

Time, Mass and Volume

Unit 11 Overview: 10 lessons

Students read and write time to the minute and choose a.m. or p.m., then find elapsed time in minutes with jumps on an open number line: to the next quarter hour, by 15s, then the rest. They find a missing start or end time and solve time stories. Then they measure mass in grams and kilograms on dial scales and liquid volume in milliliters and liters, choose the better unit, and solve mass and liquid volume stories with all four operations. In some states the unit ends with customary units (ounces, pounds, cups and gallons), reading a thermometer, and choosing the tool and the unit for a job.

THE UNIT, DAY BY DAY

Day 1	Pre-Check	What students already know, before the first lesson.
Day 2	11.1 Time to the minute, a.m. and p.m.	I can read time to the minute and tell a.m. from p.m. hours.
Day 3	11.2 Elapsed time on a number line	I can find elapsed time on a number line.
Day 4	11.3 Find the start or end time	I can find the start time or the end time.
Day 5	11.4 Time story problems	I can solve time story problems.
Day 6	11.5 Grams and kilograms	I can measure mass in grams and kilograms.
Day 7	11.6 Milliliters and liters	I can measure liquid in milliliters and liters.
Day 8	11.7 Mass and liquid volume stories	I can solve mass and liquid volume stories.
Day 9	11.8 Customary units ★	I can use ounces, pounds, cups and gallons.
Day 10	11.9 Temperature ★	I can read a thermometer.
Day 11	11.10 Choose the tool and the unit ★	I can pick the tool and unit, and estimate.
Day 12	Unit Review	The review, to go over together.
Day 13	Unit Test	Form A; Form B (other numbers) is for a retest.

★ Taught in 3rd grade in some states. Skip these lessons if yours teaches them in another grade; animalmath.com/standards shows your state's list.

GET READY FOR THE UNIT

- A geared clock, or the Teaching Clock on the board, and a paper clock for each student
- Blank open number lines for elapsed time, one hour long, marked every 5 minutes
- A kitchen scale with a dial, a dollar bill, a 1 kilogram bag (flour or rice) and a few things to weigh
- A liter bottle, a measuring jug and a beaker or cylinder marked in milliliters, and water
- For the state lessons: a bathroom scale in pounds, cup and gallon containers, a thermometer, a ruler and a meter stick

HOW EACH LESSON GOES

- 1. Warm up** (5 min)
- 2. Teach** (10 min)
- 3. Try it together** (10 min)
- 4. Practice** (15 min)
- 5. Exit ticket** (5 min): a quick check on the lesson.

Each lesson page ends with the Animal Math sheets, makers, tools and quizzes for it. "Sheet 3" is the third worksheet of a pack; a color pack prints each sheet again in black and white.

CHECKING AS YOU GO

PRINTABLE

Pre-Check: Day 1, with a key

PRINTABLE

Unit Review: the day before the test

EXIT TICKET

Exit Tickets: one a lesson, four to a page

PRINTABLE

Unit Test: Forms A and B, with keys



Time, Mass and Volume

Lesson 11.1: Time to the minute, a.m. and p.m.

GOAL Students read a clock to the minute: the hour from the short hand, then the minutes by counting by 5s to the last number the long hand passed and on by 1s. They write the time on a digital clock and choose a.m. (midnight to noon) or p.m. (noon to midnight).

About 45 minutes

I can read time to the minute and tell a.m. from p.m. hours.

