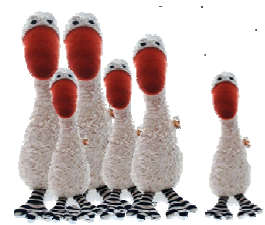


# 12 Days of Christmas Teacher's Guide



## 1. Did you know?

### 2. How many gifts?

*What suggestions did pupils make?*

*Have pupils shown signs of methodical working?*

*How did they choose to record their working (visually, with symbols? numerically?)*

*Did pupils notice any patterns in their results or ways of speeding up the calculations? (e.g. just add day number to previous day's total, each day's totals are triangular numbers, most of the daily totals are multiples of 3)*

The answers are as follows:

Day 1 = 1 gift	Running total:
Day 2 = 2 + 1 = 3 gifts	1 gift
Day 3 = 3 + 2 + 1 = 6 gifts	4 gifts
Day 4 = 4 + 3 + 2 + 1 = 10 gifts	10 gifts
Day 5 = 5 + 4 + 3 + 2 + 1 = 15 gifts	20 gifts
Day 6 = 6 + 5 + 4 + 3 + 2 + 1 = 21 gifts	35 gifts
Day 7 = 7 + 6 + 5 + 4 + 3 + 2 + 1 = 28 gifts	56 gifts
Day 8 = 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 36 gifts	84 gifts
Day 9 = 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 45 gifts	120 gifts
Day 10 = 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 55 gifts	165 gifts
Day 11 = 11 + 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 66 gifts	220 gifts
Day 12 = 12 + 11 + 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 78 gifts	286 gifts
	<b>364 gifts</b>

...which means that you will have one present for every day of the year except for Christmas Day!

### 2. How many legs?

*What suggestions did pupils make?*

*Is there evidence of a method? What is it?*

*How do they choose to record their results?*

The answers are as follows:

Day 1 = 2 legs
Day 2 = (2 x 2 legs) + 2 = 6 legs
Day 3 = (3 x 2 legs) + 4 + 2 = 12 legs
Day 4 = (4 x 2 legs) + 6 + 4 + 2 = 20 legs
Day 5 = 0 legs + 8 + 6 + 4 + 2 = 20 legs
Day 6 = (6 x 2 legs) + 0 + 8 + 6 + 4 + 2 = 32 legs
Day 7 = (7 x 2 legs) 12 + 0 + 8 + 6 + 4 + 2 = 46 legs
Day 8 = (8 x 2 legs on the milkmaid) + (8 x 3 legs on the stool) + (8 x 4 legs on the stool) + 14 + 12 + 0 + 8 + 6 + 4 + 2 = 118 legs
Day 9 = (9 x 2) + 72 + 14 + 12 + 0 + 8 + 6 + 4 + 2 = 136 legs
Day 10 = (10 x 2) + 18 + 72 + 14 + 12 + 0 + 8 + 6 + 4 + 2 = 156 legs
Day 11 = (11 x 2) + 20 + 18 + 72 + 14 + 12 + 0 + 8 + 6 + 4 + 2 = 178 legs
Day 12 = (12 x 2) + 22 + 20 + 18 + 72 + 14 + 12 + 0 + 8 + 6 + 4 + 2 = 202

All of which adds up to the grand total of 928 legs!

## 3. Investigating further

### We hope that you find this free resource useful...

If you do, please let us know at [contact@sparkyteaching.com](mailto:contact@sparkyteaching.com)

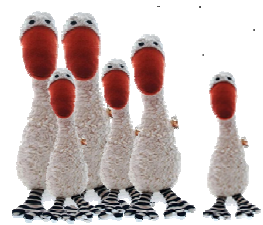
Our website contains more resources to ignite creativity in your classroom.

In particular, take a look at our 'Caution! Minds at work' posters. And, if your class likes a good think, try our **365 things to make you go "Hmmm..."** at

[www.sparkyteaching.com/resources/thinkingskills/hmmm.html](http://www.sparkyteaching.com/resources/thinkingskills/hmmm.html)



# 12 Days of Christmas Did you know?



The twelve days in the song aren't **before** Christmas, they're the twelve days **after** Christmas – from Boxing Day until January 6<sup>th</sup> (Twelfth Night is the night of January 5<sup>th</sup>)

One of the most interesting things to work out is how much all the presents would cost. We did it once with a class and they had great fun researching the different products! One website this year claims the presents would cost \$21, 465. 56!! (over £11,000!)

