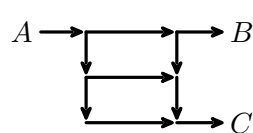


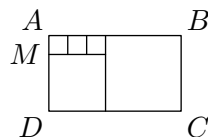
Team attack 11/09/2022

- $\frac{9}{37}$ is changed to a decimal. What digit lies in the 2022th place to the right of the decimal point?
- Emily has 21 dimes. She placed them in three piles, with an odd number of dimes in each pile. In how many different ways can she accomplish this? [*Consider piles of 1, 1, 19 dimes, for example, to be equivalent to piles 1, 19, and 1 dimes.*]
- Suppose $\frac{2}{N}$, $\frac{3}{N}$, and $\frac{5}{N}$ are three fractions in lowest terms. What are all the possible composite whole number values for N between 20 and 80?
- The Mathematical Olympiad began in the prime year 1979. Find the product of the fractions below in a simplest form:

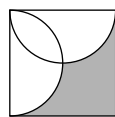
$$\left(1 - \frac{1}{1980}\right) \times \left(1 - \frac{1}{1981}\right) \times \dots \times \left(1 - \frac{1}{2022}\right).$$
- In this street map, all traffic enters at A and exits at either B or C. All traffic flows either south or east. At each intersection where there is a choice of direction, 70% of the traffic goes east and 30% goes south. What percent of the traffic exists at C?
- Rectangle $ABCD$ is partitioned into five squares as shown. The length, in centimeters, of \overline{AM} is a whole number. The area of rectangle $ABCD$ is greater than 100 sq cm. Find the smallest possible area of rectangle $ABCD$, in sq cm.
- Two semicircles are inscribed in a square with side 8 meters as shown. Approximate the area of the shaded region to the nearest tenth of a square meter. Use the approximation 3.14 for π .



Problem 5



Problem 6

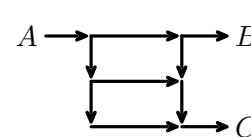


Problem 7

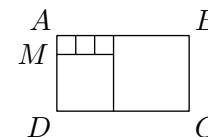
Team attack 11/09/2022

- $\frac{9}{37}$ is changed to a decimal. What digit lies in the 2022th place to the right of the decimal point?
- Emily has 21 dimes. She placed them in three piles, with an odd number of dimes in each pile. In how many different ways can she accomplish this? [*Consider piles of 1, 1, 19 dimes, for example, to be equivalent to piles 1, 19, and 1 dimes.*]
- Suppose $\frac{2}{N}$, $\frac{3}{N}$, and $\frac{5}{N}$ are three fractions in lowest terms. What are all the possible composite whole number values for N between 20 and 80?
- The Mathematical Olympiad began in the prime year 1979. Find the product of the fractions below in a simplest form:

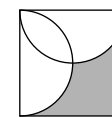
$$\left(1 - \frac{1}{1980}\right) \times \left(1 - \frac{1}{1981}\right) \times \dots \times \left(1 - \frac{1}{2022}\right).$$
- In this street map, all traffic enters at A and exits at either B or C. All traffic flows either south or east. At each intersection where there is a choice of direction, 70% of the traffic goes east and 30% goes south. What percent of the traffic exists at C?
- Rectangle $ABCD$ is partitioned into five squares as shown. The length, in centimeters, of \overline{AM} is a whole number. The area of rectangle $ABCD$ is greater than 100 sq cm. Find the smallest possible area of rectangle $ABCD$, in sq cm.
- Two semicircles are inscribed in a square with side 8 meters as shown. Approximate the area of the shaded region to the nearest tenth of a square meter. Use the approximation 3.14 for π .



Problem 5



Problem 6



Problem 7