Facts Within 20

Unit 1 Overview: 10 lessons

The first unit of 2nd grade goes back over the addition and subtraction facts within 20 and turns them into mental strategies: doubles and near doubles, making a ten to add, getting to ten or thinking addition to subtract, then the facts from memory and in games and puzzles. Lessons 1.4 to 1.7 (adding three numbers in any order, fact families, missing numbers anywhere, and = and ≠) are taught in 2nd grade in some states. Knowing the facts from memory is a goal for the whole year, so keep the flash cards and games going after the unit.

THE UNIT, DAY BY DAY

Day 1	**Pre-Check**	What students already know, before the first lesson.
Day 2	**1.1** Doubles and near doubles	I can use a double to add a near double.
Day 3	**1.2** Make a ten to add	I can make a ten to add.
Day 4	**1.3** Get to ten to subtract; think addition	I can get to 10 or think addition to subtract.
Day 5	**1.4** Add three numbers: order, zero and grouping ★	I can add three numbers in any order.
Day 6	**1.5** Fact families ★	I can write a fact family.
Day 7	**1.6** Missing numbers anywhere ★	I can find a missing number in any place.
Day 8	**1.7** True or false; equal and not equal ★	I can tell if a number sentence is true.
Day 9	**1.8** Addition facts to 20 from memory	I can add facts to 20 from memory.
Day 10	**1.9** Subtraction facts to 20 from memory	I can subtract facts to 20 from memory.
Day 11	**1.10** Fact games and puzzles	I can solve fact puzzles.
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 2nd 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

- Two ten frames and 20 counters in two colors for each student
- Snap cubes in two colors and number cards 0 to 20
- A number line 0 to 20 for each student, whiteboards and dry erase markers
- Addition and subtraction flash cards to 20, dice, and paper clips for spinners
- A pan balance (or one drawn on chart paper) and cards with = and ≠

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

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Facts Within 20

Lesson 1.1: Doubles and near doubles

GOAL Students recall the doubles to 10 + 10 and use them for near doubles: 4 + 5 is 4 + 4 and 1 more, and 10 + 9 is 10 + 10 and 1 less.

I can use a double to add a near double.

About 45 minutes

THE LESSON

1. **Warm up** (5 min) Flash the doubles cards and have the class say each sum together. Ask which ones they had to stop and think about.
2. **Teach** (10 min) Build 4 + 4 in two ten frames with one color and write 4 + 4 = 8. Add one counter of the other color to make 4 + 5: the total is 1 more, 9. Show it the other way too: 5 + 5 is 10, so 4 + 5 is 1 less. Then 10 + 9: 10 + 10 is 20, take 1 away, 19.

   > **Say:** "When the numbers are 1 apart, I find a double I know, then add 1 or take 1 away."

3. **Try it together** (10 min) Call near doubles: 3 + 2, 5 + 4, 9 + 10. Partners write the double they used and the sum, then compare: the smaller double and the bigger one both work.
4. **Practice** (15 min) Students do sheet 1 of Near Doubles to 10 and sheet 1 of Doubles to 10. Early finishers do sheet 1 of Doubles & Near Doubles to 20, with numbers past 10 (17 + 16 is 16 + 16 and 1 more).
5. **Exit ticket** (5 min) Students do **Exit Ticket 1.1** and circle a face beside the "I can" line. On question 1, look for 18, then 17, one less than the double. On question 2, 5 + 6 = 11 and 7 + 6 = 13; a 12 for 7 + 6 means the double was found but the 1 more was left off.

Need help? Start with doubles to 5 + 5 on fingers, then near doubles to 10.

Ready for more? Double teen numbers past 20: 12 + 12, then 12 + 13.

GET READY

- Two ten frames and 20 counters in two colors for each student
- Doubles flash cards, 1 + 1 to 10 + 10
- Whiteboards and markers

WORDS TO USE

double: a number added to itself, like 5 + 5

near double: two numbers 1 apart, like 4 + 5

1 more, 1 less: how far a near double is from its double

ASK

- Which double helped you? Why that one?
- Is the answer 1 more or 1 less than the double?
- Could a different double help with the same fact?

