

Subtracting to 20

Unit 5 Overview: 12 lessons

Students take subtraction past 10 and learn what the equal sign really means. They count back to take away a few, think addition to take away more, write fact families, get to 10 first and draw pictures to subtract. Then they find missing numbers, learn that = means “the same as”, decide if equations are true and find the unknown in any spot. The unit ends with fast facts, adding and subtracting mixed, and puzzles and games, so each student has a way to solve every fact.

THE UNIT, DAY BY DAY

Day 1	Pre-Check	What students already know (page 1 of the test pack).
Day 2	5.1 Count back to subtract	I can count back to subtract.
Day 3	5.2 Think addition to subtract	I can use addition to subtract.
Day 4	5.3 Fact families within 20	I can write a fact family.
Day 5	5.4 Subtract through ten	I can get to 10 to subtract.
Day 6	5.5 Subtract with pictures to 20	I can subtract with pictures.
Day 7	5.6 Missing numbers within 20	I can find a missing number.
Day 8	5.7 The equal sign means “the same as”	I can make both sides the same.
Day 9	5.8 True or false equations	I can tell if an equation is true.
Day 10	5.9 The unknown in any spot	I can find the unknown number.
Day 11	5.10 Subtraction facts to 20, fast	I can subtract fast within 20.
Day 12	5.11 Add and subtract mixed	I can add and subtract to 20.
Day 13	5.12 Puzzles and games	I can solve number puzzles.
Day 14	Unit Review	The review pages, with a tip beside every question.
Day 15	Unit Test	Form A; Form B (other numbers) is for a retest.

GET READY FOR THE UNIT

- Cubes in two colors, about 20 for each student, and a cup to hide some under
- Two ten frames and 20 counters for each pair, and a number line 0 to 20 for each student
- A pan balance (or one drawn on chart paper) and number cards 0 to 20
- Fact cards to 20, dice, paper clips for spinners, whiteboards and dry erase markers

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

EXIT TICKET

1st Grade Subtraction and Equal Sign Exit Tickets: one for every lesson, four to a page

PRINTABLE

1st Grade Subtraction and Equal Sign Test: the Pre-Check, the Unit Review and the Unit Test (Forms A and B), with keys

Subtracting to 20

Lesson 5.1: Count back to subtract

GOAL Students subtract 1, 2, 3 or 4 by counting back from the bigger number, saying one number for each one taken away, and keep going past 10 (12, 11, 10, 9).

About 45 minutes

I can count back to subtract.

THE LESSON

- 1 Warm up** (5 min) Count back together from 20 to 0 like a rocket launch. Then start at 13 and count back four, putting up a finger for each number.
- 2 Teach** (10 min) Write $15 - 3$. Snap 3 cubes off a train of 15, one at a time, while you count back: 14, 13, 12. Then do it on the number line: start at 15 and hop back 3, saying a number on each hop. Show that you do not say 15, the start.
Say: "I start at 15. I say one number for each one I take away: 14, 13, 12."
- 3 Try it together** (10 min) Pairs pull a card from 11 to 20 and a card from 1 to 4. One hops back on the number line while the other snaps cubes off a train to check. Include $12 - 3$ and $11 - 4$, which go past 10.
- 4 Practice** (15 min) Students cross out dots and write the numbers they say on sheet 3 of Counting On and Counting Back, then hop back on sheet 4. Early finishers do sheet 5, which mixes counting on and back.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 5.1** and circle a face beside the "I can" line. Check $16 - 4$: an answer of 13 means the student said 16 as the first hop.

Need help? Count back within 10 on a number line on the desk, snapping a cube off a train for each hop.

Ready for more? Sort fact cards into "count back" (take away 1 to 4) and "find another way" (take away 7, 8 or 9), and tell why.

GET READY

- A number line 0 to 20 for each student
- Cube trains of 20 for each pair
- Number cards 11 to 20 and cards 1 to 4

WORDS TO USE

count back: say the numbers going down, one less each time

minus: the sign $-$; it means take away

left: how many are still there

ASK

- Where do you start? Why there?
- How do you know when to stop?
- When is counting back slow?

WATCH FOR

Says 15, 14, 13 for $15 - 3$ and gets 13. They counted the start. Put a finger on 15, whisper it, then hop and count out loud.

Hops forward instead of back. Point left on the number line before the first hop: take away means fewer.

Loses track of how many were counted back. Put up a finger for each number said and stop when the fingers match the number taken away.

