

Student Days

at Scarborough Renaissance Festival®

Math

***Scarborough Curriculum
Guide Outline by Subject
For Teachers' Use***

Scarborough Renaissance Festival®

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Math

Objectives: Students will-

- Collect distance measurements from one point to another and create a table to help determine the scale of a given map.
- Create a key to describe the buildings, structures and landmarks within the park.
- Compute with whole numbers, fractions, and decimals.
- Convert, compare, and compute with common and nonstandard units of measure.
- Select and compute with appropriate standard and metric units to measure within the same measurement system.
- Calculate averages.
- Use appropriate reading and mathematical skills to interpret information given on maps and graphs.
- Identify two and three dimensional geometric figures.
- Formulate equations and inequalities based on linear functions.
- Formulates equations and inequalities based on square root functions.
- Uses a variety of representations to describe geometric relationships and solve problems.
- Solve word problems using written clues.

Elementary 1st – 5th

TEKS: 1. 1.6a & b, 1.8b; 2. 10.b, 11.a; 3. 10b, 11a; 4. 8, 9.c; 5. 7-8

Middle School 6th – 8th

TEKS:

High School 9th – 12th

TEKS: Algebra 7, Algebra II 9, Geometry 5

Sample Lesson: - Mapping the Festival
- Vengeance with Vegetables

Resources: ***If you have a successful resource, please share with the Student Days Department***

Mapping the Festival

Materials:

-Attached Scarborough Faire Renaissance Festival map and worksheet.

Discussion:

The following map activity was designed to be flexible. Use all, some, or none of the suggestions given depending on your students' needs. The measurements on the map were taken from the center of the bridge to the entrance of the ride or as marked on the map. A consistent, comfortable stride should be maintained. When measuring your stride take care to make the stride as natural as possible. To minimize the amount of error taken during the field measurements, have students work in pairs and calculate the average. Table 1 can be completed prior to the field trip. You can give your students practice converting units if you let them select their own units to measure their stride and then force them to compare their stride measurements with other students in a specified unit.

After both tables have been completed, determine the scale of the map by taking the ratios of the distances on the map and in the field, making sure to use the average. Students will realize that the ratios will not be the same, implying that the map is not to scale with the actual distances.

Challenge

- Have students with strong math and problem solving skills create an accurate map by surveying the land.
- Have students brainstorm for ideas. Use the scientific method as an approach to solving the map problem.

Here is some data for you to use. The units are in feet. For comparison all units should be in one set of units, generally centimeters are appropriate.

Table in Centimeters

On Map Distance	Yorkshire Tower & Dungeon	Crown Stage	Jousting Arena	Crown Pavilion	The Maze
Eagles Crossing Bridge	10				
Village's Crossing Bridge			9.7		
Front Gate		11.5		4.2	
Peg Leg Stage					20.7

Table in feet

On Map Distance	Yorkshire Tower & Dungeon	Crown Stage	Jousting Arena	Crown Pavilion	The Maze
Eagles Crossing Bridge	???				
Village's Crossing Bridge			???		
Front Gate		???		???	
Peg Leg Stage					???

Discovery of the Scarborough Faire Renaissance Festival Map Worksheet

Student Names: _____ (A) _____ (B)

- Each student should take and record their measurements.

Table 1. On Map Distances

On Map Distances	Yorkshire Tower & Dungeon			Crown Stage			Jousting Arena			Crown Pavilion			The Maze		
Eagles Crossing Bridge															
Village's Crossing Bridge															
Front Gate															
Peg Leg Stage															
Students	(A)	(B)	Avg	(A)	(B)	Avg	(A)	(B)	Avg	(A)	(B)	Avg	(A)	(B)	Avg

