PROBABILITY
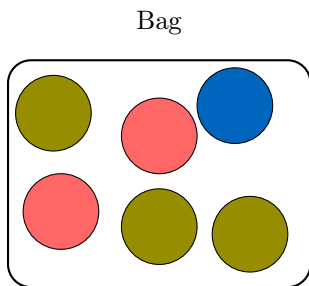
A OUTCOMES

A.1 LISTING ALL POSSIBLE OUTCOMES

MCQ 1: Look at this die: . If you roll it, what are all the possible outcomes?

☐ 1, 2, 3, 4, 5

☐ 1, 2, 3, 4, 5, 6, 7

☒ 1, 2, 3, 4, 5, 6

Answer:

- A die has six sides, numbered 1 to 6.
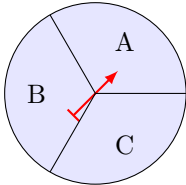- So, all possible outcomes are: 1, 2, 3, 4, 5, 6.

MCQ 2: Imagine a bag with balls: 2 red, 1 blue, and 3 green. If you pick one ball without looking, what are all the possible colors you could get?

Bag

☒ Red, Blue, Green

☐ 2 Red, 1 Blue, 3 Green

☐ Red, Red, Blue, Green, Green, Green

Answer:

- The possible outcomes are the different colors: Red, Blue, Green.
- We don't list the same color more than once because we're looking for possible colors, not how many of each.

MCQ 3: Look at this spinner: What are all the possible letters it could land on?

☐ A, B

☐ A, C

☒ A, B, C

Answer:
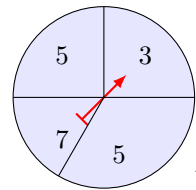
- The spinner has three sections: A, B, and C.

- So, the possible outcomes are A, B, and C.

MCQ 4: If you pick a letter from the word "PAPA," what are all the possible letters you could pick?

☐ P, A, P, A

☐ P, A, P

☒ P, A

Answer:

- The distinct letters in "PAPA" are P and A.
- So, the possible outcomes are P and A.

MCQ 5: Look at this spinner: What are all the possible numbers it could land on?

☐ 3, 5, 7, 7

☐ 3, 5, 5, 7

☒ 3, 5, 7

Answer:

- The spinner has sections with numbers 3, 5, 7, and another 5.
- But for outcomes, we list each different number once: 3, 5, 7.

MCQ 6: A couple is expecting a baby. They don't know if it will be a boy or a girl. What are all the possible outcomes for the baby's gender?

☐ Boy

☒ Girl, Boy

☐ Girl

Answer:

- The possible outcomes are: Girl, Boy.

MCQ 7: If you pick a letter from the word "APPLE," what are all the possible letters you could pick?

☒ P, A, L, E

☐ P, P, A, L, E

☐ A, P, L

☐ A, L, E, P, P

Answer:

- The distinct letters in "APPLE" are P, A, L, E.

- So, the possible outcomes are P, A, L, E.

MCQ 8: If you pick a letter randomly from the word "BANANA," what are all the possible letters you could pick?

☒ B, N, A

☐ B, A, N, A, N, A

☐ A, B, N, A, B, N

Answer:

- The distinct letters in "BANANA" are B, A, N.

- So, the possible outcomes can be listed as B, N, A (order doesn't matter).

B EVENTS

B.1 IDENTIFYING OUTCOMES FOR DIE-ROLLING EVENTS

MCQ 9: If you roll a die, what are the outcomes for the event "getting a 3"?

☐ 1, 3, 5

☐ 2, 3, 4

☐ 1, 2, 3

☒ 3

Answer: The outcomes for the event "getting a 3" are 3.

MCQ 10: If you roll a die, what are the outcomes for the event "getting a 5 or 6"?

☒ 5, 6

☐ 4, 5, 6

☐ 1, 2, 3

☐ 3, 4, 5

Answer: The outcomes for the event "getting a 5 or 6" are 5 and 6.

MCQ 11: If you roll a die, what are the outcomes for the event "not getting a 6"?

