

If the outcome of one event affects the outcome of a second event, the events are dependent.

The probability of two dependent events, A and B, is equal to the probability of event A times the probability of event B. However, the probability of event B now depends on event A.

$$P(A, B) = P(A) \cdot P(B)$$

Example: There are 6 black pens and 8 blue pens in a jar. Plutarch takes a pen without looking and then takes another pen without replacing the first, what is the probability he will get 2 black pens?

$$P(\text{black first}) = \frac{6}{14} \text{ or } \frac{3}{7} \qquad P(\text{black second}) = \frac{5}{13}$$

$$P(\text{black, black}) = \frac{3}{7} \cdot \frac{5}{13} \text{ or } \frac{15}{91}$$

Tell whether each event is independent or dependent.

1.	Haymitch (not good at fashion) selecting a sweater, selecting a shirt	
2.	Madge choosing one card from a deck then choosing a second card without replacing the first	
3.	Gale's wallet contains two \$5 bills, two \$10 bills, and three \$20 bills. Two bills are selected without the first being replaced.	
4.	Alma Coin rolls two dice.	
5.	Annie choosing two cards from a deck so that they make a "pair".	
6.	Beetee selecting a DVD from a storage case and then selecting a second DVD after replacing the first	
7.	There are 20 letter tiles face down on the table. Prim knows that there is one X-tile and one J-tile. Prim picks two tiles at the same time. What is the probability that she will pick the X-tile and then the J-tile?	
8.	Squad 451 has 12 CD's in their car. They select one of the CD's while also selecting a beverage to drink at Starbucks.	

86% of Texas' 12th graders missed this STAAR problem.

9.	Winners from the math club fund-raiser randomly select a gift-certificate from Box A and from Box B. The boxes are shown below.		What is the probability that the first winner will randomly select a DVD certificate and an amusement certificate?	
	<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>BOX A 5 dinner certificates 4 DVD certificates 3 movie certificates 5 T-shirts certificates</p> </div>	<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>BOX B 4 CD certificates 3 camera certificates 5 amusement certificates 5 TV certificates</p> </div>		
	A $\frac{20}{289}$	B $\frac{9}{17}$	C $\frac{9}{289}$	D $\frac{1}{19}$

F	I	N	N	I	C	K
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Mags places the seven cards above into a box. She draws one card, does not replace it, and then draws another card. **Write both the expression and the answer.**

1.	P(N, N)		2.	P(C, F)	
3.	P(I, K)		4.	P(N, I)	
5.	P(C, D)		6.	P(N, not K)	

Wiress draws three cards and does not replace them. **Write both the expression and the answer.**

7.	P(F, I, N)		8.	P(N, I, N)	
9.	P(K, C, F)		10.	P(N, I, not F)	
11.	P(vowel, vowel, consonant)		12.	P(N, N, N)	

Beetee draws four cards and does not replace them. **Write both the expression and the answer.**

13.	P(F, I, N, N)		14.	P(N, I, C, K)	
15.	P(N, N, I, not I)		16.	P(K, C, F, I)	

Annie draws five cards and does not replace them. **Write both the expression and the answer.**

17.	P(F, I, N, N, I)		18.	P(K, C, F, I, not N)	
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Find the missing probability.

19.	P(A) = 0.5 P(B) = 0.6 P(A and B) = ?		20.	P(A) = 0.31 P(B given A) = 0.8 P(A and B) = ?	
21.	P(A) = 0.3 P(B) = ? P(A and B) = 0.27		22.	P(A) = 0.7 P(B given A) = ? P(A and B) = 0.7	
23.	P(A) = ? P(B) = 0.06 P(A and B) = 0.03		24.	P(A) = ? P(B given A) = 0.6 P(A and B) = 0.27	