Introduction

Email is an important part of electronic communication. In this lesson, students will become familiar with different functions of email. In a challenge set forth by the princess, groups of students send and receive email calculations in order to solve mathematical problems as they renovate an old castle in hopes of achieving knighthood.

Resources

Internet Service Providers - New Mexico http://www.nmsu.edu/~CandN/providers.html
Las Cruces Area Internet Service Providers http://web.nmsu.edu/~ic-info/isp.list.html
Beginning Email - Netscape Communicator http://www.techtrax.com/mailtutr.html
Introduction to Email - Netscape Mail http://www.pcez.com/~ezaccess/email.htm
Using Pine Email http://www.itd.umich.edu/itddoc/t/t7037/t7037A.html#24
Eudora Email Tutorial http://www.iserv.net./help/eudora.html#using
Intercultural Email Classroom Connections http://www.stolaf.edu/network/iecc/

Process

Tips:
If possible have each group in different rooms
Have instructor play "Princess Reta." If teams get stuck on a part of the problem, Princess Reta should give clues as needed.

Preparation:
- Have several children's puzzles (large sturdy pieces) ready to distribute for the first activity.
- Download the handouts and print them out prior to the workshop. Make copies for students.
- Print out a copy of the solution.
- Review the activity carefully to find what might be "problem areas." Prepare hints that might be needed.
- Review the different email tutorials in order to find one that fits your needs.

Tasks:
1. Remove all edges from a puzzle. Give each student a piece of any cardboard or paper puzzle.

2. Ask them to assemble the puzzle.

3. Ask puzzling questions. What kind of communication was necessary to complete the puzzle? Did spokespersons or a leader emerge? How did you organize yourselves or did you? Would have it been easier if you had know each other to complete the puzzle? Would it have helped to see a picture of the puzzle? How do you solve a problem with a group? How do you
moderate that much information? How is each piece important to the finished puzzle? Could pieces be left out?

4. Demonstrate:
   - Folders in the in-box of email
   - Address book
   - Creating distribution lists
   - Signature
   - Forward
   - Reply
   - Saving to folders

5. Have participants work through an email tutorial from the Resources list.

6. Introduce the activity "This Old Castle."

7. Arrange students in groups of five. Assign each group a Knight number (e.g. Knight 1) and distribute handouts. Write each group's email address on the board for all groups to see.

8. Have the groups work on calculations. Remind them that they can only communicate with designated Knights.

9. When each group has a final solution for the problem, have them send ONLY their answers to all groups using a distribution list.

10. Have them figure out which group came up with the correct answer and how they accomplished this by communicating through email.

**Assessment**

See Rubric for This Old Castle.

**Content Standards**

**Outcomes**

Upon successful completion of this unit, the learner will:
- become acquainted with several aspects of Email
- work collaboratively with peers

**National Educational Technology Standards**

1) Basic operations and concepts
3) Technology productivity tools
4) Technology communications tools
6) Technology problem-solving and decision-making tools
As a resident of “This Old Castle”, your dream is to be a Knight – to march on the fields of battle for Princess Reta. However, currently your assignment is in the Castle Maintenance Department (CMD). The department is buzzing over the latest proclamation read over the castle PA system by Princess Reta:

“Hear Ye! Hear Ye! Spring Spruce Up is coming!
All inhabitants of This Old Castle are hereby
Notified that the annual Spring Spruce Up
Will begin immediately!
This year’s major projects will be to
Paint the outside walls of the castle and its towers,
Put new roofing on the towers, and
Install a cooling system.”

It seems that money is especially tight this year and Princess Reta has requested refurbishing estimates. Lord Tech, Duke of Education, who is in charge of CMD, is aware that particular staff members are awaiting an opportunity to prove themselves worthy of Knighthood. Thus, he has put forth a proposal to five of his workers:

“I have a cousin who owns a hardware store and has offered to sell Princess Reta supplies at cost, but he needs to know the exact amount of supplies that are required. In order to do this, measurements of the castle will need to be calculated. You will each be supplied with the most recent diagram of This Old Castle. The only other information I possess is that the doors and windows of the castle amount to 12% of the total wall area and one gallon of paint will cover 550 square feet. You will need to search the Records Storage Vault to find the information needed to accomplish this task. The first person who determines the necessary calculations will be granted Knighthood!”

You may communicate, via Email, with two others. You MAY NOT do a list distribution with your information. Good Luck! Knighthood awaits you!
Email Workshop: This Old Castle

Knight 1

Long hours of searching through dusty boxes of papers in the Vault yields bits and pieces of information:
1) Cylinder: Volume = \( \pi r^2 h \)
   Lateral area = \( 2\pi r h \)
2) Hemisphere: Volume = \( \frac{2}{3} \pi r^3 \)
   Lateral area = \( \frac{2}{3} \pi r^3 \)
3) The Main Hall is 120 ft long.
4) Swamp Cooler: cubic ft / min = Volume of room / 2.5
5) The Windows and Doors, which do not need to be painted, constitute 12% of the total lateral area of the castle.

