

**Doubling  
Year 3/4  
Lesson 2**

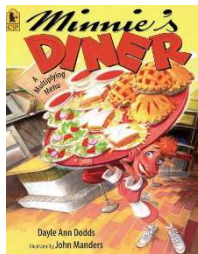
**Doubles Hunt**

**Learning intention: Doubling two-digit numbers mentally. Strategically working out which numbers commonly appear in doubling patterns.**

**Maths vocabulary: double/repeated doubling, mental strategy, split**

**Minnie's Diner** read aloud:

<https://www.youtube.com/watch?v=t4mmOackqY>



**Read again if students enjoyed it, letting them chorus the answers before the characters, in line with the upcoming game.**

**Lesson summary: Students continually double a rolled number, aiming to collect a number they have strategically chosen to 'own' on a 120 chart.**

**Materials:**

- [120 chart](#).
- 6 counters per student – 6 blue transparent for student A, 6 red for student B, or similar.
- [20-sided dice](#) for most students.
- *Support:* 10-sided dice, or 6-sided dice for extreme support.
- *Extension:* Post-it notes (20) and a cup/hat to create a post-it note dice with 0.01 0.02 0.03 up to 0.20 as options, using the [0.01 to 1.00 chart](#).

**Best set-up:** Whole-class model at a desk with materials. Students play in like-ability pairs on mixed-ability tables. Deliver extension towards the end of the fishbowl for any students who need this option.

**Game instructions:**

1. Students play in pairs with a [120 chart](#), a single 20-sided dice, and 6 transparent counters each. The players need their own unique colour of transparent counters – student A is blue, student B is green. For more engagement, use more unique counters (flowers v. butterflies).
2. Students take turns to place one of their coloured counters on the 120 chart. This becomes a number/answer that they 'own.' Players cannot choose a number that is 20 or lower (it must be more than the number that can be rolled on the dice).



**In the middle of taking turns to place their counters on the chart – with strategic thinking, numbers like 32, 48 and 64 became quite popular.**

It is ideal to use transparent counters, but sometimes more unique counters like eyeballs and buttons can be more engaging too.

3. Once all counters are on the chart, students roll only one 20-sided dice between them (not one dice each, one in total). As only one dice is rolled, it does not matter who rolls it.
4. Once rolled, students start doubling the number rolled, in chorus together. For example, if the number rolled was '4,' students would say, "4, 8, 16, 32, 64, 128, and then stop because the number said has gone beyond the chart.
5. The first number said in the sequence, if owned by a player with their counter on it, enables the player to collect their counter, which scores a point. The sequence stops there – the number after does not enable a player to collect the counter, unless the same sequence is rolled again.
6. Continue until one player collects all counters to win, or until players agree they have finished because the other counters are not able to be collected (prime numbers or similar).

**Thinking task – more strategic choices from the second game**

**onwards:** Students need to play this game many times to devise a great strategy, in terms of which numbers are most effective to 'own.'

**Support:** Cut the chart off at 60, reducing the size of the doubling sequence involved at first.

**More extreme support:** Roll a 6-sided dice for the number to start doubling.

**Extension 1:** Identify all the numbers that will be impossible and prove why.

**Extension 2:** You cannot 'own/place your counter on' any numbers on the 120 chart. Instead, you write a number beside the counter in your book that is more than 120, and you and your partner keep doubling beyond the size of the chart (beyond 120). For more challenge, set the lowest number owned as 500. Students will then need to think very strategically about which numbers to choose, as only a few will come up a lot, and most others will never be said in the sequence.

**Extension 3:** Play using the [decimal 0.01 to 1.00 chart](#). Create a post-it note cup that has 0.01, 0.02, 0.03 up to 0.20 on the post-it notes. Pull out a post-it note, such as 0.06, and start doubling until you reach an 'owned' counter space.

**Critical tip for the decimal version extension:** Think in cents. For instance, when doubling 0.06, don't think "zero point zero six," but instead think, "6 cents, 12 cents, 24 cents, 48 cents, 96 cents, 192 cents." Then map it back to the chart, as in 12 cents looks like \$0.12, so track the doubles on the chart, but think in dollars and cents, not in zero point zeroes, which are cognitively more likely to overload your brain.