WATCH FOR

Adds 1 to the bigger double (9 + 10 as 10 + 10 + 1). Build both with counters: 10 + 10 has one too many, so take 1 away.

Counts on from the first number. Cover one counter so the frames show a double, say it, then uncover the counter.

ON ANIMAL MATH

- PRINTABLE **Near Doubles to 10**: sheet 1
- PRINTABLE **Doubles to 10**: sheet 1
- PRINTABLE **Doubles & Near Doubles to 20**: sheet 1, for more
- MAKER **Doubles & Near Doubles**: Mode Mixed, Number Range Within 10
- TOOL **Ten Frames**: a second Counter Color for the 1 more
- EXIT TICKET **2nd Grade Facts Within 20 Exit Tickets**: Exit Ticket 1.1

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Facts Within 20

Lesson 1.2: Make a ten to add

GOAL Students add to 7, 8 or 9 by making a ten: break apart the other number so part of it fills the ten, then add the rest (8 + 5 = 8 + 2 + 3 = 13).

I can make a ten to add.

About 45 minutes

THE LESSON

1. **Warm up** (5 min) Call a number from 1 to 9; students write the number that makes 10 with it. Go fast: 8, 6, 9, 7, 5, 3.
2. **Teach** (10 min) Put 8 counters in one ten frame and 5 in the next. Move 2 over to fill the first frame: 10 and 3 is 13. Write 8 + 5 with a bond under the 5 showing 2 and 3, then 8 + 2 = 10 and 10 + 3 = 13. Do 9 + 7 the same way: 9 + 1 = 10, 10 + 6 = 16.

   > **Say:** "I fill the ten first. 8 needs 2 more to make 10, so I break 5 into 2 and 3. 10 and 3 is 13."

3. **Try it together** (10 min) Partners take turns: one builds a fact like 8 + 7 in two ten frames, the other moves counters to fill a ten and says the new fact (10 + 5). Both write the bond and the two steps. Include one with the smaller number first.
4. **Practice** (15 min) Students do sheet 1 of Make a Ten to Add and Subtract (draw the dots to fill the ten) and sheet 2 (break apart the smaller number), then sheet 2 of Three Sisters Garden Math. Early finishers make up three facts that cross 10 and write the steps.
5. **Exit ticket** (5 min) Students do **Exit Ticket 1.2** and circle a face beside the "I can" line. In 5 + 7 the 5 breaks into 3 and 2: 7 + 3 = 10, then 10 + 2 = 12. Watch for the whole 5 added again in the second step (10 + 5). On question 2, 9 + 5 is 10 + 4 = 14.

Need help? Use a double ten frame and counters for every problem, starting with 9 + something, where only 1 counter moves.

Ready for more? Make a ten with bigger numbers: 28 + 5 = 28 + 2 + 3 = 33, and 47 + 6.

GET READY

- Two ten frames and 20 counters for each student
- Whiteboards and markers

WORDS TO USE

make a ten: move some over to fill a ten frame first

break apart: split a number into two parts, like 5 into 2 and 3

number bond: a whole joined to its two parts

ASK

- How many more does 8 need to make 10?
- Which number did you break apart? Why that one?
- What is left after you make the ten?

WATCH FOR

Makes the ten, then adds the whole second number (8 + 2 = 10, then 10 + 5). Point to the counters: 2 of the 5 already moved, so only 3 are left.

Does not know the pairs that make 10. Practice the make 10 pairs with one ten frame before the strategy.

Breaks apart the bigger number and gets lost. Ask which frame is closer to full; fill that one.

ON ANIMAL MATH

- PRINTABLE **Make a Ten to Add and Subtract**: sheets 1-2
- PRINTABLE **Three Sisters Garden Math**: sheet 2
- MAKER **Ten Frame Addition**: Problem Type Make a Ten to Add
- TOOL **Ten Frames**: two frames with + 10-Frame
- EXIT TICKET **2nd Grade Facts Within 20 Exit Tickets**: Exit Ticket 1.2

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Facts Within 20

Lesson 1.3: Get to ten to subtract; think addition

GOAL Students subtract from teen numbers two ways: get to 10 first (17 – 8 = 17 – 7 – 1 = 9), or think of the addition fact (8 + 9 = 17, so 17 – 8 = 9).

