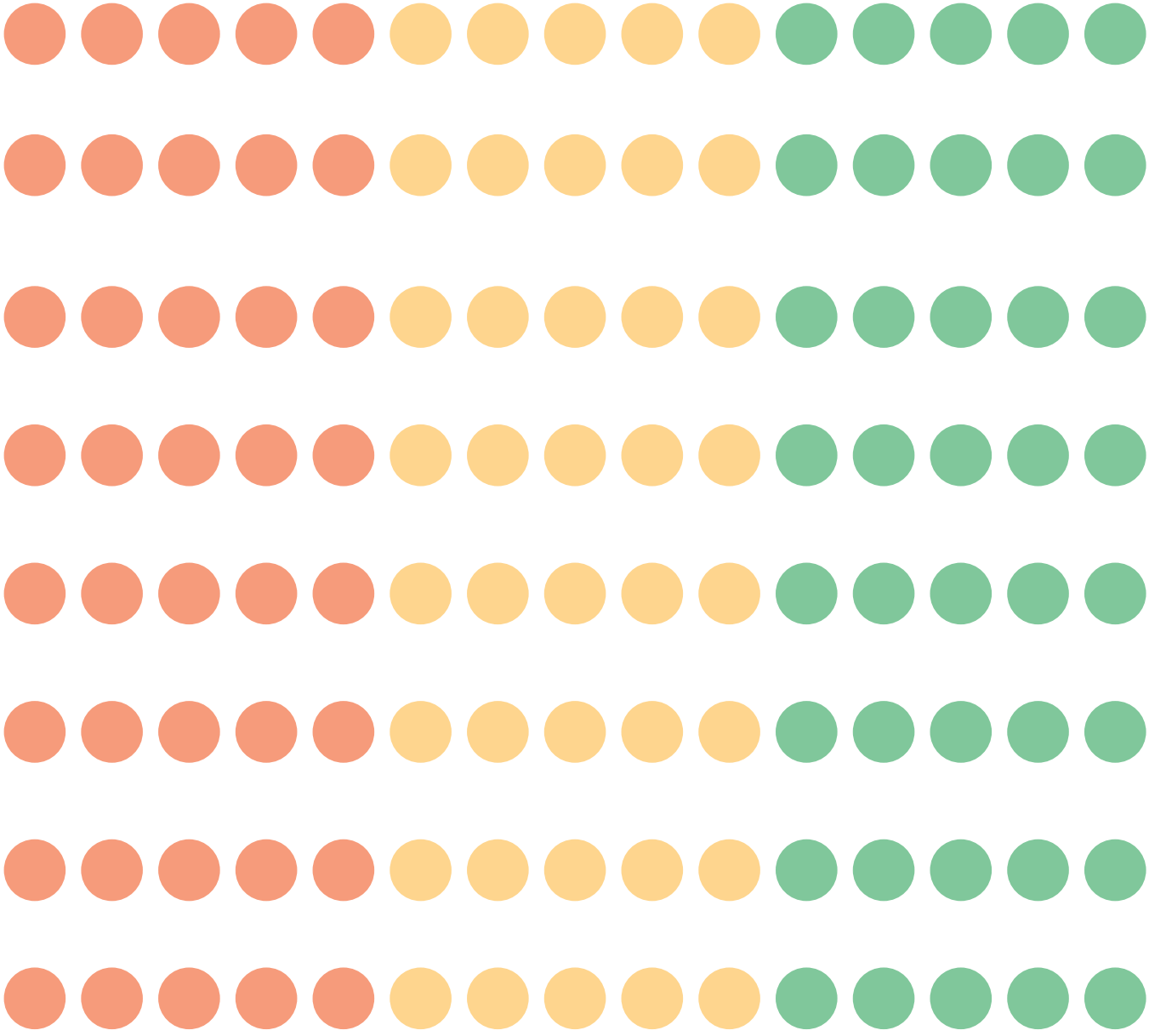
Fifteen Counters

- Distribute the 15 counters among 4 people so that no-one gets the same number of counters.

- How many different ways can the 15 counters be distributed among 4 people?



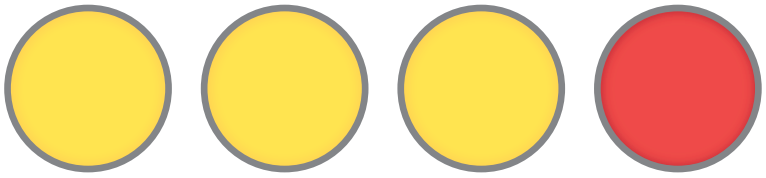
- A video of this problem is available on YouTube
  https://www.youtube.com/watch?v=5xPEaENN6Nk

Four Counter Problem

(From Counters in the Classroom)

Students will need four two-colour counters.

