

H A N D S H A K I N '

Students are given a scenario in which they must figure out how many times every-one shakes everyone else's hands.

TEACHER NOTES FOR DISCUSSION

Students will solve this problem using a variety of strategies. This activity will lead to a discussion of the problem solving strategies, their names, and uses. This is a powerful way to introduce problem solving strategies that students will expand on and use the rest of the year.

Students could solve the activity by drawing a picture, acting it out, noticing a pattern, making a simpler problem, making a chart, or any number of strategies.

A common misconception with this problem is students often see two people shaking hands as two handshakes instead of one.

Objective

By the end of this activity, students should be able to use at least two problem solving strategies for the presented problem.

Time Considerations

Instructor preparation:
30 minutes

Student activity:
three classes (one to solve, one to prepare, one to present)

Answer Key

Since there are seven total people, person #1 shakes hands with six people. Person #2 also shakes hands with six people, but since she has already shaken hands with person #1, person #2 only has five handshakes left. Person #3 has four handshakes to go. Person #4 has three handshakes. Person #5 has two handshakes left. Person #6 has one handshake. Person #7 has shaken everyone's hand. Thus, there are $6 + 5 + 4 + 3 + 2 + 1 + 0$ handshakes which is a total of 21.

STANDARDS AND BENCHMARKS

National Council of Teachers of Mathematics. *Curriculum and Evaluation Standards for School Mathematics*. <http://standards-e.nctm.org/1.0/normal/standards/intr_MAIN.html>, March 16, 2000.

Standard 6: Problem Solving

- apply a wide variety of strategies to solve problems and adapt the strategies to new situations

Standard 8: Communication

- organize and consolidate their mathematical thinking to communicate with others
- use the language of mathematics as a precise means of mathematical expression

H A N D S H A K I N '

UNDERSTAND YOUR MISSION

In this activity, you will use different problem solving strategies to figure out how many handshakes have taken place.

CHART A COURSE FOR EXPLORATION

On your trip on the Mississippi River, you stop at Savannah, Illinois, for a bite to eat. In Savannah, there is a fall festival going on. A special play called "Life on the Mississippi River" will take place at the school auditorium three days from now. You discover the actors and actress are just gathering for rehearsal. You decide to ask the producer if you can watch since you won't be there for opening night. She agrees to let you stay. Rehearsal is just beginning. The producer, Mark Twain, General Ulysses S. Grant, Becky Thatcher, Tom Sawyer, and the French explorer La Salle are shaking one another's hands and reintroducing themselves. You are also introduced to everyone and shake each person's hand. Every person shakes hands with everyone else one time. How many handshakes occurred at the beginning of this practice?

In a small group, solve this problem using at least two different methods. After two class periods, you will present your solution to the class with a poster or an overhead transparency. Each student group will turn in its work for the solution. Every student will participate in the group presentation. Explain your answer.

Gather Your Supplies

- markers
- overhead pens
- paper
- pencil
- poster paper
- transparencies

HANDSHAKIN'

Team members: _____

Answer Matched Work	
0	Answer, work, and strategies were completely different.
1	Answer, work, and strategies mostly corresponded.
2	Answer, work, and strategies all corresponded.

Presentation Was Complete	
0	Only one of the strategies was explained.
1	Some of the strategies were explained.
2	all strategies were explained thoroughly.

Presentation Showed Maturity	
0	All participants need work on presenting material.
1	Two participants maturely presented.
2	All participants were prepared, poised, and presented well.

Group Communication	
0	One person dominated the group.
1	Two members did most of the work.
2	All members of the group worked together.

Total = _____

REFERENCES

Schroeder, Merrie. University of Northern Iowa , 1999.

Strategies Used and Defended

0.5 points for each strategy

- act it out
- graph
- model
- simpler problem
- algebra formula
- list
- number sentence
- table
- backwards
- logical deduction
- pattern
- elimination
- guess/test
- picture