Section 1-6: Probability   2 kinds of probability

Experimental Probability

Using the results of an experiment to predict future outcomes.

$$= \frac{\text{\# times an event occurs}}{\text{Total \# of trials}}$$

Theoretical Probability

Using knowledge of a situation to predict future outcomes.

$$= \frac{\text{\# of favorable outcomes}}{\text{Total possible outcomes}} \leftarrow \text{Sample Space}$$

The numbers from 1 to 20 are in a bag. You reach into the bag and randomly pull out a single number. Find each probability as a fraction without reducing.

Theoretical Probability

1. P(muliple of 4) $= \frac{5}{20}$

   4, 8, 12, 16, and 20

2. P(factor of 18) $= \frac{6}{20}$

   1, 2, 3, 6, 9, 18

3. P(prime number) $= \frac{8}{20}$

   2, 3, 5, 7, 11, 13, 17, 19

4. P(even and multiple of 3) $= \frac{3}{20}$

   2, 4, 6, 8, 10, 12, 14, 16, 18, 20   3, 6, 9, 12, 15, 18

   only these three numbers are both

5. P(odd or multiple of 5) $= \frac{12}{20}$

   1, 3, 5, 7, 9, 11, 13, 15, 17, 19

   10 odd numbers

   5, 10, 15, 20

   you can't count 5 and 15 again so this is two additional numbers.

You will spin this spinner once. Find each probability as a fraction.

Theoretical Probab

1. P(Factor of 12) $= \frac{5}{8}$ 1, 2, 3, 4, 6

2. P(multiple of 3) $= \frac{2}{8}$ 3 and 6

3. P(Prime #) $= \frac{4}{8}$ 2, 3, 5, 7

4. P(Red or Blue) $\frac{2+4}{} = \frac{6}{8}$

   nothing is both red and blue so by adding these together you aren't counting anything twice.

5. P(Blue and Mult of 4) $= \frac{2}{8}$

   only the blue 4 and blue 8 are both blue and a multiple of 4.

6. P(Prime # or Blue) $= \frac{7}{8}$

   all but the red 1 are prime, blue, or both.

A survey of people's favorite fruit was conducted.
The results are shown below.

	Apple	Pear	Orange	Banana	Total
Male	73	64	80	51	268
Female	68	75	83	56	282
Total	141	139	163	107	550
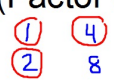
1. P(Apple) $= \dfrac{141}{550}$

2. P(Banana or Orange) $= \dfrac{107 + 163}{} = 270/550$

3. P(Female and Pear) $= \dfrac{75}{550}$

4. P(Male or Apple) $= \dfrac{268 + 141 - 73}{} = \dfrac{336}{550}$

only 75 people in both the Female row and the Pear column.

Suppose you roll a die (our book calls this a number cube).

Find each probability as a fraction.   Theoretical Probability

1. P(Prime and odd) $= \dfrac{2}{6}$

   ③ ⑤   ③ ⑤

2. P(Factor of 8) $= \dfrac{3}{6}$

   ① ④
   ② 8

3. P(less than 3 and multiple of 4) $= \dfrac{0}{6}$

   1   4
   2

   No number is both of these

You can now finish Hwk #29

Sec 1-6

Due tomorrow

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problems 8, 9, 11-14, 30-34, 36, 40