ON ANIMAL MATH

PRINTABLE

Counting On and Counting Back: sheets 3-5

PRINTABLE

Number Line Subtraction to 10: sheets 1-2, for help within 10

MAKER

Number Line: Mode Subtraction on Number Line, Number Range 1-20 (it also takes away big numbers)

TOOL

Number Line: Start 0, End 20, then Jump to draw the hops

EXIT TICKET

1st Grade Subtraction and Equal Sign Exit Tickets: Exit Ticket 5.1



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Lesson 5.2: Think addition to subtract

GOAL Students solve a subtraction like $13 - 9$ by asking what goes with 9 to make 13, and see that the missing part of the addition is the answer.

About 45 minutes

I can use addition to subtract.

THE LESSON

- 1 Warm up** (5 min) Play “What goes with?”: say 7 and the class holds up the fingers that go with it to make 10. Do 6, 9 and 4.
- 2 Teach** (10 min) Build 13 cubes, 9 red and 4 blue, on a number bond: 13 is the whole, 9 and 4 are the parts. Write $9 + 4 = 13$. Then write $13 - 9$ and cover the 9 red cubes: the other part, 4, is left. Do $15 - 7$ the same way by building $7 + 8 = 15$.
Say: “To take away 9 from 13, I think: 9 and what make 13? 9 and 4. So $13 - 9 = 4$.”
- 3 Try it together** (10 min) Partners build a bond with cubes. One hides a part under a cup; the other says the addition and the subtraction: 8 and what make 14? $14 - 8 = 6$. Include ones that take away 8 or 9, where counting back is slow.
- 4 Practice** (15 min) Students find how many are hiding on sheet 4 of Subtraction with Pictures to 20, writing the addition, then the subtraction. Then they fill in sheets 1 and 2 of Fact Families Within 20, Missing Numbers.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 5.2** and circle a face beside the “I can” line. On $12 - 8$, an answer of 20 means the student added: ask what goes with 8 to make 12.

Need help? Start with facts to 10 ($10 - 7$: 7 and 3 make 10), with cubes to hide and show.

Ready for more? Write the addition that helps for $17 - 8$ and $16 - 9$, then make one up for a partner.

GET READY

- Cubes in two colors
- A number bond mat for each pair
- Whiteboards and markers

WORDS TO USE

part: one of the groups that make the whole

whole: all of them together, the biggest number

think addition: turn a take away into “what goes with this to make that?”

ASK

- Which number is the whole? Which are the parts?
- What addition helps you solve $15 - 7$?
- How can you check a subtraction with an addition?

WATCH FOR

Adds the two numbers: writes 20 in $8 + \square = 12$.

Read it back: $8 + 20 = 12$? Then count on from 8 to 12 on fingers: 4.

Writes a missing part that is bigger than the whole. Point to the bond: the whole is the biggest number, at the top. A part is smaller.

Counts back 9 one at a time and loses count.

Show that counting on from 9 to 13 is only 4 steps.

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PRINTABLE

Subtraction with Pictures to 20: sheet 4

PRINTABLE

Fact Families Within 20 - Missing Numbers: sheets 1-2

MAKER

Fact Families: Number Range Within 20, Difficulty Fill in Missing Numbers

QUIZ

Addition and Subtraction Quiz: the Within 20 level

EXIT TICKET

1st Grade Subtraction and Equal Sign Exit Tickets: Exit Ticket 5.2



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Lesson 5.3: Fact families within 20

GOAL Students write the four facts of a family, two plus and two minus ($6 + 9$, $9 + 6$, $15 - 6$, $15 - 9$), and use a fact they know to find the others.

About 45 minutes

I can write a fact family.

THE LESSON

- 1 Warm up** (5 min) Show a train of 6 red and 9 blue cubes. Students say an addition for it, then turn the train around and say another.
- 2 Teach** (10 min) Draw a triangle with 15 at the top and 6 and 9 at the bottom. Write $6 + 9 = 15$ and $9 + 6 = 15$. Then break the 9 blue cubes off the train for $15 - 9 = 6$, and the 6 red ones for $15 - 6 = 9$. Show that every minus fact starts with the whole.
Say: "Same three numbers, four facts. When I subtract, I start with the whole."
- 3 Try it together** (10 min) Each pair gets three number cards that make a family (5, 8, 13 or 4, 9, 13). They write all four facts on whiteboards and check them with cubes. Then show 7, 7, 14: a double has only two facts.
- 4 Practice** (15 min) Students write all four facts for each triangle on sheets 3 to 5 of Fact Families Within 20, Write All. Early finishers do a sheet of Fact Families 10 to 20.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 5.3** and circle a face beside the "I can" line. On the second question, a student who circles $8 - 4 = 4$ matched one number: find all three, 4, 8 and 12, in the fact.

