Given a standard deck of cards (52 cards) find each probability as a fraction assuming that you take out one card at random.

a. P(King or Queen) = $\frac{8}{52}$

b. P(5 of clubs) = $\frac{1}{52}$

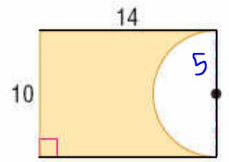
c. P(Heart and Face Card) = $\frac{3}{52}$

d. P(10 or a diamond) = $\frac{16}{52}$ (3 + 13)

e. P(Red 8) = $\frac{2}{52}$

Find the probability that a dart lands in the shaded region.

Give answer as a percent rounded to a hundredth.



$= \frac{\text{Rect} - \frac{1}{2}\text{circle}}{\text{Rect}}$

$= \frac{140 - \frac{1}{2}\pi(5)^2}{140}$

$= \frac{140 - 12.5\pi}{140}$

71.95 %

Section 9-7: Probability of Multiple Events

You flip a coin then roll a die. Find this probability as a fraction:

P(Flip Heads then roll a 5) = $\frac{1}{2} \cdot \frac{1}{6} = \frac{1}{12}$

This is an example of Independent Events:
When the outcome of the first event does not affect the outcome of the second event.

P(A and B) = P(A) • P(B)

In a jar are 4 grape suckers and 6 cherry suckers.

1. Find the probability that if you randomly grab a sucker it is Cherry. $= \frac{6}{10}$

2. Assuming that the first you took was Cherry and you ate it what is the probability that the second one you take is Grape? $\frac{4}{9}$

3. If you ate the second one too what it the probability that the third one you take is also Grape? $\frac{3}{8}$

2. Assuming that the first you took was Cherry and you ate it what is the probability that the second one you take is Grape?

3. If you ate the second one too what it the probability that the third one you take is also Grape?

These last two questions are examples of Dependent Events.

When the outcome of the first event DOES affect the outcome of the second event.

P(A and B) = P(A) • P(BafterA)

In a jar there are the following flavors of suckers:
7 lime, 8 lemon, 5 orange.

You take out a random sucker and eat it then you take out another random sucker.
Find each probability as a fraction:

`1. P(lemon and lime) $= \frac{8}{20} \cdot \frac{7}{19} = \frac{56}{380}$

2. P(orange and orange) $= \frac{5}{20} \cdot \frac{4}{19} = \frac{20}{380}$

Independent Events:
When the outcome of the first event does NOT affect the outcome of the second event.

P(A and B) = P(A) • P(B)

Dependent Events:
When the outcome of the first event DOES affect the outcome of the second event.

P(A and B) = P(A) • P(BafterA)

Is each pair of events *Dependent* or *Independent*?

1. You spin a spinner and pull a number out of a hat.

Independent

2. You open the refrigerator and randomly grab a drink and finish it. You are still thirsty so you randomly grab another drink.

Dependent

3. You have a box of different colored paper clips you are going to use when you organize some papers. You randomly grab a paper clip and put it on some papers. A few minutes later you grab another paper clip to hold together another bunch of paper.

Dependent

Is each pair of events *Dependent* or *Independent*?

4. You have a can full of bolts and need some to attach a part to a desk. You randomly grab one and try it but it's the wrong size so you throw it back in the can and grab another one.

Independent

5. A month is selected at random; a day of that month is selected at random.

Dependent

You flip a coin and roll a die.

Find the probability that you flip heads and roll a prime number. Give answer as a fraction.

Independent Events

P(A and B) = P(A) • P(B)

P(H and Prime #)= $\frac{1}{2} \cdot \frac{3}{6} = \frac{3}{12}$