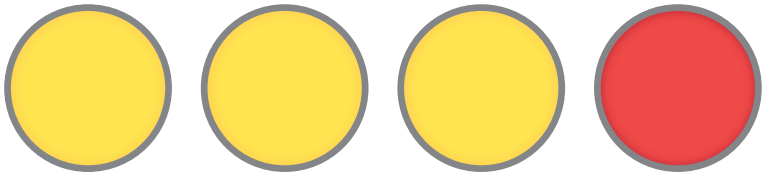
Place the four counters so that three counters are yellow face up and one counter is red face up.



State:

"A red counter is worth *twice as much* as a yellow counter."

Altogether the four counters are worth 40 points or show the following image.



Ask: What is the red counter worth?

Allow time for students to work on a solution.

Typically students will use a Guess and Check method, where a value is assigned to a coloured counter. Using this method a student may try assigning a value of 5 to the yellow counter. The total will be less than 4o, so a larger value such as 10 might be tried and so on. Eventually the value of a yellow counter will be narrowed down to eight.

Students will need to double the value of the yellow counter to answer the original question. The red counter is worth 16.

Extending the Problem

The problem may be altered in the following ways to help differentiate it.

Alter the total.

Changing the total to eight simplifies the calculations required to complete the problem. Changing the total to one means that students will need to deal with fractions and decimal fractions.

Consider what happens if the total is changed to $^{5}/_{4}$ or $^{3}/_{8}$.

- A video of this problem is available on YouTube
  https://www.youtube.com/watch?v=RyaeQGUloBc

Problem of the Week #11

Three Card Total

11

Willow has three blank cards. She wrote some numbers on them:

When she placed the cards in pairs the following totals could be made:

What was written on the cards?

Problem of the Week #12

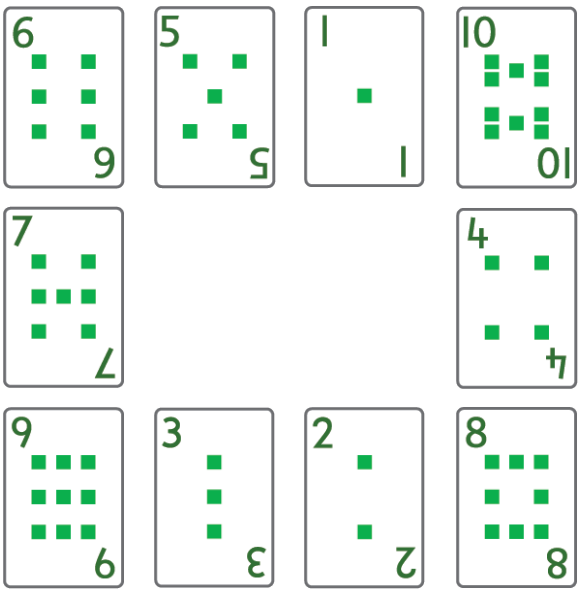
Card Rectangle

12

These cards add up to 22 in every row and column.

