



# Christmas What If... Maths Challenge Cards

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## Christmas What If...Maths Challenge Cards

1. What if Santa has 10kg of toys in his sack? Every time he visits a house he leaves one tenth of the presents in his sack. How many houses does he visit before he has less than 5kg left?
- How many kg of toys does he leave at the first house?
  - What about the fifth house?
  - What patterns can you see?



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2. What if there are 13 mince pies to share between your family? How many mince pies would each person get?
- How could you start your investigation?
  - What if one person doesn't like mince pies?
  - How many mince pies would you need for everyone to have a whole number of pies?



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3. What if the total number of faces on Sarah's Christmas presents is 21?
- What shapes could her presents be?
  - How many could she have?
  - How many edges and vertices could the presents have?
  - How will you record your investigation?

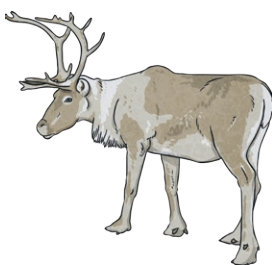


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4. What if the reindeer sleep in? Santa usually visits 100 houses per hour for 10 hours.

- How many more hours will he have to visit per hour if they sleep in for one hour?
- What if they sleep in for two hours?
- What if they sleep in for half an hour?
- How could you check your answers?



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5. What if you want to decorate the tree with a repeating pattern of white and red lights? You have 100 lights altogether.

- How many different sequences could you make?
- How can you check you have found all the answers?

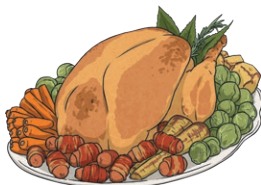


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6. What if the Brussels sprouts and pigs in blankets were served at a ratio of 3:2?

- Mum loves sprouts so has 9: how many pigs in blankets does she have?
- You have 20 items in total: how many of each?
- What if for every 3 sprouts, 1.5 roast potatoes are served?
- What if the ratio were reversed?



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7. What if everyone pulls their cracker with a different person?

- How many different combinations are there for 4 people at the table?
- What about 6 people? Or 8 people?
- Can you see any patterns?



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8. What if you are serving dinner at 3pm? The turkey takes 2  $\frac{1}{2}$  hours to cook, the potatoes take 1 hour 20 minutes, the vegetables take 25 minutes, the stuffing takes 45 minutes, the gravy takes five minutes (but only once the turkey is cooked!) and the Christmas pudding takes 30 minutes.

- Design a schedule for preparing and cooking the Christmas dinner so it is all ready (and still hot) for 3pm.



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## Answers

1. 17 houses, 1kg, 0.6561kg.
2. Answers will vary. 4 people = 3 people = 4  $\frac{1}{3}$  pies each, 3  $\frac{1}{4}$  pies each, 5 people =  $\frac{3}{5}$  pies each 6 people = 2  $\frac{1}{6}$  pies each.
3. Answers will vary. Possible answers – 3 cuboids + 2 cylinders, 2 cuboids + 3 cylinders, 3 triangular prisms + 2 cylinders.
4. 111 houses per hour, 12.5 houses per hour, 10.5 houses per hour.

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5. Possible answers – red/white, red/red/white/white, red/red/red/white/white, white/red/white/white/red.
6. Mum: 9 Brussels, 6 pigs in blankets, 4.5 potatoes. Me: 12 Brussels, 8 pigs in blankets, 6 potatoes.
7. Answers will vary.
8. Answers will vary but possibly timings = turkey in oven at 12.15, potatoes in at 1.30pm, the vegetables at 2.25pm, the stuffing at 2.05pm then all out at 2.50pm to make gravy and serve for 3pm when you put the pudding in for dessert.

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