THE LESSON

- 1 Warm up (5 min)** Show 6:35 and 2:50 on the Teaching Clock. Students write each time on whiteboards and say how they counted the minutes by 5s.
- 2 Teach (10 min)** Show 3:17. The short hand is past the 3, so the hour is 3. Count the minutes by 5s to the 3 (15), then on by 1s: 16, 17. Write 3:17. Then 9:42: by 5s to the 8 (40) and on 2 more. Last, feeding the fish at 7:12 before school is a.m.; soccer at 3:55 after school is p.m.
Say: "Short hand first for the hour. Then I count the minutes by 5s and on by 1s."
- 3 Try it together (10 min)** Partners take turns setting a time to the minute on paper clocks: 1:08, 4:51, 8:26 and 11:33. The other partner writes it. Then the class sorts the activity cards (wake up, lunch, bedtime) into a.m. and p.m.
- 4 Practice (15 min)** Students read clocks on sheet 2 and draw hands on sheet 3 of Telling Time to the Minute, then write the times and choose a.m. or p.m. on sheet 5. Early finishers write three things they do each day, with the time and a.m. or p.m.
- 5 Exit ticket (5 min)** Students do **Exit Ticket 11.1** and circle a face beside the "I can" line. On question 1, look for 10:28; 5:50 means the hands were swapped, and 10:23 or 10:33 means the minutes past the 5 were miscounted. On question 2, look for a.m. for recess at 10:24 and p.m. for the stars at 9:16.

Need help? Use a clock with the minutes written around the outside, and count the marks with a finger.

Ready for more? Find the time 1 minute before 5:00, and 1 minute after 6:59.

ON ANIMAL MATH

PRINTABLE

Telling Time to the Minute: sheets 2, 3 and 5

MAKER

Telling Time: Mode Read the Clock, Clock Type Hours & Minutes, Minute Increments Any minute

TOOL

Teaching Clock: Minute Hand Moves By 1 Minute, Show a.m. and p.m.

QUIZ

Telling Time Quiz: the To the Minute level

EXIT TICKET

3rd Grade Time, Mass and Liquid Volume Exit Tickets: Exit Ticket 11.1

GET READY

- A paper clock for each student
- The Teaching Clock with Minute Hand Moves By set to 1 Minute
- Activity cards for a.m. and p.m.

WORDS TO USE

minute: one small mark on the clock; 60 make an hour

a.m.: times from midnight to noon: morning

p.m.: times from noon to midnight: afternoon and night

ASK

- Which hand tells the hour? How do you know?
- How did you count the minutes past the last 5?
- How do you know if a time is a.m. or p.m.?

WATCH FOR

Reads 3:17 as 4:17. The hour is the number the short hand has passed.

Counts every mark by 5s. Count by 5s on the numbers, then by 1s on the small marks.

Thinks p.m. means night only. p.m. starts at noon: lunch at 12:30 is p.m. too.

Time, Mass and Volume

Lesson 11.2: Elapsed time on a number line

GOAL Students find how many minutes pass from a start time to an end time with jumps on an open number line: to the next quarter hour, then by 15s, then the rest, and add the jumps. **About 45 minutes**

I can find elapsed time on a number line.

THE LESSON

- 1 Warm up** (5 min) Count by 15s from 8:00 to 9:00 together: 8:15, 8:30, 8:45, 9:00. Ask how many minutes are in a quarter hour.
- 2 Teach** (10 min) A movie starts at 4:40 and ends at 5:25. Draw a line from 4:30 to 5:30 and mark both times. Jump from 4:40 to the next quarter hour, 4:45: 5 minutes. Jump by 15 to 5:00 and to 5:15: 30 minutes. Jump 10 more to 5:25. Add the jumps: $5 + 15 + 15 + 10 = 45$ minutes. Check on the Teaching Clock with Elapsed Time.
Say: "I jump to a friendly time first, then by 15s, then the rest. I add up the jumps."
- 3 Try it together** (10 min) Partners draw jumps for 7:50 to 8:30 and for 10:35 to 11:20, then compare their jumps. Some partners jump by 5s and 10s: ask whether they got the same total.
- 4 Practice** (15 min) Students find the time passed on sheets 1 and 2 of Elapsed Time and draw jumps on the one-hour time lines on sheet 3. Early finishers find how long the school day is from the class schedule.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 11.2** and circle a face beside the "I can" line. On question 1, look for 35 minutes and jumps such as 10, 15 and 10; 75 means they subtracted 535 from 610 like whole numbers. On question 2, look for 50 minutes; 90 means the same mistake.

