

Facts and Reminders

Whether an event is likely to happen can be expressed by a number. This number expresses the probability or likelihood that a particular event will occur. You can determine the probability that an event will occur by counting all of the possible outcomes.

Flipping One Coin

When you flip a coin, only two possible outcomes can result. You have one chance in two of flipping heads (or tails). If you flip the coin 50 times, you have $\frac{1}{2} \times 50$ or 25 likely flips with heads showing. When you actually flip the coin, however, the results may be quite different. The more times you flip the coin, however, the greater the likelihood that you will end up with exactly half the coin flips as heads.

Flipping Two Coins

Listed below are the possible outcomes when you flip two coins. (H = heads, T = tails, 1 = first coin, and 2 = second coin)

H1 H2

H1 T2

T1 T2

T1 H2

You have one chance in four of flipping two heads. You have one chance in four of flipping two tails. You have two chances in four (or one chance in two) of flipping one head and one tail.

Flipping Three Coins

Listed below are the possible outcomes when you flip three coins. (H = heads, T = tails, 1 = first coin, 2 = second coin, and 3 = third coin)

H1 H2 H3

T1 H2 H3

H1 H2 T3

T1 H2 T3

H1 T2 H3

T1 T2 H3

H1 T2 T3

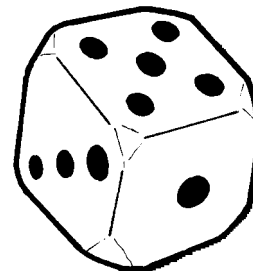
T1 T2 T3



You have one chance in eight of flipping three heads. You have one chance in eight of flipping three tails. You have three chances in eight of flipping two heads. You have three chances in eight of flipping two tails.

Rolling One Die

You have one chance in six of rolling any particular number with one die.



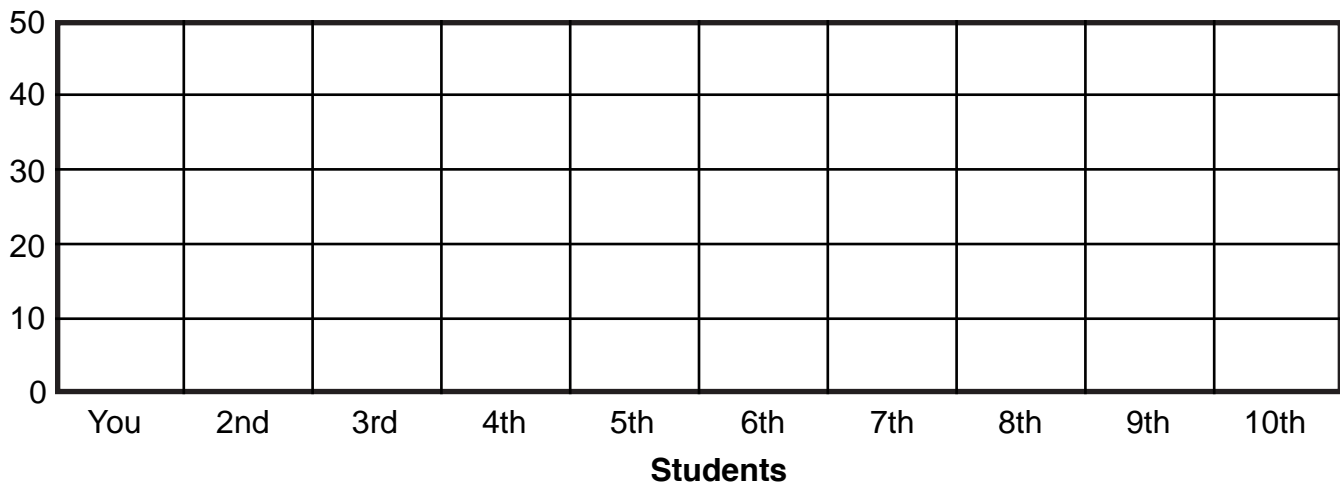
Chances Are . . .

Flipping Pennies

Directions: Read the Facts and Reminders page from this unit before you do this page. Flip one penny 50 times and record your results. (H = heads and T = tails)

- | | | | | | |
|----------|-----------|-----------|-----------|-----------|-----------|
| 1. _____ | 10. _____ | 19. _____ | 28. _____ | 37. _____ | 46. _____ |
| 2. _____ | 11. _____ | 20. _____ | 29. _____ | 38. _____ | 47. _____ |
| 3. _____ | 12. _____ | 21. _____ | 30. _____ | 39. _____ | 48. _____ |
| 4. _____ | 13. _____ | 22. _____ | 31. _____ | 40. _____ | 49. _____ |
| 5. _____ | 14. _____ | 23. _____ | 32. _____ | 41. _____ | 50. _____ |
| 6. _____ | 15. _____ | 24. _____ | 33. _____ | 42. _____ | |
| 7. _____ | 16. _____ | 25. _____ | 34. _____ | 43. _____ | |
| 8. _____ | 17. _____ | 26. _____ | 35. _____ | 44. _____ | |
| 9. _____ | 18. _____ | 27. _____ | 36. _____ | 45. _____ | |

Directions: Make a bar graph here to illustrate the number of heads flipped with one penny by you and nine of your classmates.



