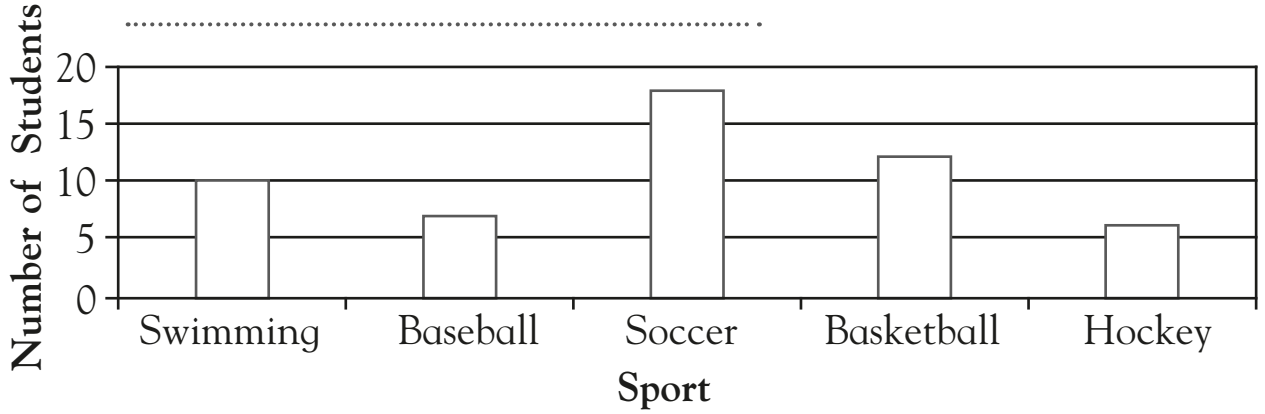
Which fruit did six people say they like best? .....

Bar Graphs

GOAL

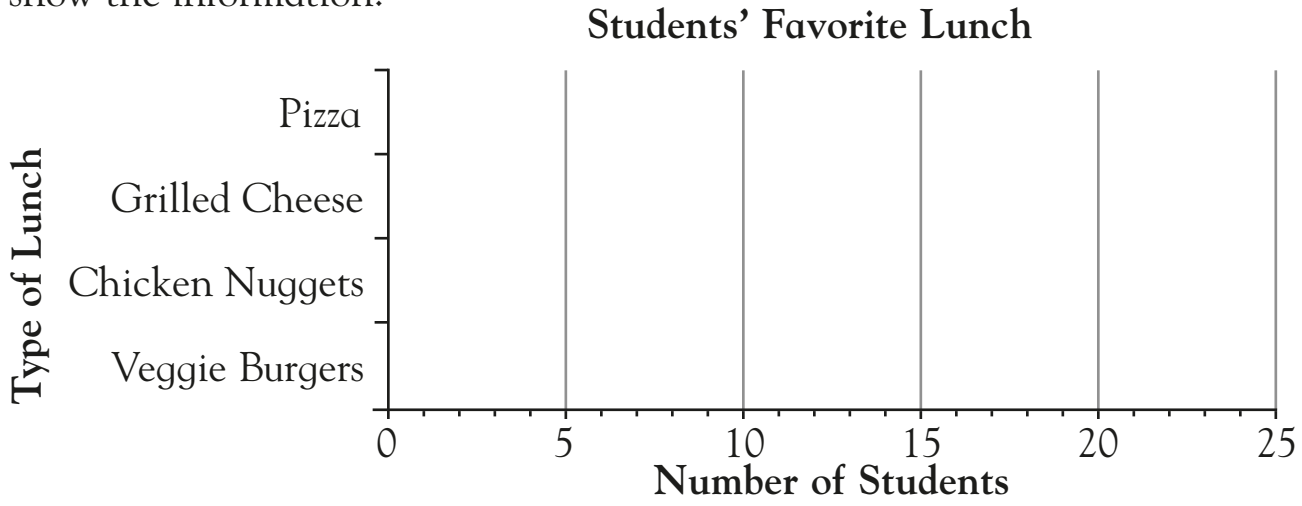
Learn to read and create a bar graph.

The third graders voted for their favorite sports. They drew a bar graph to show the results. Give a title to the graph, then use the graph to answer the questions. Circle your answers.



How many students voted for swimming?	5	10	20
About how many students voted for soccer?	10	12	18
Which sport did 6 people vote for?	Swimming	Soccer	Hockey

Students at Mayfield Public School voted for their favorite school lunch: 25 voted for pizza, 18 voted for grilled cheese, 15 voted for chicken nuggets, and 10 voted for veggie burgers. Color the bars to make a bar graph to show the information.

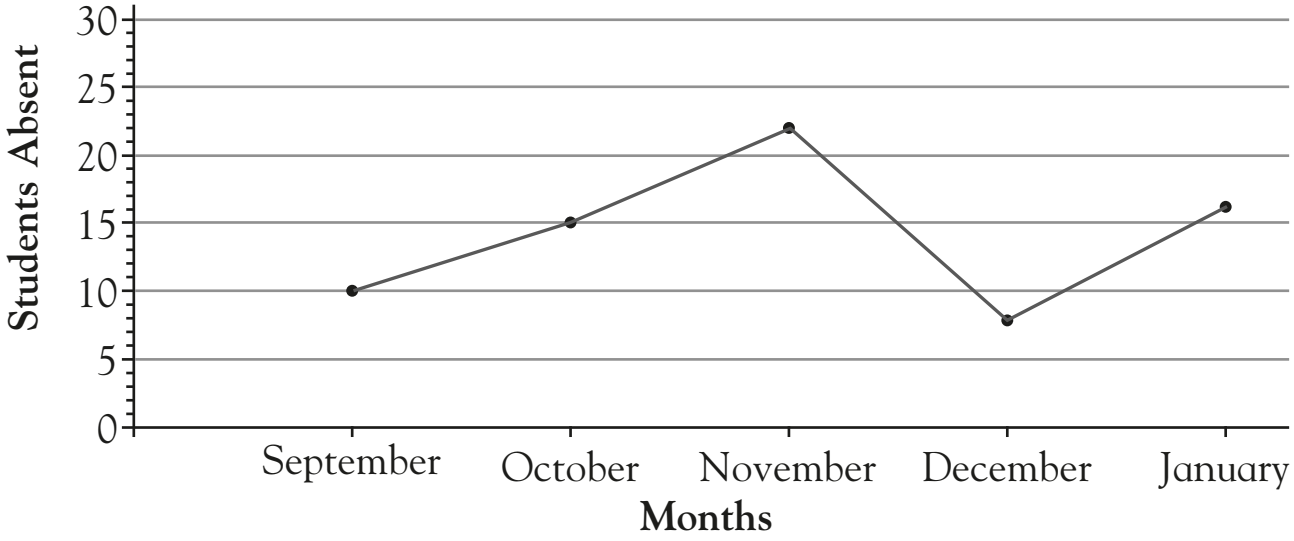


GOAL

Learn to read and create a line graph.

This line graph shows the number of students absent at Dixon Elementary during five months of the school year. Use the graph to answer the questions that follow.

Number of Students Absent at Dixon Elementary



How many students were absent in September? ☐

How many students were absent in December? ☐

How many students were absent from September through the end of October? ☐

In which month were most students absent? .....

What is the difference between the absences in November and December? ☐

Give a reason for the absences during December and January.

.....

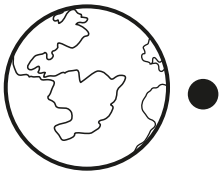
The Solar System

FACTS

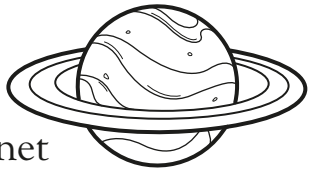
Besides the sun, there are seven major types of object in the solar system. Many of them move in an orbit—a curved path around another object.

Draw a line from each type of object to the correct definition.

Comet



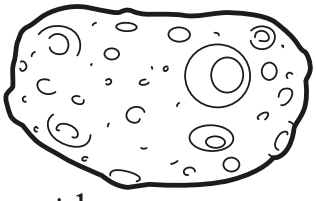
Moon



Planet

Meteor

Dwarf planet



Asteroid

A small round object that orbits the sun.

An irregularly shaped object made of rock and metal. Millions of them orbit the sun in a belt between two particular planets.

A mass of ice, rock, and dust. It orbits the sun, blazing a bright path through the sky as it nears the sun.

A large, round object that orbits the sun.

A round object that orbits a planet or a dwarf planet.

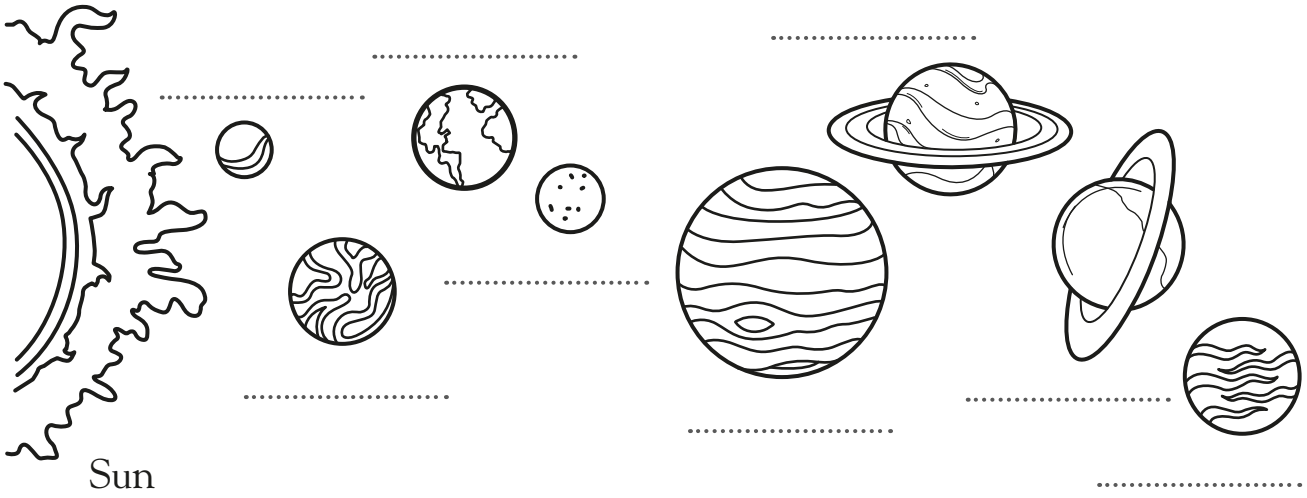
A small, rocky object. Thousands pass Earth every year. They are called meteors, or shooting stars, when they burn up in the atmosphere.

The Planets

FACTS

There are eight planets in the solar system. In order from the sun, they are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.

The planets are shown here in their order from the sun. Label each one correctly. They are not shown to scale.



Answer these questions about the planets.

1. Which is the biggest planet? .....

2. Which planet is nearest to the sun? .....

3. Which planet is farthest from the sun? .....

4. Which planet is closest to Earth? .....

5. Which planets are surrounded by rings? .....

6. Although this planet lies second from the sun, it is the hottest of them all. .....

7. Which planet looks tilted on its side, because its rings orbit from top to bottom? .....

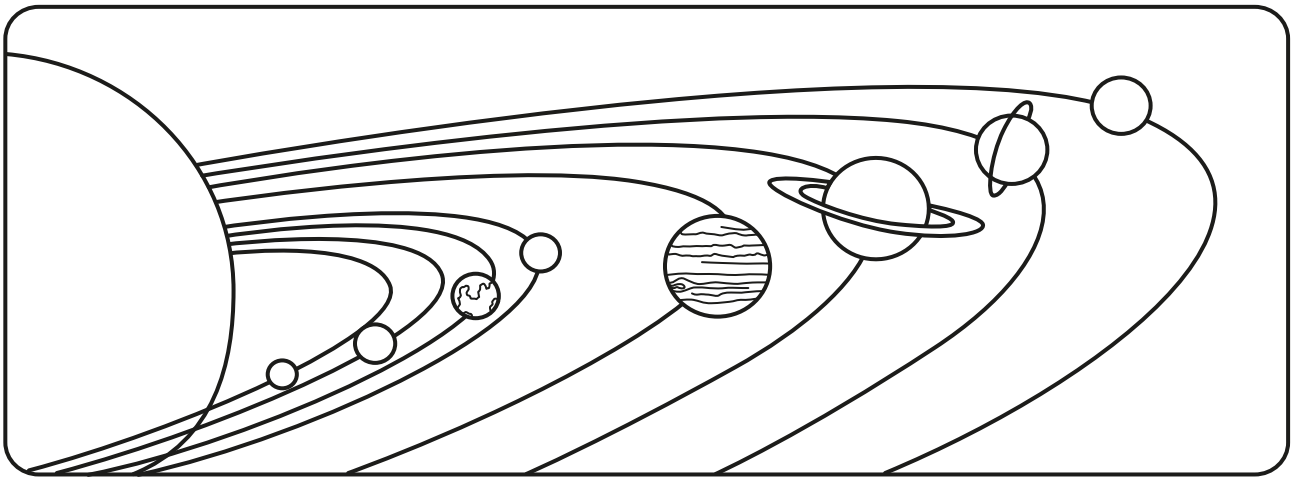
Structure of the Solar System

FACTS

The solar system is the group of planets and other objects that orbit the sun, the huge star at the center. There are eight planets—four small planets close to the sun made of rock, and four large outer planets made of gas and surrounded by rings of ice, dust, and rock. The time it takes for each planet to orbit once around the sun is its year. As the planets travel, they also rotate. One complete rotation is called a day.

