

# Palindrome Fun

A *palindrome* is a word that reads the same forwards and backwards.

For example *mum, kayak, racecar*

1. Give two other words that are also palindromes

*eye, noon, minim, redder, rotator...*

2. The following sentences are palindromes.

For each one, check it is a palindrome and circle the middle letter (or letters):

(a) Step on no pets

(b) Eva, can I stab bats in a cave?

(c) Mr. Owl ate my metal worm

3. Use the internet to find another palindrome sentence (or make up your own)

*Madam I'm Adam*

*Was it a car or a cat I saw?*

Numbers can also be palindromes. For example, 22, 151, 23532

4. Give two other numbers that are palindromes

*131, 28.82, 123454321 ...*

5. (a) Why is the 21<sup>st</sup> of February 2012 a palindrome?

*21/02/2012 is a palindrome*

(b) Give any other date in history that is a palindrome

*12<sup>th</sup> July 1621 for example can be written as 12/6/1621*

(d) When is the next palindrome date?

*This depends on three things:*

- *Can months to be written two ways, e.g. February is 2 and is also 02?*
- *Can years to be written two ways, e.g. 2015 is 2015 and is also just 15?*
- *Do you allow American order (month/day/year) and British order (day/month/year)?*

*Depending on what you allow, coming up in 2015 there is:*

- *10<sup>th</sup> May 2015: 5/10/2015 or 5/10/15*

- 11<sup>th</sup> May 2015: 5/11/15
- 12<sup>th</sup> May 2015: 5/12/15
- 5<sup>th</sup> October 2015: 5/10/2015 or 5/10/15
- 5<sup>th</sup> November 2015: 5/11/15
- 5<sup>th</sup> December 2015: 5/12/15

(d) How old will you be on that day?

6. The following method always ends up with a palindrome:

- Step 1: Start with any whole number
- Step 2: Reverse the number
- Step 3: Add this number to the one before
- Step 4: If this is a palindrome stop, else return to Step 2 with this number

(a) Start with the number 14 and follow the steps above. You should get 55.

$$41 + 14 = 55$$

(b) Start with the number 67 and follow the steps above. You should get 484.

$$67 + 76 = 143$$

$$143 + 341 = 484$$

(c) Try starting with the number 156. Where do you finish?

$$156 + 651 = 807$$

$$807 + 708 = 1515$$

$$1515 + 5151 = 6666$$

(d) Choose any other three digit number and work out where you finish.

(e) What happens if you start with a number that is already a palindrome?

If all the digits are small (less than five) it always finishes after one step, e.g:

$$1331 + 1331 = 2662$$

If some digits are larger than five it can take more steps:

$$1551 + 1551 = 3066$$

$$3066 + 6603 = 9669$$