Domain and range dominoes

Teacher notes

Why use this resource?

This is a card sorting activity that makes students think carefully about what we mean by the domain and range of a function and how to express them precisely and practise doing so. As there are two blank/incomplete cards students will need to be able to work these out for themselves rather than just confirm what has been done and cannot use a process of elimination to complete the loop. They will also need to construct a function to fit a description.

Preparation

This task involves sorting a set of cards to match up the left hand end of one with the right hand end of another. You will probably want enough sets of cards for students to work in 2s or 3s, encouraging them to share their thinking and check one another's work as they go.

If you are able to print the sheets of cards onto A3 rather than A4, students may find the resulting cards easier to work with, though they will need more desk space!

In order to complete the chain of dominoes into a closed loop, some cards need to be completed. If you laminate the cards and use dry-wipe pens the incomplete cards can be reused. Alternatively, discard them after use and print spare copies. Encourage students to use pencil so they can change their answers if they find they need to.

Possible approaches

The warm-up activity might be used to recap previous work or consolidate the language and notation of domain and range. You might use it as a mini white-board activity to help you sort students into appropriate groups to allow for differentiation.

You could start by giving each group of students just one card from the set and asking them what they make of it. When they realise the two halves of the card don't match, get them to explain why and say what the domain and range should be.

Students will probably start the main task with a familiar graph and try to find the domain and range to match—by doing this they will probably form several chunks which can gradually be built together.

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https://undergroundmathematics.org/combining-functions/domain-and-range-dominoes

Possible support

Because of the two partially blank cards students may guess which to use for the first domain and range they can't find (rather than working on a different part until there are no more connections to make). As a result students might then be unable to complete the circuit. Questions such as

- "Are you convinced all your domains and ranges are correct?" and
- "Did you have a choice which card to use?"

might be enough to help them notice and swap those cards around. (At this point they'll be pleased they wrote in pencil!)

Possible extension

Encourage students to think of different functions which could equally well fill in the blank. This could be discussed in their groups and then shared with others in the class. This might lead to extension into thinking about families of functions and link to work on transformations (see pervasive ideas).

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