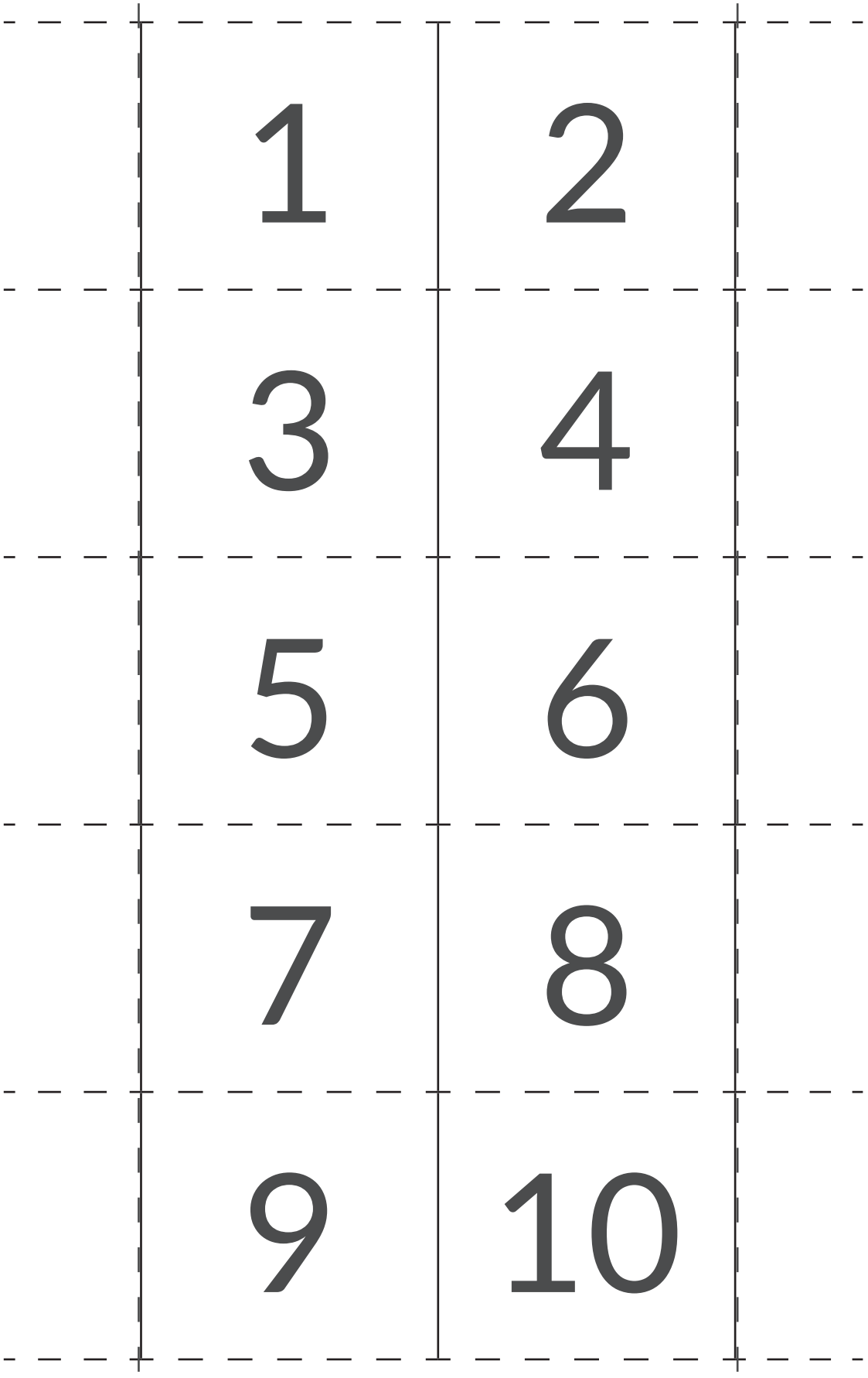
How many more arrangements can you make where all the sides add up to **22**?

Note: Swapping middle cards (e.g. 5 and 1 to be 1 & 5) doesn't count as a new arrangement

