One card is drawn from a deck and then replaced, a second card is then drawn.

What is the probability of drawing an ace on the first draw and a red card on the second?

$$\frac{4}{52} \cdot \frac{26}{52}$$

$$\frac{1}{13} \cdot \frac{1}{2} = \frac{1}{26} \approx .038$$

What is the probability of drawing a 5 on the first card and a face card on the second?

$$\frac{4}{52} \cdot \frac{12}{52}$$

$$\frac{1}{13} \cdot \frac{3}{13} = \frac{3}{169} \approx .017$$

What is the probability of drawing a club on the first draw and a red jack on the second?

$$\frac{13}{52} \cdot \frac{2}{52}$$

$$\frac{1}{4} \cdot \frac{1}{26} = \frac{1}{104} \approx .009$$

A card is drawn from a deck and not replaced before the next card is drawn.

What is the probability of drawing an ace on the first card and a 10 on the second card?

$\frac{4}{52} \cdot \frac{4}{51}$

$\frac{1}{13} \cdot \frac{4}{51} = \frac{4}{663} \approx .006$

What is the probability of drawing a king on the first card and a face card on the second?

$\frac{4}{52} \cdot \frac{11}{51}$

$\frac{1}{13} \cdot \frac{11}{51} = \frac{11}{663} \approx .017$

What is the probability of drawing a red card on the first draw and a 2 on the second card?

$\frac{26}{52} \cdot$

$\frac{1}{2} \cdot$

A survey of 187 eighth graders included 92 boys and 95 girls. 56% of the boys said they participated in an after-school activity, and 47% of the girls said they did not participate in an after-school activity. Complete the table to answer the questions.

After School Activity			
	Yes	No	Total
Male	52	40	92
Female	50	45	95
Total	102	85	187

$92(.56) = 51.5 \approx 52$

$95(.47) = 44.65 \approx 45$

Suppose you pick one student at random from these 187 eighth graders. Find the probability of each of the following events.

P(*Participates in After-School Act*) $\frac{102}{187}$

P(*Is a boy*) $\frac{92}{187}$

P(*Participates in After-School Act and is a boy*) $\frac{52}{187}$

P(*Participates in After-School Act or is a boy*) $\frac{92}{187} + \frac{102}{187} - \frac{52}{187} = \frac{142}{187}$

P($Parcitipates\ in\ After-School\ Act | Is\ a\ boy$) $\frac{52}{92}$

P($Is\ a\ boy | Participates\ in\ After-School\ Act$) $\frac{52}{102}$

Is being a boy and participating in after school activity independent? Explain your reasoning.

$P(\text{Boy}) \stackrel{?}{=} P(\text{Boy} \mid \text{Participates in After school})$

$\frac{92}{187} \stackrel{?}{=} \frac{52}{102}$

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