

Christmas Holiday 2017

Deputy First Minister's Maths Challenge

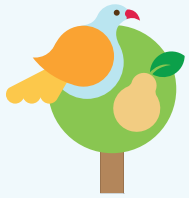


The Scottish
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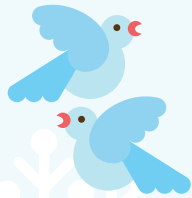


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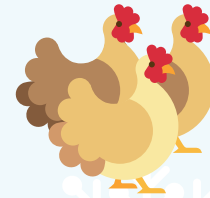
Puzzle 1 - 12 Days of Christmas



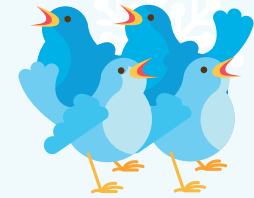
On the 1st day of Christmas my true love sent to me, a Partridge in a Pear Tree.



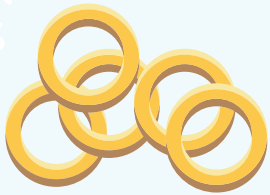
On the 2nd day of Christmas my true love sent to me, 2 Turtle Doves.



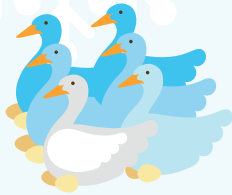
On the 3rd day of Christmas my true love sent to me, 3 French Hens.



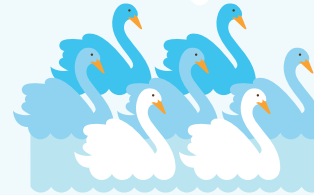
On the 4th day of Christmas my true love sent to me, 4 Calling Birds.



On the 5th day of Christmas my true love sent to me, 5 Gold Rings.



On the 6th day of Christmas my true love sent to me, 6 Geese a-Laying.



On the 7th day of Christmas my true love sent to me, 7 Swans a-Swimming.



On the 8th day of Christmas my true love sent to me, 8 Maids a-Milking.



On the 9th day of Christmas my true love sent to me, 9 Ladies Dancing.



On the 10th day of Christmas my true love sent to me, 10 Lords a-Leaping.



On the 11th day of Christmas my true love sent to me, 11 Pipers Piping.



On the 12th day of Christmas my true love sent to me, 12 Drummers Drumming.

Every day the gifts from the previous days are added on, for example: 'On the 7th day of Christmas my true love sent to me, 7 Swans a-Swimming, 6 Geese a-Laying, 5 Gold Rings, 4 Calling Birds, 3 French Hens, 2 Turtle Doves and a Partridge in a Pear Tree.'

Question:

1. How many gifts do I get on the 12th day of Christmas?

Answer:

2. How many gifts do I get altogether over all 12 days?

Answer:

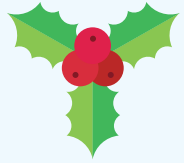
Hint:




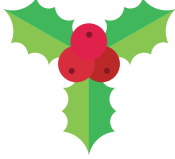




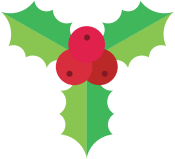
So by day 3, I have been given

$$1 \text{ Day 1} + 1+2 \text{ Day 2} + 1+2+3 \text{ Day 3} = 10 \text{ presents.}$$

Puzzle 2 - Christmas Sudoku

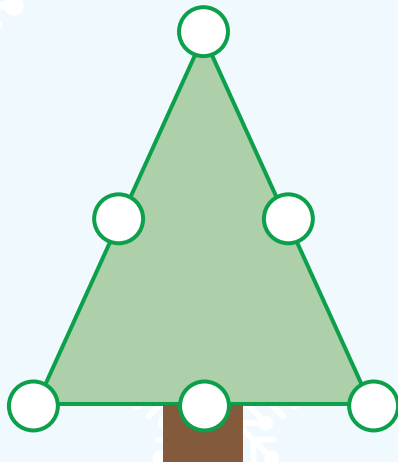
Complete the grid - you may only have one of each item in a column and row.



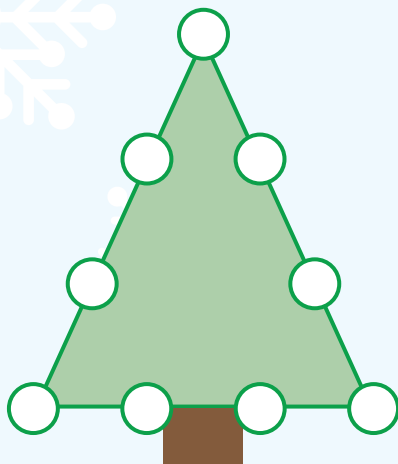
Puzzle 3 - Fill the Baubles

Fill the baubles on the tree 1, 2, 3, 4, 5, 6 so that every line has the same total.
(You can use each number only once)



CHALLENGE

Use the numbers from 1 to 9 to complete the tree in the same way.
(Remember to use each number only once)



Puzzle 4 - Snowman Decorating

Snowman equipment list



1 carrot
(nose)



2 sticks
(arms)



4 raisins
(mouth)



5 buttons
(eyes and coat)

Question:

Ben has 12 carrots, 25 sticks, 45 raisins and 65 buttons.
How many snowmen can be fully decorated using what he's got?

Answer:



CHALLENGE

Ruby comes to join in and adds 100 buttons, 19 carrots, 65 raisins and 48 sticks.
How many more can be decorated?

Answer:

Hint

1 snowman will need 1 carrot, 2 sticks, 4 raisins, 5 buttons in total.
2 snowmen will need 2 carrots, 4 sticks, 8 raisins and 10 buttons in total.
(There will be some equipment left over)

Puzzle 5 - 20 Presents

1. Cut out the 20 presents below.
2. Find someone to challenge.
3. Player One takes one, two or three presents from the pile (no more).
4. Player Two takes one, two or three presents from the pile.
5. Player One gets another shot. Continue to take it in turns.
6. The player who takes the final present wins the game and ALL of the presents.

Are there any patterns?

Can you find a winning strategy?

What if there had been more presents?

Would there be a winning strategy if there were more presents?





Issued to primary 6 pupils in Scotland for Christmas holiday maths family fun.

Developed in partnership between the Scottish Government,
The Scottish Mathematical Council and Education Scotland.

Solutions and workings will be published at
<https://blogs.gov.scot/making-maths-count> on 4 January 2018.

Parents and carers

Please check out Parentzone Scotland at www.education.gov.scot/parentzone
for more fun ways to help support your child at home with numeracy.