Use the words in the box below to complete the sentences.

Day	Gas	Rings	Rock	Star	Year



1. The sun is the ..... at the center of our solar system.

2. A ..... is the time it takes for a planet to rotate once.

3. The four small inner planets are made of .....:

4. The four giant outer planets are made of .....:

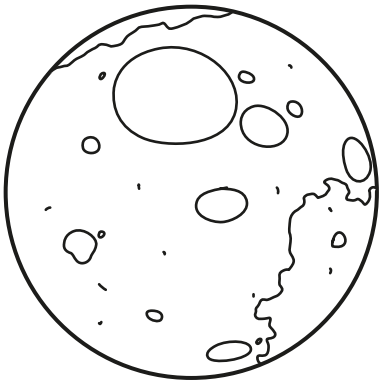
5. The outer planets have ..... made of ice, dust, and rock.

6. A ..... is the time it takes for a planet to complete one orbit around the sun.

Moons

FACTS

A moon is a natural object that orbits a planet. In the solar system there are more than 160 known moons. Earth has just one moon, but some planets have many. Only Mercury and Venus have none. All moons are made of rock, or rock and ice, and many have surfaces marked by craters, formed by collisions with asteroids. Our moon is rocky and about a quarter the size of Earth, which it orbits every 28 days. The distance between the moon and Earth is 238,855 miles, which takes a spacecraft about 60 hours to travel.



Circle the correct answer to these questions.

1. What is Earth's moon made up of?

A. Lava
B. Rock
C. Ice

2. What is the name of the thousands of marks on the moon's surface?

A. Caverns
B. Craters
C. Crevasses

3. The marks on the moon were created by collisions with what objects?

A. Asteroids
B. Meteorites
C. Planets

4. Approximately how long does it take for the moon to orbit Earth?

A. One day
B. One week
C. One month

5. How long does it take a spacecraft to travel to the moon from Earth?

A. 24 hours
B. 60 hours
C. 100 hours

6. Which of these planets does not have a moon?

A. Neptune
B. Mars
C. Venus

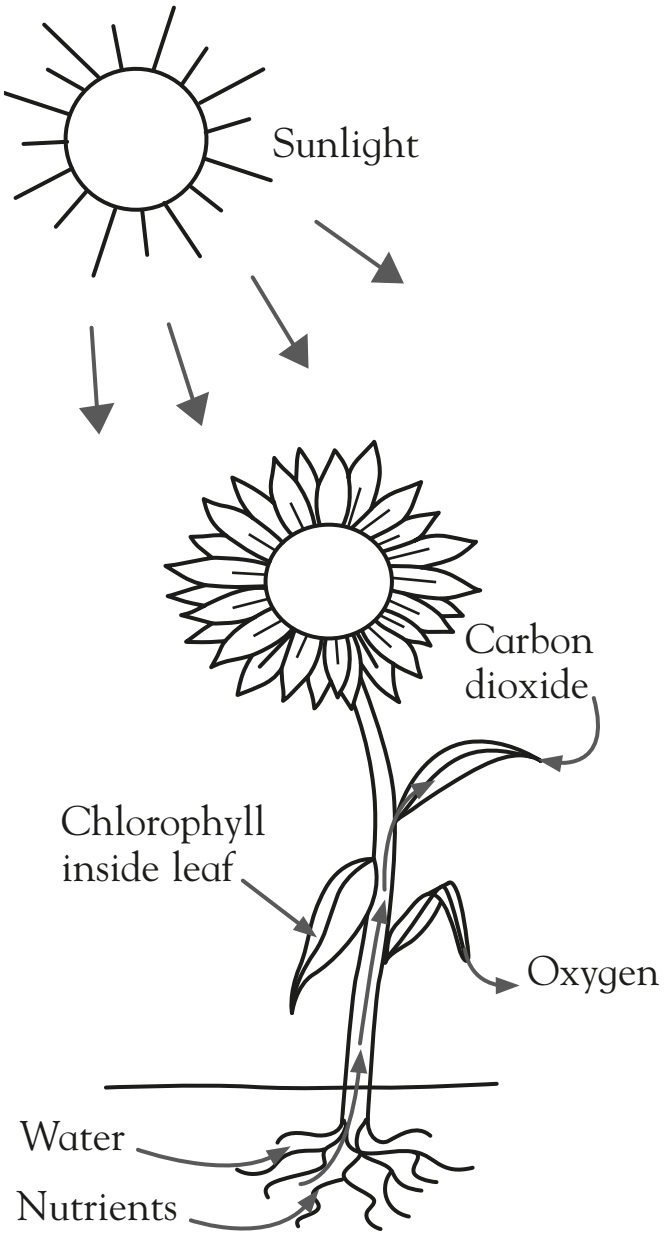
Photosynthesis

FACTS

Plants use the energy from sunlight to make food from carbon dioxide and water in a process called photosynthesis. Most food is made in the leaves.

Use the words in the box to complete the sentences.

Carbon dioxide	Chlorophyll	Food	Nutrients
Oxygen	Sunlight	Water	



1. Plants use energy from ..... to make food.

2. A green substance in leaves, called ....., traps the energy.

3. ..... enters the plant through tiny holes on the underside of the leaves.

4. The roots supply..... and ..... .

5. .....travels from the leaf to all parts of the plant.

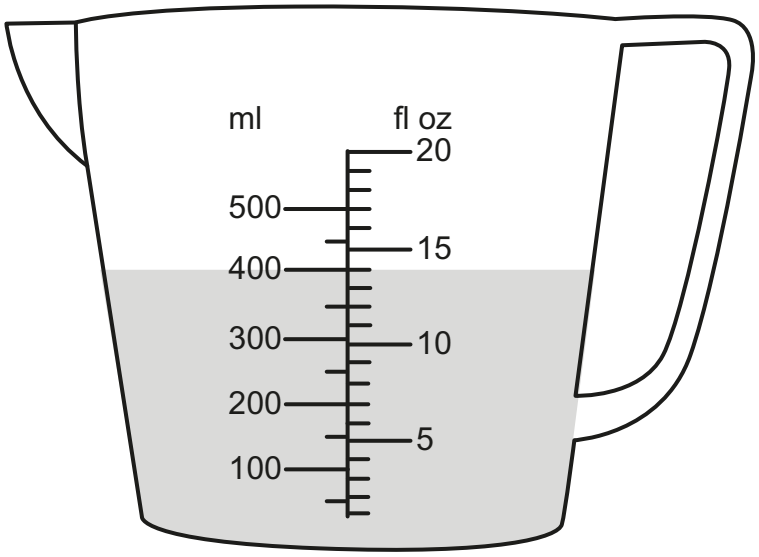
6. .....is released from the leaf through holes in the underside.

Measuring Liquids

FACTS

Liquids can be measured in pints and fluid ounces (fl oz), or liters and milliliters (ml).

Study the measuring cup of water and then answer the questions.



1. How much water is in the measuring cup, in milliliters?

2. How much water is in the measuring cup, in fluid ounces?

3. How many fluid ounces is 200 ml equal to?

4. One pint is 20 fl oz and half a pint is 10 fl oz.
How many milliliters is 10 fl oz?

5. One liter is 1,000 ml, so half a liter is 500 ml.
How many fluid ounces is 500 ml?

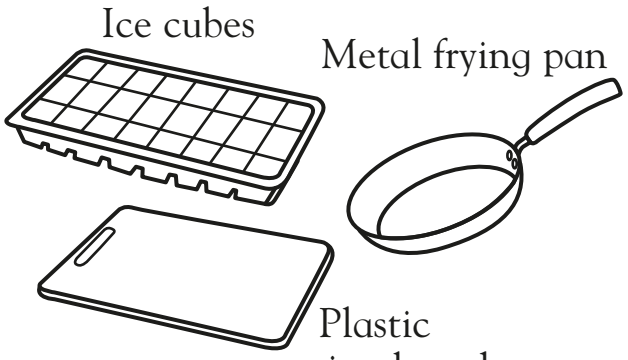
6. How many milliliters is 5 fl oz?

Conduction

FACTS

Conduction is one way that heat moves through a material. Some materials, like metals such as steel and aluminum, conduct heat well. Other materials do not conduct heat well.

TEST **What You Need:**



What To Do:

1. Press your hand against the surface of the frying pan and then the surface of the cutting board. In the table below, describe how each one feels to the touch.
2. Ask yourself what would happen if you placed an ice cube on both surfaces? Would the ice cube on the board melt first, or the ice cube in the pan? Make a prediction and put a check (✓) on the table next to the surface you think will melt the ice cube quicker.
3. Test your prediction. Place an ice cube on each surface and observe what happens.

RESULT

Material	How Does it Feel?	Predicted Result	Result
Metal pan			
Plastic board			

Look at the table and explain the result.

.....

.....

.....

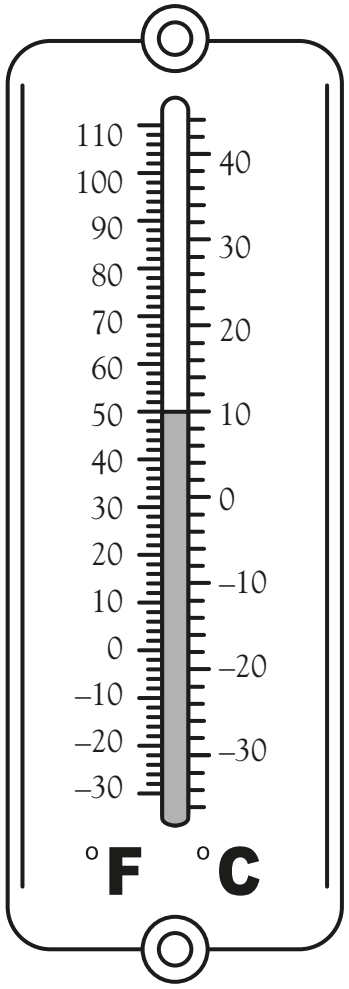
.....

Thermometer

FACTS

A thermometer is an instrument used to measure temperature. This may be measured in degrees Fahrenheit (°F), or degrees Celcius (°C).

Study the thermometer and then answer the questions.



