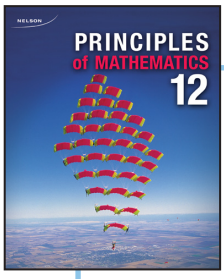


- If you have any difficulty with these solutions, please contact your teacher before continuing.

Page 143, *Your Turn*

a. odds against = number of not face cards : number of face cards = 10:3

b. Morgan is more likely to draw a card that is not a face card. Because 10 is more than three times as large as 3, you can say that Morgan is more than three times likely to draw a card that is not a face card.

Page 144, *Your Turn*

a. $P(A) = \dfrac{\text{favourable outcomes}}{\text{total outcomes}} = \dfrac{2}{5}$

total outcomes = favourable outcomes + not favourable outcomes

5 = 2 + not favourable outcomes

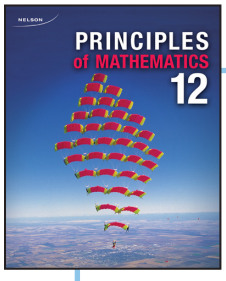
3 = not favourable outcomes

odds in favour = favourable outcomes : not favourable outcomes = 2:3

b. odds against = not favourable outcomes : favourable outcomes = 3:2

Page 145, *Your Turn*

If the odds in favour are 5:3, the probability is $\dfrac{5}{8}$ = 62.5%. The probability is greater than 50%.



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

Page 142, *Investigate the Math*

A. The event in this situation is the Roughriders will win the Grey Cup.

B. $P(\text{Roughriders win Grey Cup}) = \frac{25}{100}$

This fraction is not reduced because the question asked for a fraction out of 100.

C. The complement of this event is the Roughridgers will *not* win the Grey Cup.

D. $P(\text{Roughriders will } \textit{not} \text{ win Grey Cup}) = \frac{100}{100} - \frac{25}{100} = \frac{75}{100}$

This fraction is not reduced because the question asked for a fraction out of 100.

E. odds in favour = favourable outcomes : unfavourable outcomes = 25:75

The odds of the Roughriders winning the Grey Cup, in simplified form, are 1:3.

F. odds against = unfavourable outcomes : favourable outcomes = 75:25

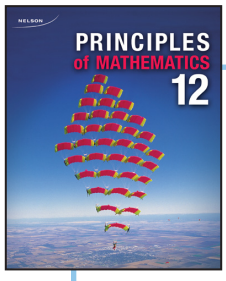
The odds of the Roughridgers not winning the Grey Cup, in simplified form, are 3:1.

G. The odds against are the reciprocal of the odds in favour.

H. If we assume that the denominators of both the probability and the complement are equal, the odds in favour can be represented as the ratio of the numerator of the probability to the numerator of the complement. The first term in the ratio represents the favourable outcomes, and the second term represents the unfavourable outcomes.

I. Similar: The numerator of the probability is equal to the first term in the odds ratio.

Different: The denominator of the probability is equal to the sum of the favourable outcomes and the unfavourable outcomes. The second term in the odds ratio is the number of unfavourable outcomes.



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

Page 146, *Your Turn*

Answers may vary for this question. Contact your teacher to confirm if your answer is correct.

Possible Solution: If your answer is based strictly on theoretical probability then, yes. The probability of Josie scoring is $\frac{2}{3} \cong 0.667$. This probability is greater than that of Ellen or Brittany; so, the chance of Josie scoring is higher than the chance of Ellen or Brittany scoring.

Possible Solution: If I base my answer on experimental probability then, no. Josie has only had three attempts in a shootout while the other girls have had many more attempts. Deciding that Josie is the best shootout performer is risky based on her limited experience. You can be more confident in the ability of a player with a greater number of attempts.

Page 147, *Your Turn*

odds against winning A = chances of not winning A : chances of winning A = 11:3

total number of chances = 11 + 3 = 14

P(not winning game A) = $\frac{11}{14} \cong 0.786$ P(winning game A) = $1 - \frac{11}{14} = \frac{3}{14} \cong 0.214$

odds against winning B = chances of not winning B : chances of winning B = 17:6

total number of chances = 17 + 6 = 23

P(not winning game B) = $\frac{17}{23} \cong 0.739$ P(winning game B) = $1 - \frac{17}{23} = \frac{6}{23} \cong 0.261$

The probability of winning game A is lower than the probability of winning game B. They should have game A at the carnival because people will win less. Therefore, it will make more money for the animal shelter.