

Everyone can participate in these puzzles, compare notes, and share solutions. *Enjoy!*

We Gather Together

November is a great month to make plans for getting together with family and friends. Thanksgiving feasts have been held since the founding of the United States. This month's Family Math activity is a great activity to do while everyone is gathered together. Have fun learning with each other!

Have a Seat

When you and your family sit down for the Thanksgiving feast, how many different ways can you sit at the table? You may be surprised at the number of possible variations.

Two People, Two Chairs

Either person could sit in the first chair. Once the first person sits down, there is only one chair for the other person to choose. So, there are two seating plans. Using A and B as the people, the seating plans are as follows:

- A, B
- B, A

Three People, Three Chairs

Three people could sit in the first chair. Once the first person sits, there are two people who could sit in the second chair. Once the second person sits, there is only one chair for the third person. So, there are six seating plans. Using A, B, and C as the people, the seating plans are as follows:

- A, B, C
- A, C, B
- B, A, C
- B, C, A
- C, A, B

More People, More Chairs!

How many seating plans are possible in each of the following cases?

- four people, four chairs
- five people, five chairs
- six people, six chairs

Do you see a pattern in the number of possible seating plans as the number of people increases?

When is Thanksgiving?

The first Thanksgiving feast in the United States was held in 1621. It wasn't until 1863 that the day became a national holiday. Thanksgiving in the United States has been officially celebrated on the fourth Thursday of November for the past 75 years! See if you can answer the following questions:

- 1) How much time passed between the first Thanksgiving and the year the celebration became a national holiday?
- 2) In what year did the official day to celebrate Thanksgiving change to our current practice?
- 3) Sometimes, the fourth Thursday and the last Thursday of November are the same day. When does this happen?
- 4) When is the fourth November Thursday not also the last November Thursday?
- 5) What is the earliest date in November that can be Thanksgiving?
- 6) What is the latest possible Thanksgiving date?

The More, the Merrier

You probably know these names that are based on the number of people in the group: two people form a "pair," three people make a "trio," four people are a "quartet," and five people would be a "quintet." Do you know the names for collections of people based on what they do? How about group names for types of animals? Match each group of people and animals with the collective noun used to describe it.

Groups of People

1. actors	5. drummers	9. magicians	13. poets
2. chess players	6. friends	10. mathematicians	14. singers
3. comedians	7. grandparents	11. musicians	15. students
4. dentists	8. listeners	12. paparazzi	16. teachers

Group Names

audience	choir	orchestra	rhyme
board	class	party	roll
brace	flash	quiz	set
cast	illusion	riot	wisdom

Groups of Animals

1. bees	5. flamingos	9. grasshoppers	13. porcupines
2. eagles	6. frogs	10. lions	14. rhinoceroses
3. elephants	7. geese	11. monkeys	15. turkeys
4. fish	8. giraffes	12. owls	16. whales

Group Names

army	crash	pod	school
barrel	gaggle	prickle	stand
cloud	parade	pride	swarm
convocation	parliament	rafter	tower

We Gather Together Answers

More People, More Chairs!

How many seating plans are possible in each of the following cases?

- four people, four chairs
 - Answer: 24 seating plans
- five people, five chairs
 - Answer: 120 seating plans
- six people, six chairs
 - Answer: 720 seating plans

Do you see a pattern in the number of possible seating plans as the number of people increases?

Answer: Each new answer is the previous answer multiplied by the total number of people.

Number of People	Number of Seating Plans	Calculation
2	2	2×1
3	6	$3 \times 2 \times 1$
4	24	$4 \times 3 \times 2 \times 1$
5	120	$5 \times 4 \times 3 \times 2 \times 1$
6	720	$6 \times 5 \times 4 \times 3 \times 2 \times 1$

Fun Math Fact

The calculation used to find the number of seating plans has a special name and notation. When the whole numbers from one to any number, n , are multiplied, this is called “ n factorial.” An exclamation point is used to indicate the operation.

$$6! = 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720$$

When is Thanksgiving?

1) How much time passed between the first Thanksgiving and the year the celebration became a national holiday?

Answer: 242 years

2) In what year did the official day to celebrate Thanksgiving change to our current practice?

Answer: 1941

3) Sometimes, the fourth Thursday and the last Thursday of November are the same day. When does this happen?

Answer: This happens when November 1 is on Sunday, Monday, Tuesday, Friday, or Saturday. November 24, 25, 26, 27, or 28 will be the fourth and last Thursday.

4) When is the fourth November Thursday not also the last November Thursday?

Answer: This happens when November 1 is on Wednesday or Thursday. November 22 or 23 will be the fourth Thursday; November 29 or 30 will be the last Thursday.

5) What is the earliest date in November that can be Thanksgiving?

Answer: November 22 is the earliest date for Thanksgiving.

6) What is the latest possible Thanksgiving date?

Answer: November 28 is the latest date for Thanksgiving.

The More, the Merrier

Groups of People

1. a cast of actors
2. a board of chess players
3. a riot of comedians
4. a brace of dentists
5. a roll of drummers
6. a party of friends
7. a wisdom of grandparents
8. an audience of listeners
9. an illusion of magicians
10. a set of mathematicians
11. an orchestra of musicians
12. a flash of paparazzi
13. a rhyme of poets
14. a choir of singers
15. a class of students
16. a quiz of teachers

Groups of Animals

1. a swarm of bees
2. a convocation of eagles
3. a parade of elephants
4. a school of fish
5. a stand of flamingos
6. an army of frogs
7. a gaggle of geese
8. a tower of giraffes
9. a cloud of grasshoppers
10. a pride of lions
11. a barrel of monkeys
12. a parliament of owls
13. a prickle of porcupines
14. a crash of rhinoceroses
15. a rafter of turkeys
16. a pod of whales