I can get to 10 or think addition to subtract.

About 45 minutes

THE LESSON

1. **Warm up** (5 min) Show 13, 16 and 12 in ten frames. Students say how many to take away to get to 10.
2. **Teach** (10 min) Build 17 in two frames. Take away 7 to empty the second frame: 10 are left. Take 1 more from the full frame: 9. Write 17 – 8 with a bond showing 7 and 1, then 17 – 7 = 10 and 10 – 1 = 9. Show the same hops on a number line. Then ask "8 and what make 17?" and write 8 + 9 = 17, so 17 – 8 = 9.

   > **Say:** "I take away enough to get to 10, then the rest. Or I think: 8 and what make 17?"

3. **Try it together** (10 min) Give 11 – 9, 15 – 9 and 12 – 3. Half the pairs get to 10 on a number line and half think addition, then they trade and check that the answers match. Talk about which way was faster for 11 – 9 (9 + 2 = 11).
4. **Practice** (15 min) Students do sheet 3 of Make a Ten to Add and Subtract (cross out to get to 10) and sheet 4 (hop back to 10), then sheet 5, which mixes adding and subtracting. Early finishers write the addition fact that checks each answer on sheet 4.
5. **Exit ticket** (5 min) Students do **Exit Ticket 1.3** and circle a face beside the "I can" line. On question 1, 13 – 7 breaks 7 into 3 and 4: 13 – 3 = 10, then 10 – 4 = 6. Watch for 10 – 7 in the second step. On question 2, 8 + 7 = 15 gives 15 – 8 = 7.

Need help? Use a full ten frame and loose ones: take the loose ones first, then from the ten.

Ready for more? Get to a ten with bigger numbers: 34 – 6 = 34 – 4 – 2 = 28.

GET READY

- Two ten frames and 20 counters for each student
- 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

think addition: use an addition fact you know to subtract

part: one of the two numbers that make the whole

ASK

- How many do you take away to get to 10?
- How much is left to take away?
- What addition fact helps with this one?

WATCH FOR

After getting to 10, takes away the whole number again (10 – 8). Count the counters already gone: 7 went, so only 1 more goes.

Thinks addition but adds the two numbers (8 + 17). Ask: 8 and how many more make 17? Count on from 8 on the number line.

ON ANIMAL MATH

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

MAKER **Decompose to Subtract**: Digit Mode Teen Numbers (Within 20), Decomposition Style Guided (One Part Pre-Filled)

TOOL **Number Line**: Mode Jump, Start 0, End 20

TOOL **Ten Frames**

EXIT TICKET **2nd Grade Facts Within 20 Exit Tickets**: Exit Ticket 1.3

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Facts Within 20

Lesson 1.4: Add three numbers: order, zero and grouping

GOAL Students learn that order does not change a sum (4 + 13 = 13 + 4), adding 0 leaves a number the same, and three numbers can be grouped any way, so they add a pair that makes 10 or a double first.

I can add three numbers in any order.

About 45 minutes

★ Taught in 2nd grade in some states

THE LESSON

1. **Warm up** (5 min) Write 6 + 5 = 11. Students write its turn-around fact. Then ask for 0 + 16 and 16 + 0, and why both are 16.
2. **Teach** (10 min) Snap a train of 4 red and 13 blue cubes and turn it around: 13 + 4 is still 17. Write 4 + 13 = 13 + 4. Then write 8 + 6 + 2, circle 8 and 2 (they make 10) and add 10 + 6 = 16. Show that adding in order, 8 + 6 = 14 and 14 + 2 = 16, gives the same sum. Then 5 + 4 + 5: here the double 5 + 5 works.

   > **Say:** "I can add in any order and group the numbers any way. I look for a 10 or a double to add first."