Need help? Start with families within 10 (3, 5, 8) and build each fact with a cube train.

Ready for more? Find the family when only two numbers are given (9 and 17: what is the third?), then write all four facts.

GET READY

- Cube trains in two colors
- Number cards: 5, 8, 13 and 4, 9, 13
- Whiteboards and markers

WORDS TO USE

fact family: facts that use the same three numbers

turn around: switch the parts: $6 + 9$ is $9 + 6$

whole: the biggest number; a minus fact starts with it

ASK

- What three numbers are in this family?
- Why does $9 + 6 = 15$ belong with $15 - 6 = 9$?
- Why do 7, 7 and 14 make only two facts?

WATCH FOR

Writes $6 - 15 = 9$. Point to the top of the triangle: subtract from the whole, so start there.

Puts a number from another family in a fact. Circle the three numbers first and check that each fact uses only those.

Writes the same fact twice. Tick each fact off: two plus facts, two minus facts.

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- PRINTABLE** **Fact Families Within 20 - Write All:** sheets 3-5
- PRINTABLE** **Fact Families 10 to 20 - Write All:** sheets 1-2, for early finishers
- PRINTABLE** **Fact Families 5 to 10 - Write All:** any sheet, for help within 10
- MAKER** **Fact Families:** Number Range 10 to 20, Difficulty Write All 4 Facts
- QUIZ** **Addition and Subtraction Quiz:** the Within 20 level
- EXIT TICKET** **1st Grade Subtraction and Equal Sign Exit Tickets:** Exit Ticket 5.3

Subtracting to 20

Lesson 5.4: Subtract through ten

GOAL Students subtract a one-digit number from a teen number by taking away to get to 10 first, then taking away the rest ($15 - 7$: $15 - 5 = 10$, $10 - 2 = 8$).

About 45 minutes

I can get to 10 to subtract.

THE LESSON

- 1 Warm up** (5 min) Show teen numbers in two ten frames: a full ten and some more. Students say the number, then how many to take away to get to 10 (16: take away 6).
- 2 Teach** (10 min) Show $15 - 7$ with counters: a full frame and 5 more. Take away the 5 extra first to land on 10, then 2 more: $10 - 2 = 8$. Write $15 - 5 = 10$ and $10 - 2 = 8$, with the 7 broken into 5 and 2. Then show the two hops on a number line.
| Say: "First I get to 10. Then I take away the rest."
- 3 Try it together** (10 min) Pairs do $14 - 8$, $16 - 9$ and $11 - 3$ with counters in ten frames, then on whiteboards, saying both steps out loud. $11 - 3$ takes away just 1 to get to 10.
- 4 Practice** (15 min) Students cross out dots to get to 10 first on sheet 3 of Make a Ten to Add and Subtract, then hop back to 10 on sheet 4. Early finishers do sheet 5, which mixes adding and subtracting.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 5.4** and circle a face beside the "I can" line. On $13 - 7$, look for $10 - 7 = 3$ as the second step: the student took away all 7 again after reaching 10.

Need help? Use counters in two ten frames for every problem: take the extras off first, then the rest from the full frame.

Ready for more? Solve $17 - 9$ and $15 - 8$ by getting to 10 and by thinking addition, and tell which was faster.

GET READY

- Ten frames and counters for each pair
- A number line 0 to 20 for each student
- Whiteboards and markers

WORDS TO USE

get to 10: take away just enough to land on 10

break apart: split a number in two, like 7 into 5 and 2

the rest: what is still to take away after 10

ASK

- How many do you take away to get to 10? How do you know?
- You took away 5. How many more do you still need to take away?
- Why is 10 an easy number to subtract from?

WATCH FOR

Takes all 7 away again after 10: $10 - 7 = 3$. Write the 7 as 5 and 2 and cross off each part as it is used.

Breaks the 7 into parts that do not land on 10, like 4 and 3. Ask first: how many to get from 15 to 10? That is the first part.

Gives 10 as the answer. Ask "Did you take away all 7?" and point to the part still to go.

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PRINTABLE

Make a Ten to Add and Subtract: sheets 3-5

MAKER

Decompose to Subtract: Digit Mode Teen Numbers (Within 20), Decomposition Style Guided

TOOL

Ten Frames: two frames with + 10-Frame

TOOL

Number Line: Start 0, End 20, Jump

EXIT TICKET

1st Grade Subtraction and Equal Sign Exit Tickets: Exit Ticket 5.4



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Lesson 5.5: Subtract with pictures to 20

GOAL Students subtract within 20 with a picture: draw the first number, cross out the number taken away, count what is left and write the number sentence.

About 45 minutes

I can subtract with pictures.