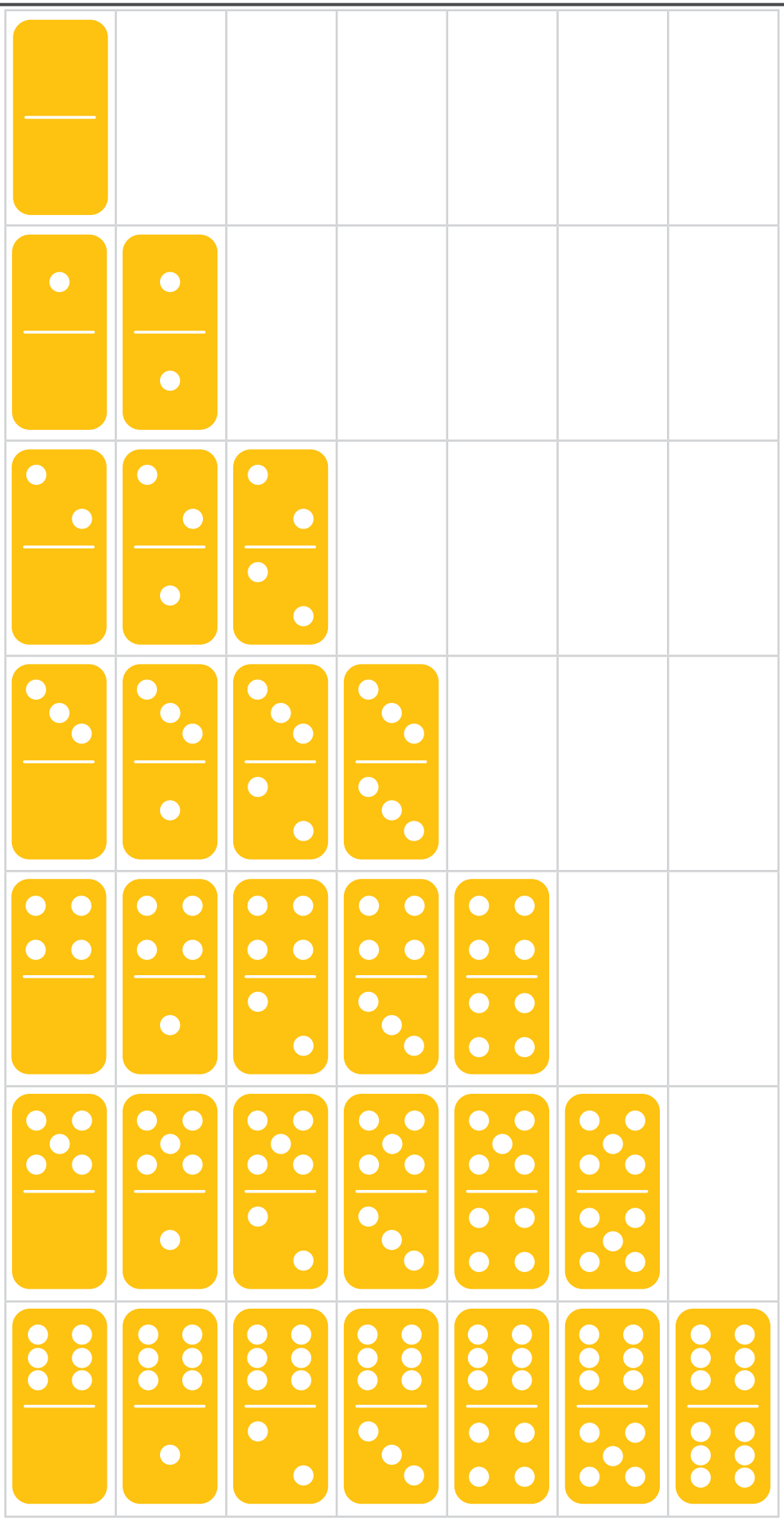


Card Blanks Template: Reasoning

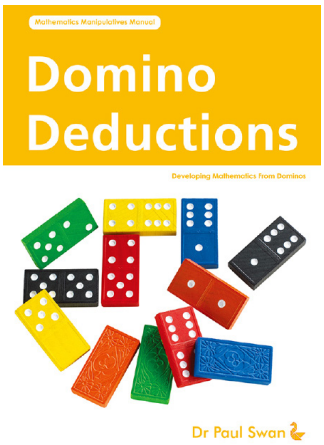
- Cut along the dotted lines
- Fold each card (1 & 2, 3 & 4, 5 & 6 etc) down the middle



Domino Printable



You can check that you have a full set of dominoes by placing your set on the grid, or cut these out to make a set to use at home.



More activities with dominoes can be found in the book Domino Deductions

ebook & physical:

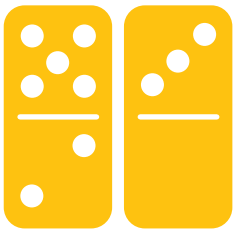
drpaulswan.com.au/shop

You can buy foam dominoes from the shop on my website

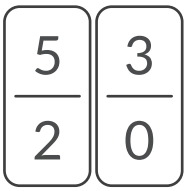
drpaulswan.com.au/shop

Domino Blanks Template

- You will need a set of dominoes (standard double-6 set) or the domino cut outs.



This could be recorded as: 5 & 2 and 3 & 0



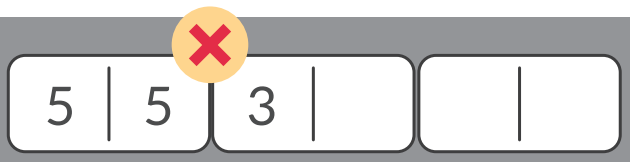
Total ___	Total ___	Total ___	Total ___	Total ___	Total ___
Total ___	Total ___	Total ___	Total ___	Total ___	Total ___
Total ___	Total ___	Total ___	Total ___	Total ___	Total ___
Total ___	Total ___	Total ___	Total ___	Total ___	Total ___
Total ___	Total ___	Total ___	Total ___	Total ___	Total ___
Total ___	Total ___	Total ___	Total ___	Total ___	Total ___

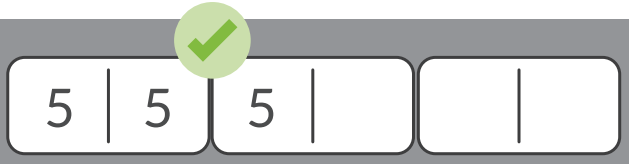
Domino 21

Make the three dominoes sum to 21.