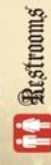
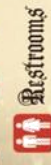
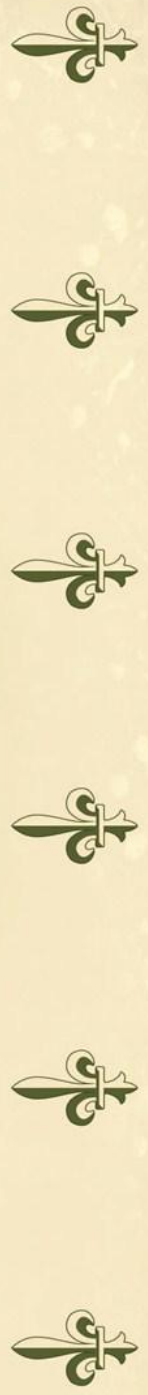
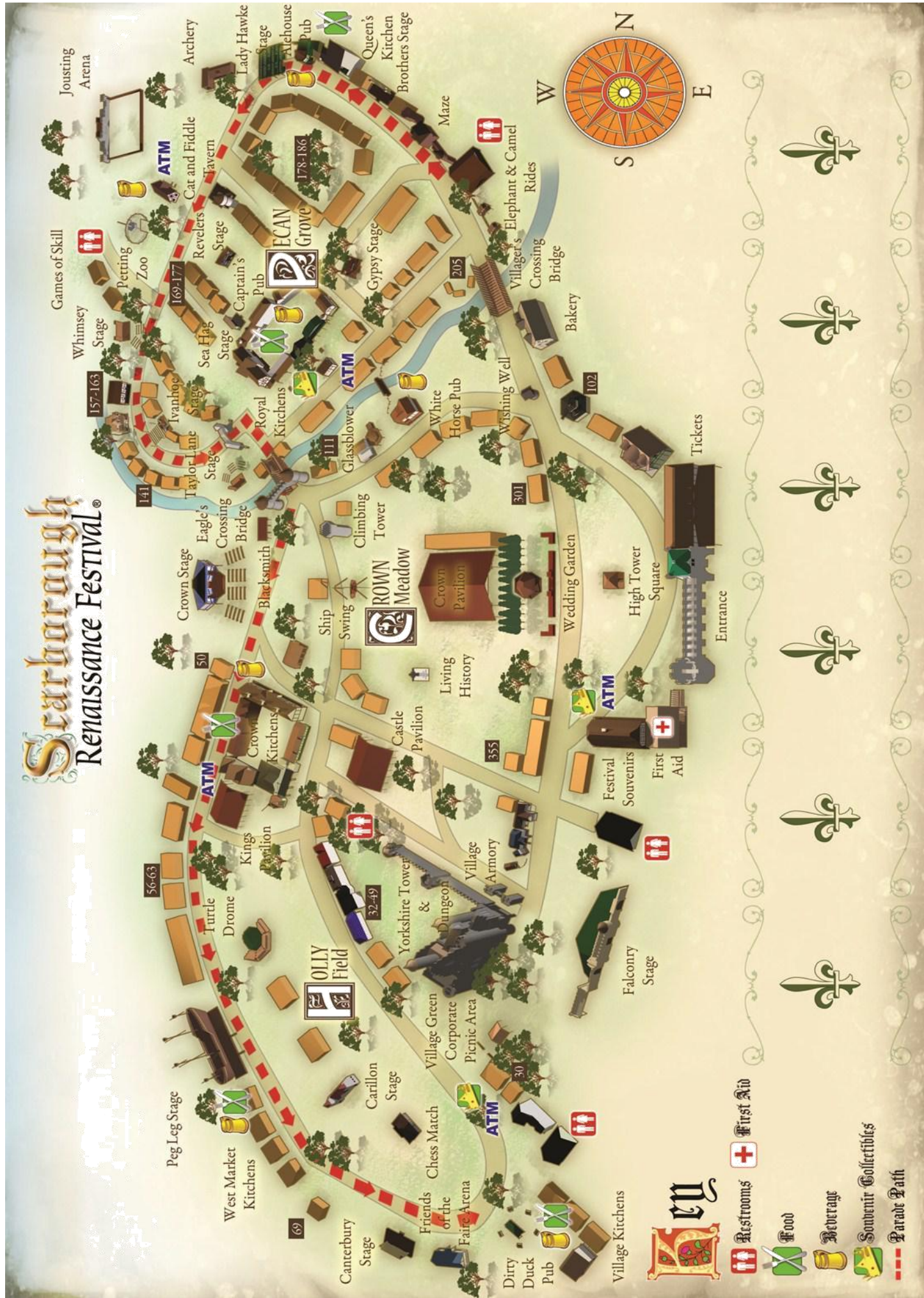
Table 2. Actual Distance:

Actual Distances	Yorkshire Tower & Dungeon			Crown Stage			Jousting Arena			Crown Pavilion			The Maze		
Eagles Crossing Bridge															
Village's Crossing Bridge															
Front Gate															
Peg Leg Stage															
Students	(A)	(B)	Avg	(A)	(B)	Avg	(A)	(B)	Avg	(A)	(B)	Avg	(A)	(B)	Avg

Show work when necessary

- Compare the ratios of the map distance over the actual distance to determine the scale of the map.
(Show work)
- What does the result tell you about the map?

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Vengeance with Vegetables

(Elementary, Middle)

Proficiency Outcome: Math and Science

Grade 6

- Use variables to describe arithmetic processes, to generalize arithmetic statements and to generalize a problem situation.
- Predict the influences of the motion of some objects on other objects.

Grade 9

- Apply the concepts of force and mass to predict the motion of objects.

Materials: a stopwatch, data table, paper and pencil

Discussion:

Students should be aware that in order to get an object to move, something has to be done to the object.