THE LESSON

- 1 Warm up** (5 min) Tell quick take away stories: "10 birds, 3 fly away." Students show 10 fingers, fold 3 and say how many are left.
- 2 Teach** (10 min) Draw 16 circles in two ten frames: a full ten and 6 more. Cross out 7 from the end: the 6 extra, then 1 from the full ten. Count what is left: 9. Write $16 - 7 = 9$ and show where each number is in the picture.
Say: "The first number is all of them. I cross out the ones taken away. The rest is the answer."
- 3 Try it together** (10 min) Show pictures with some crossed out. Pairs write the sentence on whiteboards (13 with 8 crossed out is $13 - 8 = 5$). Then each draws $15 - 6$ or $18 - 9$ and a partner checks it.
- 4 Practice** (15 min) Students cross out and write how many are left on sheet 1 of Subtraction with Pictures to 20, write the sentence for pictures already crossed out on sheet 2, and draw their own on sheet 3. Early finishers do the stories on sheet 5.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 5.5** and circle a face beside the "I can" line. On the second question, the first number is all 12 oranges: a student who writes $6 - 6$ started with the ones left.

Need help? Take counters off two ten frames instead of drawing, then draw the same problem.

Ready for more? Make up a take away story, draw it, and write the number sentence under the picture.

GET READY

- Ten frames and counters for each pair
- Whiteboards and markers
- Pictures to cross out, for the board

WORDS TO USE

cross out: draw a line through one taken away

left: the ones not crossed out

number sentence: numbers and signs, like $16 - 7 = 9$

ASK

- Which number is all of them?
- Where is the answer in your picture?
- How does the ten frame help?

WATCH FOR

Counts the crossed out ones as the answer.

Circle the ones left and count only those.

Draws the wrong number to start, like 12 circles for 13. Draw in ten frames: a full ten, then the ones. The frames show 13 at a glance.

Writes the sentence backward: $5 - 13$. Point to the picture: start with all of them, then the ones crossed out.

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PRINTABLE

Subtraction with Pictures to 20: sheets 1-3 and 5

PRINTABLE

Counting On and Counting Back: sheet 3 (cross out from the end)

TOOL

Ten Frames: two frames with + 10-Frame; click a counter to take it off

QUIZ

Addition and Subtraction Quiz: the Within 20 level

EXIT TICKET

1st Grade Subtraction and Equal Sign Exit Tickets: Exit Ticket 5.5



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Lesson 5.6: Missing numbers within 20

GOAL Students find a missing second number in an addition or subtraction ($8 + \square = 13$, $14 - \square = 6$) by asking what number makes it true, then read it back to check.

About 45 minutes

I can find a missing number.

THE LESSON

- 1 Warm up** (5 min) Play Hide the Cubes: show 10 cubes, hide some under a cup and show the rest. Students say how many are hiding. Then do it with 14.
- 2 Teach** (10 min) Write $8 + \square = 13$. Put out 8 cubes and add one at a time until there are 13: 5 were added. Write 5 in the box and read it back. Then write $14 - \square = 6$: start with 14 and take away until 6 are left, 8. Show the shortcut: 6 and what make 14? 8.
Say: "I ask: what number makes this true? Then I put it in the box and check."
- 3 Try it together** (10 min) Pairs play Hide the Cubes with numbers to 20: one hides some, the other writes the equation with a box ($7 + \square = 15$) and solves it. Then all try $16 - \square = 9$ on whiteboards.
- 4 Practice** (15 min) Print a Fill in the Blank maker sheet with the box second (settings below). Students solve each one and read it back to check. Early finishers do the boxes on sheet 3 of Subtraction Drills Within 20; some boxes there are on top.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 5.6** and circle a face beside the "I can" line. A student who circles 22 for $8 + \square = 14$ added the numbers: have them read $8 + 22 = 14$ and check it.

Need help? Use the cup and cubes for every problem, with numbers within 10 first.

Ready for more? Write missing number problems for a partner, one with + and one with -, and check the answers.

GET READY

- Cubes and a cup to hide some under
- Two ten frames and counters for each pair
- Whiteboards and markers

WORDS TO USE

missing number: the number that goes in the box

equation: a number sentence with =

check: read it back with your number in it

ASK

- What number makes this true? How do you know?
- How can you check your number?
- Will the missing number be more or less than the total? Why?

WATCH FOR

Adds the numbers shown: 21 for $8 + \square = 13$.

Read it back: $8 + 21 = 13$? Then count on from 8 to 13 on fingers.

Writes 20 for $14 - \square = 6$. Ask: can you take 20 away from 14? Show 14 cubes and take some away until 6 are left.