1. What is the temperature reading in degrees Fahrenheit?

2. What is the temperature reading in degrees Celsius?

3. How many degrees Fahrenheit is 40°C?

4. How many degrees Celcius is 100°F equal to?

5. How many degrees Celcius is –22°F equal to?

6. How many degrees Fahrenheit is 0°C equal to?

7. How many degrees Celcius is 0°F equal to?

8. How many degrees Fahrenheit is 20°C equal to?

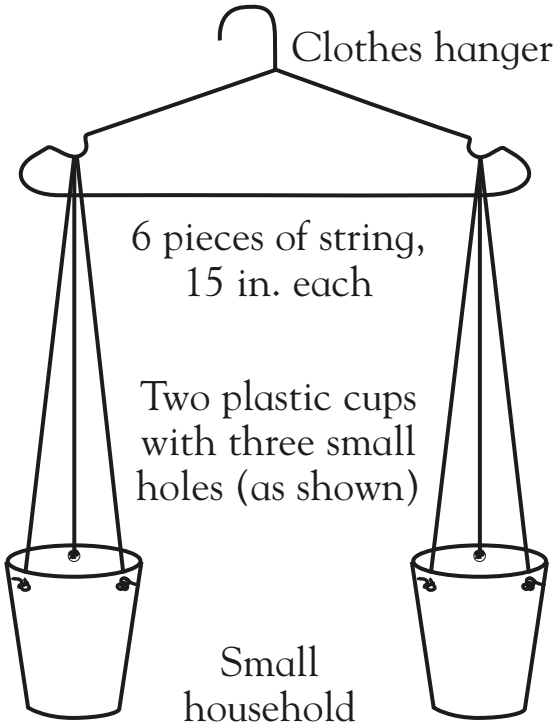
Mass

FACTS

Matter is the name used to describe all the different material that makes up the universe. The amount of matter in an object is called its mass. The amount of space that matter takes up is called its volume.

TEST

What You Need:



What To Do:

1. Thread one end of a 15 in. length of string through a hole in one cup and tie it. Repeat for the other two holes.
2. Tie together the loose ends of the three pieces of string, then hang from one end of the hanger.
3. Repeat these steps for the other cup to make a balance.
4. Hang the balance from a doorknob. The bottom of the cups should be level, and hover above the floor.
5. Add items to each cup and compare their mass. An item with greater mass will weigh a cup down more than an item with less mass.

RESULT

Predict which items have more mass. Were your predictions correct?

Item in Left Cup	Item in Right Cup	Prediction of Result	Result

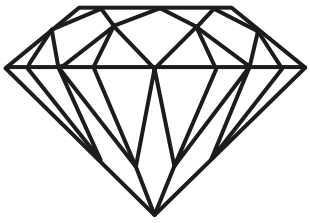
The Elements

FACTS

An element is a natural substance that cannot be broken down into any simpler ingredients. Scientists have discovered more than 100 elements in the universe.

Name the element found in each of the objects below, using the words in the box.

Aluminum	Carbon	Gold	Helium
Iron	Mercury	Silver	



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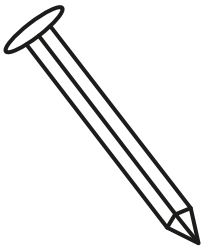

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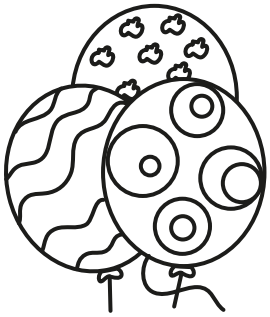

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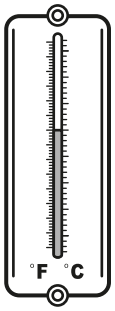

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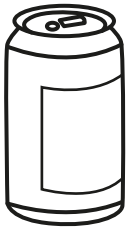

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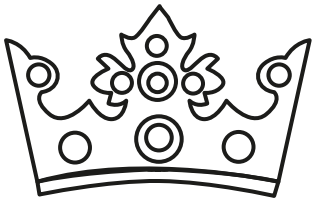

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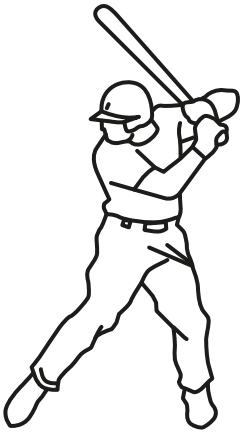
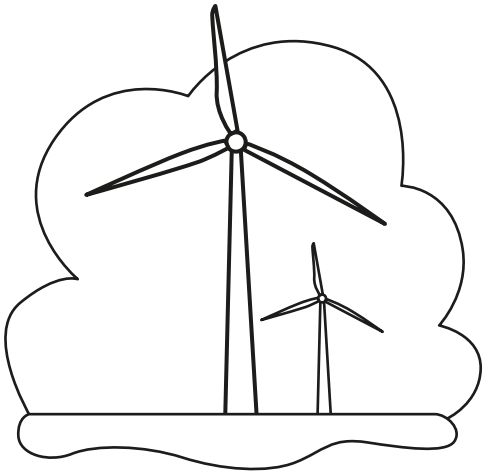
Energy

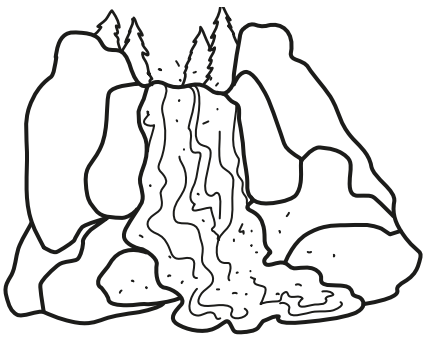
FACTS

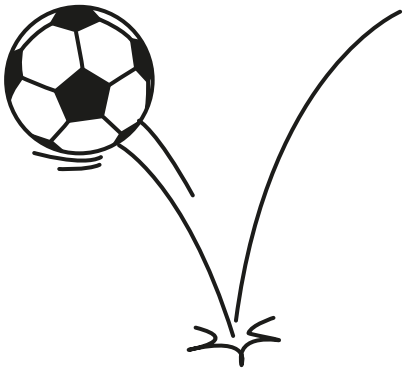
Energy is what makes things happen. Kinetic energy is the energy of movement. A speeding rocket contains kinetic energy. Potential energy is the energy that a still object has because of its position. A diver standing on a board has potential energy because of her height above the water. When the diver dives, her potential energy changes to kinetic energy.

Write **P** in the box next to each picture of potential energy and **K** in the box next to each picture of kinetic energy.





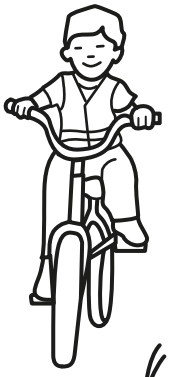
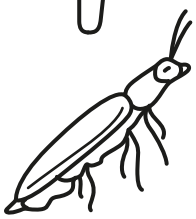
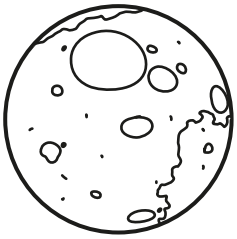
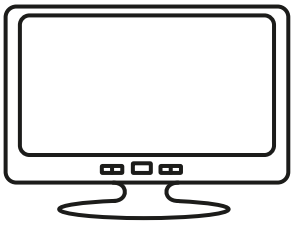


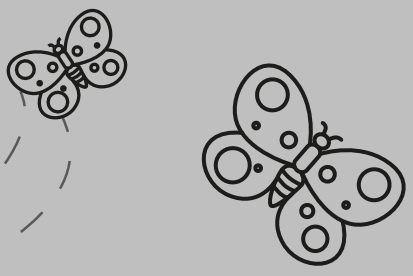


FACTS

Light enables us to see a bright and colorful world. Light travels in straight lines, called rays. Light bulbs and the sun are sources of light. They make light. Mirrors and many other objects reflect light. They do not make light.

Look at the pictures and put a check (✓) in the correct box, to indicate if it is a source of light or if it reflects light.

	Source of Light	Reflects Light
 Safety strips	☐	☐
 Firefly	☐	☐
 Moon	☐	☐
 Candle	☐	☐
 T.V.	☐	☐



Certificate

3rd Grade

Congratulations to

.....

for successfully finishing this book.

GOOD JOB!

You're a star.

Date

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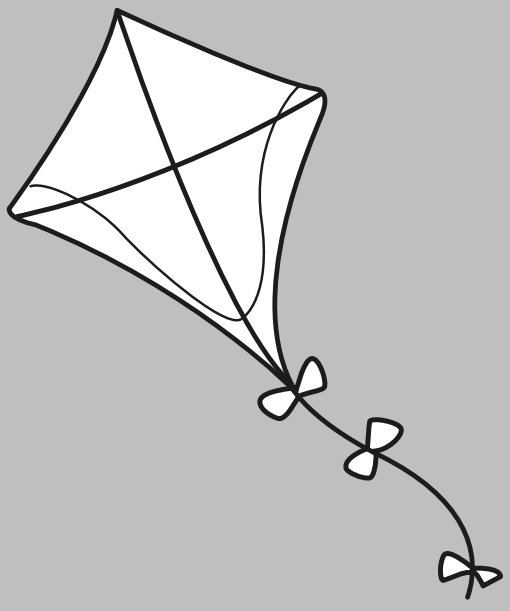


Answer Section with Parents' Notes

The aim of this book is to introduce basic literacy, numeracy, and science concepts to your child. These activities are intended to be completed by a child with adult support.

How to Help Your Child

As you work through the pages with your child, make sure he or she understands what each activity requires. Read the facts and instructions aloud. Encourage questions and reinforce observations to build confidence and increase active participation at school.

If an activity seems too challenging, encourage your child to try another page. Be sure to praise progress made as a page is completed, a correct answer is selected, or a thoughtful response is given. If they are getting answers wrong, then encourage them to try again another time as needed. Above all, remember to have fun!

Spelling and Language Arts Pages

The spelling pages of the workbook are designed to help your child understand the concepts of spelling and the decoding of words, which will build his or her skills in understanding word meanings, reading, and writing sentences. The language arts pages gives children the opportunity to work with different types of words. They are a starting point for awareness and instruction in your child's everyday life. To build language skills, provide access to a variety of fiction and nonfiction texts. Read together and discuss what you read. Encourage them to write letters to family members, and write narratives about personal experiences by keeping a journal. Celebrate our language with your child every day.

Math Pages

These pages will assist children studying math at third-grade level. Your child's reading ability may not be up to the level of some of the more advanced math words, so be prepared to assist. Working with your child also has great benefits in helping you understand how he or she is thinking and reasoning, so that areas of difficulty for your child can be more easily determined. When appropriate, use props to help your child visualize the solutions—for example, find objects to measure around your house.

Science Pages

These pages include various types of written activities and hands-on activities that can be assembled from simple, safe-to-use household items. The hands-on activities are designed not just to test your child's knowledge, but also to give him or her practice in the basic skills of scientific investigation—following a plan, making observations and predictions, recording data, and drawing inferences and conclusions. Your child will need guidance from you in many of these activities. The notes at the end of the book will assist you in that, and also contain additional information, activity ideas, and critical thinking questions that can help make science an enjoyable educational experience.

4

Silent Letters

FACTS

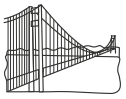
Some words include silent letters. You do not hear the sound of those letters in the words. Examples of silent letters are the letter **b** in "lamb" and **k** in "knife."

Read the poem below. Circle the four words that have silent letters.

Silent letters help spell words.
They don't make a sound, you (know,)
Like the **k** in ("knee") and ("knob,")
And the **w** in ("grow!")

In the box below are words with silent letters. Choose the correct word to complete each sentence.

science thumb bowl knit bridge sign lamb knife



A young sheep is called a lamb.

We had to cross the bridge to get to the park.

While playing volleyball yesterday, Sam hurt her thumb.

I had a bowl of soup for dinner last night.

Zack used a knife to spread butter on the bread.

The sign in the store window says "Open."

Since childhood, Allen's favorite subject has been science.

My grandmother loves to knit sweaters for me.

Cut out a comic strip from the newspaper. Ask your child to find and circle words that have silent letters. Ask him or her to read the words aloud. Help your child with any pronunciation he or she is unsure of.

5

The Schwa Sound

FACTS

The schwa sound is an unstressed sound pronounced as "uh," as in the first syllable of the word "above." Every vowel can make the schwa sound.

Use the words below to fill in the box, based on the vowel that makes the schwa sound in each of them.

about garden circus above open
the easily carnival soda bacon
family lemon apron success public

a	e	i	o	u
about	garden	family	lemon	circus
soda	the	easily	apron	success
above	open	carnival	bacon	public

The names of the animals below contain a schwa sound. Read each clue and unscramble the letters to spell the animal's name.

an animal with stripes	barez	zebra
a black-and-white bear	aapnd	panda
the fastest cat	eethach	cheetah
an extinct reptile	ioaudnsr	dinosaur
a large ape	oiallgr	gorilla
a hairy spider	trntlaaua	tarantula

Review the schwa sound in words such as "kingdom," "garage," "gasoline," "ago," and "salad." You can make picture cards for words containing the schwa sound, too.