Need help? Use a number line with every 5 minutes labeled, and jump by 5s only.

Ready for more? Find the time from 9:25 a.m. to 11:10 a.m., more than an hour, in hours and minutes.

GET READY

- Blank one-hour number lines marked every 5 minutes
- The Teaching Clock with Elapsed Time on
- Whiteboards and markers

WORDS TO USE

elapsed time: how much time passes from the start to the end

start time: when something begins

jump: a hop on the number line, as many minutes as it covers

ASK

- Where did you make your first jump? Why there?
- How many minutes from 4:45 to 5:15?
- How can you check your total on the clock?

WATCH FOR

Subtracts the times like numbers: 5:25 minus 4:40 is 85. An hour has 60 minutes, not 100. Jump on the number line instead.

Stops at the hour and forgets the last jump. Point to the end time: did your jumps reach it?

Adds the jumps wrong. Write each jump above its arc, then add them in a column.

ON ANIMAL MATH

- PRINTABLE** **Elapsed Time:** sheets 1-3
- TOOL** **Teaching Clock:** Elapsed Time
- QUIZ** **Telling Time Quiz:** the Elapsed Time level
- EXIT TICKET** **3rd Grade Time, Mass and Liquid Volume Exit Tickets:** Exit Ticket 11.2

Time, Mass and Volume

Lesson 11.3: Find the start or end time

GOAL Students find an end time by jumping forward from the start time, and a start time by jumping back from the end time, crossing the hour.

About 45 minutes

I can find the start time or the end time.

THE LESSON

- 1 Warm up** (5 min) Ask what time it is 15 minutes after 6:50, and 10 minutes before 9:05. Students answer on whiteboards.
- 2 Teach** (10 min) Recess starts at 2:50 and lasts 25 minutes. Start at 2:50 and jump 10 to 3:00, then 15 to 3:15; recess ends at 3:15. Then a show ends at 6:20 after 35 minutes. Start at the end and jump back 20 to 6:00, then back 15 to 5:45; it started at 5:45. Show both on the Teaching Clock.
Say: "To find the end, I jump forward. To find the start, I start at the end and jump back."
- 3 Try it together** (10 min) Partners fill a Start, Time passed, End table on the board: 11:35 and 40 minutes (end 12:15), 4:05 and 35 minutes (end 4:40), and an end of 7:10 after 25 minutes (start 6:45). Each pair shows one row on a number line.
- 4 Practice** (15 min) Students find end times and start times in the two tables on sheet 4 of Elapsed Time. Early finishers make a Start, Time passed, End table for their own afternoon.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 11.3** and circle a face beside the "I can" line. On question 1, look for 2:15; 1:75 means 60 minutes were not traded for an hour. On question 2, look for 7:35; 8:55 means they added the 40 minutes instead of jumping back.

Need help? Use the Teaching Clock to move the hands forward or back by 5 minutes at a time.

Ready for more? A lesson starts at 1:25 and the class has 2 breaks of 15 minutes and 40 minutes of work. When does it end?

GET READY

- Blank one-hour number lines
- The Teaching Clock with Elapsed Time on
- Whiteboards and markers

WORDS TO USE

end time: when something is over

jump back: go back on the number line to find the start

cross the hour: go past :00 into the next hour

ASK

- Do you jump forward or back to find the start time?
- What time is it 10 minutes after 2:50?
- How can you check a start time you found?

WATCH FOR

Writes 2:75 for 2:50 plus 25 minutes. At :60 a new hour starts: jump to 3:00 first, then the rest.

Adds to find a start time. The start comes before the end: jump back on the line.

Jumps back from 6:20 to 5:85. Jump back to 6:00 first, then into the hour before: 5:45.

ON ANIMAL MATH

PRINTABLE

Elapsed Time: sheet 4

TOOL

Teaching Clock: Elapsed Time

QUIZ

Telling Time Quiz: the Elapsed Time level

EXIT TICKET

3rd Grade Time, Mass and Liquid Volume Exit Tickets: Exit Ticket 11.3

Time, Mass and Volume

Lesson 11.4: Time story problems

GOAL Students solve story problems about time: they find whether the story asks for an end time, a start time or the minutes that pass, then solve with jumps on a number line or by adding and subtracting minutes.