You may communicate with Knights 3 & 5.

Armed with this information you set to work. You must accomplish the following:

11. Compute the lateral surface area of the castle and the walls of the tower.
12. Figure the number of gallons of paint needed.
13. Determine how many square feet of roofing material will be needed for the towers.
14. Compute the volume of the castle and all the towers.
15. According to the BTU’s, determine the number of swamp coolers needed to cool the castle.
Email Workshop: This Old Castle

Knight 2

Long hours of searching through dusty boxes of papers in the Vault yields bits and pieces of information:

6) Cone:
   \[ \text{Volume} = \pi \times \text{radius}^2 \times \text{height} \]
   \[ \text{Lateral area} = 2 \times \pi \times \text{radius} \times \text{height} \]

7) West Tower:
   \[ \text{bottom} = \text{cylinder} \]
   \[ \text{apex} = \text{hemisphere} \]

8) Radius of the East Tower is 4 ft.
9) Width of the Main Hall is 60 ft.
10) 1 box of roofing shingles will cover 0.9 sq. ft.
11) Pythagorean theorem: \( a^2 + b^2 = c^2 \) (\( c \) = hypotenuse — slanted side)

You may communicate with Knights 1 & 4.

Armed with this information you set to work. You must accomplish the following:

16. Compute the lateral surface area of the castle and the walls of the tower.
17. Figure the number of gallons of paint needed.
18. Determine how many square feet of roofing material will be needed for the towers.
19. Compute the volume of the castle and all the towers.

According to the BTU’s, determine the number of swamp coolers needed to cool the castle.
Long hours of searching through dusty boxes of papers in the Vault yields bits and pieces of information:

12) Rectangular Prism:
   Volume = length*width*height
   Lateral area = 2*(length + width) * height

13) \( \pi = 3.14 \)

14) Heights of the North, South and West Towers apex = 4 ft.

15) Height of the Main Hall is 30 ft

16) Swamp coolers come in the following sizes:
   - 1400 cubic ft / min
   - 2800 cubic ft / min
   - 4000 cubic ft / min
   - 6500 cubic ft / min
   - 4500 cubic ft / min

You may communicate with Knights 2 & 5.

Armed with this information you set to work. You must accomplish the following:

20. Compute the lateral surface area of the castle and the walls of the tower.

21. Figure the number of gallons of paint needed.

22. Determine how many square feet of roofing material will be needed for the towers.

23. Compute the volume of the castle and all the towers.

According to the BTU’s, determine the number of swamp coolers needed to cool the castle.
Long hours of searching through dusty boxes of papers in the Vault yields bits and pieces of information:

17) One gallon of paint will cover 550 sq. ft.
18) Height of all the towers is 50 ft high.
19) The base of the North Tower is 6 ft square.
20) Rectangular Pyramid: \[ \text{Volume} = \frac{1}{3} \times \text{length} \times \text{width} \times \text{height} \]
\[ \text{Lateral area} = 4 \times (\text{area of a triangle}) \]
\[ \text{Area of a Triangle} = \frac{1}{2} \times \text{base} \times \text{hypotenuse} \]

You may communicate with Knights 3 & 1.

Armed with this information you set to work. You must accomplish the following:

24. Compute the lateral surface area of the castle and the walls of the tower.
25. Figure the number of gallons of paint needed.
26. Determine how many square feet of roofing material will be needed for the towers.
27. Compute the volume of the castle and all the towers.

According to the BTU’s, determine the number of swamp coolers needed to cool the castle.
Long hours of searching through dusty boxes of papers in the Vault yields bits and pieces of information:

21) Main Hall is a rectangular prism.
22) The base of the South Tower is 4 ft square.

23) East Tower:
    - bottom = cylinder
    - apex = cone

24) North and South Tower:
    - bottom = rectangular prism
    - apex = rectangular pyramid

25) The slant height of the pyramids can be found using the Pythagorean formula.

You may communicate with Knights 4 & 2.

Armed with this information you set to work. You must accomplish the following:

28. Compute the lateral surface area of the castle and the walls of the tower.
29. Figure the number of gallons of paint needed.
30. Determine how many square feet of roofing material will be needed for the towers.
31. Compute the volume of the castle and all the towers.

According to the BTU’s, determine the number of swamp coolers needed to cool the castle.
Email Workshop: This Old Castle

Figure Answers

Bird's Eye View