

# **Algebraic Relationships**

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## Wheels and More Wheels

Jenny is confused. She has been making wagons (4 wheels) and tricycles (3 wheels) in her workshop. She knows that she used 38 wheels, but she can't remember how many tricycles and wagons she made. Find at least two possible combinations of wagons and tricycles Jenny could have made. Explain your answers.

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## **Sarah's Birthday Party**

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Sarah's having a birthday party soon. It will take five days to invite everyone. She invited one friend on Monday. On Tuesday she invited two more friends. If she continues to invite one more friend each day than the day before, how many friends will she invite altogether? Explain your thinking.

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## Ring in My Ears

While sitting on his front porch at 9 a.m. on Saturday, Travis noticed something interesting. At the same moment his grandfather clock, which chimes every 4 hours, chimed, the church bell down the street, which rings every 6 hours, went off. When will be the next time that these 2 sounds happen at the same time?

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## Family of Three

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Jan, Jill and Jeff are all in the same family. The product of their ages is 24. Two of them are twins, however, the oldest is not a twin. What are their ages? Explain.

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## Jack and the Beanstalk

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When Jack found a bean plant it was 12 inches tall. By the end of the second day it was 19 inches tall. By day three it was 26 inches, and on day four it was 33 inches tall. If it continues to grow in this pattern, how tall will it be by the end of day 10?

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## Compost, Anyone?

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Katie's mom offered to pay her to carry 7 bags of leaves to the compost pile. Katie said she would do it if her mom would pay her 5 cents for the first bag, 10 cents for the second, 20 cents for the third, and so on. How much will Katie make for carrying all 7 bags?

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## Campaign Flyers

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Jeremiah is running for student body president at his school. He printed up 500 flyers on fancy paper using his computer. Zeke and Zack are handing out the flyers for Jeremiah. On the first day they handed out a total of 50 flyers. On the second day, they handed out 58 flyers, eight more than the day before. On the third day Zeke and Zack gave out 66 flyers, eight more than the second day. If they hand out all the flyers at this rate, how many days will it take them? Explain your thinking.

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## Picnic Puzzle

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Briana is going on a picnic. She plans to bring a blanket, a picnic basket and a frisbee. She has two baskets to choose from: a wicker basket or a plastic one. She has two blankets: a plaid one and a solid blue one. She finds four different colored frisbees: gold, white, black and orange. She picks out one basket, one blanket and one frisbee to bring. What are all the different combinations of these three items she could have chosen?

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## Shoes on Display

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Adrian was shopping for shoes. He looked first at a pair of basketball shoes. He then moved left 3 pairs of shoes to the end of the display to look at some running shoes. Next he moved to the right 7 pairs of shoes to look at some hiking boots. From there he moved left 5 pairs of shoes to check out a pair of sandals. Next he wandered to the right 8 pairs of shoes to look at some dress shoes, which were at the opposite end of the display from the running shoes. How many pairs of shoes were on display? Explain your thinking.

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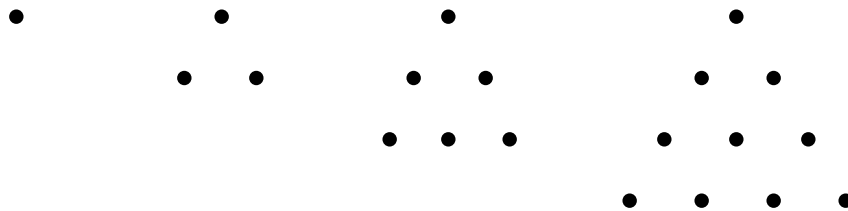
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## Triangular Dots

Look at the picture of the triangular numbers. How many dots will be in the 10<sup>th</sup> triangular number? Explain your thinking.



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## Weeds Be Gone!

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Kyle and Lyle were bored and wanted to find something to do. Lyle's mom suggested they pull out some weeds in her flower beds. In the first 10 minutes together they pulled 21 weeds. In the second 10 minutes they pulled 11 more weeds than they did in the first 10 minutes, or 32 weeds. In the third 10 minutes they pulled 11 more weeds than they did in the second 10 minutes, or a total of 43 weeds. Each 10 minutes they pulled 11 more weeds than they had pulled during the previous 10 minutes. How long would it take them to pull more than 250 weeds altogether?

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## Men From Outer Space

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Oakridge, Oregon was invaded by space creatures: the Fritzles, with four feet, and the Frops, with three feet. Jill was hidden from them, but counted thirty-one of the creatures' feet as they marched by. Find at least two possible combinations of Frops and Fritzles that could have been marching by Jill.