About 45 minutes

I can solve time story problems.

THE LESSON

- 1 Warm up** (5 min) Add minutes: $20 + 25$, $15 + 30$, $35 + 25$. Ask which sum makes an hour.
- 2 Teach** (10 min) Read: Soccer practice starts at 3:20 p.m. and lasts 50 minutes. What time does it end? It asks for an end time, so jump forward: 3:20 to 4:00 is 40 minutes, 10 more is 4:10 p.m. Then read: Leo reads for 30 minutes and draws for 25 minutes. How many minutes is that in all? It asks how long, so add the minutes: 55 minutes.
Say: "First I find what the story asks for: a time, or how many minutes. Then I choose jumps, adding or subtracting."
- 3 Try it together** (10 min) Partners solve: A bus leaves at 8:40 a.m. and the ride takes 35 minutes. When does it arrive? Then: Ava has 60 minutes before dinner and plays for 25. How many minutes are left? Pairs share how they knew what to find.
- 4 Practice** (15 min) Students solve the word problems on sheet 5 of Elapsed Time and write each answer with its unit. Early finishers write a time story for a partner, with a.m. or p.m.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 11.4** and circle a face beside the "I can" line. On question 1, look for 2:05 p.m.; 1:65 means 60 minutes were not made into an hour. On question 2, look for 55 minutes; 135 means they added the minutes.

Ready for more? Solve a two-step story: a game starts at 11:05, has two halves of 25 minutes and a 10 minute break. When does it end?

GET READY

- Story cards on chart paper
- Blank number lines
- Whiteboards and markers

WORDS TO USE

how long: asks for the minutes that pass

what time: asks for a start or end time

in all: add the minutes together

ASK

- Does this story ask for a time or for minutes?
- How did you cross the hour?
- Does your answer need a.m. or p.m.?

WATCH FOR

Answers a "what time" story with a number of minutes. Underline the question: "What time" needs a time like 4:10.

Writes 3:70 for 3:20 plus 50 minutes. Jump to 4:00 first, then the minutes left.

Adds when the story takes minutes away. Act it out: time left gets smaller, so subtract.

Need help? Draw the number line for every time story, and label the start and the end.

ON ANIMAL MATH

PRINTABLE

Elapsed Time: sheet 5

QUIZ

Telling Time Quiz: the Elapsed Time level

EXIT TICKET

3rd Grade Time, Mass and Liquid Volume Exit Tickets: Exit Ticket 11.4



Time, Mass and Volume

Lesson 11.5: Grams and kilograms

GOAL Students read dial scales in grams and kilograms by finding what each tick is worth and counting on from the number before the pointer, and choose grams for light things and kilograms for heavy things.

About 45 minutes

I can measure mass in grams and kilograms.

THE LESSON

- 1 Warm up** (5 min) Pass around a dollar bill and a 1 kilogram bag. Students guess which things in the room are closer to a gram and which to a kilogram.
- 2 Teach** (10 min) Draw a dial from 0 to 500 grams, numbered every 100, with a tick every 20. Ask what each tick is worth: 5 ticks make 100, so each is 20. The pointer is 3 ticks past 400: 420, 440, 460. The mass is 460 grams. Then a dial from 0 to 10 kilograms, numbered every 2, a tick every 1: the pointer at 3 ticks past 0 reads 3 kilograms. Last, sort: a lemon in grams, a horse in kilograms.
Say: "First I find what each tick is worth. Then I start at the number before the pointer and count on."
- 3 Try it together** (10 min) Weigh fruit and a book on the class scale. Partners read the dial and write the mass with its unit, then say whether grams or kilograms fits better and why.
- 4 Practice** (15 min) Students read scales in grams on sheet 1 and in kilograms on sheet 2 of Grams and Kilograms, draw pointers on sheet 3 and choose the unit and the best estimate on sheet 4. Early finishers list five things that weigh about a kilogram.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 11.5** and circle a face beside the "I can" line. On question 1, look for 8 kg; 10 means they read the nearest number instead of counting the ticks. On question 2, look for the button; the chair or the sofa means they mixed up grams and kilograms.

