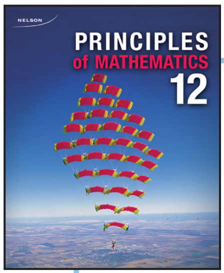


- If you have any difficulty with these solutions, please contact your teacher before continuing.

Page 198, *Question 2*

a. These are independent because the question specifies that Celeste chooses randomly.

b. $P(\text{stationary bike and free weights}) = P(\text{stationary bike}) \times P(\text{free weights})$

$$= \frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$$

The probability that Celeste will use a stationary bike and free weights is $\frac{1}{6}$ or about 16.7%.

Page 198, *Question 5*

a. If the events are independent, then $P(A \cap B) = P(A) \times P(B)$.

$P(A \cap B) = 0.12$

$P(A) \times P(B) = 0.35 \times 0.4 = 0.14$

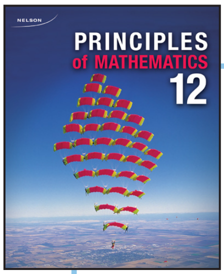
Because these values are not equal, the events are not independent.

b. If the events are independent, then $P(Q \cap R) = P(Q) \times P(R)$.

$P(Q \cap R) = 0.468$

$P(Q) \times P(R) = 0.720 \times 0.650 = 0.468$

Because these values are equal, the events are independent.



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Page 197, *Your Turn*

a. Because the first ticket drawn is not returned the events are dependent.

b. The probability will be less. Max cannot win more than one prize. If you win the first prize, your name is not put back in.

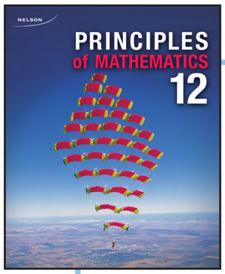
Page 183, *Reflecting*

A. It lowers the probability of the second event, because there are fewer chips from which to choose on the second draw. Also, fewer defective chips can be drawn.

B. No. Jocelyn would be drawing from 100 chips on the second draw, just as on the first draw. Therefore, the probability of the second chip being defective would be $\frac{3}{100}$ (the same as the probability for the first draw), not $\frac{2}{99}$.

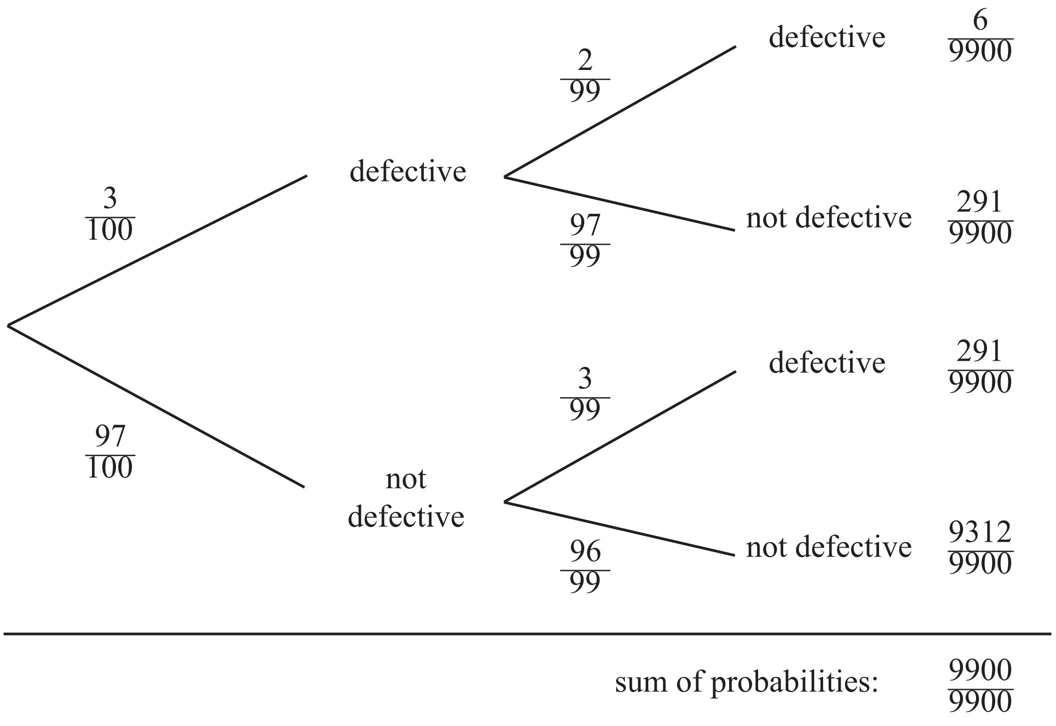
C. If the first chip she drew was not defective, she could not draw two defective chips. She needs to consider only the probability that both the first and second chips are defective.

D. If the first chip is defective, then the probability of the second chip being defective is $\frac{2}{99}$. However, if the first chip is not defective, then the probability of the second chip being defective is $\frac{3}{99}$. Because the probability of the second chip being defective depends on whether the first chip is defective, it is conditional on the first chip. Thus, it is considered a conditional probability.



- If you have any difficulty with these solutions, please contact your teacher before continuing.

E.

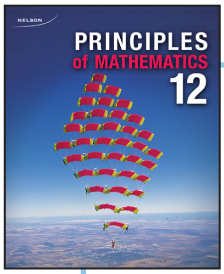


The sum of probabilities is 1. This indicates that no cases have been missed and that the determinations of probability are correct.

Page 185, *Your Turn*

$$P(\text{multiple of } 4 \mid \text{multiple of } 6) = \frac{P(\text{multiple of } 6 \cap \text{multiple of } 4)}{P(\text{multiple of } 6)}$$

$$P(\text{multiple of } 4 \mid \text{multiple of } 6) = \frac{\frac{3}{40}}{\frac{6}{40}} = \frac{3}{6} = \frac{1}{2}$$



- If you have any difficulty with these solutions, please contact your teacher before continuing.

Page 186, *Your Turn*

a.

P(have cellphone and not have smartphone) = *P*(have cellphone) × *P*(not have smartphone)

Probability of having a cellphone and having a smartphone are given in the original question.

P(have a cellphone) = 0.91 P(have a smartphone) = 0.42

P(not have a smartphone) = 1 – P(have a smartphone) = 1 – 0.42 = 0.58

P(have a cellphone and not have a smartphone) = *P*(have a cellphone) × *P*(not have a smartphone)

= 0.91 × 0.58 = 0.5278

The probability of a person having a cellphone but not a smartphone is 53%.

Page 187, *Your Turn*

a. Add the four probabilities at the end of the branches. They should add to 1.

b. Let *G* represent winning the game. Let *W* represent windy conditions.

$$P(G'\cap W) = P(W)\times P(G'|W) = 0.40\times 0.30 = 0.12$$

$$P(G'\cap W') = P(W')\times P(G'|W') = 0.60\times 0.40 = 0.24$$

$$P(\text{lose}) = 0.12 + 0.24 = 0.36$$

$$P(\text{win}) = 0.64$$

$$P(\text{lose}) = 1 - 0.64 = 0.36$$

The values match, so the answer is verified.