☐ 2, 3, 4

☐ 1, 2, 3, 4, 5, 6

☒ 1, 2, 3, 4, 5

☐ 1, 3, 5

Answer: The outcomes for the event "not getting a 6" are 1, 2, 3, 4, and 5.

MCQ 12: If you roll a die, what are the outcomes for the event "getting a number greater than or equal to 4"?

☐ 1, 2, 3

☒ 4, 5, 6

☐ 3, 4, 5

☐ 2, 3, 4

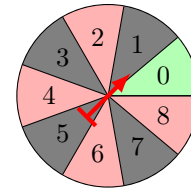*Answer:* The outcomes for the event "getting a number greater than or equal to 4" are 4, 5, and 6.

MCQ 13: If you roll a die, what are the outcomes for the event "even number"?

☐ 1, 3, 5

☒ 2, 4, 6

☐ 1, 2, 3, 4, 5, 6

☐ 2, 3, 4, 5

Answer: The outcomes for the event "even number" are 2, 4, and 6.

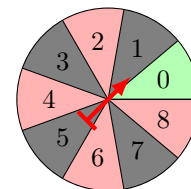## B.2 IDENTIFYING OUTCOMES IN A CASINO SPINNER

MCQ 14: If you spin the spinner below, what are the outcomes for the event "getting a 2"?

☒ 2

☐ 1, 2, 3

☐ 2, 4, 6

☐ 0, 1, 2

Answer: The outcomes for the event "getting a 2" are 2.

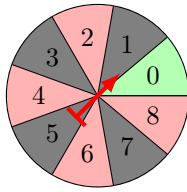**MCQ 15:** If you spin the spinner below, what are the outcomes for the event "not getting a 4"?

☐ 1, 2, 3, 4

☒ 0, 1, 2, 3, 5, 6, 7, 8

☐ 2, 4, 6, 8

☐ 4, 5, 6

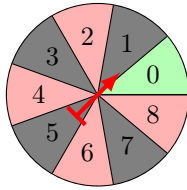*Answer:* The outcomes for the event "not getting a 4" are 0, 1, 2, 3, 5, 6, 7, and 8.

MCQ 16: If you spin the spinner below, what are the outcomes for the event "red"?

☐ 1, 3, 5, 7

☐ 0

☒ 2, 4, 6, 8

☐ 1, 2, 3, 4

Answer: The outcomes for the event "red" are 2, 4, 6, and 8.

MCQ 17: If you spin the spinner below, what are the outcomes for the event "getting an odd number"?

☐ 0, 1, 3

☐ 2, 4, 6, 8

☐ 1, 2, 3, 4

☒ 1, 3, 5, 7

Answer: The outcomes for the event "getting an odd number" are 1, 3, 5, and 7.

C USING WORDS TO DESCRIBE PROBABILITY

C.1 FINDING THE PROBABILITY IN A DRAWING EXPERIMENT

MCQ 18: What is the chance of picking a red candy from a bag with 4 red candies and 4 blue candies?

Choose one answer:

☐ Impossible

☐ Less Likely

☒ Even Chance

☐ Most Likely

☐ Certain

Answer: The correct answer is "Even Chance." Since there are the same number of red and blue candies, you have an equal chance of picking a red candy.

MCQ 19: What is the chance of picking a blue candy from a bag with 4 red candies and 4 blue candies?
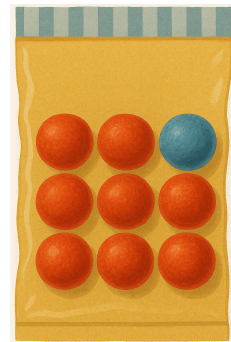

Choose one answer:

☐ Impossible

☐ Less Likely

☒ Even Chance

☐ Most Likely

☐ Certain

Answer: The correct answer is "Even Chance." Since there are the same number of red and blue candies, you have an equal chance of picking a blue candy.

MCQ 20: What is the chance of picking a blue candy from a bag with 9 red candies and 1 blue candy?

Choose one answer:

☐ Impossible

☒ Less Likely

☐ Even Chance

☐ Most Likely

☐ Certain

Answer: The correct answer is "Less Likely." Since there are many more red candies than blue candies, you have a small chance of picking a blue candy.

