

MATHCOUNTS[®] Problem of the Week Archive

It's Wedding Season! – July 20, 2020

Problems & Solutions

June and July are two months when many weddings are often held. In honor of all the couples who had to postpone or cancel their events due to the COVID-19 pandemic, here are a few problems about weddings!

In preparation for Tracy's wedding, Lisa decides to throw Tracy a bridal shower. Lisa is planning to make the invitations herself. Each invitation requires 6 inches of ribbon to make a tiny bow on the front. If Lisa needs enough ribbon for 28 invitations, but must buy the ribbon by the half-yard, how many yards of ribbon must Lisa buy? Express your answer as a decimal to the nearest tenth.

*If 28 invitations are needed and each one requires 6 inches (or half a foot) of ribbon, the invitations will require $28 \times 0.5 = 14$ feet of ribbon. This length is equivalent to $14 \div 3 = 4.667$ yards. Since Lisa must buy the ribbon by the half-yard, she is forced to purchase **5** yards of ribbon for the invitations.*

One of the most difficult tasks before a wedding for many couples is to do the seating chart for the reception. Tracy's reception site has tables that seat 8 people or tables that seat 10 people. If Tracy uses the tables that seat 8 people, she will have exactly 2 guests left over. If Tracy uses the tables that seat 10 people, she will have exactly 4 guests left over. Tracy has between 200 and 250 guests. How many guests does Tracy have?

*Knowing that there are 4 people left over if the 10-person tables are used tells us that the number of guests ends with the digit 4. Therefore, we can divide 204, 214, 224, 234 and 244 by 8 and see which of these numbers leaves us with a remainder of 2. There must be **234** guests at the reception.*

One of the final tasks of the wedding day is often to cut the wedding cake. Tracy chose a wedding cake design that is made up of many smaller cakes. Each of the smaller cakes is the shape of a right cylinder with a height of 5 inches and a diameter of 10 inches. Each smaller cake will be cut into exactly 30 pieces. How many cubic inches of cake are in each piece? Express your answer as a decimal to the nearest tenth.

The smaller cakes are each in the shape of a right cylinder, so we will use the volume formula $V = \pi r^2 h$. The cakes each have a radius of 5 inches (since the diameter is 10 inches) and a height of 5 inches, so the volume of each cake is $\pi(5)^2(5) = 392.7$ cubic inches. Dividing this volume into 30 equal pieces yields $392.7 \div 30 = \mathbf{13.1}$ cubic inches per piece of wedding cake.

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