3. **Try it together** (10 min) Deal three number cards to each pair. They write the sum, circle the pair they add first and say why. Put a 0 in once: what happens?
4. **Practice** (15 min) Students do sheets 1 and 2 of Properties of Addition (turn-around facts), sheet 3 (adding zero, true or false) and sheet 4 (circle the two numbers that make 10). Early finishers do sheet 5 of Adding Three Numbers (find the missing number).
5. **Exit ticket** (5 min) Students do **Exit Ticket 1.4** and circle a face beside the "I can" line. In 3 + 8 + 7, look for 3 and 7 circled, then 3 + 7 = 10 and 10 + 8 = 18. On question 2, the boxes are 9 (6 + 9 turned around) and 14; a 6 in the first box means the student copied a number.

Need help? Use cube trains for every sum, then the dot cards on sheet 1 of Adding Three Numbers.

Ready for more? Add four numbers by finding two pairs: 4 + 7 + 6 + 3 = 10 + 10.

GET READY

- Snap cubes in two colors, about 20 for each pair
- Number cards 0 to 9 for each pair
- Whiteboards and markers

WORDS TO USE

turn-around fact: the same two numbers added in the other order: 4 + 7 and 7 + 4

zero: nothing; adding 0 leaves a number the same

group: choose which two numbers to add first

ASK

- Which two numbers did you add first? Why?
- Does 4 + 13 have the same sum as 13 + 4? How do you know?
- What happens when you add 0?

WATCH FOR

Adds only two of the three numbers. Have them tick each number as they use it.

Thinks adding 0 makes 0, or adds 1. Act it out: 12 cubes and no more cubes is still 12.

Writes 8 + 2 = 10 + 6 = 16 in one line. Write two sentences: 8 + 2 = 10, then 10 + 6 = 16.

ON ANIMAL MATH

- PRINTABLE — **Properties of Addition**: sheets 1-4
- PRINTABLE — **Adding Three Numbers**: sheets 1 and 5
- MAKER — **Horizontal Math Equations**: Range Within 20, then in Advanced Options Three Numbers, Numbers With a Ten or a Double
- EXIT TICKET — **2nd Grade Facts Within 20 Exit Tickets**: Exit Ticket 1.4

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Facts Within 20

Lesson 1.5: Fact families

GOAL Students see that one addition fact gives three more: from 4, 7 and 11 they write 4 + 7 = 11, 7 + 4 = 11, 11 – 4 = 7 and 11 – 7 = 4, and use a family to subtract.

I can write a fact family.

About 45 minutes

★ Taught in 2nd grade in some states

THE LESSON

1. **Warm up** (5 min) Show a bond with parts 3 and 9. Students write the whole, 12, then any fact they can make with the three numbers.
2. **Teach** (10 min) Build a train of 4 red and 7 blue cubes and fill a bond: parts 4 and 7, whole 11. Write the two adding facts, turning the train around for the second. Snap off the 4: 11 – 4 = 7. Put it back and snap off the 7: 11 – 7 = 4. Point out that each subtraction starts with the whole.

   > **Say:** "Three numbers, four facts. The whole comes last when I add and first when I subtract."

3. **Try it together** (10 min) Give each pair a triangle card: 7, 8, 15; 5, 9, 14; 6, 6, 12. They write the facts, then work out why 6, 6 and 12 make only two.
4. **Practice** (15 min) Students do sheet 3 of Fact Families Within 20 (Write All), then sheet 1 of Fact Families 10 to 20 (Write All). Early finishers do sheet 5 of Fact Families Within 20, then sheets 5 and 6 of Addition Drills Within 20.
5. **Exit ticket** (5 min) Students do **Exit Ticket 1.5** and circle a face beside the "I can" line. On question 1, all four facts use 6, 9 and 15, with 15 first in both subtractions; watch for 6 – 15 or a fact with another number. On question 2, only 12 – 5 = 7 uses 5, 7 and 12.

Need help? Start with families whose whole is 10 or less, with a cube train for each fact.

Ready for more? Write the family of 7, 13 and 20, or find the family when only the whole and one part are given.