Need help? Give a dial with every tick labeled first, then one with fewer numbers.

Ready for more? Read a 0 to 1,000 gram dial with a tick every 50, or find two things whose masses add to 1 kilogram.

GET READY

- A kitchen scale with a dial, a dollar bill and a 1 kilogram bag of flour or rice
- Fruit, a book and other things to weigh
- Whiteboards and markers

WORDS TO USE

mass: how heavy something is

gram: a small unit: a dollar bill is about 1 gram

kilogram: a big unit: 1,000 grams, like a big bag of rice

ASK

- What is each tick worth on this dial? How do you know?
- Which number comes right before the pointer?
- Would you weigh a cherry in grams or kilograms?

WATCH FOR

Counts each tick as 1 on a dial that counts by 20s. Count the ticks between two numbers first, then share the gap.

Writes the number without the unit. Read the unit on the dial: g or kg. Write it every time.

Picks kilograms because the thing looks big, like a pillow. Think about how heavy it is, not how big. Lift it if you can.

ON ANIMAL MATH

PRINTABLE

Grams and Kilograms: sheets 1-4

QUIZ

Mass and Liquid Volume Quiz: the Read the Scale level

QUIZ

Mass and Liquid Volume Quiz: the Better Unit level

EXIT TICKET

3rd Grade Time, Mass and Liquid Volume Exit Tickets: Exit Ticket 11.5

Time, Mass and Volume

Lesson 11.6: Milliliters and liters

GOAL Students read the water in beakers, cylinders and jugs in milliliters and liters by finding what each mark is worth, and choose milliliters for small amounts and liters for big ones.

About 45 minutes

I can measure liquid in milliliters and liters.

THE LESSON

- 1 Warm up (5 min)** Show a teaspoon (about 5 milliliters) and a liter bottle. Students guess which things hold about a liter: a bucket, a glass, a sink, a big soda bottle.
- 2 Teach (10 min)** Pour water into a beaker marked 0 to 500 milliliters, numbered every 100, a mark every 50. The water is at the mark between 100 and 200, so it is 150 milliliters. Then a jug from 0 to 10 liters, numbered every 2, a mark every 1: the water is at the mark between 2 and 4, so it is 3 liters. Last, sort: a spoonful of medicine in milliliters, a full sink in liters.
Say: "I find what each mark is worth, then I read the line at the top of the water."
- 3 Try it together (10 min)** Pour different amounts into the class beaker and jug. Partners read each one and write the amount with its unit, then sort picture cards into milliliters and liters.
- 4 Practice (15 min)** Students read cylinders on sheet 1 and cups and jugs on sheet 2 of Milliliters and Liters, color water up to an amount on sheet 3 and choose the unit and the best estimate on sheet 4. Early finishers find how many 250 milliliter cups fill a liter.
- 5 Exit ticket (5 min)** Students do **Exit Ticket 11.6** and circle a face beside the "I can" line. On question 1, look for 300 mL; 200 or 400 means they read the closest number instead of the mark between. On question 2, look for milliliters for the juice box and liters for the rain barrel.

Need help? Pour water and read it together, with each mark labeled on a strip of tape.

Ready for more? Read a cylinder with a mark every 10 milliliters, or find how many milliliters in 3 liters.

GET READY

- A beaker or cylinder marked in milliliters, a measuring jug marked in liters, and water
- A liter bottle and a teaspoon
- Picture cards of things that hold liquid

WORDS TO USE

liquid volume: how much liquid something holds

milliliter: a tiny unit: about 20 drops of water

liter: a big unit: 1,000 milliliters, a big water bottle

ASK

- What is each mark worth on this beaker?
- Where do you read the water: at the top or the bottom?
- Would a sink hold milliliters or liters?