6

Syllables

FACTS

A syllable is a letter or group of letters representing a vowel sound. It may or may not contain one or more consonants. Dividing words into syllables is called syllabication.

Read the words below aloud. Count the number of syllables in each word and then write each word under the correct heading in the table.

quality cough cry empty gopher
closed butterfly enough ordinary walked hurry
helicopter certificate probably spectacular paragraph

1 Syllable	2 Syllables	3 Syllables	4 Syllables
closed	enough	butterfly	helicopter
cough	empty	quality	certificate
cry	hurry	probably	ordinary
walked	gopher	paragraph	spectacular

Choose a word from above to complete each sentence below.

The school play was spectacular!

Did you ever ride in a helicopter?

So far I have written one paragraph.

A gopher is a rodent that builds tunnels underground.

I will probably miss practice tomorrow because of my cough.

They received a special certificate for their science project.

Play a game by saying words aloud and then asking your child to tell you the number of syllables in each word.

7

Counting Syllables

FACTS

Dividing words into syllables makes it easier to read, understand, remember, and spell words.

Count the syllables in the name of each month. Write the number of syllables next to each word.

January	4	May	1	September	3
February	4	June	1	October	3
March	1	July	2	November	3
April	2	August	2	December	3

Read the words below aloud. Then divide each word by drawing a line between each of its syllables. Write the number of syllables in each box.

won/der/ful 3	note/book 2	al/pha/bet 3
bas/ket/ball 3	go/ril/la 3	cal/en/dar 3
air/plane 2	earth/quake 2	bare/foot 2
ze/bra 2	birth/day 2	gi/raffe 2
li/on 2	el/e/men/ta/ry 5	an/oth/er 3
kan/ga/roo 3	mi/cro/chip 3	vi/ta/min 3
com/pu/ter 3	prac/tice 2	some/time 2
dol/phin 2	slip/per/y 3	a/part/ment 3
sand/wich 2	a/bout 2	un/der/stand 3

Play a game in which you give clues to a word by making statements such as "I am thinking of a word that has four syllables and is a subject you study in school." Your child has to tell you the word ("mathematics"). You can also switch roles.

8

Commonly Used Words

FACTS

Commonly used words are also called sight words. The best way to remember how to spell those words with irregular spellings is to practice writing them repeatedly.

around	contain	enough	language	object	solution
because	country	example	laugh	phrase	squirrel
found	decided	explain	machine	produce	thought
brought	different	fault	material	quickly	question
night	today	include	mean	scientist	which

Read the commonly used words in the box above. Choose a word from the box to complete each sentence below.

We finally had enough information to write the report.

We saw a squirrel running around the attic.

I would like to learn to speak another language.

Can you explain how you solved that problem?

Dad brought a football to the picnic.

It was difficult to find an answer to Joe's question.

We decided to stay home when it started to rain.

My brother wants to become a scientist.

You need a passport to go to another country.

Everyone began to laugh when Zoe cracked a joke.

Discuss words on the list that have more than one meaning, such as "mean," "object," and "solution." Use the words in sentences to explain their different meanings.

9

Commonly Used Words

FACTS

You should know commonly used words by sight. It is useful to be able to read the words automatically, because many of them are not spelled as they sound.

about	better	bring	carry	clean	listen
done	draw	drink	eight	fall	tomorrow
full	got	grow	hold	hole	cried
probably	keep	mountain	match	light	long
much	myself	never	only	own	pick
seven	shall	show	numeral	small	start
melody	today	together	try	warm	write
travel	minutes	nothing	heard	fight	brilliant
north	south	evening	oval	circle	across

Choose words from the box above that match each word or phrase below.

not cool	warm	attempt	try
number	numeral	sketch	draw
tune	melody	take a trip	travel
begin	start	choose	pick
egg-shaped	oval	completed	done
sobbed	cried	a round shape	circle
get bigger	grow	not heavy	light
reveal	show	argue	fight
not short	long	not dirty	clean

Write sentences with incorrect spellings on a piece of paper. For example, "Did you wright the numerol aight?" Ask your child to circle the mispelled words and write them correctly.

10

Homophones

FACTS

Homophones are words that sound the same but have different meanings and often different spellings, too.

Choose the correct homophone from the box to complete each sentence below.

flea	flee	dear	deer	rap	wrap
scent	cent	herd	heard	ring	wring
rain	rein	tail	tale	flower	flour
threw	through	some	sum	red	read

We saw a deer at the park today.

Many people had to flee their country during the war.

The ground was dry because it did not get any rain.

The children ran through the hall like a herd of elephants.

We should each carry a flower to the spring concert.

I love the fairy tale called *Beauty and the Beast*.

Dad sprinkled flour on the counter and rolled out the dough.

May I have some cookies with the milk, please?

The skunk defends itself by releasing a strong scent.

Andrew used bright red paper to wrap the present.

My mother gave me a silver ring.

Write homophones on index cards. Shuffle them and ask your child to identify the correct pairs.

11

Rhyming Words

FACTS

Words that have the same ending sound are called rhyming words. Often, the ends of these rhyming words are spelled differently.

Read the words in the box. Then write each one under the word it rhymes with in the smaller boxes below.

pear	could	floor	bait	would	flew	bare	store
learn	tough	flight	rough	threw	plate	puff	straight
tear	turn	shore	height	burn	might	stood	knew

door	stuff	bite	earn
floor	tough	height	learn
shore	rough	flight	turn
store	puff	might	burn

date	good	wear	blue
bait	could	pear	knew
plate	stood	tear	threw
straight	would	bare	flew

Find a word from above to complete each sentence below.

A word that means "dish" or "platter" and rhymes with "bait" plate

A word that means "coast" and rhymes with "floor" shore

A word that means "not crooked" and rhymes with "date" straight

A word that names a kind of fruit and rhymes with "bare" pear

A word that means "not smooth" and rhymes with "stuff" rough

Use words from above to write short silly rhymes. Read them aloud. For example, "The door of the store at the shore on the floor" or "I stood on the wood where I could be good."

12

Plurals

FACTS

Plural words are words that mean more than one person, place, or thing. Most plural words end in **-s**, **-es**, and **-ies**. When a singular word's last two letters are a consonant followed by **y**, change **y** to **ies** to make it plural. Add **s** when the last two letters are a vowel followed by **y**. For words ending with **s**, **sh**, **ch**, **x**, or **z**, add **es**. When a consonant is followed by an **o**, add **-es**.

Use the suffix **-s** or **-es** to make the plural form for each word below.

pig	pigs	piece	pieces	door	doors
box	boxes	month	months	inch	inches
watch	watches	beach	beaches	house	houses
ostrich	ostriches	window	windows	coach	coaches
pear	pears	groom	grooms	grape	grapes

Write the plural form of each word given below.

city	cities	boy	boys	peach	peaches
baby	babies	day	days	cave	caves
brush	brushes	dish	dishes	hero	heroes
video	videos	potato	potatoes	monkey	monkeys
pearl	pearls	globe	globes	hive	hives

Review the words from this page that have **-es**, **-ies**, or a change of the letter **f** to a **v** in their plural form.

13

Irregular Plurals

FACTS

Making the plural of a singular word does not always involve just adding **-s** or **-es**. Making the plural of some words requires spelling changes. For example, for most singular words ending with a single **f** or **fe**, change **f** or **fe** to **v** and add **-es.** These words are called irregular plurals.

Choose a plural word from the word box and write it next to its singular form below.

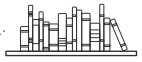
geese children wolves knives scarves oxen
men teeth mice shelves leaves calves

goose	geese	tooth	teeth
man	men	child	children
mouse	mice	ox	oxen
wolf	wolves	leaf	leaves
shelf	shelves	calf	calves
knife	knives	scarf	scarves

Choose a word from above to complete each sentence below.

Some birds, such as geese, fly south for the winter.

I organized the books on all the shelves.



At night we could hear wolves howling.

The children were tired after a long day out in the sun.

I bought my aunt a colorful scarf for her birthday.

Read sentences using words with incorrect plural forms aloud. Ask your child to identify the correct word. For example, "The gooses are in the park." and "The childs are on the swings."

14

Past Tense of Verbs

FACTS

The suffixes **-ed** and **-d** are added to most verbs to form the past tense. These verbs are called regular verbs.

For each present-tense verb in the first column, write its past-tense form in the second column. Then write the number of syllables in each past-tense verb in the third column.

Present Tense	Past Tense	Number
paint	painted	2
play	played	1
carry	carried	2
smile	smiled	1
report	reported	3
cook	cooked	1
arrive	arrived	2
ask	asked	1

Use a past-tense word from above to complete each sentence below.

Finally, the train arrived.

The band played jazz all night.

Dad cooked dinner for us.

Jack asked his mom for permission to attend the party.

Shannon carried her pet hamster in a cage to the vet.

Write some sentences that each include a verb in the present tense. Then invite your child to rewrite the sentences using the past tense.

15

Past Tense of Verbs

FACTS

Irregular verbs are spelled differently in the past tense. They do not follow the rule of adding just the suffix **-ed** or **-d**.

Circle the correct verb for each pair of sentences.

The pitcher catched (caught) the ball.
Then, he (threw) throwed the ball to first base.

The teacher sayed (said) to read the whole chapter.
She (left) leaved a note on the board.

The girl losed (lost) her backpack.
Then she (found) finded it in the gym.

We seed (saw) goats at the farm.
One goat drinked (drank) water from a bowl.

We flyed (flew) from New York to Texas.
My father slept) sleeped on the plane.

He goed (went) to the museum last Sunday.
He (felt) feeled tired on the train.

Read the sentences on this page aloud, using both the incorrect and correct verb, because it may be easier for your child to identify the correct verb by hearing it spoken.

16

Irregularly Spelled Words

FACTS

Many words are not spelled the way they are pronounced. These words have irregular spellings.

Read about Lily in the sentences below. Circle the word in each sentence that is spelled incorrectly. Then write the correct spelling of the word.

Lily was (knew) to her school. new

She had been (againsed) moving. against

But her father's company had moved (acros) town. across

He was a (lawya). lawyer

She was hoping to make new (freinds) at school. friends

Lily was good at math and (compleated) the multiplication problems quickly. completed

One day, she helped Pat (anser) her math problems. answer

The next day, she heard a (nock) on her door. knock

It was Kate. She had a math (qwestion). question

Lily helped her and (new) that she had made two friends. knew

Review your child's tests, homework, and workbook pages. In a notebook, keep track of words he or she spells incorrectly. Give your child a spelling test incorporating the regularly misspelled words that you find.

17

Reading and Comprehension

FACTS

Knowing the meanings of prefixes helps us to understand words.

Read the story and then answer the questions below.

Laura's father unlocked the cottage door. Whew, it was dusty! Laura was unprepared for all the dirt and dust. She had agreed to help her father get the cottage ready for the summer. She was unsure, however, that they could get all the work done in one weekend. Laura thought it would be fun, but she disliked getting dirty. She was excited about one thing: repainting the porch furniture. The next day, her father worked outside in the yard. She helped him. They had to replant the flowers that were overgrown with weeds. She had to dig up the flowers carefully, and he replanted them. When they finished, they were covered in mud.
"That was a muddy job," her dad said. "We'll repaint the furniture tomorrow!"

Find words from the story that contain prefixes, and write them under the prefix headings in the columns below.

un-	re-	dis-	over-
unlocked unprepared unsure	repainting replant replanted repaint	disliked	overgrown

Fill in the blanks.

Where does the story take place? at the cottage

Who goes to the cottage? Laura and her father

What is Laura excited about? repainting the porch furniture

Why might the cottage need so much work? Answers may vary

Answers may vary

Help your child to create a mini book of prefixes. Fold a piece of construction paper in half to make the cover. Insert several pieces of white paper cut to size. On each page, write a word that has a prefix. Make sure you use a different prefix on each page.

18

Reading and Comprehension

FACTS

Careful reading of written text helps you spot errors, such as spelling mistakes.

Read the text carefully, and answer the questions below.

Spectacular Spiders

Many people fear spiders, but these creepy-crawly creatures are not all harmful. In fact, some spiders contain poisson that helps cure diseases. Spiders have eihgt legs and can feel vibrations through the tiny hairs on their legs. Most spiders eat insects and are skilled at builting intricate webs. They watch and weight for the web to vibrate, which means that the prey has been captured.