It could be shoved in one direction or it could be thrown up, out or down. Either way, a force is involved. Demonstrate to students that different movements can be obtained by applying different amounts of force in different directions. If you want to hit the face on Vegetable Vengeance, you have to apply a force in that direction, but you also have to account for the force of gravity. The effect of gravity will be small, but if you observe closely you will see that it does fall toward the ground. Ask younger, less knowledgeable students how the game would change if the distance between you and the face getting the vegetables would increase. You have to apply more force. In addition, as the distance increases, the object that is thrown will have to be thrown higher into the air to offset the force of gravity. Have students take time measurements between throwing a vegetable straight to the person's face and throwing a vegetable up in the air but still towards the person's face.

Have students write down their observations and/or draw the shape the object followed.

For more knowledgeable students, have them time a vegetable with a small force (perhaps one that does not make it to the person), and then a large force.

Vengeance with Vegetables

(High school)

Proficiency Outcomes: Math and Science

Grade 12

- Estimate answers, compute, and solve problems involving real numbers.
- Use fundamental forces to explain and make predictions about motions and changes in systems.

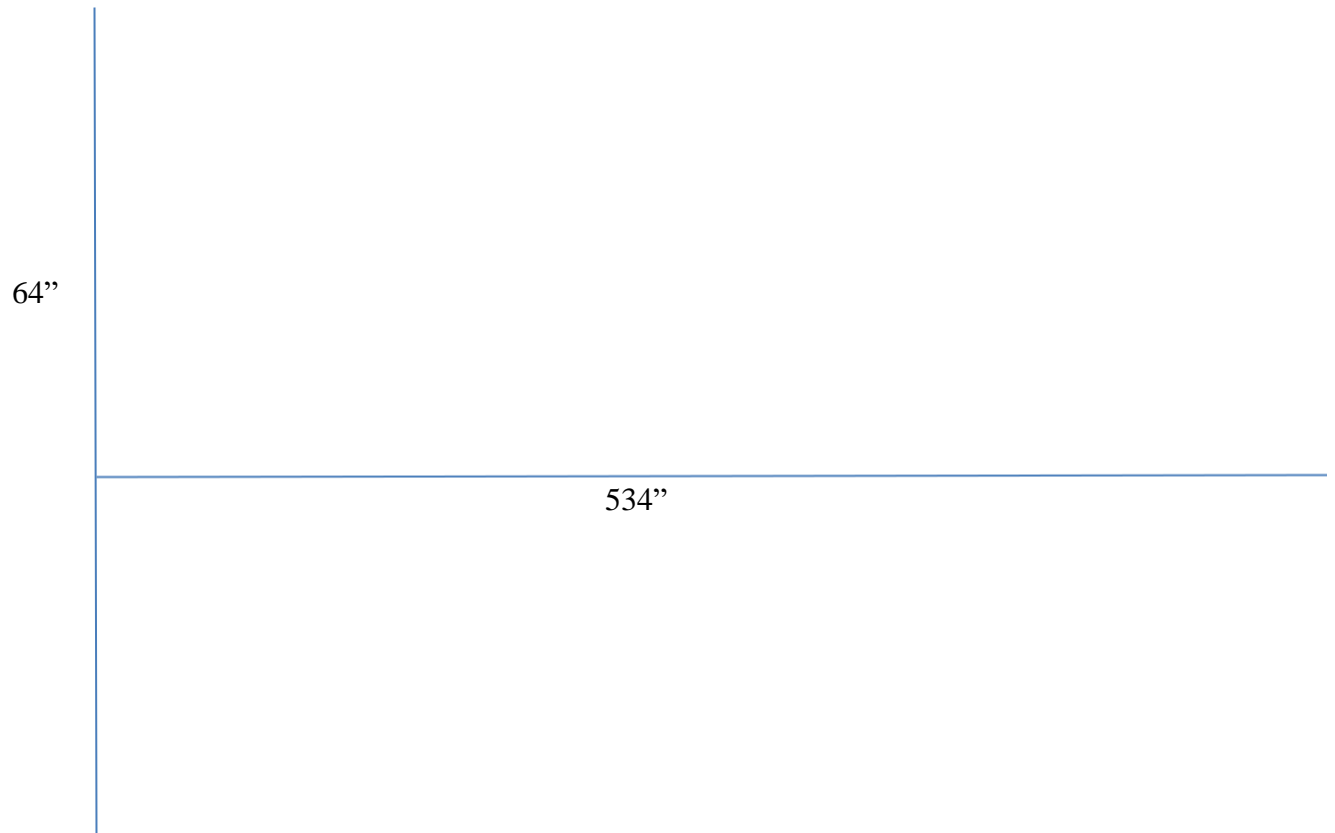
Discussion:

When the insults start flying at the Vegetable Vengeance game, you will want to sharpen your math skills to hit the target. The key is to know how far away you are from the face and how fast gravity will pull the tomato towards the earth. For a real challenge, determine the height above the target you must aim at in order to offset the effects of gravity and hit the target.

