PRE-COLLEGE MATH Name_____

Review for Test 12 Period____ Date_____

A bag contains 8 red marbles, 6 blue marbles, and 4 yellow marbles. Two marbles are selected at random, without replacement. Find the probability of each of the following. (18)

1. P(red, then yellow) $\frac{8}{18}\cdot\frac{4}{17}=\boxed{\frac{16}{153}}$

2. P(2 blue) $=\frac{6}{18}\cdot\frac{5}{17}=\boxed{\frac{5}{51}}$

3. P(2 red or 2 blue) $\frac{8}{18}\cdot\frac{7}{17}+\frac{6}{18}\cdot\frac{5}{17}=\boxed{\frac{43}{153}}$

4. P(1 red and 1 yellow, in either order) $\frac{8}{18}\cdot\frac{4}{17}+\frac{4}{18}\cdot\frac{8}{17}=\boxed{\frac{32}{153}}$

One card is pulled from a standard deck of 52 cards. Find the probability of the following.

5. P(a face card) $\frac{12}{52}=\boxed{\frac{3}{13}}$

6. P(a heart) $\frac{13}{52}=\boxed{\frac{1}{4}}$

7. P(a face card or a heart) $\frac{12}{52}+\frac{13}{52}-\frac{3}{52}=\frac{22}{52}=\boxed{\frac{11}{26}}$

8. P(the jack of hearts) $\boxed{\frac{1}{52}}$

Find the odds of an event happening, given the probability of the event.

9. $\frac{4}{7}$ $\boxed{4:3}$

10. $\frac{2}{15}$ $\boxed{2:13}$

Find the probability of an event happening, given the odds of the event.

11. 10:3 $\boxed{\frac{10}{13}}$

12. 7:8 $\boxed{\frac{7}{15}}$

Solve. Round to 3 decimal places. $P(x)={}_nC_x\cdot p^x(1-p)^{n-x}$

13. On any given day, the probability that the entire Watson family eats dinner together is 2/5. Find the probability that, during any 7-day period, the Watson's eat dinner together at least six times.

$P(6)+P(7)={}_7C_6\cdot\left(\frac{2}{5}\right)^6\left(\frac{3}{5}\right)^1+{}_7C_7\left(\frac{2}{5}\right)^7\left(\frac{3}{5}\right)^0=\boxed{.019}$

14. Assume that you are taking about 10-question multiple choice test. If each question has four choices and you have to guess on each question, what is the probability of getting exactly 7 questions correct?

$P(7)={}_{10}C_7\cdot\left(\frac{1}{4}\right)^7\left(\frac{3}{4}\right)^3=\boxed{.003}$

15. Eight unbiased coins were tossed simultaneously. Find the probability of getting exactly 4 heads.

$P(4)={}_8C_4\cdot\left(\frac{1}{2}\right)^4\left(\frac{1}{2}\right)^4=\boxed{.273}$

16. A carton of 12 eggs at the grocery store has a 0.03 chance of having a cracked egg in the carton. What is the probability that less than 3 eggs are cracked?

$P(0)+P(1)+P(2)$

$={}_{12}C_0\cdot(.03)^0(.97)^{12}+{}_{12}C_1\cdot(.03)^1(.97)^{11}+{}_{12}C_2(.03)^2(.97)^{10}=\boxed{.995}$

17. According to government data, the probability that a woman between the ages of 25 and 29 was never married is 40%. In a random survey of 10 women in this age group what is the probability that two or fewer were never married?

$P(0)+P(1)+P(2)$

$={}_{10}C_0(.40)^0(.60)^{10}+{}_{10}C_1(.40)^1(.60)^9+{}_{10}C_2(.40)^2(.60)^8=\boxed{.167}$

18. Five dice are rolled. What is the probability that three of them are 6?

$P(3)={}_5C_3\cdot\left(\frac{1}{6}\right)^3\left(\frac{5}{6}\right)^2=\boxed{.032}$