Counts on from 8 and counts the 8: gets 6 for $8 + \square = 13$. Whisper 8, then count 9, 10, 11, 12, 13 on fingers: five.

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MAKER

Fill in the Blank Equations: Operations + and -, Range Within 20, Position Right Side

PRINTABLE

Subtraction Drills Within 20: sheet 3

PRINTABLE

Fact Families Within 20 - Missing Numbers: sheets 3-5

QUIZ

Addition and Subtraction Quiz: the Within 20 level

EXIT TICKET

1st Grade Subtraction and Equal Sign Exit Tickets: Exit Ticket 5.6



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Subtracting to 20

Lesson 5.7: The equal sign means “the same as”

GOAL Students learn that $=$ means both sides are the same amount, not “the answer comes next”, and make the two sides of a balance match ($9 = 6 + 3$, $5 + 4 = 7 + 2$).

About 45 minutes

I can make both sides the same.

THE LESSON

- 1 Warm up** (5 min) Show two towers of cubes, 7 and 7, then 7 and 9. Students show thumbs up for the same and thumbs down for not the same.
- 2 Teach** (10 min) Put 6 cubes and 3 cubes on one side of the balance and 9 on the other: it is level. Write $6 + 3 = 9$. Swap the sides and write $9 = 6 + 3$. Then put $5 + 4$ on one side and $7 + 2$ on the other: still level, so $5 + 4 = 7 + 2$.
Say: “The equal sign means ‘the same as’. The two sides have to match.”
- 3 Try it together** (10 min) One partner builds a side with cubes; the other makes the other side match a different way. They write it with an equal sign ($10 = 6 + 4$, $8 + 2 = 5 + 5$). Then try $7 + 5 = \square + 2$: why does 12 not go in the box?
- 4 Practice** (15 min) Students write the number sentence for each balance on sheet 1 of The Equal Sign and True or False to 20, find the missing numbers on sheet 2, and find the ones that are the same on sheet 3.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 5.7** and circle a face beside the “I can” line. A student who writes 13 in $8 + 5 = \square + 9$ read = as “the answer comes next”: build both sides with cubes.

Need help? Use cubes on a real balance for every problem, with numbers within 10.

Ready for more? Find as many ways as they can to fill $6 + 6 = \square + \square$, and explain why they all work.

GET READY

- A pan balance and cubes, or a balance drawn on chart paper
- Cubes and number cards 0 to 20 for each pair
- Whiteboards and markers

WORDS TO USE

equal sign: the sign $=$; it says both sides are the same

the same as: just as many; what $=$ means

side: the part before the $=$ or the part after it

ASK

- Is $9 = 6 + 3$ true? Can the answer come first?
- How do you know both sides are the same?
- What else is the same as 12?

WATCH FOR

Writes the total of the left side in the box:

$7 + 5 = 12 + 2$. Find each side out loud: 12 here, 14 there. Not the same, so what number makes 12?

Says $9 = 6 + 3$ is backward or wrong. Put it on the balance: 9 cubes on one side, 6 and 3 on the other. Level means the same.

Adds every number: $5 + 4 = 7 + 2$ is 18. Cover one side with a hand and find the other side, then switch.

ON ANIMAL MATH

PRINTABLE The Equal Sign and True or False to 20: sheets 1-3

MAKER

Equal Sign and True or False: Problem Type Balance Scales (Missing Number), Number Range Within 20, Operations Addition Only

QUIZ

Equal Sign Quiz: the Make It True level

EXIT TICKET

1st Grade Subtraction and Equal Sign Exit Tickets: Exit Ticket 5.7



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Subtracting to 20

Lesson 5.8: True or false equations

GOAL Students decide if an equation with + or – is true by finding each side and checking that the two match ($16 - 6 = 5 + 5$ is true; $7 + 3 = 10 + 3$ is false).

About 45 minutes

I can tell if an equation is true.

THE LESSON

- 1 Warm up** (5 min) Read quick equations aloud: $5 + 5 = 10$, $4 + 4 = 9$, $10 = 10$. Students hold up True or False.
- 2 Teach** (10 min) Write $8 + 4 = 6 + 6$. Find each side and write it under: 12 and 12, the same, so it is true. Write $9 + 2 = 10 + 2$: 11 and 12, so it is false. Then write $14 = 14$ and $8 = 13 - 5$: one number on a side still counts.
| Say: “I find each side. If the two numbers match, it is true.”
- 3 Try it together** (10 min) Pairs sort equation cards into true and false ($18 - 8 = 3 + 7$, $7 + 6 = 14$, $11 = 4 + 7$, $12 - 2 = 9 + 2$), then fix each false one by changing one number.
- 4 Practice** (15 min) Students find each side and circle True or False on sheet 4 of The Equal Sign and True or False to 20, then fix the false ones and write the number that makes each one true on sheet 5.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 5.8** and circle a face beside the “I can” line. On $6 + 3 = 9 + 1$, a student who circles True saw 9 and stopped: have them find the right side too.

