

Board game frenzy

What is your favorite board game? The problems below are based on popular games that can be played at home, within your classroom, or as part of family math nights at your school. We encourage you to send these problems home with students to promote mathematics learning with family members and peers outside the classroom. We recognize that these games may not be available in every classroom; you may want to display game board images on an interactive whiteboard in the classroom and as handouts for students to take home.

Grades 5–6

WEEK 1

Clue Junior® is a game in which players must solve a mystery. One character and a pet are hiding in a room of a mansion. Your job is to figure out which character is hiding in which room with which pet. The mansion has 6 rooms: a bathroom, a kitchen, a dining room, a living room, a bedroom, and a laundry room. The game also has 5 characters—Wendy White, Peter Plum, Samantha Scarlet, Georgie Green, and Mortimer Mustard—and 5 pets—a dog, a cat, an angelfish, a snake, and a hamster. With a partner, find how many combinations of characters, pets, and rooms are possible. What strategy did you use? If you eliminate the characters of Mortimer Mustard, Georgie Green, and Samantha Scarlet, how many possible combinations of characters, pets, and rooms are possible? How does this number compare to the number of combinations at the beginning of the game? Why?

WEEK 2



As you play Clue Junior, you discover that the angelfish is the missing pet. You know that the angelfish needs at least 7 gallons of water to live. If each room has a fish tank with the dimensions shown to the right, in which room or rooms could the angelfish be located? (Hint: 1 gallon = 231 cubic inches.) Be ready to defend your answer.

Room	Tank dimensions (in.)
Kitchen	12, 7, 7
Bathroom	5, 6, 7
Dining room	16, 14, 9
Living room	12, 15.5, 10
Bedroom	10, 15, 15.5
Laundry room	14, 11, 10.5

WEEK 3

On your first Monopoly® turn, you have \$1,500. You land on the income tax space, which means you have to pay \$200 or 10% of your money. Which would you choose and why? What if you had \$2,200; which would you choose and why? What is the minimum amount of money you could have for which paying the \$200 would be less than paying the 10%?

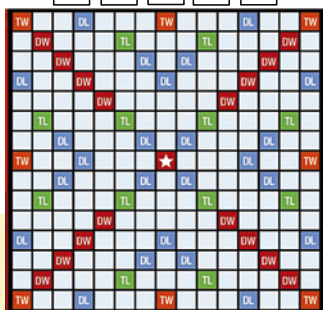
WEEK 4

Each Monopoly player starts with \$1,500. The game includes bills in the following denominations: \$1, \$5, \$10, \$20, \$50, \$100, and \$500. Assuming that you have an unlimited amount of each denomination, show the different ways you could make \$1,500 using exactly 10 bills. Compare your answers to a friend's or a family member's. Discuss similarities and differences.

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F₄ A₁ C₃ E₁

A₁ C₃ U₁ T₁ E₁



The word **FACTORY** is on the Scrabble® board horizontally with the letter *T* in the middle of the board (on the star). On your turn, you have 2 options to make words by using the letters above the game board. Figure out which letter to omit from these 2 options as you place the word on the board. Remember, your goal is to earn the most points. Which word would you choose? Why? Where on the Scrabble board would you place it? Why? Be ready to support and justify your answer by showing how you found all possible point options.

Nora and her family began playing Scrabble at 4:30 p.m. They took a break to eat a snack at 5:15 p.m. and resumed playing at 5:30 p.m. They finished their game at 6:05 p.m. How long did Nora and her family play Scrabble (not including the snack break)? Express your answer in hours and minutes. Explain your strategy. How many seconds did Nora and her family play Scrabble? Explain your strategy.

The **Connect Four®** playing frame is 20 centimeters (cm) high and 25 cm long. What are the area and perimeter of the playing frame in millimeters (mm)? Each of the 7 columns on the board contain 6 same-size circles. Suppose that the Connect Four makers decided to enlarge the playing frame to 27 cm high and 35 cm long. Using a measuring tool of your choice, determine how many more circles you could add to the new playing frame. Explain your reasoning. Do you think that enlarging the playing frame is a good idea? Write a letter to the company explaining why or why not.

Play a few games of Connect Four with a partner or family member and complete the chart, indicating the number of game pieces used in each game. (At <http://www.mathsisfun.com/games/connect4.html> you can play an online version.) Complete the chart as a class, as well. Make and support (with evidence) conjectures about the class data. Do the class data have any patterns? If not, why do you think there are none? Support either answer with evidence from the game. Discuss with a partner the type of graph you would use to represent the total number of pieces used in each game. Why is this graph the best option?

Game eg.	Yellow pieces	Red pieces	Total pieces
	15	18	33
1			
2			
3			
4			



T'Asia and Adeline are playing Hi Ho Cherry-O™. T'Asia has 5 cherries in her bucket and needs a total of 10 cherries to win. On any spin, she could collect 1, 2, 3, or 4 cherries, or she could lose 1, 2, or all of the cherries. List 5 ways in which T'Asia can win the game in just 3 turns. Explain your answer to a friend. Find 5 ways in which T'Asia can win the game in 4 turns. Support your answer.

Adeline and T'Asia have not finished their game of Hi Ho Cherry. Adeline's bucket has 3 cherries, and T'Asia's bucket has 7 cherries. How many more cherries does T'Asia have than Adeline? Solve this using at least 2 different strategies. Explain your answer to a friend. If Adeline has 4 cherries, and T'Asia has 9, is there a way for Adeline to still win and T'Asia to lose in 2 turns? Convince a family member of your answer.

Count the number of chutes, or slides, on the Chutes and Ladders™ game board. How many chutes do you have altogether? How do you know? Count the number of ladders. How many ladders do you have altogether? Explain how you got your answer. How many chutes and ladders do you have altogether? What did you do to find your answer? Are there more chutes or more ladders? Tell me how you know.



Thomas and Varun are playing Chutes and Ladders. Thomas is on space 25 and spins a 3 on his next turn. He is excited because he will land on the longest ladder on the board. How many spaces will he skip by going up the ladder? If Varun is on space 68, how many spaces must he move to catch up? Look at the game board. Can Varun catch up with Thomas on his next turn if the spinner has a maximum of 6? Explain your answer to a friend.