WATCH FOR

Reads the bottom of the container or the side of the label. Read the line where the top of the water meets the marks.

Counts each mark as 10 when the marks count by 50. Count the marks between two numbers to find what each is worth.

Thinks a liter is a small amount. Show the liter bottle again: a liter is 1,000 milliliters.

ON ANIMAL MATH

PRINTABLE

Milliliters and Liters: sheets 1-4

QUIZ

Mass and Liquid Volume Quiz: the Read the Container level

QUIZ

Mass and Liquid Volume Quiz: the Better Unit level

EXIT TICKET

3rd Grade Time, Mass and Liquid Volume Exit Tickets: Exit Ticket 11.6

Time, Mass and Volume

Lesson 11.7: Mass and liquid volume stories

GOAL Students solve one-step story problems about mass and liquid volume with all four operations: they add and subtract masses and amounts, and multiply or divide when there are equal groups, and write the answer with its unit.

About 45 minutes

I can solve mass and liquid volume stories.

THE LESSON

- 1 Warm up (5 min)** Read two scales drawn on the board, 300 grams and 450 grams. Ask how much the two things have together.
- 2 Teach (10 min)** Read: A bag of apples has a mass of 6 kilograms. How much do 5 bags have? $5 \times 6 = 30$ kilograms. Then: 48 liters of juice go equally into 6 jugs. How much in each? $48 \div 6 = 8$ liters. Then: a pot holds 900 milliliters of soup and we eat 450. How much is left? $900 - 450 = 450$ milliliters. Draw a bar model for each.
Say: "Equal groups mean multiply or divide; joining or taking away means add or subtract. The answer gets its unit."
- 3 Try it together (10 min)** Partners solve: A goat has a mass of 18 kilograms and a lamb 5 kilograms. How much more mass does the goat have? Then: 7 bottles hold 2 liters each. How many liters in all? They draw a bar model and name the operation.
- 4 Practice (15 min)** Students solve the stories on sheets 1-5 of Mass and Liquid Volume Word Problems, as many as time allows, and check the units. Early finishers do sheet 5 of Grams and Kilograms and sheet 5 of Milliliters and Liters.
- 5 Exit ticket (5 min)** Students do **Exit Ticket 11.7** and circle a face beside the "I can" line. On question 1, look for 725 grams; 975 means they added. On question 2, look for 7 liters; 40 or 30 means they added or subtracted instead of dividing.

Need help? Give a bar model for each story with the numbers already placed.

Ready for more? Write a mass story and a liquid story for each operation, and trade with a partner.

GET READY

- Story cards with grams, kilograms, milliliters and liters
- Bar model strips
- Whiteboards and markers

WORDS TO USE

in all: put together: add, or multiply equal groups

left: take away: subtract

each: equal groups: multiply or divide

ASK

- Are there equal groups in this story?
- Which operation did you use? Why?
- What unit does your answer need?

WATCH FOR

Adds every pair of numbers. Act the story out or draw it: equal groups shared out means divide.

Forgets the unit or writes the wrong one.

Underline the unit in the question and write it with the answer.

Subtracts the smaller digit from the bigger in each place. Regroup when the top digit is smaller.

ON ANIMAL MATH

PRINTABLE

Mass and Liquid Volume Word Problems: sheets 1-5

PRINTABLE

Grams and Kilograms: sheet 5

PRINTABLE

Milliliters and Liters: sheet 5

QUIZ

Mass and Liquid Volume Quiz: the Stories level

EXIT TICKET

3rd Grade Time, Mass and Liquid Volume Exit Tickets: Exit Ticket 11.7

Time, Mass and Volume

Lesson 11.8: Customary units

GOAL Students use customary units: ounces for light things and pounds for heavy ones (16 ounces make a pound), and cups for small amounts of liquid and gallons for big ones, and tell which unit is bigger.

About 45 minutes

★ Taught in 3rd grade in some states

I can use ounces, pounds, cups and gallons.