GET READY

- Number bond mats or triangle cards with three numbers
- Snap cubes in two colors, 20 for each pair
- Whiteboards and markers

WORDS TO USE

fact family: the adding and subtracting facts made from the same three numbers

whole: the biggest number in the family; the two parts make it

part: one of the two smaller numbers

ASK

- Which number is the whole? How do you know?
- If you know 10 + 7 = 17, what is 17 – 7?
- Why does a double have only two facts?

WATCH FOR

Writes the smaller number first in a subtraction (4 – 11). Use the cube train: take 4 from 11, not 11 from 4.

Brings in a number from outside the family (11 – 1 = 10). Circle the three numbers on the bond and check that each fact uses only those.

Writes the same fact twice. Tick off each fact on a list: two that add, two that subtract.

ON ANIMAL MATH

- PRINTABLE **Fact Families Within 20 - Write All**: sheets 3 and 5
- PRINTABLE **Fact Families 10 to 20 - Write All**: sheet 1
- PRINTABLE **Addition Drills Within 20**: sheets 5-6
- MAKER **Fact Families**: Number Range 10 to 20, Difficulty Write All 4 Facts
- EXIT TICKET **2nd Grade Facts Within 20 Exit Tickets**: Exit Ticket 1.5

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Facts Within 20

Lesson 1.6: Missing numbers anywhere

GOAL Students find a missing number in any place (□ + 5 = 13, 16 – □ = 9, 12 = □ + 8): they decide what they know, a part or the whole, and use a fact.

I can find a missing number in any place.

About 45 minutes

★ Taught in 2nd grade in some states

THE LESSON

1. **Warm up** (5 min) Hide some counters under a cup and put 6 beside it: "There are 14 in all. How many are hiding?" Repeat with 11 in all and 9 showing.
2. **Teach** (10 min) Write □ + 5 = 13: a part and the whole, so 13 – 5 = 8; check 8 + 5 = 13. Write 16 – □ = 9: 16 at the start and 9 left, so 7 went away. Read 12 = □ + 8 as "12 is the same as the box and 8": 4. Last, 6 + □ = 10 + 4: find the side with no box first, 14, so the box is 8.

   > **Say:** "I find what I know, then use a fact. I check by putting my number in the box."
3. **Try it together** (10 min) Partners write a fact family, then cover one number of a fact with a sticky note for the other to find, in every place.
4. **Practice** (15 min) Students do sheet 1 of Fact Families Within 20 (Missing Numbers), then sheet 3 of Addition Drills Within 20. Early finishers do sheet 3 of Subtraction Drills Within 20.
5. **Exit ticket** (5 min) Students do **Exit Ticket 1.6** and circle a face beside the "I can" line. Look for 9, 8 and 7 in the boxes; a 21 in the first box means the student added the two numbers shown. On question 2 the answer is 8; a 3 means the student made 10 and stopped.

Need help? Play the cup game for every problem, with wholes to 10 at first.

Ready for more? Try a sum on each side, 8 + □ = 3 + 10, or 40 + □ = 65.

GET READY

- A cup and 20 counters for each pair
- Whiteboards and markers
- Sticky notes

WORDS TO USE

missing number: the number in the box that we need to find

equal sign: means both sides are the same amount

check: put your number in the box and read the sentence

ASK

- What do you know: the whole or a part?
- Which fact in the family helps?
- Put your number in the box. Is the sentence true?

WATCH FOR

Adds the two numbers shown (□ + 5 = 13 gives 18). Ask if 18 and 5 could make 13. Play the cup game with counters.

In 12 = □ + 8, writes 20. Read it as "12 is the same as something and 8."

ON ANIMAL MATH

- PRINTABLE **Fact Families Within 20 - Missing Numbers**: sheet 1
- PRINTABLE **Addition Drills Within 20**: sheet 3
- PRINTABLE **Subtraction Drills Within 20**: sheet 3
- MAKER **Fill in the Blank Equations**: Range Within 20, Position Mixed (Advanced Options)
- MAKER **Equal Sign and True or False**: Problem Type Make It True (Missing Number), Number Range Within 20
- QUIZ **Equal Sign Quiz**: the Make It True level
- EXIT TICKET **2nd Grade Facts Within 20 Exit Tickets**: Exit Ticket 1.6

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Facts Within 20

Lesson 1.7: True or false; equal and not equal

GOAL Students find the value of each side of a number sentence, write = or ≠ between two sides (13 + 4 = 10 + 7, 11 – 9 ≠ 3), tell if a sentence is true, and fix a false one.

