Predicting Probability

1.) Based on a sample survey, an airline claims that its flights have a 92% probability of being on time. Out of 1,000 flights, how many would you predict will be on time?

$$\frac{\%}{\text{total}} = \frac{92}{100} = \frac{x}{1{,}000}$$

$x = 920$

% is out of a total of 100%

total # of flights

2.) If you roll a number cube 24 times, how many times do you expect to roll a 5?

1 (5) on a number cube

$$\frac{1}{6} = \frac{x}{24}$$

$24 = 6x$

$x = 4$

6 sides on a dice (number cube)

3.) A store claims 78% of shoppers end up buying something. Out of 1,000 shoppers, how many would you prdict will buy something?

$\frac{\text{part}}{\text{total}} \quad \frac{78}{100} = \frac{x}{1{,}000} \qquad 78{,}000 = 100x \qquad x = 780$

4.) A bag contains 9 red chips, 4 blue chips, and 7 yellow chips. You pick a chip from the bag, record its color and put the chip back in the bag. If you do this 100 times, how many times do you expect to remove a yellow chip from the bag?

yellow chips → $\frac{7}{20} = \frac{x}{100}$

$20x = 700$

total chips = 20

$x = 35$

$9 + 4 + 7 = 20$

5.) A local owner of a pizzeria estimates that 72% of his customers order pepperoni on their pizza. Out of 250 orders taken in one day, how many would you predict to have pepperoni?

$\frac{\#\ cats}{\text{total students}}$

$\frac{72}{100} = \frac{x}{250}$ $\quad \frac{\text{drop } 15}{\text{+5}} = \frac{x}{50}$

$100x = 18000$

$x = 180$