THE LESSON

- 1 Warm up** (5 min) Hold up a slice of bread and a loaf. Ask which one is about an ounce and which is about a pound.
- 2 Teach** (10 min) Weigh a book on the bathroom scale in pounds and an eraser on the kitchen scale in ounces. A pound is 16 ounces, so a pound is the bigger unit. Fill the gallon jug cup by cup with the class counting: 16 cups. A gallon is much bigger than a cup. Sort cards: a pumpkin in pounds, a spoon in ounces, a bucket in gallons, a bowl of soup in cups.
Say: "Light things in ounces, heavy things in pounds. A little liquid in cups, a lot in gallons."
- 3 Try it together** (10 min) Partners sort picture cards into ounces or pounds and cups or gallons, then circle the bigger amount in pairs: 3 cups or 3 gallons, 5 ounces or 5 pounds.
- 4 Practice** (15 min) Students read scales in pounds on sheet 1 and choose pounds or ounces on sheet 4 of Pounds and Ounces, then review cups and pints on sheet 3 of Cups and Pints. Early finishers find how many cups fill 2 gallons.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 11.8** and circle a face beside the "I can" line. On question 1, look for pounds for the heavy box and cups for the glass. On question 2, look for 1 pound and 1 gallon; circling 1 ounce or 1 cup means they mix up which unit is bigger.

Need help? Hold the cup and the gallon jug, or the ounce and pound things, before choosing a unit.

Ready for more? Fill in a table: 1 gallon = 4 quarts = 8 pints = 16 cups.

GET READY

- A bathroom scale in pounds and a kitchen scale in ounces
- A cup and a gallon jug
- Picture cards of things to weigh and fill

WORDS TO USE

ounce: a small unit of weight: a slice of bread

pound: a bigger unit: 16 ounces, a loaf of bread

gallon: a big unit for liquid: 16 cups, a big milk jug

ASK

- Is a pound more or less than an ounce?
- How many cups make a gallon?
- Would you weigh a cat in ounces or pounds?

WATCH FOR

Thinks more ounces than pounds means the thing is lighter. A small unit takes more of them: 16 ounces is the same as 1 pound.

Picks gallons for a teacup because it holds liquid. Think about how much: a teacup holds less than 1 cup.

Mixes up weight and liquid units. Ask: am I weighing it or filling it?

ON ANIMAL MATH

PRINTABLE

Pounds and Ounces: sheets 1 and 4

PRINTABLE

Cups and Pints: sheet 3, for review

EXIT TICKET

3rd Grade Time, Mass and Liquid Volume Exit Tickets: Exit Ticket 11.8

Time, Mass and Volume

Lesson 11.9: Temperature

GOAL Students read a thermometer in degrees Fahrenheit and Celsius by finding what each mark is worth and counting from the number below the top of the line, and choose a temperature that fits the weather.

I can read a thermometer.

About 45 minutes

★ Taught in 3rd grade in some states

THE LESSON

- 1 Warm up** (5 min) Show pictures of a snowy day and a beach. Students say which is hot and which is cold, and guess a temperature for each.
- 2 Teach** (10 min) Draw a thermometer from 40 to 80 °F, numbered every 10, a mark every 2 degrees. Ask what each mark is worth: 5 marks make 10, so each is 2. The line ends 2 marks above 60: 62, 64. It is 64 °F. Then a Celsius thermometer numbered every 5, a mark every degree: the line 3 marks above 15 reads 18 °C. Last, a glass of ice water fits 35 °F, not 95 °F.
Say: "I find what each mark is worth, then count up from the number below the top of the line."
- 3 Try it together** (10 min) Partners read thermometers drawn at different temperatures on the board, then circle the temperature that fits a picture: hot cocoa, a swimming pool, a snowman.
- 4 Practice** (15 min) Students read Fahrenheit thermometers on sheet 1 and Celsius thermometers on sheet 2 of Reading Thermometers, then choose temperatures that make sense on sheet 4. Early finishers read the class thermometer and write the temperature.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 11.9** and circle a face beside the "I can" line. On question 1, look for 58 °F; 54 means each mark was counted as 1 degree. On question 2, look for 100 °F for a warm bath.