MCQ 21: What is the chance of picking a red candy from a bag with 9 red candies and 1 blue candy?
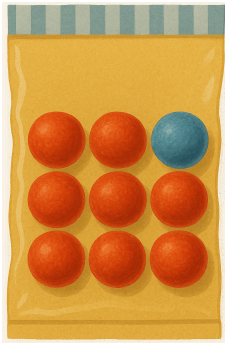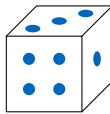
Choose one answer:

☐ Impossible

☐ Less Likely

☐ Even Chance

☒ Most Likely

☐ Certain

Answer: The correct answer is "Most Likely." Since there are many more red candies than blue candies, you have a big chance of picking a red candy.

C.2 FINDING THE PROBABILITY IN A DICE EXPERIMENT

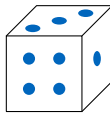**MCQ 22:** What is the chance of getting a 3 when you roll a die?

Choose one answer:

☐ Impossible

☒ Less Likely

☐ Even Chance

☐ Most Likely

☐ Certain

Answer: The correct answer is "Less Likely." Since there are six numbers on a die, you have a small chance of rolling a 3.

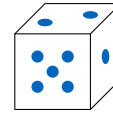**MCQ 23:** What is the chance of **not** getting a 3 when you roll a die?

Choose one answer:

☐ Impossible

☐ Less Likely

☐ Even Chance

☒ Most Likely

☐ Certain

Answer: The correct answer is "Most Likely." Since there are six numbers on a die and five of them are not 3, you have a big chance of rolling a 1, 2, 4, 5, or 6.

MCQ 24: What is the chance of getting an even number (2, 4, or 6) when you roll a die?
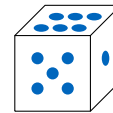

Choose one answer:

☐ Impossible

☐ Less Likely

☒ Even Chance

☐ Most Likely

☐ Certain

Answer: The correct answer is "Even Chance." Since there are six numbers on a die and three of them are even, you have an equal chance of getting an even number or an odd number.

MCQ 25: What is the chance of getting a 7 when you roll a die?

Choose one answer:

☒ Impossible

☐ Less Likely

☐ Even Chance

☐ Most Likely

☐ Certain

Answer: The correct answer is "Impossible." Since there are only six numbers on a die, from 1 to 6, you can't roll a 7.

D USING NUMBERS TO QUANTIFY PROBABILITY

D.1 DESCRIBING PROBABILITIES WITH WORDS

MCQ 26: The probability of winning a game is $\frac{1}{10}$. Find the word to describe this probability.

☐ Impossible

☒ Less Likely

☐ Even Chance

☐ Most Likely

☐ Certain

Answer: The correct answer is "Less Likely." The probability of winning is $\frac{1}{10}$, which means you have the chance to win 1 game out of 10 games played. So, it's Less Likely.

MCQ 27: The probability of winning a game is $\frac{4}{5}$. Find the word to describe this probability.

☐ Impossible

☐ Less Likely

☐ Even Chance

☒ Most Likely

☐ Certain

Answer: The correct answer is "Most Likely." The probability of winning is $\frac{4}{5}$, which means you have the chance to win 4 games out of 5 games played. So, it's Most Likely.

MCQ 28: The probability of winning a game is $\frac{1}{2}$. Find the word to describe this probability.

☐ Impossible

☐ Less Likely

☒ Even Chance

☐ Most Likely

☐ Certain

Answer: The correct answer is "Even Chance." The probability of winning is $\frac{1}{2}$, which means you have the chance to win 1 game out of 2 games played. So, it's an Even Chance.

MCQ 29: The probability of winning a game is 0. Find the word to describe this probability.

☒ Impossible

☐ Less Likely

☐ Even Chance

☐ Most Likely

☐ Certain

Answer: The correct answer is "Impossible." The probability of winning is 0, which means you have no chance to win the game. So, it's Impossible.

MCQ 30: The probability of winning a game is 1. Find the word to describe this probability.