I can tell if a number sentence is true.

About 45 minutes

★ Taught in 2nd grade in some states

THE LESSON

1. **Warm up** (5 min) Put 6 + 3 on one side of a balance and 9 on the other: is it level? Then 6 + 3 and 10. Students show a thumb up for true and down for false.
2. **Teach** (10 min) Write 13 + 4 and 10 + 7 with a space between. Both sides are 17, so write =. Write 11 – 9 and 3: 2 is not 3, so write ≠ and read it "is not equal to." Then show 12 + 4 ≠ 16: 12 + 4 is 16, so it is false. Fix it by changing ≠ to =.

   > **Say:** "I find the value of each side. The same amount: equal. Not the same: not equal."

3. **Try it together** (10 min) Pairs sort sentence cards into true and false, then fix each false one. Include 11 = 4 + 7 and 6 + 4 = 10 + 1, so the answer is not always alone on the right.
4. **Practice** (15 min) Students do sheet 2 of Equal and Not Equal (write = or ≠), sheet 3 (true or false, fix the false ones) and sheet 5 (stories). Early finishers do sheet 4 (sort the cards). For review, use sheet 4 of The Equal Sign and True or False to 20.
5. **Exit ticket** (5 min) Students do **Exit Ticket 1.7** and circle a face beside the "I can" line. On question 1, both sides make 13 (=), and 16 – 7 is 9, not 8 (≠). On question 2, 9 + 8 ≠ 17 is false because 9 + 8 is 17; a student who circles True may be reading ≠ as =. 12 – 5 = 3 + 4 is true.

Need help? Use the balance and cubes for each sentence, then the cube trains on sheet 1 of Equal and Not Equal.

Ready for more? Write true sentences with = and ≠ for a partner, with two-digit numbers: 30 + 5 = 20 + 15.

GET READY

- A pan balance and cubes, or a balance drawn on chart paper
- Cards with = and ≠ for each student
- Sentence cards, some true and some false

WORDS TO USE

true: both sides are the same amount

false: the two sides are not the same amount

not equal (≠): an equal sign with a line through it; read it "is not equal to"

ASK

- What is the value of each side?
- How do you read ≠?
- How could you change it to make it true?

WATCH FOR

Thinks the answer must come right after =, so marks 11 = 4 + 7 false. Read = as "is the same as" and find both sides.

Says 12 + 4 ≠ 16 is true because 16 is the sum. Read the whole sentence aloud: "12 + 4 is not equal to 16." Is that true?

Works out one side and guesses the other. Write the value under each side before choosing the sign.

ON ANIMAL MATH

PRINTABLE **Equal and Not Equal**: sheets 2-5

PRINTABLE **The Equal Sign and True or False to 20**: sheet 4, for review

MAKER **Equal Sign and True or False**: Problem Type True or False, Then Fix It, Number Range Within 20, Equation Forms Both Sides (Like 6 + 2 = 10 – 2)

QUIZ **Equal Sign Quiz**: the True or False level

EXIT TICKET **2nd Grade Facts Within 20 Exit Tickets**: Exit Ticket 1.7

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Facts Within 20

Lesson 1.8: Addition facts to 20 from memory

GOAL Students answer addition facts to 20 right away, without counting, and use a strategy (a double, a near double, make a ten) for any fact they do not know yet.

I can add facts to 20 from memory.

About 45 minutes

THE LESSON

1. **Warm up** (5 min) Flash 10 facts in a row; students write each sum on whiteboards. Go back over any fact several students missed and name a strategy for it.
2. **Teach** (10 min) Sort a set of flash cards with the class into three piles: know it, almost, and need a strategy. Take 8 + 7 from the last pile and think aloud: 8 needs 2 to make 10, so 10 + 5 = 15, or 7 + 7 and 1 more is 15. Say the fact three times. Do 6 + 5 the same way: 5 + 5 and 1 more.