Need help? Use a thermometer with every mark labeled first.

Ready for more? Find how many degrees warmer 71 °F is than 54 °F.

GET READY

- A real thermometer and a large drawn one
- Pictures of hot and cold days
- Whiteboards and markers

WORDS TO USE

temperature: how hot or cold something is

degree: one step on a thermometer

Fahrenheit and Celsius: two scales: water freezes at 32 °F and at 0 °C

ASK

- What is each mark worth on this thermometer?
- Which number is right below the top of the line?
- Is 90 °F hot or cold?

WATCH FOR

Counts each mark as 1 degree when the marks count by 2s. Count the marks between 50 and 60 first: 5 marks, so each is 2.

Reads the number above the top of the line. Start at the number below the top and count up.

Mixes up Fahrenheit and Celsius. Look at the letter at the top: °F or °C.

ON ANIMAL MATH

PRINTABLE

Reading Thermometers: sheets 1, 2 and 4

EXIT TICKET

3rd Grade Time, Mass and Liquid Volume Exit Tickets: Exit Ticket 11.9

Time, Mass and Volume

Lesson 11.10: Choose the tool and the unit

GOAL Students pick the tool and the unit for a job (a ruler and centimeters for length, a scale and kilograms for mass, a beaker or jug and liters for liquid, a thermometer for temperature), estimate first, then measure.

About 45 minutes

★ Taught in 3rd grade in some states

I can pick the tool and unit, and estimate.

THE LESSON

- 1 Warm up** (5 min) Hold up each tool. Students say what it measures: how long, how heavy, how much liquid or how hot.
- 2 Teach** (10 min) Read: How much water does the bucket hold? It asks how much liquid, so use a measuring jug and liters. Estimate first: about 8 liters. Then measure. How long is the table? A meter stick and centimeters or meters. How heavy is a bag of oranges? A scale and kilograms. Compare each measurement with the estimate.
Say: "I ask what the job measures: length, mass, liquid or temperature. That tells me the tool and the unit."
- 3 Try it together** (10 min) Partners take a job card, name the tool and the unit, estimate, then measure with the real tool and write how close the estimate was.
- 4 Practice** (15 min) Students decide when a measurement must be exact on sheet 4 and choose sensible units on sheet 5 of Estimate or Exact?, then circle the tool for each job on sheets 1 and 2 of Choosing Measuring Tools. Early finishers measure three things with the Measuring Tool.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 11.10** and circle a face beside the "I can" line. On question 1, look for the scale and kilograms; the beaker or liters mean they mixed up mass and liquid. On question 2, look for 9 centimeters for the crayon.

Need help? Match each tool to a picture of what it measures before choosing.

Ready for more? Estimate the mass of five things in the room in order, then weigh them and check the order.

GET READY

- A ruler, a meter stick, a scale, a measuring jug and a thermometer
- A bucket, a bag of oranges and job cards (what to measure)
- A recording sheet: estimate, then measure

WORDS TO USE

tool: what you measure with: ruler, scale, beaker

unit: what you count in: centimeters, kilograms, liters

estimate: a careful guess before you measure

ASK

- What does this job measure?
- Why is a meter stick better than a ruler for the door?
- Was your estimate close? How close?

WATCH FOR

Picks a ruler for every job. Ask what the question wants: how long, how heavy or how much.

Picks meters for a book. Show a meter stick next to the book: centimeters fit small things.

Changes the estimate after measuring. Write the estimate first and keep it: the point is to see how close it was.

ON ANIMAL MATH

PRINTABLE

Estimate or Exact? sheets 4-5

PRINTABLE

Choosing Measuring Tools: sheets 1-2, for review

TOOL

Measuring Tool: Measure With Centimeter Ruler

EXIT TICKET

3rd Grade Time, Mass and Liquid Volume Exit Tickets: Exit Ticket 11.10