Rules:

1. *Always start with a double.*
2. *The connections between dominoes need to have the same number*





Domino 21 Answers

Starting with a double 6, we have to join a 6 to connect to the next domino.

That means we have already accounted for 18 of our 21, leaving 3 left for the remaining dominoes.

We can either have 0,0,3 or 1,1,1

1,2,0 and 2,0,1 fail the joining rule.

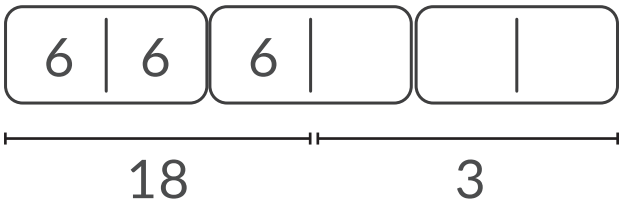
*

*

*

Discuss with your students if the turned around dominoes are the same answer or different.

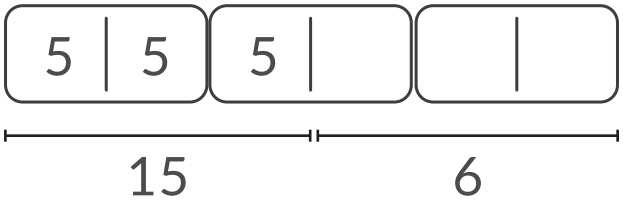
Domino 21 Reasoning:



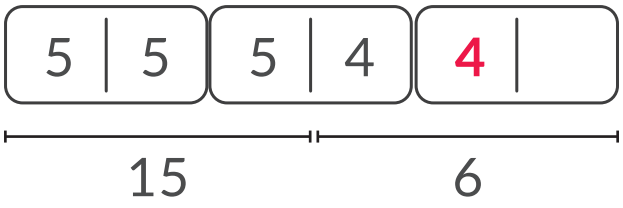
We have already accounted for 18 of our 21, leaving 3 left for the remaining dominoes.

We can either have 0,0,3 or 1,1,1

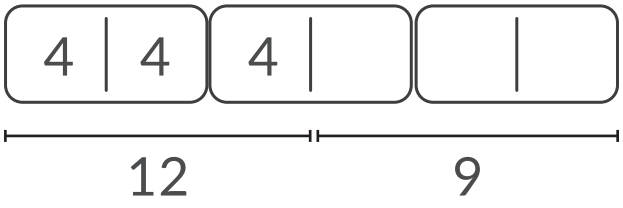
1,2,0 and 2,0,1 fail the joining rule.



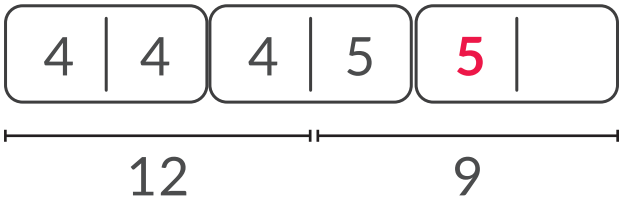
We start the 5's and 15 of or 21 is accounted for.



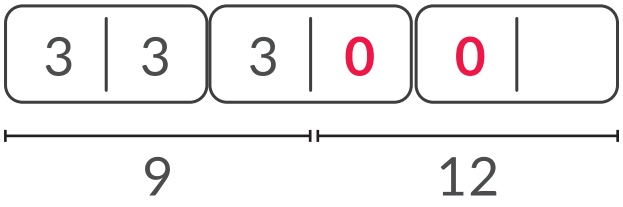
Our 4 would need to match with another 4, exceeding our total.



To start the 4's, we use 12.



This one doesn't work, because the 5 would need to match with another 5 (for a minimum of 10) and this whole section only has 9 to play with.



Being systematic, we try 0, 1, 2, 3... in these spots. 0, 1, 2 can't add up to 21.

3, 3 has already been used so that is not usable either.