☐ Impossible

☐ Less Likely

☐ Even Chance

☐ Most Likely

☒ Certain

Answer: The correct answer is "Certain." The probability of winning is 1, which means you will definitely win the game. So, it's Certain.

MCQ 31: Louis advises you to play because the probability of winning this game is $\frac{3}{4}$. Do you follow his advice?

☒ Yes

☐ No

Answer: The correct answer is "Yes." The probability of winning is $\frac{3}{4}$, which means you have the chance to win 3 games out of 4 games played. So it is most likely. Therefore, it's a good idea to follow Louis's advice and play.

MCQ 32: Louis advises you to play because the probability of winning this game is $\frac{1}{4}$. Do you follow his advice?

☐ Yes

☒ No

Answer: The correct answer is "No." The probability of winning is $\frac{1}{4}$, which means you have the chance to win 1 game out of 4 games played. So it is less likely. Therefore, it's not a good idea to follow Louis's advice and play.

MCQ 33: The probability of succeeding a penalty is $\frac{1}{2}$ for Louis and $\frac{3}{4}$ for Hugo. Which player do you choose to take the penalty?

☐ Louis

☒ Hugo

Answer: The correct answer is "Hugo." The probability of succeeding for Louis is $\frac{1}{2}$, which means he has an even chance to succeed. For Hugo, it's $\frac{3}{4}$, which means he is most likely to succeed because he has the chance to succeed in 3 out of 4 penalties. So, Hugo is the better choice to take the penalty.

MCQ 34: The probability of succeeding a penalty is $\frac{1}{4}$ for Louis and $\frac{3}{5}$ for Hugo. Which player do you choose to take the penalty?

☐ Louis

☒ Hugo

Answer: The correct answer is "Hugo." The probability of succeeding for Louis is $\frac{1}{4}$, which means he is less likely to succeed because he has the chance to succeed in 1 out of 4 penalties. For Hugo, it's $\frac{3}{5}$, which means he is most likely to succeed because he has the chance to succeed in 3 out of 5 penalties. So, Hugo is the better choice to take the penalty.

E CALCULATING PROBABILITIES

E.1 CALCULATING PROBABILITIES

Ex 35: A ball is selected at random from a bag containing a total of 2 red balls and 3 blue balls.
Calculate the probability that the selected ball is a red ball.

$$P(\text{"choosing a red ball"}) = \frac{\boxed{2}}{\boxed{5}}$$

Answer:

- The total number of possible outcomes when selecting a ball from the bag is 5, since there are 5 balls in total (2 red + 3 blue).

- The number of outcomes for the event "choosing a red ball" is 2, as there are two red balls in the bag.

- Therefore, the probability of choosing a red ball is given by:

$$P(\text{"choosing a red ball"}) = \frac{\text{number of outcomes in the event}}{\text{total number of possible outcomes}}$$
$$= \frac{2}{5}$$

Ex 36: A ball is selected at random from a bag containing a total of 2 red balls and 3 blue balls.
Calculate the probability that the selected ball is a blue ball.

$$P(\text{"choosing a blue ball"}) = \boxed{\dfrac{3}{5}}$$

Answer:

- The total number of possible outcomes when selecting a ball from the bag is 5, since there are 5 balls in total (2 red + 3 blue).

- The number of outcomes for the event "choosing a blue ball" is 3, as there are three blue balls in the bag.

- Therefore, the probability of choosing a blue ball is given by:

$$P(\text{"choosing a blue ball"}) = \frac{\text{number of outcomes in the event}}{\text{total number of possible outcomes}}$$
$$= \frac{3}{5}$$

This answer was generated on 06:09 PM +11 on Friday, May 16, 2025.

Ex 37: A fruit is selected at random from a basket containing a total of 3 apples, 2 oranges, and 5 bananas.
Calculate the probability that the selected fruit is an apple.

$$P(\text{"selecting an apple"}) = \boxed{\dfrac{3}{10}}$$

Answer:

- The total number of possible outcomes when selecting a fruit from the basket is 10, since there are 10 fruits in total (3 apples + 2 oranges + 5 bananas).