Not everyone dislikes spiders. Some people like spiders enough to keep them as pets. A favorite pet spider is the tarantula. It can live up to 25 years in captivity. People eat spiders, too! In Southeast Asia, street vendors sell fried spiders. Do you feel like a snack? Some people say fried spiders taste nutty, like peanut butter.

Four words in the first paragraph above are spelled incorrectly. Find the words and write their correct spellings in the blanks below.

poison eight building wait

Write any four words that contain suffixes. Answers may vary

creepy crawly nutty harmful

Complete these sentences with words from the text above.

The word that means "to be caught" is captured.

Some people keep spiders as pets.

When an insect is caught in a spider's web, the web will vibrate.

Tarantulas can live up to 25 years in captivity.

Encourage your child to read *Diary of a Spider* by Doreen Cronin. It is a humorous story narrated by a spider that shares spider facts and safety tips, such as "Never fall asleep in a shoe."

19

Reading and Comprehension

FACTS

Recognizing correctly spelled words and understanding their meanings help you get the most out of a piece of writing.

Read the text. Then answer the questions below.

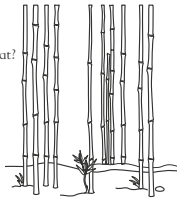
Giant Pandas

Giant pandas are bears with black-and-white fur. They have short hind legs and pigeon-toed feet. They cannot run quickly. Instead, they move along on their front paws. As they take a step, their whole foot touches the ground. That is similar to the way other bears and humans walk. Other animals, such as dogs and cats, walk on their toes.

Pandas live in the forests of China. They need to live in places where bamboo grows. They eat an amazing amount of it—about 30 pounds a day! They can peel, chew, and swallow a bamboo stalk in 40 seconds. In the past few years, pandas have had trouble finding enough food. They used to be able to migrate to other forests to find bamboo. But this has become difficult. Why? People have been building farms and homes in the panda's habitat. Scientists are trying to find ways to protect giant pandas.

Which word in the third sentence contains a suffix?

quickly



Which word from the story names a panda's habitat?

forests

Which word from the story means "surprising"?

amazing

Circle the word below that means "migrate."

run climb (move)

Discuss terms from the text that may be unclear to your child, such as, "pigeon-toed feet," "bamboo," and "migration." Encourage him or her to read *The Year of the Panda* by Miriam Schlein. It is a story of a Chinese boy who rescues a starving panda.

20

Prefixes

FACTS

Adding a prefix to the beginning of a word changes the meaning of the orignal word.

Look at each set of words. Based on the meanings of the words, write what you think each prefix means.

agree — disagree
appear — disappear

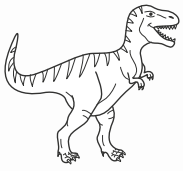
Dis- means not

read — misread
spell — misspell

Mis- means wrong/wrongly

fill — refill
send — resend

Re- means again



possible — impossible
proper — improper

Im- means not

kindergarten — prekindergarten
historic — prehistoric

Pre- means before

Have your child talk out the answers before writing. For example, your child might say, "'Disagree' means 'not to agree,' and 'dislike' means 'not to like,' so 'dis' must mean 'not.'"

21

Suffixes

FACTS

Adding a suffix to the end of a word changes the meaning of the original word.

Look at each set of words. Based on the meanings of the words, write what you think each suffix means.

care — careful
pain — painful

-ful means full of

care — careless
fear — fearless

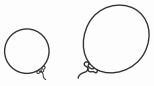
-less means without

bake — baker
teach — teacher

-er means one who does something

low — lowest
high — highest

-est means most



big — bigger
small — smaller

-er means more

Have your child talk out the answers before writing them. For example, your child might say, "'Careless' means 'without care,' and 'fearless' means 'without fear,' so 'less' must mean 'without.'"

22

Subject and Predicate

FACTS

The subject of a sentence tells who or what the sentence is about. The simple subject is usually a single noun. The predicate of a sentence tells what the subject is or does. The simple predicate is usually a single verb.

Draw one line under the subject of each sentence.
Draw two lines under the predicate of each sentence.
Circle the simple subject and the simple predicate.

(Erica) (knitted) a wool scarf.

My (grandfather) (collects) toy trains.

(Jason) (went) to the beach.

The fluffy (cat) (stretched) its legs.

(Minnesota) (has) many lakes.

The crooked (swing) (hangs) from the tree.

The jolly (farmer) (sang) while he worked.

The soccer (fans) (shouted) loudly when their team scored.

(Sally Ride) (was) the first American woman in space.

The (capital) of Colorado (is) Denver.

Be sure your child is comfortable with this concept before moving on to the next activity.

23

Subject and Predicate

FACTS

Sometimes a sentence can have a compound subject, or more than one subject. A sentence can also have a compound predicate.

Read each sentence. Determine whether the underlined part of each sentence is a compound subject or a compound predicate. Some sentences have both! Circle the correct answer.

John **and** Tara enjoy swimming in the summer.
(Compound subject) | Compound predicate | Both

Mary opened her locker **and** looked for her science book.
Compound subject | (Compound predicate) | Both

The train will stop in Philadelphia **and** continue on to Baltimore.
Compound subject | (Compound predicate) | Both

Tom **and** his dad went fishing in the creek.
(Compound subject) | Compound predicate | Both

Jack **and** Mary spoke with the teacher and the principal.
(Compound subject) | Compound predicate | Both

Birds **and** butterflies are pretty to see **and** help flowers grow.
Compound subject | Compound predicate | (Both)

The actors **and** the dancers performed wonderfully **and** made the audience clap and cheer.
Compound subject | Compound predicate | (Both)

For fun, have your child compose a wacky sentence with long compound subjects and predicates.

24 Choosing Words

FACTS

Writers look for words that will make their writing interesting and give more information.

Read the words in the word gallery. Choose two words from each set and write a sentence with the words. If you are not sure exactly what each word means, use a dictionary to find the meaning.

Instead of "good," use:

delightful excellent admirable splendid satisfying talented

Instead of "bother," use:

annoy pester trouble disturb nag

Answers may vary

Answers may vary

Instead of "go," use:

flee run escape plod wander scurry roam

Answers may vary

Check your child's sentences to ensure proper spelling, punctuation, and word usage.

25 Similes

FACTS

Similes are phrases that compare one thing to another using the words "like" or "as."

Complete the similes in each sentence using one of the words from the word bank.

fish honey lion mice peacock tack

Justin swam like a fish.

The thorns on the rose were as sharp as a tack.

My dog thinks he is as powerful as a lion.

You should be as proud as a peacock of all the work you have done.

Let's be quiet like mice while the baby sleeps.

The poem that Sam wrote his mom for Mother's Day was as sweet as honey.

Invite your child to play with creating similes.

26 Adverbs

FACTS

An adverb describes a verb (an action or state of being). It tells how, where, when, how often, and why something is done.

In each sentence, underline the adverb. Then circle the verb it describes.

The fox (ran) quickly into its den.

I (swallowed) the medicine easily.

The actor (performed) well.

The patient (rested) comfortably in bed.

Theo accidentally (tripped) on the stairs.

I will (read) that book soon.

Sandra usually (walks) to school.

The soccer player never (misses) a practice.

The snake (hid) underground.

The class (waited) impatiently for the bell to ring.

Ask your child to explain why a writer would want to use adverbs.

27 Conjunctions

FACTS

A conjunction is a word that is used to join sentences, ideas, phrases, or words.

Choose the conjunction from the conjunction bank that best completes each sentence.

and but or so because unless

We won't go to the baseball game unless it stops raining.

Hannah is good at drawing, and she has won many drawing contests.

I like chocolate, but I prefer vanilla.

Dave forgot to put on sunscreen, so he got a sunburn.

Do your chores, or you won't get to play outside.

I am going to bed because I am tired.

Write three sentences using conjunctions.

Answers may vary

Answers may vary

Answers may vary

Check the sentences to ensure that conjunctions are used correctly.

28

Times Tables

GOAL

Learn the multiplication facts for 3, 4, 6, and 8.

Write the missing number in each box.

3 x 1 = 3	4 x 1 = 4	6 x 1 = 6	8 x 1 = 8
3 x 2 = 6	4 x 2 = 8	6 x 2 = 12	8 x 2 = 16
3 x 3 = 9	4 x 3 = 12	6 x 3 = 18	8 x 3 = 24
3 x 4 = 12	4 x 4 = 16	6 x 4 = 24	8 x 4 = 32
3 x 5 = 15	4 x 5 = 20	6 x 5 = 30	8 x 5 = 40
3 x 6 = 18	4 x 6 = 24	6 x 6 = 36	8 x 6 = 48
3 x 7 = 21	4 x 7 = 28	6 x 7 = 42	8 x 7 = 56
3 x 8 = 24	4 x 8 = 32	6 x 8 = 48	8 x 8 = 64
3 x 9 = 27	4 x 9 = 36	6 x 9 = 54	8 x 9 = 72
3 x 10 = 30	4 x 10 = 40	6 x 10 = 60	8 x 10 = 80
3 x 11 = 33	4 x 11 = 44	6 x 11 = 66	8 x 11 = 88
3 x 12 = 36	4 x 12 = 48	6 x 12 = 72	8 x 12 = 96

Memorizing the times tables is essential in third grade. It is crucial to children's understanding of future math concepts, including division. Explain that when multiplying or adding, the numbers may appear side by side or above and below each other.

29

More Times Tables

GOAL

Learn the multiplication facts for 7, 9, 11, and 12.

Fill in the missing numbers to complete the times tables.

7 x 1 = 7	9 x 1 = 9	11 x 1 = 11	12 x 1 = 12
7 x 2 = 14	9 x 2 = 18	11 x 2 = 22	12 x 2 = 24
7 x 3 = 21	9 x 3 = 27	11 x 3 = 33	12 x 3 = 36
7 x 4 = 28	9 x 4 = 36	11 x 4 = 44	12 x 4 = 48
7 x 5 = 35	9 x 5 = 45	11 x 5 = 55	12 x 5 = 60
7 x 6 = 42	9 x 6 = 54	11 x 6 = 66	12 x 6 = 72
7 x 7 = 49	9 x 7 = 63	11 x 7 = 77	12 x 7 = 84
7 x 8 = 56	9 x 8 = 72	11 x 8 = 88	12 x 8 = 96
7 x 9 = 63	9 x 9 = 81	11 x 9 = 99	12 x 9 = 108
7 x 10 = 70	9 x 10 = 90	11 x 10 = 110	12 x 10 = 120
7 x 11 = 77	9 x 11 = 99	11 x 11 = 121	12 x 11 = 132
7 x 12 = 84	9 x 12 = 108	11 x 12 = 132	12 x 12 = 144

Children should aim to be able to automatically associate certain factors with their products, such as 7, 8, and 56, or 5, 9, and 45. Practice mental math, use flash cards, or call out verbal problems to see how many math facts they can respond to in one minute.

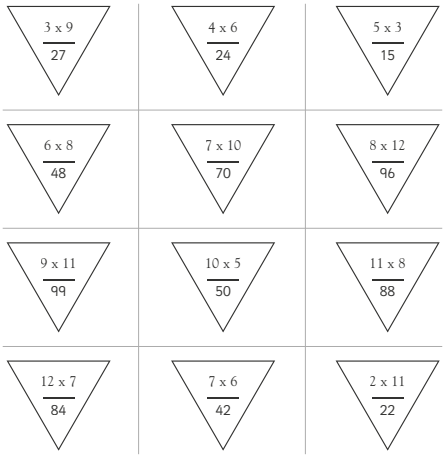
30

Practice Times Tables

GOAL

Practice multiplication facts.

Multiply the numbers at the top of each triangle.
Write the answer under the line.



Explain to children that multiplication problems, like addition and subtraction problems, can be shown both horizontally and vertically.

31

More Multiplication

GOAL

Learn to multiply by two-digit numbers by multiplying by the tens and ones separately, and then adding the answers.

5 x 15 = 75 | Step 1: 5 x 10 = 50 | Step 2: 5 x 5 = 25 | Step 3: 50 + 25 = 75

What is the product of each multiplication equation? **Remember**: Multiply by the tens and ones separately and add their answers.

