Today is Pi Day! Below are a few questions to celebrate.

If June ate 1/4 of 2/3 of 1/2 of a pie, what fraction of the whole pie did she eat? Express your answer as a common fraction.

To determine what fraction of the pie June ate, we can multiply \((1/4)(2/3)(1/2) = 2/24 = 1/12\). So, June ate \(1/12\) of the pie.

If the top surface of a particular slice of pie is a sector of a circle with a vertex angle measuring 20 degrees and the length of the arc is \(\pi\) units, what is the circumference of the top surface of the whole pie? Express your answer in terms of \(\pi\).

Since the sector has a vertex angle that measures 20 degrees, the sector is \(20/360 = 1/18\) of the whole pie. Thus, the arc (which is \(\pi\) units) is \(1/18\) of the whole pie’s circumference. So, the whole circumference of the pie must be \(18\pi\) units.

What is the perimeter of the top surface of the remaining portion of the pie if only the slice described in question 2 is removed? Express your answer in terms of \(\pi\).

When the sector described above is removed, the remaining circumference is \(18\pi - \pi = 17\pi\). To this, we must add the length of 2 radii for where the cuts were made to remove the piece of pie. Since the whole pie’s circumference is \(18\pi\), the radius can be found using the equation \(C = 2\pi r\): \(18\pi = 2\pi r \rightarrow r = 9\). Thus, the total perimeter is \(2(9) + 17\pi = 18 + 17\pi\) units.
Problems
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If the top surface of a particular slice of pie is a sector of a circle with a vertex angle measuring 20 degrees and the length of the arc is π units, what is the circumference of the top surface of the whole pie? Express your answer in terms of π.

What is the perimeter of the top surface of the remaining portion of the pie if only the slice described in question 2 is removed? Express your answer in terms of π.