



# THEBP Number Partners Challenge 2016 Partner Tip Sheet



## Round Three: The Dice Train

This challenge explores number awareness and being methodical. You should **spend no more than 30 minutes** on the challenge as a whole – try and get as far as you can, but incomplete entries can still be submitted.



All of the activities featured in the challenge this year are adapted from resources from nrich at the University of Cambridge - <http://nrich.maths.org>

You will need:

- Entry sheet
- 4 dice – preferably 3 of one colour, one of a different colour
- Scrap paper/white boards for your working out

### The Dice Train

Using four dice stacked in the shape of a train, teams must work out how many different variations are possible if they follow three rules.

1. Faces of dice that touch each other must have the same number.
2. The number on the top of the funnel (top of the white dice in the picture) must equal the total of the numbers showing on top of the remaining dice (the 'carriages') that can be seen.
3. You must use all four dice.



### Tips for volunteers

Get your team to look at the four dice and building the train in the picture. Make sure your pupils know which is the 'funnel number', and which are the 'carriage numbers'.

You could ask the children to tell you which of the numbers on the dice can add up to make other numbers e.g.  $1 + 3 = 4$  which features on a dice, but  $5 + 9 = 14$  does not.

You could use multiple sets of dice and let each team member try different combinations, or work together methodically. You will need to help your team track their combinations and come up with a sensible approach as there are points available for good explanations.

### Send your entry to:

Anita Kessie, Curriculum Project Coordinator

Email: [Anita.Kessie@thebp.co.uk](mailto:Anita.Kessie@thebp.co.uk)

Fax: 020 7375 2323

Tower Hamlets Education Business Partnership  
First Floor, Norvin House  
45-55 Commercial Street  
London, E1 6BD

**Final deadline for all three activities is Friday 20<sup>th</sup> May 2016.**



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### Round Three: The Dice Train

These dice represent an old steam train. The dice that make up the train are joined using three rules.



**RULE 1: Faces of dice that touch each other must have the same number.**

So, underneath the white dice is a 3 touching a 3 on the blue dice.  
The blue dice has a 6 on the face that touches the 6 on the middle blue dice.  
The middle blue dice has a 1 that touches the 1 on the last dice.

**RULE 2: The number on the top of the funnel (top of the white dice in the picture) must equal the total of the numbers showing on top of the remaining dice (the 'carriages') that can be seen.**

So, the 4 on top of the funnel equals the two 2's on top of the blue dice.

**RULE 3: You must use all four dice.**

So this means there are always two 'carriage numbers' to add up.

### YOUR CHALLENGE

Obeying all the rules, how many different trains is it possible to make?

Don't forget to tweet us during the Number Partners Challenge – why not send us photos of your team taking part, feedback on the activities or some encouragement for your team using #CountMeIn @NumberPartners



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## Team Entry Sheet Round Three

**Team Name:**

School Name	Pupil Names	Volunteer Company

How many different trains can you make if you follow the three rules?	
Can you show below how you recorded your combinations to make sure you didn't repeat any? You can use extra paper if you need to.	There will be points for accuracy and a methodical approach

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<b>TOTAL SCORED</b>	
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**Don't forget to submit this entry form!**

**Send your entry to:**

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