	Step 1	Step 2	Step 3
5 x 21	5 x 20 = 100	5 x 1 = 5	100 + 5 = 105
3 x 14	3 x 10 = 30	3 x 4 = 12	30 + 12 = 42
2 x 22	2 x 20 = 40	2 x 2 = 4	40 + 4 = 44
5 x 33	5 x 30 = 150	5 x 3 = 15	150 + 15 = 165
2 x 63	2 x 60 = 120	2 x 3 = 6	120 + 6 = 126
4 x 13	4 x 10 = 40	4 x 3 = 12	40 + 12 = 52
6 x 18	6 x 10 = 60	6 x 8 = 48	60 + 48 = 108
8 x 52	8 x 50 = 400	8 x 2 = 16	400 + 16 = 416
9 x 32	9 x 30 = 270	9 x 2 = 18	270 + 18 = 288
7 x 42	7 x 40 = 280	7 x 2 = 14	280 + 14 = 294

Multiply single-digit numbers by three-digit numbers.

2 x 101 = 202 | 3 x 115 = 345 | 5 x 230 = 1,150

Breaking apart numbers and multiplying the tens and ones separately is a key strategy that will help children with mental math. For example, ask, "How much is 22 x 4?" They can work out 4 x 20 = 80 and 4 x 2 = 8, then add to find that the product is 88.

32

Division

GOAL

Learn to divide. The number you are dividing is called the dividend. The number you are dividing by is called the divisor. The answer is the quotient.

Dividend → 10 ÷ 5 = 2 ← Quotient
Divisor

Divide these 12 cookies into 4 sets. Now you have 4 sets of 3 cookies.
That is the same as 12 ÷ 4 = 3

There are three ways to show division:
1. $4\overline{)12}$ 2. 12 ÷ 4 3. 12/4

Figure out the answers to these division problems.

$3\overline{)9}$ = 3	$2\overline{)6}$ = 3	$7\overline{)56}$ = 8	$5\overline{)35}$ = 7
14 ÷ 2 = 7	18 ÷ 3 = 6	8 ÷ 2 = 4	45 ÷ 9 = 5
15/3 = 5	24/4 = 6	63/7 = 9	36/9 = 4

Read the problem. Then do the division to find the answer.

Ken was showing his friends 36 rocks in his collection. He gave an equal number of rocks to 9 friends in his class.

How many rocks did each student receive? 36 ÷ 9 = 4

Ensure that children become familiar with the three key terms used in division: The *dividend* is the number being divided, the *divisor* is the number that another number is being divided by, and the *quotient* is the answer, or number of times that the divisor will fit into the dividend.

33

More Division

GOAL

Learn to divide and find remainders.

Ms. Dolan had 5 books for 3 children. She gave one book to each child. How many books were left with Ms. Dolan?

5 ÷ 3 or 5/3 = 1R2 1R2 means 1 book per child, remainder 2

Answer the division questions below.
Show remainders where necessary.

$2\overline{)14}$ = 7	$10\overline{)20}$ = 2	$3\overline{)27}$ = 9	$7\overline{)42}$ = 6
$5\overline{)23}$ = 4R3 $-\underline{20}$ 3	$6\overline{)31}$ = 5R1 $-\underline{30}$ 1	$7\overline{)25}$ = 3R4 $-\underline{21}$ 4	$3\overline{)20}$ = 6R2 $-\underline{18}$ 2

Write the answers to these division questions.

60 ÷ 10 = 6	8 ÷ 4 = 2	44 ÷ 11= 4	28 ÷ 7 = 4
32 ÷ 4 = 8	56 ÷ 8 = 7	72 ÷ 6 = 12	63 ÷ 9 = 7

Answer these division questions.

12/3 = 4	24/6 = 4	83/9 = 9R2	48/8 = 6
66/3 = 22	15/6 = 2R3	40/8 = 5	64/8 = 8

Literature can often help children understand math concepts; a narrative can put math into context. Read a book like Pat Hutchins's *The Doorbell Rang* with your child, and discuss how using division will answer the question, "Will there be enough cookies for everyone?"

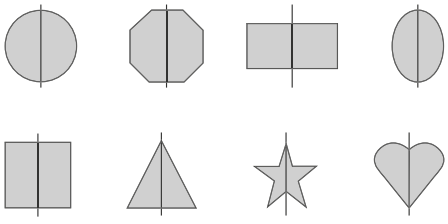
34

Half of a Shape

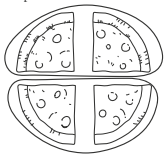
GOAL

Learn to divide shapes in half.
Half is shown as $\frac{1}{2}$, or one half.

Look at these shapes. Draw a line through each to show the shape divided into two equal halves.



This pizza is divided into quarters.
How many equal quarters does the pizza have? 4
Circle two shares of the pizza.



Reinforce the meaning of *one half* while cutting a piece of fruit, such as an apple or an orange, in half. When using the term *half*, explain that the two halves of an object are equal in size.

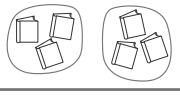
35

Half of an Amount

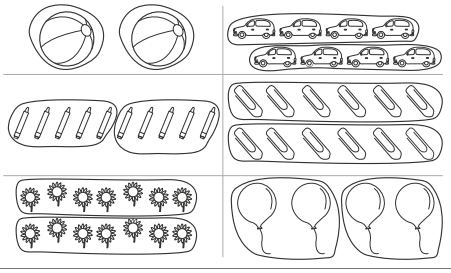
GOAL

Learn to divide amounts in half.

Circle two equal groups of books.
This is the same as dividing the collection of books into two halves.

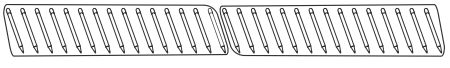


Look at the objects below. Circle two equal groups of each object.



Count the pencils below and write the total number. 30

Circle two equal groups of pencils. How many pencils are there in each group? 15



Counting objects and dividing them into equally sized groups is an effective way to reinforce the concept of division. Practice grouping and dividing up coins, dominoes, and other objects found around the house.

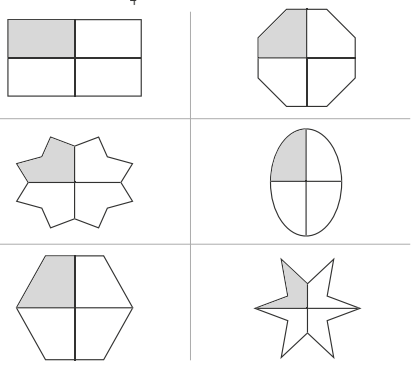
36

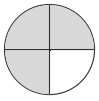
Quarters

GOAL

Learn quarters of shapes. A shape is divided into quarters when it is divided into four equal parts. One quarter is written as $\frac{1}{4}$.

Draw lines through each shape to divide it into four equal parts or quarters. Then color one quarter, or $\frac{1}{4}$, of each shape.





This circle is divided into four parts. Three of the four parts are shaded. How much of the circle is shaded? Circle the correct fraction.

$\frac{1}{2}$ $\frac{1}{4}$ $\frac{3}{4}$

When cutting a pizza or a cake, discuss how you are dividing it into parts or fractions—halves, quarters, sixths, and so on. Use everyday objects and situations to reinforce the concept that a half of something is larger than a quarter of something.

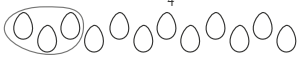
37

Quarters of Amounts

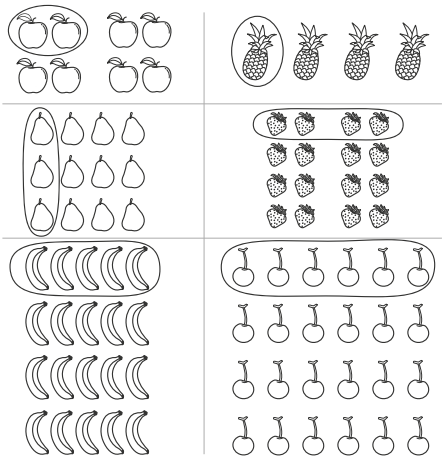
GOAL

Learn to find a quarter, or $\frac{1}{4}$, of amounts.

Count the eggs. Circle $\frac{1}{4}$ of the eggs.



Look at the groups of objects. Circle $\frac{1}{4}$ of the objects in each set.



Using objects around the home helps demonstrate fractions in a concrete way. To help reinforce fractions, provide dominoes, wooden bricks, or other objects and have children display the fractions featured on this page.

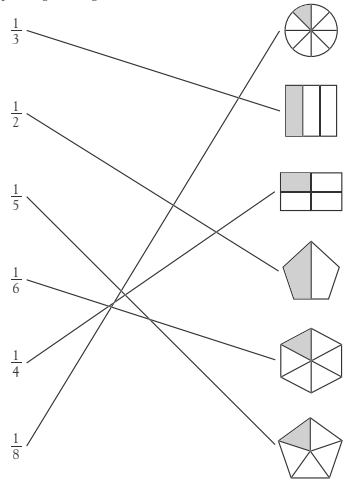
38

More Fractions

GOAL

Learn more about the fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, and $\frac{1}{8}$.

Read the fractions. Draw a line from each fraction to the shape that shows corresponding shading.



Let children find fractions of shapes, working with clay or pieces of paper. This will reinforce fractions for tactile learners. It also provides a clear understanding of fractions by illustrating them in a less abstract way.

39

Reducing Fractions

GOAL

Learn to reduce fractions. The top number of a fraction is called a numerator. The bottom number of a fraction is called a denominator. To reduce fractions, divide the numerator and denominator by the greatest common factor. The greatest common factor is the highest number both the numerator and denominator are divisible by.

$\frac{3}{4}$ ← numerator
$\frac{3}{4}$ ← denominator

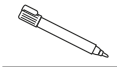
$\frac{2}{8} \div \frac{2}{2} = \frac{1}{4}$

Reduce these fractions.

$\frac{3}{9} = \frac{1}{3}$ $\frac{8}{10} = \frac{4}{5}$ $\frac{6}{18} = \frac{1}{3}$

$\frac{21}{36} = \frac{7}{12}$ $\frac{18}{27} = \frac{2}{3}$ $\frac{15}{30} = \frac{1}{2}$

Solve these word problems. **Remember:** Reduce the fractions in each problem.



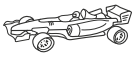
Jim had 25 markers. He gave 5 of the markers to Luke. What fraction of the markers did he give to Luke? $\frac{1}{5}$

Annie had 40 tulip bulbs. She planted 10 bulbs in front of the school building. She planted the others near the playground. Write the fraction to show how many of the bulbs she planted in the front.

$\frac{1}{4}$

Jenny is selling 36 headbands to raise money for a school trip. She sold 9 of them. What fraction of the headbands did she sell? $\frac{1}{4}$

Dan had 45 toy cars. He gave 9 to Jill. What fraction of his toy cars did he give her?



$\frac{1}{5}$

Understanding division and multiplication is key to finding the lowest common denominator. Reducing fractions helps children become proficient at working with large numbers and gain confidence in dividing.

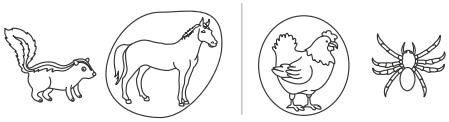
40

Estimating Mass

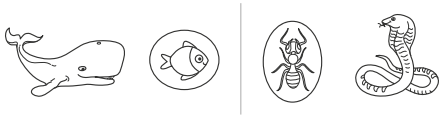
GOAL

Learn to estimate mass. To estimate means to make a good guess using clues. Mass is a measure of how much matter an object has. Weight is a measure of how strongly gravity pulls on that matter.

Circle the animal that is probably heavier in these pairs.



Circle the animal that is probably lighter in these pairs.



Circle the correct ending to each story.

Jack and John went to the farmers' market. Jack bought a bag of apples. John bought a bag of string beans. Both bags were the same size. The bag of apples probably weighed:

(more than the bag of string beans)
less than the bag of string beans
about the same as the bag of string beans

Ally and Laura carried books to the library. They each had five large books. Laura's books probably weighed:

(about the same as Ally's books)
more than Ally's books
less than Ally's books

Provide some word problems that will help children practice estimation. Explain that estimation is not guessing; it is a way to predict an amount based on information you know.