- The number of outcomes for the event "selecting an apple" is 3, as there are three apples in the basket.

- Therefore, the probability of selecting an apple is given by:

$$P(\text{selecting an apple}) = \frac{\text{number of outcomes in the event}}{\text{total number of possible outcomes}}$$
$$= \frac{3}{10}$$

Ex 38: In our class, there are 10 students including you. What is the probability the teacher selects you when the teacher chooses a student at random?

$$P(\text{"being selected"}) = \boxed{\dfrac{1}{10}}$$

Answer:

- The total number of possible outcomes when selecting a student from the class is 10, since there are 10 students in total, including you.

- The number of outcomes for the event "being selected" is 1, as there is only one student who is you.

- Therefore, the probability of being selected is given by:

$$P(\text{"being selected"}) = \frac{\text{number of outcomes in the event}}{\text{total number of possible outcomes}}$$
$$= \frac{1}{10}$$

E.2 CALCULATING PROBABILITIES ON A CASINO SPINNER

Ex 39: You spin the casino spinner shown below. Calculate the probability of the event "getting a 2".
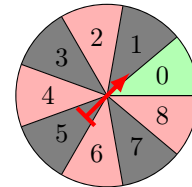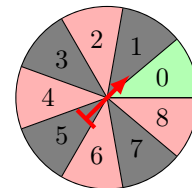

$$P(\text{"getting a 2"}) = \boxed{\dfrac{1}{9}}$$

Answer:

- The total number of possible outcomes when spinning the casino spinner is 9, since there are 9 sections (0 to 8).

- The number of outcomes for the event "getting a 2" is 1, as there is one section labeled 2 on the spinner.

- Therefore, the probability of getting a 2 is given by:

$$P(\text{"getting a 2"}) = \frac{\text{number of outcomes in the event}}{\text{total number of possible outcomes}}$$
$$= \frac{1}{9}$$

Ex 40: You spin the casino spinner shown below. Calculate the probability of the event "not getting a 4".

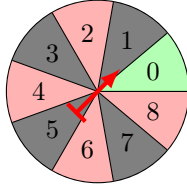$$P(\text{"not getting a 4"}) = \boxed{\dfrac{8}{9}}$$

Answer:

- The total number of possible outcomes when spinning the casino spinner is 9, since there are 9 sections (0 to 8).

- The number of outcomes for the event "not getting a 4" is 8, as there are eight sections that are not 4: 0, 1, 2, 3, 5, 6, 7, and 8.

- Therefore, the probability of not getting a 4 is given by:

$$P(\text{"not getting a 4"}) = \frac{\text{number of outcomes in the event}}{\text{total number of possible outcomes}}$$
$$= \frac{8}{9}$$

**Ex 41:** You spin the casino spinner shown below. Calculate the probability of the event "red".

$$P(\text{"red"}) = \frac{\boxed{4}}{\boxed{9}}$$

Answer:

- The total number of possible outcomes when spinning the casino spinner is 9, since there are 9 sections (0 to 8).

- The number of outcomes for the event "red" is 4, as there are four red sections on the spinner: 2, 4, 6, and 8.

- Therefore, the probability of landing on a red section is given by:

$$P(\text{"red"}) = \frac{\text{number of outcomes in the event}}{\text{total number of possible outcomes}}$$
$$= \frac{4}{9}$$

Ex 42: You spin the casino spinner shown below. Calculate the probability of the event "getting an odd number".
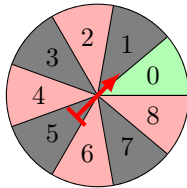
$$P(\text{"getting an odd number"}) = \frac{\boxed{4}}{\boxed{9}}$$

Answer:

- The total number of possible outcomes when spinning the casino spinner is 9, since there are 9 sections (0 to 8).

- The number of outcomes for the event "getting an odd number" is 4, as there are four odd numbers on the spinner: 1, 3, 5, and 7.

- Therefore, the probability of getting an odd number is given by:

$$P(\text{"odd number"}) = \frac{\text{number of outcomes in the event}}{\text{total number of possible outcomes}}$$
$$= \frac{4}{9}$$