Gravity will cause the object to accelerate towards the ground (the center of the earth) at a rate of -32 ft/s^2 . This means; for every second the object spends in the air, it will change its velocity an additional 32 ft/s.

NOTE - Students must try to maintain the same force each time a tomato is thrown. Otherwise, this variable will make a big difference in the outcome of this experiment.

Have students demonstrate an understanding of vector components by drawing the resultant vector and identifying the horizontal and vertical components. The following measurements were taken at the Ohio Renaissance Festival Vegetable Vengeance game.



Suggested Projects and Classroom Activities

Complimenting Contest:

Hold a complimenting contest in your classroom. Students will create their own compliments, and then select an opponent. The more elaborate the compliment, the better, and the last person to run out of compliments wins. (The best formula for creating a renaissance-style compliment is to compare your subject to beautiful things. For example: "Your eyes are more radiant than a thousand stars on a crisp, clear night." One of the richest sources for inspiration is Shakespeare's *Romeo and Juliet*.)

Build a Castle:

Design and build a model of a castle. During Henry VIII's reign, he built the castles of Deal, St. Mawes, Walmer, Sandown, Pendennis and rebuilt Dartmouth. However, due to the utilization of gunpowder and cannons during this period, the design of castles changed from that of medieval castles. Tudor castles were circular or semicircular structures made up of several circular sections. Medieval castles, for the most part, were square or rectangular. Rounded walls gave Tudor castles a more deflective surface against cannon fire and a better field of fire for their own guns and cannons inside the castle. Tudor castles also had a lower profile (less of a target for cannons) and thick walls.

Royal Feast:

Research and create a menu for a feast. Remember that England is an island. There were plenty of sheep, but spices were quite a luxury because of their expense.

Greetings:

Have your class practice greeting one another in the 16th Century style (see "Customs and Mannerisms" herein).

Present a Petition:

Elect your own Parliament and have its members present a petition to Henry VIII.

Historical Writing:

Write a letter or journal entry from the point of view of a historical figure. For example: a letter from Wolsey to Henry VIII regarding Parliament's refusal to grant him funding for a war, or a journal entry from Anne Boleyn concerning her long awaited marriage to Henry VIII. Be creative! Pick any one or make one up but be sure the letter or journal entry deals with a specific event.

Role Playing:

Act out a meeting between Henry VIII and Pope Clement VII in regard to Henry's divorce from Catherine of Aragon, or between Henry VIII and one of his advisors regarding a matter of national concern.

Create a Newspaper:

Although there were no newspapers in Renaissance England, create one for your class and include stories regarding the King's progress, Parliament's activities, and various military and religious happenings. Look at your local newspaper to gain a better understanding of story placement, writing style, and use of advertisements.

Obituaries:

Write an obituary notice for King Henry VIII, Catherine of Aragon, Anne Boleyn or another important figure of the day. Examine the obituary section in your local newspaper to learn writing style and pertinent information.

A Renaissance Christmas:

Stage a Christmas celebration in Renaissance England. What would be on the menu? What songs would be sung? Was there a Santa Claus, etc.?

Panel Discussion:

Create a panel discussion or debate regarding an unpopular policy of national or domestic concern.

Timelines:

Create a timeline based on the information presented herein. Remember to highlight the important dates in Henry VIII's reign.

Calligraphy & Illumination:

Study some different calligraphic alphabets, and then try to learn one. Copy or write a paragraph in your new handwriting. Have students look at examples of manuscript illumination and have them illuminate a bookmark using their own initials.

Coat of Arms:

Have students create a Coat of Arms. Many coats of arms contained lions, eagles, and mythical beasts. An excellent resource is *A Complete Guide to Heraldry* by A.C. Fox-Davies.

Translating Conversation:

As an exercise, try to translate an ordinary 21st century conversation into Old English.

Old English

Faith, Jack, where hast thou been?

Thou wast to have been up betimes!

Aye, even so. My good grey mare threw
a shoe upon the road; naught could I do
but lead her to the smithy in Stratford,
some seven miles off.

By St. Christopher, t'is ill luck

Too true, alack. Hast supped? I
fear me thy trenchers be bare

Nay, in good sooth; we kept a cold partridge
wing and a tankard of cider against thou
shouldst arrive.

21st Century

Wow, Jack, where have you been?

I thought you were gonna get up early!

Yeah, but I had a flat tire and no spare.
I had to hitchhike to World of Auto Parts.

Yeah, bummer

You're telling me. Is there any food left?
I bet you guys ate it all.

No, as a matter of fact we saved you
some pizza and a Pepsi.