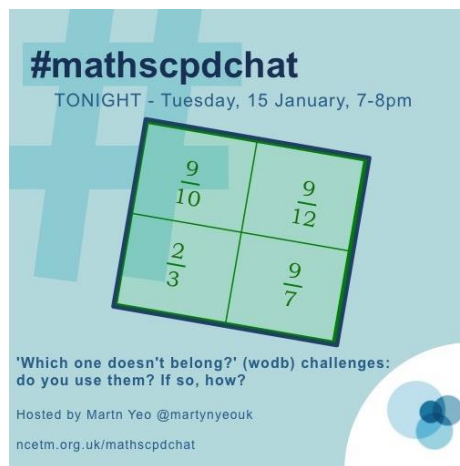


## #mathscpdchat 15 January 2019

**‘Which One Doesn’t Belong?’ (WODB) challenges: do you use them? If so, how?**

Hosted by [@martynyeouk](https://twitter.com/martynyeouk)

*This is a brief summary of the discussion – to see all the tweets, follow the hashtag **#mathscpdchat** in Twitter*



Some of the areas where discussion focussed were:

- WODB (Which One Doesn't Belong?) challenges differ from OOO (Odd One Out) challenges in that with WODBs (but not with OOOs) it is usually possible to **justify (often in more than one way) selecting any one of the given items to be the one that doesn't belong;**
- WODBs can be used effectively with **learners of all ages** to gain insight into their (mathematical) thinking, and to diagnose misconceptions ... for example they have worked well with 5, 8 and 9 year olds, and at GCSE level;
- WODBs provide opportunities for lots of **discussion and argumentation;**
- WODBs are useful for **touching briefly on things that pupils have learnt before** ... for keeping in circulation ideas that are not the current focus for learning;

- discussion generated by a WODB may focus on **what is the same about the items** (why they all 'belong') as well as on what is different about them;
- working on WODBs can improve **problem-solving and reasoning** skills;
- WODBs can **generate surprises** ... pupils seeing things that were not designed-into the WODB, that were **not anticipated or expected** ... including pupils seeing things (such as properties and relationships) which they don't yet know how to express using conventional language, vocabulary or symbols;
- it is sometimes useful to ask about WODB items **'Which ones pair up?'**;
- **how much time to spend on a WODB** ... ten to fifteen minutes ... a whole lesson;
- devising one's **own WODBs**;
- where to **find WODBs** created by other people;
- giving **pupils** opportunities to **create their own WODBs**;
- WODBs may be used in **subjects other than maths**, and in **tutor time**.

An interesting 'conversation' of tweets, about some ways of, and reasons for, using WODBs, and where to find them, followed from this tweet by [Martyn Yeo](#):



including these from [Jenny Hill-Parker](#) and [Martyn Yeo](#):



**Jenny Hill-Parker** @JennyHillParker · Jan 15

Replying to @martynyeouk @WODBMath and 3 others

I've never used it but I'm interested! Is the brown one the one that doesn't belong?! #mathscpdchat



**Martyn** @martynyeouk · Jan 15

Could it be a different one? #mathscpdchat



**Jenny Hill-Parker** @JennyHillParker · Jan 15

The little one? Is the purpose to get a discussion going with the students re classification? #mathscpdchat

these from [Simon Gregg](#) and [Simon Ball](#):



**Simon Gregg** @Simon\_Gregg · Jan 15

Replying to @JennyHillParker @martynyeouk and 4 others

Yes; and ideally there should be reasons for choosing each, and children should give reasons for their choices. #wodb #mathscpdchat



**Simon Ball** @ballyzero · Jan 15

Replying to @martynyeouk @PardoeMary and 4 others

I had a phase of using them at GCSE level about eight years ago now. No examples on me but I enjoyed creating them. I've not thought about them until very recently... definitely something to get back into! #mathscpdchat



**Simon Gregg** @Simon\_Gregg · Jan 15

Replying to @martynyeouk @WODBMath and 3 others

I use them roughly once a week; I've used them with five year olds and with 8 and 9 year olds. I think they work for all ages - I get some great answers from twitter people too! #wodb #mathscpdchat

these from [Mary Pardoe](#), [Martyn Yeo](#) and [Simon Gregg](#):



**Mary Pardoe** @PardoeMary · Jan 15

Replying to @Simon\_Gregg @martynyeouk and 4 others

Yes, yours are lovely! And you tweet about issues with them ... e.g. how 'Which one doesn't belong?' differs from 'Odd one out!' #mathscpdchat



**Martyn** @martynyeouk · Jan 15

This is an interesting discussion point @Simon\_Gregg which do you prefer wodb or odd one out?? #mathscpdchat



**Simon Gregg** @Simon\_Gregg · Jan 15

I think the one answer one would be over much too quickly with no chance for participation. With a many-answer #wodb I sometimes get my whole class participating, and have to stop while there are still people wanting to say more!

these from [Martyn Yeo](#), [Mary Pardoe](#) and [Simon Gregg](#):



**Martyn** @martynyeouk · Jan 15

We all want to know @Simon\_Gregg where do you get yours from?  
#mathscpdchat



**Mary Pardoe** @PardoeMary · Jan 15

He devises them himself!!!! #mathscpdchat



**Simon Gregg** @Simon\_Gregg · Jan 15

Yes, I'm a bit fanatical about them!