Need help? Check each side with cubes, starting with equations that have one number on a side.

Ready for more? Write two true and two false equations with + or – on both sides for a partner to sort.

GET READY

- Equation cards, some true and some false
- Cubes for checking
- True and False cards for each student

WORDS TO USE

true: both sides are the same

false: the sides are not the same

find each side: work out the number on each side of the =

ASK

- How do you know it is true?
- What one number could you change to make it true?
- Can an equation be true with the answer first?

WATCH FOR

Calls $6 + 3 = 9 + 1$ true because $6 + 3 = 9$. Find both sides and write each number under its side before choosing.

Calls $12 = 5 + 7$ false because “the answer goes last”. Read it as “12 is the same as $5 + 7$ ” and check it with cubes.

Thinks $8 = 8$ is not a real equation. Put 8 cubes on each side of the balance: level, so true.

ON ANIMAL MATH

PRINTABLE The Equal Sign and True or False to 20: sheets 4-5

PRINTABLE Properties of Addition: sheet 3 (true or false with turn arounds and zero)

MAKER

Equal Sign and True or False: Problem Type Find Each Side, Then True or False, Number Range Within 20, Operations Addition & Subtraction, Equation Forms Both Sides

QUIZ

Equal Sign Quiz: the True or False level

EXIT TICKET

1st Grade Subtraction and Equal Sign Exit Tickets: Exit Ticket 5.8

Subtracting to 20

Lesson 5.9: The unknown in any spot

GOAL Students find an unknown number wherever it is: first ($\square - 4 = 6$), second, or with the equal sign first ($12 = \square + 5$), by asking if the box is a part or the whole.
I can find the unknown number.

About 45 minutes

THE LESSON

- 1 Warm up** (5 min) Write $9 + \square = 14$ and $14 - \square = 9$. Students solve both on whiteboards: both boxes are 5.
- 2 Teach** (10 min) Tell a story: "Some frogs sat on a log. 4 hopped off. 6 are left." Write $\square - 4 = 6$ and draw a bond: the parts are 4 and 6, so the whole is 10. Then write $12 = \square + 5$ and read it as "12 is the same as something plus 5": $7 + 5 = 12$, so the box is 7.
Say: "Is the box a part or the whole? If it is the whole, I add the parts."
- 3 Try it together** (10 min) Pairs solve $\square - 7 = 8$, $16 = 9 + \square$ and $\square + 8 = 12$ with a bond and cubes, then read each one back with the number in the box. Include one written in a column with the box on top.
- 4 Practice** (15 min) Students fill in the blanks, always the first number, on sheets 1 and 2 of Fill in the Blank, Equations to 20, then the boxes on top and in the middle on sheet 3 of Halloween Subtraction Drills.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 5.9** and circle a face beside the "I can" line. On $\square - 6 = 9$, an answer of 3 means the student subtracted the numbers shown: ask how many there were at the start.

Need help? Act out each one with cubes and a cup, with wholes to 10 first.

Ready for more? Solve sheet 1 of Add & Subtract Crossword to 20, or write box problems for a partner with the box in a new spot each time.

GET READY

- Cubes and a cup
- A number bond mat for each pair
- Whiteboards and markers

WORDS TO USE

unknown: a number we do not know yet; the box

whole: all of them, the biggest number in a fact

start: how many there were at the beginning

ASK

- Is the box a part or the whole? How do you know?
- What story could go with $\square - 4 = 6$?
- How can you check your number?

WATCH FOR

Writes 2 for $\square - 4 = 6$. Ask: if you start with 2, can you take away 4 and have 6 left? Act it out with cubes.

Skips equations that start with a number and =, like $12 = \square + 5$. Read them as "12 is the same as", or turn the card around: $\square + 5 = 12$.

Puts the whole in a part spot. Draw the bond first and put the numbers in it before solving.

ON ANIMAL MATH

PRINTABLE **Fill in the Blank - Equations to 20:** sheets 1-2 (the blank is always first)

PRINTABLE **Halloween Subtraction Drills:** sheet 3

PRINTABLE **Add & Subtract Crossword to 20:** sheet 1

MAKER **Fill in the Blank Equations:** Operations + and -, Range Within 20, Position Mixed

MAKER **Equal Sign and True or False:** Problem Type Make It True (Missing Number), Number Range Within 20

EXIT TICKET **1st Grade Subtraction and Equal Sign Exit Tickets:** Exit Ticket 5.9



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Subtracting to 20

Lesson 5.10: Subtraction facts to 20, fast

GOAL Students practice subtraction facts within 20 until they come quickly, picking the fastest way for each (count back, think addition or get to 10) and knowing the facts within 10 by heart.

