



Decomposing Numbers with Chips

Number Sense

Spill the chips, count each color, and name every way to decompose the total

 Grades K–1 10–15 min Independent or guided Levels A–D

How to use these sheets



What students do

- Each sheet works across three representations: the chips they see, the number line they draw on, and the words and numbers they write.
- Levels A to D climb from counting to justifying. Students work the levels in order.
- Each level runs across two pages, so there is room to build and to write.
- Every problem starts from a build: spill the chips or draw them before writing anything.
- Students close each level by explaining how they know.

Sentence frame

_____ *red* and _____ *yellow* compose _____.



Materials & terms

- Red & yellow chips from the Math Pack: 5 per student for Levels A to C, 10 for Level D.
- A small plastic cup for shaking, and a pencil.

total

how many chips in all

quantities

the amounts that compose a total: the red chips and the yellow chips

compose

put quantities together to make a total

decompose

break a total into quantities

Every chip lands on one color, so every spill shows one way to decompose the total.

Level A — Count the colors

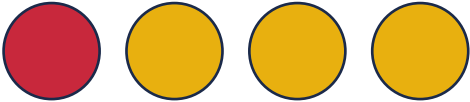
LEVEL A • CALCULATE

1 of 2

The chips are given. Count each color, then write the total.

1.  red yellow total

 red and yellow compose .

2.  red yellow total

 red and yellow compose .

3.  red yellow total

 red and yellow compose .

Level A — Count the colors

LEVEL A • CALCULATE

2 of 2

Count the last set, then spill your own chips and show them on a number line.

4.  red _____ yellow _____ total _____

_____ red and _____ yellow compose _____.

5. **Build first:** Spill your own 5 chips. Draw what you see, then write the numbers.

 red _____ yellow _____ total _____

6. Now show your spill on a number line. Jump the red chips from 0. Jump the yellow chips. Where do you land?



_____ red and _____ yellow compose _____.

Level B — Build what is missing

The total and one color are given. Color the chips, then write the numbers.

1. The total is 4. Three chips are red. Color 3 red, then color the rest yellow.



yellow

_____ red and _____ yellow compose _____.

2. The total is 5. One chip is red. Color 1 red, then color the rest yellow.



yellow

_____ red and _____ yellow compose _____.

Color the chips before you write. The two colors always compose the total.

Level B — Build what is missing

LEVEL B • INTERPRET

2 of 2

Jump on the number line, then write the numbers you composed.

3. Start at 0. Jump 2 for the red chips. Jump 3 more for the yellow chips. Where do you land?



land on _____

_____ red and _____ yellow compose _____.

4. Start at 0. Jump 4, then jump 2 more. Where do you land? Write the numbers you composed.



_____ and _____ compose _____.

Level C — Compare two spills

LEVEL C • COMPARE

1 of 2

Two spills are given. Compare the totals and the colors.

1.

Spill 1



Same total? _____

Spill 2



Which has more red? _____

2.

Spill 1



Same total? _____

Spill 2



Which total is larger? _____

Count each spill. Then look at the two colors.

Level C — Compare two spills

LEVEL C • COMPARE

2 of 2

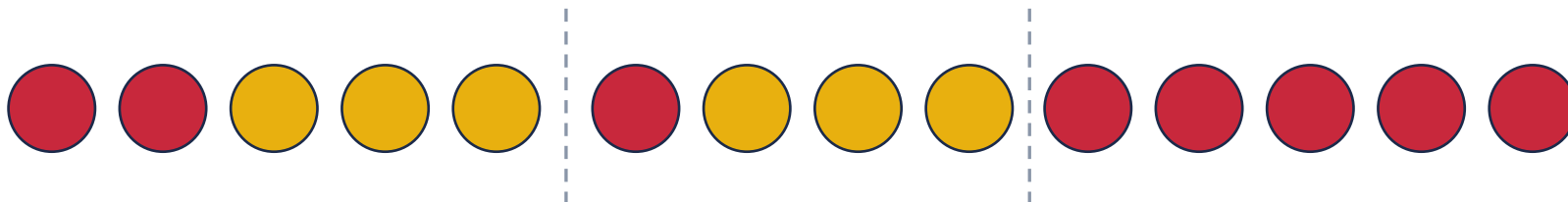
Name what holds still, then find the spills that decompose 5.

3. Look again at the two spills in problem 1. What stays the same? What changes?

Teacher: check the answer the student says.

- ☐ A The total stays the same. The red and the yellow change.
- ☐ B Both spills have 5 chips.
- ☐ C The colors change. One has more red and one has more yellow.
- ☐ D Nothing stays the same. The two spills look different.

4. Circle every spill that decomposes 5. A spill can land with 0 of one color.



_____ red and _____ yellow compose _____.

Level D — Find every way

LEVEL D • JUSTIFY

1 of 2

Build with 5 chips. Record every way you find.

1. Find every way to decompose 5. Record each way you build.

Red	Yellow	Total

Show one way on the number line:



Jump the red quantity from 0. Then jump the yellow quantity. You always land on 5.

_____ red and _____ yellow compose _____.

Say each way as you write it. Check your rows for a way you already have.

Level D — Find every way

Explain how you know you have them all.

2. Make a claim.

I claim there are _____ ways to decompose 5 because

3. Lisa spilled 5 chips and 2 landed red. Alonzo spilled 5 chips and 4 landed yellow. Lisa says she has more red chips than Alonzo. Is she right? How do you know?

Teacher: check the answer the student says.

- ☐ A I do not know how many red chips Alonzo has.
- ☐ B No. Alonzo has more, because 4 is more than 2.
- ☐ C Yes. Lisa has 2 red and Alonzo has 1 red.
- ☐ D Yes. Alonzo has 4 yellow, so he has 1 red. Lisa has 2 red, and 2 is more than 1.

Number line strips

Print at actual size (100%) and cut the strips apart. One strip per student.

The first strip counts 0 to 5. The second counts 0 to 10. The last two are blank, so students label their own. Each space between two ticks is one unit, the same size as one chip, and every jump starts at 0.



Answer key

DOK level is shown here for teachers only.

Level A

DOK 1

1. red 2, yellow 1, total 3
2. red 1, yellow 3, total 4
3. red 3, yellow 2, total 5
4. red 4, yellow 1, total 5
5. Answers vary. The red and the yellow always compose 5.
6. Answers vary. Both jumps land on 5.

Level B

DOK 2a

1. 1 yellow. 3 red and 1 yellow compose 4.
2. 4 yellow. 1 red and 4 yellow compose 5.
3. Land on 5. 2 and 3 compose 5.
4. Land on 6. 4 and 2 compose 6.

Level C

DOK 2b

1. Same total, 5. Spill 1 has more red.
2. Not the same: 5 and 4. Spill 1 is larger.
3. A, B, or C shows the understanding: the total holds at 5 and the two quantities change. D reads the new colors as a new total.
4. Circle the first spill (2 and 3) and the third spill (5 and 0).

Level D

DOK 3

1. Six ways: 0 and 5, 1 and 4, 2 and 3, 3 and 2, 4 and 1, 5 and 0.
2. Sample claim: I claim there are 6 ways because the red chips can be 0, 1, 2, 3, 4, or 5, and the rest are yellow.
3. Lisa is right. Alonzo's 4 yellow leave 1 red, and 2 is more than 1. C and D show the understanding. B compares Alonzo's yellow with Lisa's red. A has not decomposed Alonzo's 5 yet.

Watch for students who recount the total after every spill. The total stays the same; only the two quantities change.

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