Precalc 13.4

Find the probability of independent events
Find the probability of dependent events
Identify mutually exclusive and inclusive events
Find the probability of mutually exclusive and inclusive events

independent
dependent
} options

mutually exclusive
inclusive
} can be both

dice sample space

whiteboards (if time)

Could it be both?

P (king or heart)

$$\frac{4}{52} + \frac{13}{52} - \frac{1}{52} = \frac{16}{52} = \frac{4}{13}$$

**Lesson 13-4** *(Pages 860–867)*

**Determine if each event is *independent* or *dependent*. Then determine the probability.**

1. the probability of selecting a red marble, not replacing it, then a green marble from a box of 6 red marbles and 2 green marbles

D: $\frac{6}{8} \cdot \frac{2}{7} = \frac{12}{56} = \frac{3}{14}$

2. the probability of randomly selecting two dimes from a bag containing 10 dimes and 8 pennies, if the first selection is ~~not~~ replaced

T $\frac{10}{18} \cdot \frac{10}{18} = \frac{100}{324} = \frac{25}{81}$

D $\frac{10}{18} \frac{9}{17} =$

3. There are two traffic lights along the route that Laura drives from home to work. One traffic light is red 50% of the time. The next traffic light is red 60% of the time. The lights operate on separate timers. Find the probability that these lights will both be red on Laura's way from home to work.

$P_{(R+R)}$ $\frac{50}{100} \cdot \frac{60}{100} = \frac{3000}{10000} = \frac{3}{10}$ 30%

number cubes = dice

**Determine if each event is *mutually exclusive* or *mutually inclusive*. Then determine each probability.**

**4.** the probability of tossing two number cubes and either one shows a 5

Use a table...
Could both be fives? (Ask)

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |

$P_6 \quad \frac{6}{36} = \frac{1}{6}$

$P_{<5} = \frac{1}{6}$

$P_9 = \frac{4}{36} = \frac{1}{9}$

| Second Die \ First Die | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |

**5.** the probability of selecting a card from a standard deck of cards and the card is a 10 or an ace

Could it be both?