@teachmaths & I wrote a piece about #wodb for @ATMMathematics's  
Mathematics Teaching #mathscpdchat

these from [Martyn Yeo](#) and [Simon Gregg](#):



**Martyn** @martynyeouk · Jan 15

Why are you so fanatical do you think? #mathscpdchat



**Simon Gregg** @Simon\_Gregg · Jan 15

There's not a tweet-sized answer to that!



#1 I value discussion and argumentation, and so I want part of my lesson to give  
an opportunity for lots of that.



**Simon Gregg** @Simon\_Gregg · Jan 15

Replying to @Simon\_Gregg @PardoeMary and 8 others

#2 I want everyone to be included, and I find because it's just a small bit of  
speaking up and explaining, everyone can take it on. (I annotate the image and  
add initials so I can check to see everyone is in on it.)



**Simon Gregg** @Simon\_Gregg · Jan 15

Replying to @Simon\_Gregg @PardoeMary and 8 others

#3 There are surprises. Students see lots of things I haven't designed in.  
Sometimes really creative things, mathematical ideas that we don't even have  
the vocabulary for.



these from [Jenny Hill-Parker](#) and [Simon Gregg](#):



**Jenny Hill-Parker** @JennyHillParker · Jan 15

Replying to @Simon\_Gregg @martynyeouk and 4 others

Okay, that makes sense - I like it! Are there resources available  
anywhere? Or do you make your own? #mathscpdchat





**Simon Gregg** @Simon\_Gregg · Jan 15

Replying to @JennyHillParker @martynyeouk and 4 others

There's a lovely #wodb website: [wodb.ca](http://wodb.ca)  
[#mathscpdchat](#)

I also have a collection of ones I've made, which anyone's welcome to use:



**Which One Doesn't Belong?**

187 new photos added to shared album

and this from [Heather Scott](#):



**Heather Scott** @MathsladyScott · Jan 15

[#mathscpdchat](#) It is always great to be reminded of different interesting possibilities. Using this really improves both problem-solving and reasoning skills 😊

**Simon Gregg** @Simon\_Gregg

Replying to @martynyeouk

I imagine that if every teacher did them every week for 13 years they could get too much. But that's not going to happen - so #wodb on! 😊

(to read the discussion-sequence generated by any tweet look at the 'replies' to that tweet)

Among the links shared were:

[Which one does not belong](#), which is an article in Mathematics Teaching 260 (Association of Teachers of Mathematics; ATM) in which [Simon Gregg](#) and [Jim Noble](#) outline an approach to reviewing prior knowledge and encouraging reasoning and discussion in both primary and secondary classrooms. It was shared by [Simon Gregg](#)

[Simon Gregg's WODBs](#), which is a collection of WODBs created by [Simon Gregg](#). It was shared by [Simon Gregg](#)

[Reasoning with Which One Doesn't Belong](#), which is an illustrated blog by [Simon Gregg](#) in which he describes how he worked effectively with 22 young students using a WODB. It includes three short video clips illustrating issues that arose. He explains how advice in Christopher Danielson's book and teachers' guide (see next link) supported this work. It was shared by [Simon Gregg](#)

[Which One Doesn't Belong? A Shapes Book and Teacher's Guide](#), which is a book (Teacher's Bundle) by [Christopher Danielson](#); every colourful page contains a thoughtfully designed set of four shapes. Each of the shapes can be a correct answer to the question 'Which one doesn't belong?' Because all their answers are right answers, students naturally shift their focus to justifications and arguments based on the shapes' geometric properties. It was shared by [Mary Pardoe](#)

[Wollygoggles and Other Creatures: Problems for Developing Thinking Skills](#) by Thomas C O'Brien, which is a collection of reproducible brainteasers for young thinkers, all clustered around mathematics and nonverbal skills, shared by [Heather Scott](#)

[Can You Solve My Problems by Alex Bellos](#) which is a 'casebook of ingenious, perplexing and totally satisfying puzzles', shared by [Martyn Yeo](#)

[WODB animation](#) which is an animated WODB consisting of twelve 'performing' Xmas trees, created by [Geometry Dad](#) and shared by [Geometry Dad](#)