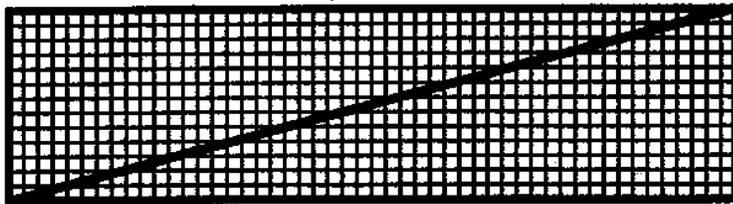


1. What is the units digit of: $7^{77} - 6^{66}$? _____ 1

2. Two standard dice are rolled, a red one and a blue one.
Let R be the number showing on the red die and B the
number showing on the blue die.
What is the probability that $R > 2B$?
Write the answer as a common fraction. _____ 2

3. How many positive whole numbers smaller than 1000
are either multiples of 9 or multiples of 11 ? _____ 3

4. A 50×13 rectangle
is divided into 1×1
squares by lines
parallel to the sides
of the rectangle. A diagonal of the rectangle is drawn.
How many of the 1×1 squares does the diagonal pass through ? _____ 4

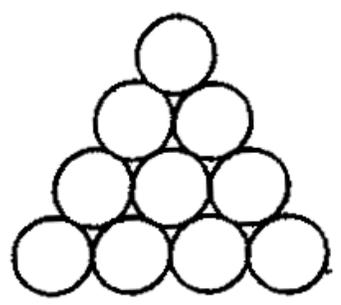


5. You have five playing cards: an ace, a king, a queen, a jack, and a ten.
In how many different orders can you put the cards if
the king and the queen are always next to each other ? _____ 5
6. 25% of the people who like chocolate like hot pepper.
90% of the people who like hot pepper like chocolate.
Everyone likes one or the other or both.
What fraction of the people like both ?
Express your answer as a common fraction. _____ 6
7. The first number in a sequence is 2, and the second number is 3.
Each new number is obtained by dividing the previous number
by the one before that. (So the third number is $\frac{3}{2}$ and the fourth is $\frac{1}{2}$.)
Find the tenth number in the sequence. _____ 7
8. Nimoy wrote down all numbers from 100 to 1000, one after the other.
How many 5's did he write ? _____ 8

9. An 800 meter long train travelling at 20 meters per second went into a tunnel. The front of the train emerged from the tunnel 90 seconds after the rear of the train entered the tunnel. Find the length of the tunnel, in meters. _____ 9

10. A gambler went into the casino with one dollar in her pocket. She made a series of six one dollar bets, winning or losing one dollar each time. She ended up with one dollar in her pocket. In how many different ways could this have happened ? _____ 10

11. A 4-row wine rack is shown in the diagram. Each circle represents a hollow cylinder that can hold one bottle of wine. How many bottles can be stored in a similar 10 row wine rack?



_____ 11

12. Alex had three boxes of marbles. In the first box, 30% of the marbles were blue. There were twice as many marbles in the second box as in the first box, and 25% were blue in the second box. There were twice as many marbles in the third box as in the second box, and 20% were blue in the third box. Alex lost the third box. What percentage of his blue marbles did he lose ? _____ 12