Directions: Flip two coins 50 times and record the results here as HH, TT, or HT. Use a small cup or your hand to flip or roll the pennies.

- | | | | | | |
|----------|-----------|-----------|-----------|-----------|-----------|
| 1. _____ | 10. _____ | 19. _____ | 28. _____ | 37. _____ | 46. _____ |
| 2. _____ | 11. _____ | 20. _____ | 29. _____ | 38. _____ | 47. _____ |
| 3. _____ | 12. _____ | 21. _____ | 30. _____ | 39. _____ | 48. _____ |
| 4. _____ | 13. _____ | 22. _____ | 31. _____ | 40. _____ | 49. _____ |
| 5. _____ | 14. _____ | 23. _____ | 32. _____ | 41. _____ | 50. _____ |
| 6. _____ | 15. _____ | 24. _____ | 33. _____ | 42. _____ | |
| 7. _____ | 16. _____ | 25. _____ | 34. _____ | 43. _____ | |
| 8. _____ | 17. _____ | 26. _____ | 35. _____ | 44. _____ | |
| 9. _____ | 18. _____ | 27. _____ | 36. _____ | 45. _____ | |

Count the number of times you flipped two heads. _____

Count the number of times you flipped two tails. _____

Count the number of times you flipped one head and one tail. _____

Flipping Three Pennies

Directions: Read the Facts and Reminders page from this unit before you do this page. Flip three pennies 64 times and record your results.

(H = heads, T = tails, 1 = first coin, 2 = second coin, and 3 = third coin)

- | | | | | | |
|-----------|-----------|-----------|-----------|-----------|-----------|
| 1. _____ | 12. _____ | 23. _____ | 34. _____ | 45. _____ | 56. _____ |
| 2. _____ | 13. _____ | 24. _____ | 35. _____ | 46. _____ | 57. _____ |
| 3. _____ | 14. _____ | 25. _____ | 36. _____ | 47. _____ | 58. _____ |
| 4. _____ | 15. _____ | 26. _____ | 37. _____ | 48. _____ | 59. _____ |
| 5. _____ | 16. _____ | 27. _____ | 38. _____ | 49. _____ | 60. _____ |
| 6. _____ | 17. _____ | 28. _____ | 39. _____ | 50. _____ | 61. _____ |
| 7. _____ | 18. _____ | 29. _____ | 40. _____ | 51. _____ | 62. _____ |
| 8. _____ | 19. _____ | 30. _____ | 41. _____ | 52. _____ | 63. _____ |
| 9. _____ | 20. _____ | 31. _____ | 42. _____ | 53. _____ | 64. _____ |
| 10. _____ | 21. _____ | 32. _____ | 43. _____ | 54. _____ | |
| 11. _____ | 22. _____ | 33. _____ | 44. _____ | 55. _____ | |

You know from the Facts and Reminders page that you had one chance in eight of flipping all three heads with three pennies. That would be eight times in 64 flips.

Count the number of times you flipped three heads. _____

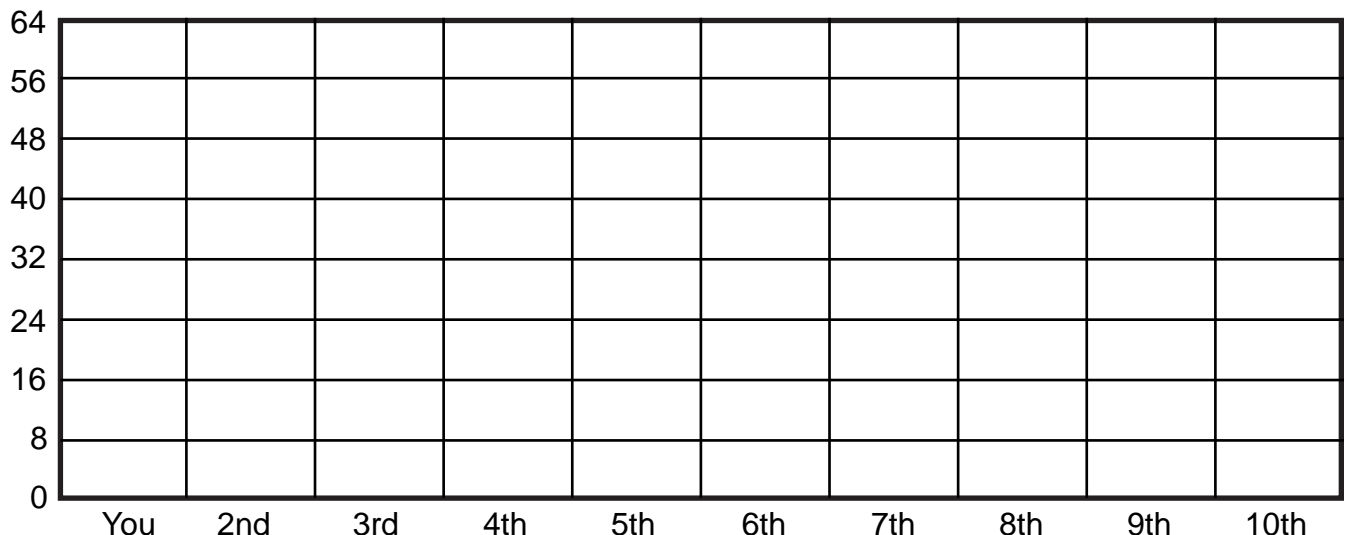
Count the number of times you flipped three tails. _____