About 45 minutes

I can subtract fast within 20.

THE LESSON

- 1 Warm up** (5 min) Flash fact cards within 10. Students whisper the answer to a partner, then say it together.
- 2 Teach** (10 min) Write $13 - 2$, $17 - 9$ and $14 - 6$. Ask which way is fastest for each: count back for $13 - 2$ (12, 11), think addition for $17 - 9$ ($9 + 8 = 17$), get to 10 for $14 - 6$ ($14 - 4 - 2 = 8$). Then students sort their cards into facts they know by heart and facts they work out.
| Say: "I pick the fastest way. Facts I know by heart, I just say."
- 3 Try it together** (10 min) Partners quiz each other with fact cards: a card answered right away goes in the fast pile; for the others, the partner says a helper fact. Then pairs play Subtraction Memory (sheet 5 of Subtraction Games to 20).
- 4 Practice** (15 min) Students do sheet 1 of Subtraction Drills Within 20 and write their time, then sheet 5 or 6 (facts with 7 or with 9, then their families). On another day, use the same sheets of Halloween Subtraction Drills.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 5.10** and circle a face beside the "I can" line. Slow or wrong answers on $15 - 8$ and $12 - 8$ show who still counts back 8 by ones: give them a helper fact.

Need help? Practice one group at a time (take away 9, then take away 8) with a helper fact card beside each one.

Ready for more? Make a card set of the ten hardest facts they know and quiz a partner, or take the Subtraction Quiz set to Up to 20.

GET READY

- Subtraction fact cards to 20 for each pair
- A timer
- Whiteboards and markers

WORDS TO USE

fast fact: a fact you know right away, without counting

helper fact: a fact you know that helps with one you do not, like $7 + 8 = 15$ for $15 - 8$

ASK

- Which way did you use for this one? Why?
- What addition fact helps you with $16 - 9$?
- Which facts do you know right away now?

WATCH FOR

Counts back by ones for every fact and loses count on $16 - 9$. Ask for the helper fact: 9 and what make 16? Write it next to the problem.

Is one off: $13 - 4 = 10$. They counted the start. Check with addition: $4 + 10$ is 14, not 13.

Rushes to beat the timer and guesses. Race only their own time from yesterday, and count a right answer before speed.

ON ANIMAL MATH

PRINTABLE

Subtraction Drills Within 20: sheets 1, 5 and 6

PRINTABLE

Halloween Subtraction Drills: sheets 1, 5 and 6

PRINTABLE

Subtraction Games to 20: sheet 5 (Subtraction Memory)

MAKER

Math Fact Drills: Operations – only, Fact Range Within 20

QUIZ

Subtraction Quiz

EXIT TICKET

1st Grade Subtraction and Equal Sign Exit Tickets: Exit Ticket 5.10

Subtracting to 20

Lesson 5.11: Add and subtract mixed

GOAL Students add and subtract within 20 on the same page, reading each sign before they solve, and choose + or – to make an equation true.

About 45 minutes

I can add and subtract to 20.

THE LESSON

- 1 Warm up** (5 min) Say a fact without its sign: “8 and 5 makes 13” or “8 and 5 makes 3”. Students hold up the + card or the – card.
- 2 Teach** (10 min) Write $7 + 6$ and $13 - 6$ side by side. Circle each sign before solving, then show how they help each other: $7 + 6 = 13$, so $13 - 6 = 7$. Then write $15 \square 6 = 9$ and ask which sign makes it true: $15 + 6$ is 21, too big, so it is minus.
| Say: “I look at the sign first. Plus makes more, minus makes fewer.”
- 3 Try it together** (10 min) Pairs play Bigger Answer Wins (sheet 6 of Subtraction Games to 20), saying each fact aloud. Then solve sign puzzles on whiteboards: $8 \square 7 = 15$, $14 \square 9 = 5$, $6 \square 5 = 11$.
- 4 Practice** (15 min) Students do sheet 2 of Subtraction Drills Within 20, circling each sign first, then a Horizontal Math to 20 sheet. Early finishers follow the paths on sheets 2 and 3 of Math Mazes (its other sheets are for older grades).
- 5 Exit ticket** (5 min) Students do **Exit Ticket 5.11** and circle a face beside the “I can” line. An answer of 18 for $11 - 7$ or 25 for $16 - 9$ means the student added: circle each sign and try again.

