This is in Week 10 packet...

1. In how different ways can you seat 2 kids and 3 adults in a row if the kids CANNOT sit next to each other?

KAKAA KAAAK $6 \cdot 2 \cdot 3 \cdot 1 \cdot 2 \cdot 1 = 72$
KAAKA AKAKA
AAKAK AKAAK

2. How many different scrambles of the word Engineer can be made?

$$\frac{8!}{3! \, 2!} = 3360$$
e   n

3. In how many ways can you select 5 of 13 rides at the El Dorado County Fair?

$$_{13}C_5 = \frac{13!}{5! \, 8!} = 1287$$

4. In how many ways can you ride 5 of 13 rides at the El Dorado County Fair?

$$_{13}P_5 = \frac{13!}{8!} = 154,440$$

5. From a penny, dime, quarter and half dollar, how many different sums of money can be made?

Sums of + Sums of + Sums of
2 coins   3 coins   4 coins

$_4C_2$ + $_4C_3$ + $_4C_4$

6   +   4   +   1 = 11 different
                           Sums

6. Find the probability that a face card (J,Q, K) or a heart will be drawn from a deck of 52 cards.

$$\frac{_{12}C_1 + _{13}C_1 - _3C_1}{_{52}C_1} = \frac{12 + 13 - 3}{52} = \frac{22}{52} = \frac{11}{26}$$

7. Find the probability of getting 2 orange marbles from a bag of 3 red and 2 orange marbles if:

a) the first marble is replaced. $\frac{2}{5} \cdot \frac{2}{5} = \frac{4}{25}$
b) the first marble is not replaced. $\frac{2}{5} \cdot \frac{1}{4} = \frac{1}{10}$