   > **Say:** "If I know it, I say it. If I don't, I use a strategy, then I say the fact again so I remember it."

3. **Try it together** (10 min) Partners quiz each other with flash cards and sort them into the three piles. Each picks two cards from the need a strategy pile, writes the strategy on a sticky note and practices them.
4. **Practice** (15 min) Students do sheet 1 of Addition Drills Within 20 and write the starting and ending times, then sheet 2 to beat their time. Early finishers do sheets 1 and 2 of Halloween Addition Drills.
5. **Exit ticket** (5 min) Students do **Exit Ticket 1.8** and circle a face beside the "I can" line. All eight facts should take a couple of minutes. The column facts all cross ten; 12 + 5 = 17 checks that they add the ones and keep the ten. Note the facts that were wrong or slow for tomorrow's practice.

Need help? Practice a short stack of facts (doubles and make ten facts) with the strategy chart on the desk.

Ready for more? Time a whole sheet and try to beat it, or add a one-digit number to a teen number: 13 + 5, 16 + 3.

GET READY

- Addition flash cards to 9 + 9, a set for each pair
- A timer
- The class strategy chart: doubles, near doubles, make a ten
- Whiteboards and markers

WORDS TO USE

from memory: knowing the answer right away, without counting

fluent: quick and right

strategy: a way to work out a fact you do not know yet

ASK

- Which facts do you know right away?
- Which strategy helps most with the 9 facts?
- Is 13 + 5 the same as 5 + 13?

WATCH FOR

Counts on fingers for every fact. Pick three facts a day to learn by heart; let them use a strategy, then say the fact.

Mixes up close facts (6 + 5 = 12). Check with a double: 5 + 5 = 10, so 6 + 5 is 11.

Races and makes careless mistakes. Count right answers first; speed comes after.

ON ANIMAL MATH

- PRINTABLE **Addition Drills Within 20**: sheets 1-2
- PRINTABLE **Halloween Addition Drills**: sheets 1-2
- MAKER **Addition Fact Drills**: Fact Range Within 20
- QUIZ **Addition and Subtraction Quiz**: the Within 20 level
- EXIT TICKET **2nd Grade Facts Within 20 Exit Tickets**: Exit Ticket 1.8

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Facts Within 20

Lesson 1.9: Subtraction facts to 20 from memory

GOAL Students answer subtraction facts within 20 right away by thinking of the addition fact (11 – 9: 9 + 2 = 11, so 2), and get to 10 for the ones they do not know yet.

I can subtract facts to 20 from memory.

About 45 minutes

THE LESSON

1. **Warm up** (5 min) Say an addition fact, 8 + 12 = 20; students write both subtraction facts that go with it. Do three more.
2. **Teach** (10 min) Show 11 – 9 and think aloud: what goes with 9 to make 11? 9 + 2 = 11, so 11 – 9 = 2. Then 20 – 7: 7 + 13 = 20, so 13. Every addition fact they know hides two subtraction facts. For one they do not know yet, they get to 10 first, as in lesson 1.3.

   > **Say:** "To subtract, I think: what do I add to the number I take away to make the whole?"

3. **Try it together** (10 min) Partners flip subtraction cards, say the addition fact that helps, then the answer. Missed cards go in a pile to practice.
4. **Practice** (15 min) Students do sheet 1 of Subtraction Drills Within 20 with their start and end times, then sheet 2 (add and subtract, watch the signs). Early finishers do sheets 1 and 2 of Halloween Subtraction Drills, or the Subtraction Quiz with Up to 20 picked.
5. **Exit ticket** (5 min) Students do **Exit Ticket 1.9** and circle a face beside the "I can" line. All eight within a couple of minutes. Question 1 is all teen facts; 17 – 5 and 19 – 6 check taking ones from a teen number. An answer bigger than the start number means the student added.

Need help? Practice one whole at a time (every way to take from 14) with cubes.