Count the number of times you flipped two heads. _____

Count the number of times you flipped two tails. _____

Comparing Results

Directions: Make a bar graph here to illustrate the number of times three heads with three pennies were flipped by you and nine of your classmates.



Students

Add all ten of the students' flips. One chance in eight would mean a total of 80 three-head flips by the ten students. How close did the total come to 80? _____

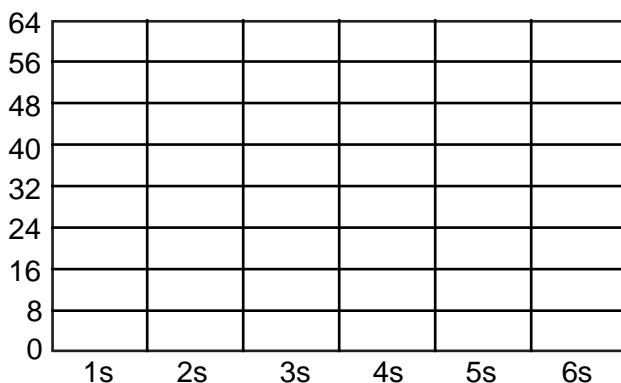
Chances Are . . .

Rolling Dice

Directions: Read the Facts and Reminders page from this unit before you do this page. You have one chance in six of rolling any particular number with one roll of the die. Roll one die 64 times and record your results.

- | | | | | | |
|-----------|-----------|-----------|-----------|-----------|-----------|
| 1. _____ | 12. _____ | 23. _____ | 34. _____ | 45. _____ | 56. _____ |
| 2. _____ | 13. _____ | 24. _____ | 35. _____ | 46. _____ | 57. _____ |
| 3. _____ | 14. _____ | 25. _____ | 36. _____ | 47. _____ | 58. _____ |
| 4. _____ | 15. _____ | 26. _____ | 37. _____ | 48. _____ | 59. _____ |
| 5. _____ | 16. _____ | 27. _____ | 38. _____ | 49. _____ | 60. _____ |
| 6. _____ | 17. _____ | 28. _____ | 39. _____ | 50. _____ | 61. _____ |
| 7. _____ | 18. _____ | 29. _____ | 40. _____ | 51. _____ | 62. _____ |
| 8. _____ | 19. _____ | 30. _____ | 41. _____ | 52. _____ | 63. _____ |
| 9. _____ | 20. _____ | 31. _____ | 42. _____ | 53. _____ | 64. _____ |
| 10. _____ | 21. _____ | 32. _____ | 43. _____ | 54. _____ | |
| 11. _____ | 22. _____ | 33. _____ | 44. _____ | 55. _____ | |

Directions: Count up the number of 1s, 2s, 3s, 4s, 5s, and 6s rolled in the 64 rolls. Record the results in bar graph form.



Directions: Roll two dice 64 times and record the total for each roll on this chart.

- | | | | | | |
|-----------|-----------|-----------|-----------|-----------|-----------|
| 1. _____ | 12. _____ | 23. _____ | 34. _____ | 45. _____ | 56. _____ |
| 2. _____ | 13. _____ | 24. _____ | 35. _____ | 46. _____ | 57. _____ |
| 3. _____ | 14. _____ | 25. _____ | 36. _____ | 47. _____ | 58. _____ |
| 4. _____ | 15. _____ | 26. _____ | 37. _____ | 48. _____ | 59. _____ |
| 5. _____ | 16. _____ | 27. _____ | 38. _____ | 49. _____ | 60. _____ |
| 6. _____ | 17. _____ | 28. _____ | 39. _____ | 50. _____ | 61. _____ |
| 7. _____ | 18. _____ | 29. _____ | 40. _____ | 51. _____ | 62. _____ |
| 8. _____ | 19. _____ | 30. _____ | 41. _____ | 52. _____ | 63. _____ |
| 9. _____ | 20. _____ | 31. _____ | 42. _____ | 53. _____ | 64. _____ |
| 10. _____ | 21. _____ | 32. _____ | 43. _____ | 54. _____ | |
| 11. _____ | 22. _____ | 33. _____ | 44. _____ | 55. _____ | |

Directions: Count up the numbers rolled in the 64 rolls. Record the results in a separate bar graph form. What pattern can you find about the numbers 5 through 9? _____