

## Math and Cats

G'Day!

This is your math friend James.

I like trying to answer questions people have about math, especially the "I wonder" questions people ask. In fact, just today I was this question by Annie A. in San Francisco.

### "CAN YOU DO SOMETHING WITH MATH AND CATS?"

I love this question! It's making me think!

And clearly Annie is thinking something interesting and deep too. But I have to admit I am not really sure what she is asking here.

#### What do you think she might be asking me?

Of course one can do something that connects math and cats. Here are some ideas that came to my head right away.

- You can count cats.
- You can try to work out how much cat food you would need to buy to feed a cat for a year.
- You can weigh a kitten each day, make a chart, and see how fast the kitten is growing.

And so on.

#### Can you think of more things to add to a list like this?

And sometimes a math book might have a problem about cats. Maybe something like this:

### puzzle #1

A family owns some cats.

In their household there are a total of 20 legs and 14 ears. How many people are in the family and how many cats do they own?



Some people like puzzles like these and other people don't—and that's okay.

And some people might say this puzzle like is unanswerable as we don't know if some person or some cat might, unfortunately, be missing a leg or an ear!

### puzzle #1 addendum

Assuming no person or animal is missing a leg or an ear, can you answer the puzzle?

But I suspect Annie is asking something deeper than a math question that is about counting, calculating, or measuring numbers related to cats. So, what next?

Well I next did what everyone does when faced with an interesting question: I typed it into the internet!

Up came some articles claiming that cats can count and that cats can do basic logic and reasoning, and I learned some more number facts about cats. For example, I learned that cats can run up to 30 miles per hour.

#### Should I trust everything I read on the internet?

And then some interesting math occurred to me! (This is the wonderful thing about just thinking and playing with half-formed thoughts: often exciting ideas will flash into your brain when you least expect them.)

What if two cats were playing a game of chasey, with one chasing the other. Could there be math in the geometry of a chasey game? Yes!

Here's a puzzle:

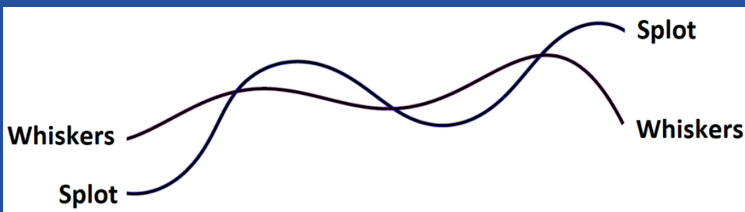
## puzzle #2

Two cats, Whiskers and Splot, are playing a game of chasey.

Whiskers is chasing Splot.

At any instant, Whiskers is running directly towards Splot, but Splot always manages to keep the same distance away from Whiskers.

The picture below shows just a section of the paths they followed. (The picture is cut off to the left and to the right.)



And now the question:

Were Whiskers and Splot running left to right in this picture, or right to left? How do you know?

Does this seem like an interesting question to you?



Please share with me any thoughts or additional ideas or answers to any questions in this letter. Perhaps you can make up a puzzle too about math and cats. And tell me:

Did you think I did a good job fulfilling Annie's puzzle request?

## WRITE TO ME

Do you have a math question you'd like me to answer, or try to answer?

Have an adult help you to write to me at the website. Each week I'll pick a new student question and give my thoughts on it! Plus I'll give me solutions to the most recent puzzles.

## OTHER RESOURCES

Check out MATHICAL for award-winning math books for middle-schoolers and teens, the YouTube channel NUMBERPHILE for math videos galore, and MORE MATH! for even more resources. Wowza!

For example, this week I suggest you look at this NUMBERPHILE video about cats!

## About the Author: Dr. James Tanton



The NMF Weekly is written by mathematician Dr. James Tanton as a resource for friends and fans of the 2021 National Math Festival. Learn more at [globalmathproject.org/nmf-weekly](https://globalmathproject.org/nmf-weekly) & [nationalmathfestival.org](https://nationalmathfestival.org)

