



The interior angles of an equilateral triangle are all 60 degrees

News

Welcome to the 60th maths newsletter! 60, as you know, is quite an important number, because we measure time in hours that have 60 minutes and minutes that have 60 seconds. The number system based on 60 is called sexagesimal and was used by the Sumerians



in the 3rd millennium BC. This was then passed down to the ancient Babylonians who liked the number 60 because lots of numbers divide exactly into it. 60 is the smallest number that 1, 2, 3, 4, 5 and 6 are all factors of. Circles are often divided up into 360 degrees. 360 is 6 x 60 and is the smallest number that 1, 2, 3, 4, 5, 6, 8, 9 and 10 are all factors of. 7 doesn't go into it, basically because the number 7 is a pain.¹ If you'd like a house point when we get back to school, do you know who the man in the picture is and what he's got to do with all of this?

Consecutive Factors

We have just seen that 360 is the smallest number that 1, 2, 3, 4, 5, 6, 8, 9 and 10 are all factors of, but what would the smallest number be if we included 7 in that list? What if we wanted to find the smallest number that all the numbers from 1 to 20 were factors of? Can you think of a quick² method for answering this question?

1. Although 7 is actually an extremely popular number, as you probably know. If you ask someone randomly to choose a number between 1 and 10, they will often choose 7.

2. Well, fairly quick.

Substitution Puzzle

Here's a topical puzzle from @kyledevans. Every letter represents a different digit. O represents zero. What does each letter represent?

$$\begin{array}{rcccc}
 & S & T & A & Y \\
 + & S & A & F & E \\
 + & S & T & A & Y \\
 \hline
 = & H & O & M & E
 \end{array}$$

Sea Monster Riddle

If you would like to have a go at solving a mathematical riddle about a sea monster, go to tinyurl.com/TWJ-seamonster



Joke

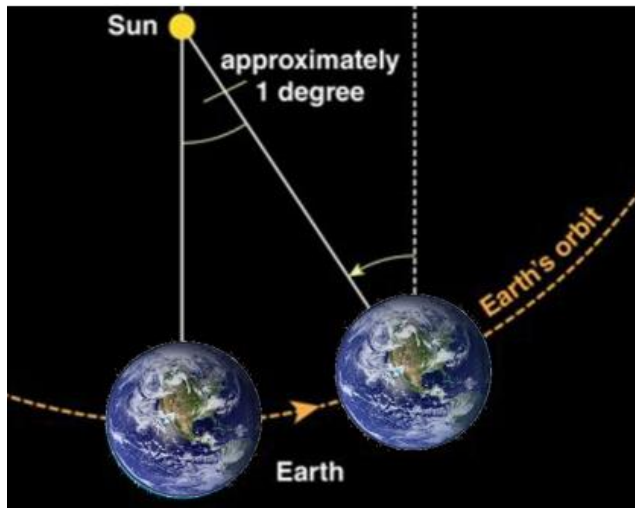
The teacher asked me how many seconds are there in a year?

"12" I replied.

"2nd January, 2nd February..."

Degrees in a Circle

360 is a good number to divide a circle up into because there are roughly 360 days in a year, which means that every day the earth moves roughly 1 degree around the sun.³



The Degrees Button

If I pick a random number like 3.14⁴, and ask the question “How long is 3.14 hours in hours, minutes and seconds?”, how could I work that out? One answer is that you could use the ‘hours, minutes and seconds’ button on your calculator. Type in 3.14, then press equals. Now press the



button, and it should say 3°8'24", which means 3 hours, 8 minutes, 24 seconds. It also works in reverse. Type 3, 8, 24, pressing that button after each one, then press equals. Pressing that button again will tell you that 3 hours, 8 minutes, 24 seconds is 3.14 hours.

3. This diagram is not to scale.

4. Pi is a pretty random number, even though I clearly didn't choose it randomly. Randomness is confusing.

5. 'Congruent' means exactly the same shape and size.

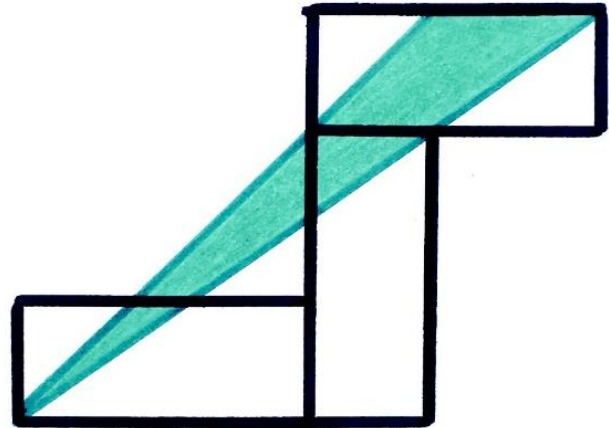
6. No, I'm not changing it to "Do you care?", no matter how many of you email me about it!

7. That really is his middle name.⁸

8. It's not.

Geometry Puzzle

Here's a geometry puzzle from Catriona Shearer @Cshearer41. The rectangles are all congruent⁵, each with an area of 9. What is the area of the blue triangle?



Did You Know?

Did you know⁶ that the number

23456789

is prime?

One Final Puzzle

This is from Ed @edsouthall Southall.⁷

What's the area of the larger square?