41

Mass Problems

GOAL

Learn to solve problems about mass and weight.

oz = ounce lb = pound g = gram kg = kilogram

1 lb = 16 ounces 1 kg = 1,000 grams

Read each problem and find the answer. Show your work in the box.

Grams and kilograms

One bag of sugar weighs 2 kg. How many kilograms is 4 bags of sugar? (8 kg)

A baseball has a mass of about 145 g. What is the mass of 10 baseballs? (1,450 g)

Mara's pumpkin has a mass of 2 kg. Selia's pumpkin has a mass of 3 kg. Whose pumpkin has the greater mass? (Selia's)
What is the difference in mass between the two pumpkins? (1 kg)

Ounces and pounds

Gary weighs 72 pounds. Tiko weighs 66 pounds. Ed weighs 68 pounds. How much do they weigh altogether? (206 pounds)

Gail bought a pumpkin. It weighs 320 oz. How many pounds is that? (20 pounds)

Reinforce skills when out shopping. For example, look at the weights given on packets of sugar, flour, or vegetables, and ask children to try and work out the total weight of the groceries you are buying. They may want to try estimating in these scenarios.

42

Estimating Volume

GOAL

Learn to estimate the volume of liquids.

Standard System

1 cup	=	$\frac{1}{2}$ pint	2 cups	=	1 pint
4 cups	=	1 quart	2 pints	=	1 quart
4 quarts	=	1 gallon	8 pints	=	1 gallon

Metric System (estimates)

1 cup	=	240 milliliters (mL)	2 cups	=	500 mL
1 pint	=	500 mL	4 cups	=	1 liter
1 quart	=	1 liter	2 pints	=	1 liter
4 quarts	=	3.7 liters	1 gallon	=	3.7 liters

Using the information in these charts, match the quantity in the first column to the estimated volume in the second column.

1 cup of tea	2 liters
1 gallon of juice	240 mL
1 pint of cream	3.7 liters
2 quarts of water	500 mL

In each row, circle the name of the person who has more.

(Jack) has 1 gallon of juice. — Julie has 1 quart of juice.

Maggie has 2 cups of milk. — (Milo) has 1 liter of milk.

(Arun) has 1 quart of water. — Annie has 500 mL of water.

A good way to reinforce measuring and quantities is to use the terms frequently when talking with children. You can also work on projects together, such as when baking, which involves using precise measurements.

43

Solving Volume Problems

GOAL

Learn to solve volume problems using measures in ounces, pints, quarts, and gallons.

Metric System (estimates)

1 teaspoon	=	5 milliliters (mL)			
1 cup	=	240 mL			
2 cups	=	500 mL			
1 pint	=	500 mL			
4 cups	=	1 liter	=	1,000 mL	
1 quart	=	1 liter	=	2 pints	
4 quarts	=	3.7 liters	=	1 gallon	

Using the information given above, solve these word problems.

Josh has a pitcher with 2 liters of juice. He uses 500 mL for breakfast. How much juice is left in the pitcher? (1,500 mL)

Jen needs 2 cups of frosting to make cupcakes. She has 1 liter of frosting. After using 2 cups, how much frosting will she have left? Circle the answer.

6 cups none (2 cups)

A container holds 10 mL of liquid. Circle the equivalent volume.

1 cup 1 pint (2 teaspoons)

Kip has to buy 20 liters of soda for a party. How many 2-liter containers should he buy? Circle the answer.

(10 2-liter containers) 5 2-liter containers

Make sure children understand the problem. As they read it, highlight key information. After they solve the problem, ask them to read their answer in the form of a sentence; for example, "After using 2 cups of frosting, Jen will have 2 cups of frosting left over."

44 Looking at 2-D Shapes

GOAL

Learn to recognize two-dimensional (2-D) shapes.
Two-dimensional shapes are made up of straight or curved lines.
All the lines are connected.

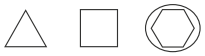
Circle the shape that has three sides.

Figure out the answers to these questions on shapes.

Circle the shape with four sides that are equal in length.

Circle the shape that has four sides, with two sides shorter than the other two.

Circle the shape that has six sides.



Circle the shape that has more than three sides.

How many sides does a triangle have? Circle the answer.

2 (3) 6

How many sides does a pentagon have? Circle the answer.

2 (5) 6

How many sides do each of these shapes have? Write the answer in the box.


Rectangle 4


Square 4


Triangle 3


Hexagon 6


Octagon 8


Pentagon 5

Review the definition of 2-D shapes. Ask children to draw a square on a sheet of paper. Cut out the square. Explain that the square is a flat shape, made up of lines and corners.

45 2-D and 3-D Shapes

GOAL

Learn about 2-D and 3-D shapes. Edges are the sides of a shape.
Faces are flat surfaces of shapes.

2-D shapes are flat shapes that have width and length.

Circle	Square	Triangle	Rectangle	Oval
0 sides	4 sides	3 sides	4 sides	0 sides

Pentagon	Hexagon	Heptagon	Octagon	Right triangle
5 sides	6 sides	7 sides	8 sides	3 sides

3-D shapes have height, width, and depth.

Sphere	Cube	Cylinder	Cone
0 flat faces: no edges or corners	6 flat faces: all the same size	2 flat faces	1 flat face

Triangular prism	Triangular-based pyramid	Square-based pyramid	Octagonal prism
5 faces: 2 triangular, 3 squares or rectangles	4 faces: all triangular	5 faces: 4 triangular, 1 square	10 faces: 2 octagons, 8 squares or rectangles

Based on the information above, circle the correct answer to each question.

Which shape has more edges? Square (Octagonal prism)

Which shape has 6 flat faces with all the same size? Square (Cube)

Review the fact that 2-D shapes are flat. Draw a square and a cube, then compare them. Point out that the 3-D cube has faces and edges—it has depth, as well as height and width. Discuss other 3-D shapes, such as cylinders and pyramids.

46 Rectangular Arrays

GOAL

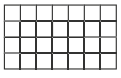
Learn to recognize rectangular arrays to show multiplication.
A rectangular array is a pattern of items, such as dots or boxes, arranged in rows and columns.


This rectangular array has two rows and four columns.
2 x 4 = 8

Count the rows and columns. Then write the multiplication sentence.


3 rows and 6 columns 3 x 6 = 18


8 rows and 2 columns 8 x 2 = 16


4 rows and 7 columns 4 x 7 = 28

Connect the words on the left with the matching picture on the right.

3 rows and 7 columns

1 row and 10 columns

2 rows and 4 columns

Rectangular arrays let children see multiplication in a different way. For consistency, read arrays based on the number of rows, then the number of columns. An array of four columns and three rows is a 3 x 4 rectangular array.

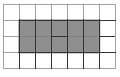
47 Areas of Shapes

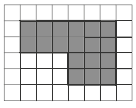
GOAL

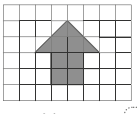
Learn about the areas of shapes. You can measure the areas of shapes by using squares. Each square is a square unit.


What is the area of this rectangle? 4 x 3 = 12 square units

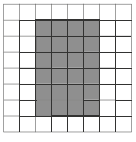
Measure the areas of these shapes. You can multiply the length and width, or you can count the number of square units.


The area of the rectangle is 10 square units.


The area of this L-shape is 18 square units.


The area of the arrow is 8 square units.

Sam and Avi drew a picture of their yard. It was 4 square units wide and 6 square units long. Draw a picture of their yard on this graph paper. What is the area?


24 square units

Help children understand the difference between area and perimeter. Measure the length and width of a piece of paper in centimeters, and multiply to find the area. Then find the perimeter by measuring the length and width of the sides.

48

Reading Tables

GOAL Learn to use a table.

Read the information in the table given here. Circle the answers to the questions. **Remember:** A table shows information across in rows or down in columns.

Animals and Their Coverings

Type of Animal	Example	Body Covering
Amphibians	Frog	Slimy skin
Birds	Blue jay	Feathers
Fish	Salmon	Wet scales
Mammals	Polar bear	Fur
Reptiles	Turtle, Lizard	Shell, Scales

What does the first column of the table show?

(Type of animal) Examples of animals Body coverings

What animal is shown as an example of a fish?

Turtle (Salmon) Frog

How many types of animal are shown in the table?

Three Four (Five)

What covers the body of a salmon?

Slimy skin (Wet scales) Fur

How many examples of reptiles are there in the table?

One (Two) Three

Reinforce children's understanding of how tables present information in a simple but organized visual way. Encourage them to incorporate tables into their schoolwork, especially for science and social studies projects.

49

Pictographs

GOAL Learn to use a pictograph.

Look at the information given on the pictograph below. Answer the questions that follow.

The members of the Smith family are planning to go on a picnic and discuss their favorite fruits. The children make a pictograph to show how many people like each fruit.

The Smiths' Favorite Fruit ☺ = 1 family member

Apples	☺☺☺☺☺☺☺☺
Bananas	☺☺☺☺☺☺
Grapes	☺☺☺☺☺
Oranges	☺☺☺
Strawberries	☺☺

How many family members like apples best? 8

How many kinds of fruit are shown on the graph? 5

How many people like oranges best? 3

How many people like strawberries best? 2

How many more people chose bananas than chose grapes? 1

Which fruit did six people say they like best? Bananas

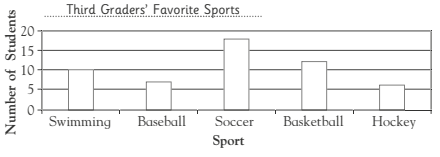
Creating pictographs can be fun. Encourage children to collect information about friends or family and their favorite colors or foods to create their pictograph. Let them draw pictures to represent food, or faces for people.

50

Bar Graphs

GOAL Learn to read and create a bar graph.

The third graders voted for their favorite sports. They drew a bar graph to show the results. Give a title to the graph, then use the graph to answer the questions. Circle your answers.

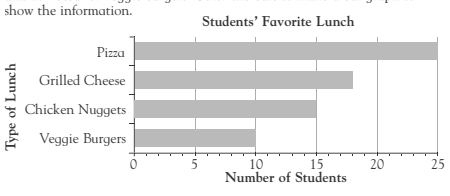


How many students voted for swimming? 5 (10) 20

About how many students voted for soccer? 10 12 (18)

Which sport did 6 people vote for? Swimming Soccer (Hockey)

Students at Mayfield Public School voted for their favorite school lunch: 25 voted for pizza, 18 voted for grilled cheese, 15 voted for chicken nuggets, and 10 voted for veggie burgers. Color the bars to make a bar graph to show the information.



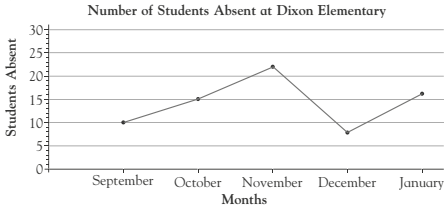
Graphs and tables of information help make number concepts more concrete. Graphs also help children understand and compare information. Help your child make a bar graph of your family's favorite games or ice-cream flavors.

51

Line Graphs

GOAL Learn to read and create a line graph.

This line graph shows the number of students absent at Dixon Elementary during five months of the school year. Use the graph to answer the questions that follow.



How many students were absent in September? 10

How many students were absent in December? 8

How many students were absent from September through the end of October? 25

In which month were most students absent? November

What is the difference between the absences in November and December? 14

Give a reason for the absences during December and January.

Answer may vary

Find simple line graphs in newspapers and online. Share them with children. Read them together to review how the information shown is used to keep track of events in the real world.

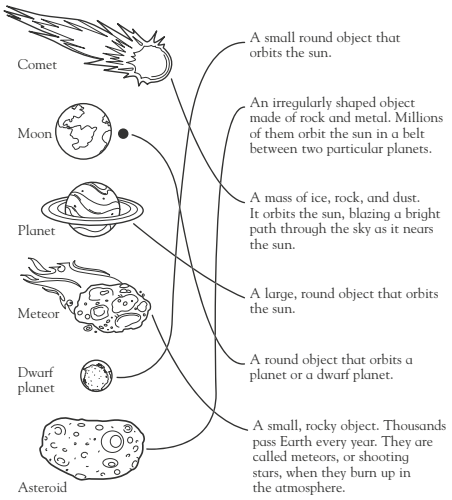
52

The Solar System

FACTS

Besides the sun, there are seven major types of object in the solar system. Many of them move in an orbit—a curved path around another object.

