

# Doubling forever

1. Write the sequence of doubles you get when you start with 2.  
Continue this to the 8th double.
2. Under this, write the sequence of doubles you get when you start with 3.  
Continue to the 8th double.

2, 4, 8, 16, 32, 64, 128 ...

3, 6, 12 ...

4, 8 ...

3. Under this, write the sequence of doubles, starting with 4.  
This time, stop if you realise you are repeating a sequence you have already written.
4. Under this, write the sequence of doubles starting with 5.  
Again, stop if you recognise this sequence as a repeat or a near repeat.
5. Continue writing sequences, starting with 6, 7, 8, 9, etc.  
Stop at the point where you realise you are repeating a sequence that you have previously written.
6. Try all the doubles sequences up to 20, 40, 80, etc.

Can you say how many different sequences there actually are if you double numbers to 20 and keep doubling?

Can you predict which other numbers would produce repeat sequences, e.g. 24?

Can you suggest how you know and why this is?