Ready for more? Subtract a one-digit number from a two-digit number with a fact: 41 – 9 (11 – 9 = 2, so 32).

GET READY

- Subtraction flash cards (teen numbers take away 2 to 9), a set for each pair
- A timer
- The class strategy chart
- Whiteboards and markers

WORDS TO USE

think addition: find the part that goes with the number taken away

difference: the answer to a subtraction

from memory: knowing it right away

ASK

- What addition fact helps with 20 – 6?
- Is your answer less than the number you started with?
- Which facts do you still count for?

WATCH FOR

Takes the smaller digit from the bigger one (11 – 9 = 8, from 9 – 1). Think addition instead: 9 + 2 = 11, so 2.

Counts back and is off by one (16 – 3 = 14). Count back saying only the numbers you land on: 15, 14, 13.

ON ANIMAL MATH

- PRINTABLE **Subtraction Drills Within 20**: sheets 1-2
- PRINTABLE **Halloween Subtraction Drills**: sheets 1-2
- MAKER **Subtraction Fact Drills**: Fact Range Within 20
- QUIZ **Subtraction Quiz**
- EXIT TICKET **2nd Grade Facts Within 20 Exit Tickets**: Exit Ticket 1.9

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Facts Within 20

Lesson 1.10: Fact games and puzzles

GOAL Students practice facts within 20 in games and puzzles, choosing a strategy for each fact and explaining it to a partner.

I can solve fact puzzles.

About 45 minutes

THE LESSON

1. **Warm up** (5 min) Play I Have, Who Has? with the addition cards: each student listens for the fact that matches their card.
2. **Teach** (10 min) Do a follow-the-arrows puzzle on the board: start at 6, add 5, take away 9, then add 8. Name a strategy at each step: 6 + 5 is 5 + 5 and 1 more, 11 – 9 is 2 because 9 + 2 = 11, and 2 + 8 makes 10. Then show a cross sum: find an empty box from a row or column that has only one.

   > **Say:** "Every fact can be found more than one way. I pick the fastest way for me, and I check it."

3. **Try it together** (10 min) Pairs play Spin and Add (sheet 3 of Addition Games to 20) or Race to Zero (sheet 4 of Subtraction Games to 20), saying the fact and the strategy before each move.
4. **Practice** (15 min) Students do sheet 1 of Add & Subtract Crossword to 20 and sheet 4 of Cross Sums Within 10 and 20. Early finishers do sheets 5 and 6.
5. **Exit ticket** (5 min) Students do **Exit Ticket 1.10** and circle a face beside the "I can" line. Look for 12, 9 and 18; an early mistake carries on. Only 8 and 7 make 15.

Need help? Play with a ten frame on the desk and a partner who says strategies aloud.

Ready for more? Make a four-step arrow puzzle for a partner.

GET READY

- Dice, paper clips for the spinners and counters
- The game pages and the I Have, Who Has? cards

WORDS TO USE

strategy: a way to work out a fact

check: work it out another way to be sure

puzzle: a problem where the numbers have to fit together

ASK

- What strategy did you use for that fact?
- How can you check that box?
- Which facts came up most in the game?

WATCH FOR

Makes a mistake early in a chain and carries it through. Check each box before going on by saying the fact aloud.

Guesses in the cross sums. Start with a row or a column that has only one empty box.

ON ANIMAL MATH

- PRINTABLE **Add & Subtract Crossword to 20**: sheet 1
- PRINTABLE **Cross Sums Within 10 and 20**: sheets 4-6
- PRINTABLE **Addition Games to 20**: sheet 3
- PRINTABLE **Subtraction Games to 20**: sheet 4
- PRINTABLE **I Have, Who Has? Addition and Subtraction to 20**: sheets 1-2
- MAKER **Number & Math Crosswords**: Mode Math Crossword, Operation Addition & Subtraction, Number Range 1 to 20
- MAKER **Sum & Difference Box Puzzles**: Number Range Within 20
- EXIT TICKET **2nd Grade Facts Within 20 Exit Tickets**: Exit Ticket 1.10

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