Draw a line from each type of object to the correct definition.



When a meteor falls to Earth and hits the ground, it is called a meteorite. The largest meteorite in the world is called the Hoba meteorite, in Namibia, Africa. Discovered in 1920, it is thought to have fallen more than 80,000 years ago. It weighs 66 tons and has never been moved.

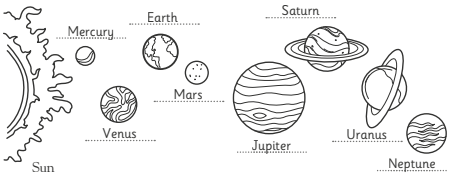
53

The Planets

FACTS

There are eight planets in the solar system. In order from the sun, they are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.

The planets are shown here in their order from the sun. Label each one correctly. They are not shown to scale.



Answer these questions about the planets.

1. Which is the biggest planet? Jupiter
2. Which planet is nearest to the sun? Mercury
3. Which planet is farthest from the sun? Neptune
4. Which planet is closest to Earth? Mars
5. Which planets are surrounded by rings? Saturn and Uranus
6. Although this planet lies second from the sun, it is the hottest of them all. Venus
7. Which planet looks tilted on its side, because its rings orbit from top to bottom? Uranus

Five of the planets are visible to the naked eye from Earth: Mercury, Venus, Mars, Jupiter, and Saturn. Of the five, Venus is the easiest to spot. It has a brilliant white light that outshines the stars around it. Together with your child, research online the current position of the five "naked eye" planets above your area, and see if you can spot them.

54

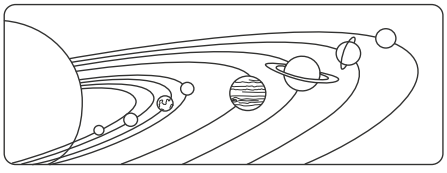
Structure of the Solar System

FACTS

The solar system is the group of planets and other objects that orbit the sun, the huge star at the center. There are eight planets—four small planets close to the sun made of rock, and four large outer planets made of gas and surrounded by rings of ice, dust, and rock. The time it takes for each planet to orbit once around the sun is its year. As the planets travel, they also rotate. One complete rotation is called a day.

Use the words in the box below to complete the sentences.

Day	Gas	Rings	Rock	Star	Year



1. The sun is the star at the center of our solar system.
2. A day is the time it takes for a planet to rotate once.
3. The four small inner planets are made of rock.
4. The four giant outer planets are made of gas.
5. The outer planets have rings made of ice, dust, and rock.
6. A year is the time it takes for a planet to complete one orbit around the sun.

Astronomers call the four inner planets in the solar system terrestrial planets. The four outer planets are called the gas giants. Uranus and Neptune are sometimes called ice giants because they contain a high percentage of frozen methane and frozen ammonia. Ask your child: "If you could name the planets, what would you name them?"

55

Moons

FACTS

A moon is a natural object that orbits a planet. In the solar system there are more than 160 known moons. Earth has just one moon, but some planets have many. Only Mercury and Venus have none. All moons are made of rock, or rock and ice, and many have surfaces marked by craters, formed by collisions with asteroids. Our moon is rocky and about a quarter the size of Earth, which it orbits every 28 days. The distance between the moon and Earth is 238,855 miles, which takes a spacecraft about 60 hours to travel.

Circle the correct answer to these questions.

1. What is Earth's moon made up of?
   - A. Lava
   - (B.) Rock
   - C. Ice
2. What is the name of the thousands of marks on the moon's surface?
   - A. Caverns
   - B. Craters
   - (C.) Crevasses
3. The marks on the moon were created by collisions with what objects?
   - (A.) Asteroids
   - B. Meteorites
   - C. Planets
4. Approximately how long does it take for the moon to orbit Earth?
   - A. One day
   - B. One week
   - (C.) One month
5. How long does it take a spacecraft to travel to the moon from Earth?
   - A. 24 hours
   - (B.) 60 hours
   - C. 100 hours
6. Which of these planets does not have a moon?
   - A. Neptune
   - B. Mars
   - (C.) Venus

The astronauts who landed on the Moon brought back many rocks. The make up of those rocks suggests that the Moon was probably born when a Mars-sized object (Theia) collided with Earth billions of years ago. The collision blew a huge amount of rocky debris into space. Some of that debris clumped together to form the moon.

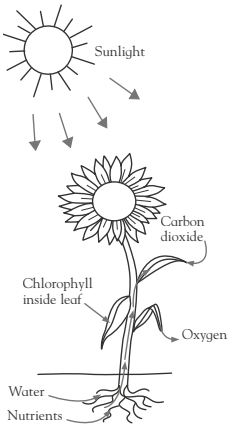
56 Photosynthesis

FACTS

Plants use the energy from sunlight to make food from carbon dioxide and water in a process called photosynthesis. Most food is made in the leaves.

Use the words in the box to complete the sentences.

Carbon dioxide	Chlorophyll	Food	Nutrients
Oxygen	Sunlight	Water	



1. Plants use energy from sunlight to make food.
2. A green substance in leaves, called chlorophyll, traps the energy.
3. Carbon dioxide enters the plant through tiny holes on the underside of the leaves.
4. The roots supply water and nutrients.
5. Food travels from the leaf to all parts of the plant.
6. Oxygen is released from the leaf through holes in the underside.

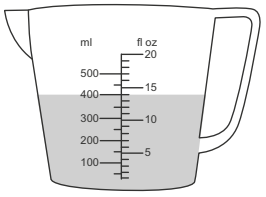
A critical part of photosynthesis is a plant's use of carbon dioxide. Carbon dioxide is a waste gas for humans, but is crucial to a plant. By consuming carbon dioxide, green leaves help keep carbon dioxide levels in our atmosphere down, which is good for our planet.

57 Measuring Liquids

FACTS

Liquids can be measured in pints and fluid ounces (fl oz), or liters and milliliters (ml).

Study the measuring cup of water and then answer the questions.



1. How much water is in the measuring cup, in milliliters? 400 ml
2. How much water is in the measuring cup, in fluid ounces? 14 fl oz
3. How many fluid ounces is 200 ml equal to? 7 fl oz
4. One pint is 20 fl oz and half a pint is 10 fl oz. How many milliliters is 10 fl oz? 290 ml
5. One liter is 1,000 ml, so half a liter is 500 ml. How many fluid ounces is 500 ml? 17 fl oz
6. How many milliliters is 5 fl oz? 147 ml

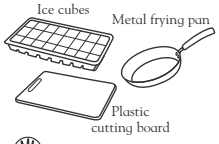
There are many different units we can use to measure something. The most common are the US customary system (inches, pounds, and ounces) and the metric system (centimeters, kilograms, and grams). While that can be confusing, it's good to learn the common conversions between them.

58 Conduction

FACTS

Conduction is one way that heat moves through a material. Some materials, like metals such as steel and aluminum, conduct heat well. Other materials do not conduct heat well.

TEST **What You Need:**



What To Do:

1. Press your hand against the surface of the frying pan and then the surface of the cutting board. In the table below, describe how each one feels to the touch.
2. Ask yourself what would happen if you placed an ice cube on both surfaces? Would the ice cube on the board melt first, or the ice cube in the pan? Make a prediction and put a check (✓) on the table next to the surface you think will melt the ice cube quicker.
3. Test your prediction. Place an ice cube on each surface and observe what happens.

RESULT

Material	How Does it Feel?	Predicted Result	Result
Metal pan	Colder than the plastic board	(✓)	(✓)
Plastic board	Warmer than the metal pan		

Look at the table and explain the result.

Metal is a better conductor of heat than plastic. It feels cooler than plastic because it conducts heats away from your hand. Also, heat from the air moves faster through metal, melting the ice cube quicker.

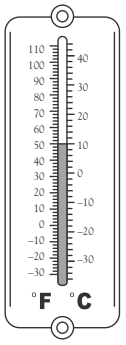
Have your child try this activity with other materials (wood, concrete, glass, ceramics). How do they compare with metal and plastic as conductors of heat?

59 Thermometer

FACTS

A thermometer is an instrument used to measure temperature. This may be measured in degrees Fahrenheit (°F), or degrees Celcius (°C).

Study the thermometer and then answer the questions.



1. What is the temperature reading in degrees Fahrenheit? 50°F
2. What is the temperature reading in degrees Celsius? 10°C
3. How many degrees Fahrenheit is 40°C? 104°C
4. How many degrees Celcius is 100°F equal to? 38°C
5. How many degrees Celcius is –22°F equal to? –30°C
6. How many degrees Fahrenheit is 0°C equal to? 32°F
7. How many degrees Celcius is 0°F equal to? –18°C
8. How many degrees Fahrenheit is 20°C equal to? 68°F

Have your child use an outdoor thermometer to record the temperature every morning and every evening for one week. Make sure they read the thermometer at the same time each day and record the results on a chart. What trends do they notice? Do they think the thermometer is a useful tool?

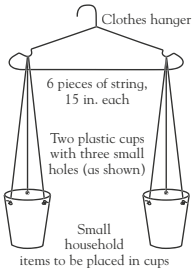
60

Mass

FACTS

Matter is the name used to describe all the different material that makes up the universe. The amount of matter in an object is called its mass. The amount of space that matter takes up is called its volume.

TEST **What You Need:**



What To Do:

1. Thread one end of a 15 in. length of string through a hole in one cup and tie it. Repeat for the other two holes.
2. Tie together the loose ends of the three pieces of string, then hang from one end of the hanger.
3. Repeat these steps for the other cup to make a balance.
4. Hang the balance from a doorknob. The bottom of the cups should be level, and hover above the floor.
5. Add items to each cup and compare their mass. An item with greater mass will weigh a cup down more than an item with less mass.

RESULT

Predict which items have more mass. Were your predictions correct?

Item in Left Cup	Item in Right Cup	Prediction of Result	Result

Answers may vary

Mass is the amount of matter in an object whereas weight is the measure of gravity pulling down on mass. Your mass is always the same no matter where you are. Your weight varies, however. On the moon, you weigh much less than you do on Earth, because the moon's gravity is about 17 percent of Earth's gravity. So you weigh 17 percent less on the moon.

61

The Elements

FACTS

An element is a natural substance that cannot be broken down into any simpler ingredients. Scientists have discovered more than 100 elements in the universe.

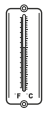
Name the element found in each of the objects below, using the words in the box.

Aluminum Carbon Gold Helium Iron Mercury Silver


Carbon


Iron


Helium


Mercury


Silver


Aluminum


Gold

Scientists often refer to the elements by their chemical symbols. Together with your child download the Periodic Table of Elements from the internet. What elements are represented by these chemical symbols: O, H, C, N, Al? (Answer: oxygen, hydrogen, carbon, nitrogen, aluminum.) Fe stands for iron, Au for gold, and Ag for silver.

62

Energy

FACTS

Energy is what makes things happen. Kinetic energy is the energy of movement. A speeding rocket contains kinetic energy. Potential energy is the energy that a still object has because of its position. A diver standing on a board has potential energy because of her height above the water. When the diver dives, her potential energy changes to kinetic energy.

Write **P** in the box next to each picture of potential energy and **K** in the box next to each picture of kinetic energy.

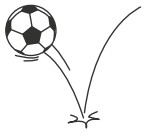

K


P


P


K


K


K

Energy is always changing from potential energy to kinetic energy and back again. At the top of a hill, a roller coaster car has lots of potential energy. As it speeds down the hill, it loses potential energy and gains kinetic energy. As it ascends the next hill, it loses kinetic energy and gains potential energy again. This cycle repeats throughout the ride.

63

Light

FACTS

Light enables us to see a bright and colorful world. Light travels in straight lines, called rays. Light bulbs and the sun are sources of light. They make light. Mirrors and many other objects reflect light. They do not make light.

Look at the pictures and put a check (✓) in the correct box, to indicate if it is a source of light or if it reflects light.

	Source of Light	Reflects Light
Safety strips	☐	✓
Firefly	✓	☐
Moon	☐	✓
Candle	✓	☐
T.V.	✓	☐

The brightness of light is an important part of how we see. In bright light we can see lots of detail and color. In dim light it is harder. Make your child read the same page from a book in four different degrees of brightness ranging from almost dark to very bright. Have them record on a chart the difference in the ability to read at each dimness level.