Need help? Start with Horizontal Math 10 to 20: mixed signs, but no new ten to cross.

Ready for more? Write sign puzzles for a partner: a fact with its sign covered by a sticky note.

GET READY

- Fact cards with + and – mixed
- A + card and a – card for each student
- Whiteboards and markers

WORDS TO USE

plus: the sign +; put together

minus: the sign –; take away

sign: the mark that says add or subtract

ASK

- What does the sign tell you to do?
- Will the answer be more or less? Why?
- How did $7 + 6$ help you with $13 - 6$?

WATCH FOR

Adds every problem on a mixed page. Circle the signs before starting: one color for plus, one for minus.

Picks + for $12 \square 5 = 7$ because the numbers are there. Try each sign: $12 + 5$ is 17, $12 - 5$ is 7. Which one makes it true?

Misses addition facts after a week of subtracting. Warm up with doubles and make a ten before the mixed page.

ON ANIMAL MATH

- | | |
|-------------|---|
| PRINTABLE | Subtraction Drills Within 20: sheet 2 |
| PRINTABLE | Horizontal Math to 20: sheets 1-3 |
| PRINTABLE | Math Mazes: sheets 2-3 |
| PRINTABLE | Horizontal Math 10 to 20: sheets 1-2, for help |
| MAKER | Horizontal Math Equations: Operations + and –, Range Within 20 |
| QUIZ | Addition and Subtraction Quiz: the Within 20 level |
| EXIT TICKET | 1st Grade Subtraction and Equal Sign Exit Tickets: Exit Ticket 5.11 |

Subtracting to 20

Lesson 5.12: Puzzles and games

GOAL Students use their facts within 20 to solve number puzzles (arrow chains, riddles, two cards that make a number) and play games that need quick adding and subtracting.
I can solve number puzzles.

About 45 minutes

THE LESSON

- 1 Warm up** (5 min) Play I Have, Who Has? with the subtraction cards: every student gets a card, and the class tries to beat its time.
- 2 Teach** (10 min) Draw an arrow chain: start at 15, take away 7, add 5, take away 4. Solve it one arrow at a time, writing each answer in its box: 8, 13, 9. Then show cards 8, 4, 9 and 6 and find the two that make 13 (4 and 9), checking with $13 - 9 = 4$.
Say: "One step at a time. I write each answer before the next arrow."
- 3 Try it together** (10 min) Show how Rocket to the Moon is played, then pairs play it or Spin and Subtract while you listen to the facts said out loud. Partners check each answer on the answer sheet.
- 4 Practice** (15 min) Students pick a puzzle: the subtraction riddle on sheet 2 of Animal Riddle Math, or the mystery picture on sheet 2 of Mystery Pictures: Math Facts. Pairs who finish play Race to Zero (sheet 4 of Subtraction Games to 20).
- 5 Exit ticket** (5 min) Students do **Exit Ticket 5.12** and circle a face beside the "I can" line. In the arrow chain, a student who adds at every arrow gets 18, 22, 28: have them say each sign before each step.

Need help? Play Race to the Top (sheet 2), where the numbers are small, before the board game.

Ready for more? Make an arrow chain or a riddle for the class, and check that every answer is right.

GET READY

- Subtraction Games to 20 for each pair
- Dice, pawns and paper clips for spinners
- I Have, Who Has? cards, cut apart

WORDS TO USE

arrow: what to do next: -5 means take away 5

total: what the parts make together

ASK

- What did you do first? Why?
- How do you know these two cards make 14?
- Which fact did a game help you learn?

WATCH FOR

Uses the first number at every arrow: $13 - 5$, then $13 + 4$. Point to the last box filled in: that is the new start.

In a game, the partner accepts an answer without checking. Make checking on the answer sheet a rule of the game.

Guesses which two cards make the number.

Take one card and ask what goes with it:

$14 - 6 = 8$. Is there an 8?

ON ANIMAL MATH

PRINTABLE **Subtraction Games to 20:** sheets 1-4

PRINTABLE **I Have, Who Has? Addition and Subtraction to 20:** sheets 3-4

PRINTABLE **Animal Riddle Math:** sheets 2-3, or the same sheets of Halloween Riddle Math

PRINTABLE **Mystery Pictures: Math Facts:** sheet 2

MAKER **Number & Math Crosswords:** Mode Math Crossword, Operation Addition & Subtraction, Number Range 1 to 20

EXIT TICKET **1st Grade Subtraction and Equal Sign Exit Tickets:** Exit Ticket 5.12



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