The song has been around as long as the 16th Century and has appeared with different lyrics. The "four calling birds" were actually "four colly birds" which was another name for blackbirds. Another line that has changed its meaning is "five gold rings", which probably refers not to jewellery, but to the rings around a bird's neck (e.g. the ring-necked pheasant). When this change is made, the first seven gifts are all types of birds.

Some people think that the words were made up as a form of Twelfth Night memory game and others think that each gift represents something about Christianity. Truth be told, no one is too sure quite what the song is all about.

The French word for a partridge is "une perdrix" (*oon pair-dree*) which sounds strangely similar to "in a pear tree." Coincidence? We think not. It's possible the original line was "a partridge, une perdrix."

Continuing with the French theme – much of their version of the carol sounds like a menu: eight plates of salad, seven spitted rabbits, six partridges with cabbage, five legs of mutton, four pigs' trotters, three joints of beef, two breasts of veal and a good stuffing without bones!

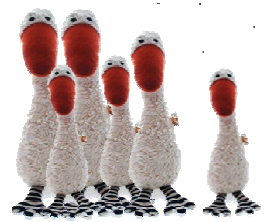
The Australians have a version especially tailored to their wildlife and it's so good, it's worth repeating:

"On the twelfth day of Christmas,  
my true love sent to me,  
twelve possums playing,  
eleven lizards leaping,  
ten wombats washing,  
nine crocs-a-snoozing,  
eight dingos dancing,  
seven emus laying,  
six sharks-a-surfing,  
five kangaroos –  
four lyrebirds,  
three wet gallahs,  
two snakes on skis  
and a kookaburra in a gum tree!"

Try using it as a memory game with your class (in much the way that the original song was probably sung).



# 12 Days of Christmas How many gifts?



Remind yourself of the lyrics to the Christmas song, 'The Twelve Days of Christmas'.

Can you imagine getting all those presents? By Day 12, as well as all the presents, you'd probably have a messy carpet and a bit of a headache! Today's investigation is about the number of those presents...

If you were to be given all of the presents in the song,  
how many gifts would you end up with?

Talk with a partner about how you might work out the answer.

Some hints:

- on the first day, you just get one measly partridge in a pear tree.
- Day 2, you get two turtle doves and a partridge (which equals 3 presents)
- on Day 3, you are given three French hens, the two doves and the partridge ( $3+2+1=6$ )

...so far, you have 10 presents and it's only Day 3!

Use this space to present your working and results in an interesting way:



You should notice something interesting about the answer - **what is it?**

# 12 Days of Christmas How many legs?

Think about the different characters that appear in the Christmas carol 'The 12 Days of Christmas'.

It might be a strange question to ask, but it's one that's been frustrating us...

## How many legs get a mention in the song altogether?

**Talk with a partner about how you might work out the answer.**

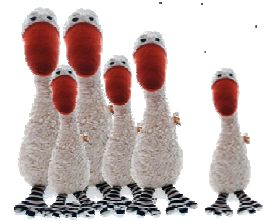
Some hints:

- on Day 1, the partridge has two legs
- on the second day there are two turtle doves ( $2 \times 2 \text{ legs} = 4$ ) and another partridge (2) which equals 6 legs altogether!
- can you see how the number is going to get very big, very quickly?!
- Day 8 is always a tricky one... remember that milkmaids, cows and milking stools all have legs!

Use this space to present your working and results in an interesting way:



# 12 Days of Christmas Investigating further



## QUESTIONS TO INVESTIGATE:

How many eyes are mentioned in the song?

What sorts of presents would a modern version of this carol contain?

How much would the presents cost to buy?

(This is great fun to investigate with Upper KS2 – get them Googling birdtrader.co.uk for partridge prices! We haven't uploaded our child-friendly version of it this year. We'll try to sort it for 2010!)

## HIGHER ABILITY DIFFERENTIATION:

For those of you wanting to stretch your higher-ability pupils, take a look at the following sites which link the "How many gifts?" problem to Pascal's triangle. In particular, the PDF file is highly recommended:

A really nicely designed PDF download

[http://www.post-gazette.com/downloads/20031222\\_12daysxmasmath.pdf](http://www.post-gazette.com/downloads/20031222_12daysxmasmath.pdf)

A basic website showing the various Pascal's triangle patterns

<http://dimacs.rutgers.edu/~judyann/LP/lessons/12.days.pascal.html>

This simple website generates a Pascal's triangle of size specified by you. Saves you working it all out!

<http://mathforum.org/dr.cgi/pascal.cgi>

