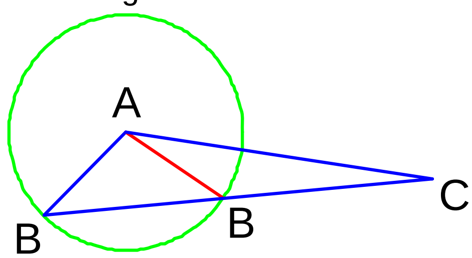
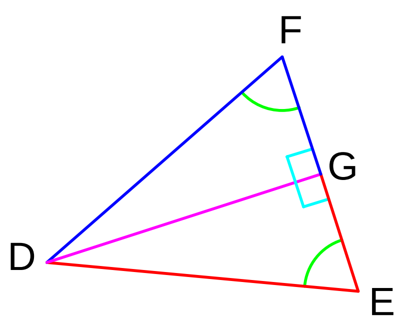
Activity 1

Divide participants into subgroups and ask each group to discuss geometry congruency theorems, listing as many as they can and providing a rationalization as to why each of them is a congruency theorem. The subgroups then report back to the entire group. If no one mentions SSA, ask if it is a congruency theorem and then discuss why it is not. The easiest way is to develop a figure like the following:



Activity 2

Give sub grouped participants triangle DEF with DE ≅ DF and ask them to prove ∠DEF ≅ ∠DFE in as many ways as they can, reporting their proofs back to the entire group at the designated time. Please see the discussion in the Workshop details for additional discussion and information.



Activity 3

Ask the group for the probability that two people in it will have the same birthday (month and day). Then, ask each person in the group to give the month and day of their birth. If there is a match within the group, the matching person should indicate so when a birthday is given. That is, if I say my birthday is May 26, and yours is the same, you would say, “Match,” or something like that.

The probability for a match is about 0.5 if there are 23 people in the group. If there are 50 people in the group, the probability is about 0.97. Please see the discussion in the Workshop details for additional discussion and information.

Activity 4

Prove selected divisibility rules. Please see the discussion in the Workshop details for additional discussion and information.

Activity 5

Announce that you, as a group, will be five 2-digit addends, where digits within the addend are not repeated (33, 77, etc.), and the sum will be 258 when they pick 2 numbers, and you, as the leader, pick 3 numbers. Ask the group for their two numbers first.

Regardless of what they pick, you pick a value that, when combined with their selection, yields a sum of 99. That will account for four of the addends in the sum (two they picked, and two you use to create two sums of 99). The fifth addend will be 60 in this case, which is two greater than the last two digits of the sum. Please see the discussion in the Workshop details for additional discussion and information.

Activity 6

Give the following to the group and ask them how to solve the problem.
"Suppose one-third of an individual's income is spent on housing, another third is spent on transportation and education, and 25% on food and entertainment. The individual has $200 left for saving, giving, investing, and shopping? How much does the individual make a month?

More than likely, they will solve it algebraically, using the equation $\frac{x}{3} + \frac{x}{3} + \frac{x}{4} = x - \$200$, where x represents the monthly income. Solving, $\$200 = \frac{x}{12}$, which gives that x = $2400.

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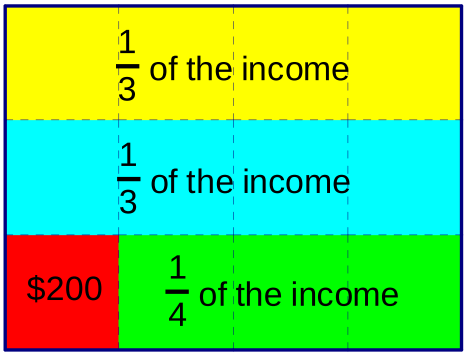
Activity 6--continued
It is important that they see there are other ways to do the problem. This same algebraic problem can be solved geometrically by having the total income (big rectangle) divided into thirds horizontally and fourths vertically. The net result is a total of 12 congruent squares, four of which represent a third and three of which represent a fourth. There is one square left after the fourth and both thirds are represented. But, we know that the left over money is $200. Since there are 12 congruent squares, the total income must be 12 x $200 = $2400.



Birthday problem

Compute with $\frac{(365)(364)(363)\ \ldots\ \text{some } n \text{ days}}{365^n}$ or $1 - \frac{365!}{((365 - n)!)(365^n)}$

Number Of People	Probability Of 2 With Different Birthdays	Probability Of 2 With Same Birthday
2	0.9973	0.0027
5	0.9729	0.0217
6	0.9595	0.0405
22	0.5243	0.4657
23	0.4927	0.5073
50	0.0342	0.9704
60	0.0058	0.9942