| | |
|---|---|
| **Item Name:** | Fun Safe Playground |
| **Item Type:** | Complex Project |
| **Subject and/or Course:** | Mathematics, Grade 5 |
| **Common Core Standards:** | 5.MD.C.5: Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.<br>5.G.A.2: Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. |
| **Developer/Source:** | Theresa Morris, UL-SCALE, Stanford Graduate School of Education |
| **Item Features:** | Administration: Curriculum-embedded<br>Length of time for response: 13 days<br>Method of scoring: Analytic rubric scoring<br>Opportunity for student collaboration: Daily<br>Opportunity for teacher feedback and revision: A few times |

Collection of performance assessment items compiled by

SCALE
Stanford Center for Assessment, Learning, & Equity

# Fun Safe Playground

TEACHER'S GUIDE

A. Task overview: Students will create a fun safe playground based on safety guidelines that will demonstrate problem solving, communication and reasoning, and content skills related to volume, and area.

B. **Performance Outcomes:**

- Students will research and synthesize information.
- Students will reason abstractly and spatially, to make informed decisions.
- Students will collaborate with peers, communicate ideas, and provide justifications using mathematics.

C. Aligned standards:

1. **Primary Common Core State Standards:**

**5.MD.C.5**: Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
**5.G.A.2:** Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

2. Secondary Common Core State Standards (optional):

**5.NBT.B.5**: Fluently multiply multi-digit whole numbers using the standard algorithm.
5.MD.B.2: Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.
**5.NF.B.4**: Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
**5.MD.A.1**: Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
**4.MD.A.2**: Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
4.**MD.A.3**: Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

3. Other standards

**CC 3-5.SL.4:** Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
**CC 3-5.SL.5:** Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.
**CC 3-5.SL.6:** Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion); use formal English when appropriate to task and situation.
**CC L.RI.5.9:** Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.

D. Time/schedule requirements:
This task will take approximately thirteen days to complete



## E. Materials/resources:

Documents:

- Culminating Project: The Ideal Playground
- Survey: What makes a playground fun?
- Playground Information Form
- Playground Information Table
- Grid paper for playground sketch
- Formative Assessment A
- Formative Assessment B
- Presentation Preparation
- Culminating Individual Performance Task

Materials:

- Tape
- Rulers
- Internet access
- Printer
- Poster Boards
- Student Computers

Online Resources:

- *Burke Premier Play Environments*: http://www.bciburke.com/find-playground-designs.html
- *Playground Safety: Applicable Standards, Guidelines and Protective Surfacing:* http://www.chalmersinsurancegroup.com/docs/Playground-Safety-Applicable-Standards-Guidelines-and-Protective-Surfacing-RC80950.pdf

## F. Prior knowledge:

- Understanding of area of a rectangle
- Ability to conduct research on the internet
- Basic computational skills using the four operations with fractions, decimals, and whole numbers

## G. Connection to curriculum:

*Fun Safe Playground* was designed to be students' opportunity to apply knowledge and skills related to measurement in a real life situation that requires problem solving, communication and reasoning, and analysis of information.

## H. Scoring:

Student work can be scored using the Presentation rubric and Performance Task rubric.



## Fun Safe Playgrounds

Overview

**Project Launch**: How can we design a fun safe playground? What makes a playground fun? Safe? How can a playground be designed to promote fitness?

**Learning Task 1:** Students research to determine what makes a playground fun. Analyze data to determine likes/dislikes about existing playground equipment.

**Learning Task 2:** Research types of playground systems. Students select components to include in their ideal playground. Create a diagram of their ideal playground. Record cost for each component to be in final budget.

**Formative Assessment A:** Area of "Use Zone" given a diagram of a playground system.

**Learning Task 3:** Research how to select a ground coverage to prevent injuries from falls. Students will select material to use as ground covering. Determine the total volume of the ground covering needed for their ideal playground. Calculate cost of the ground material.

**Formative Assessment B:** Determine the ground cover needed given a diagram of a playground system and fall height.

**Learning Task 4:** Students create and give presentation. Student presentations should include:

- Why the playground is fun?
- What makes the playground safe?
- How the playground supports fitness?
- What is the total cost of their ideal playground?
- Supporting evidence and justification for each.

**Culminating Performance Task:** Students individually complete a performance task to gain evidence of student mastery of skills related to this task.



**Daily Breakdown of Activities:**

| Learning Task 1 | Overview | Teacher Notes | CCSS |
|---|---|---|---|
| Day 1 | Class discussion regarding task. Share the Culminating Project outline, rubric, and overview with students. Establish student teams. Overview final product. Class discuss how to determine what features within a playground students like the most or least. [Research, questionnaires, etc.] | Review & Establish classroom protocols regarding group work and class discussions. | |
| Day 2 | • Class discussion about survey data.<br>• Students within the class complete the survey.<br>• Teams represent data from the survey in a line plot.<br>• Teams determine which features students like the most and least based on data.<br>• Teams decide which type of features to emphasize in their playground. | • Teacher collect survey data from other classes prior to this activity.<br>• Can display the line plots within the class.<br>• Student teams need to keep this data to use while creating final presentation. | 5.MD.B.2 |
| **Learning Task 2** | **Overview** | **Teacher Notes** | |
| Day 3 | • Teacher shares presentation to build common knowledge and vocabulary for:<br>  • Difference between playground systems and individual playground equipment.<br>  • "Use Zone" of playground equipment and systems<br>  • Calculate area of "Use Zone"<br>  • Top View of playground equipment and systems<br>• Teams research types of playground systems and individual features.<br>• Teams begin to select specific systems and individual features. | • PowerPoint can be helpful (see site below for images). This discussion is to begin to build understanding.<br>• Students will need this information as the teams begin to select and create a diagram of their ideal playground.<br>• This is a nice website that includes cost, top view, and dimensions for Use Zones. This website was used in creating the presentation. http://www.bciburke.com/find-playground-designs.html<br>• All Use zones included in this website are rectangles or squares. | 4.MD.A.2<br>5.NBT.B.5 |
| Day 4 | • Teams finalize their selections for playground systems and individual features.<br>• Teams create a diagram of their ideal playground.<br>• Teams calculate the area for each "Use Zone" used within their playground. | • Diagrams are not drawn to scale.<br>• Teams should complete an information form for each system and feature within their playground.<br>• Students should include the dimensions for the "Use Zone" on the diagram. | 4.MD.A.2<br>5.NBT.B.5<br>5.G.A.2 |



| | | | |
|---|---|---|---|
| Day 5 | • Teams finalize diagram of their playground<br>• Teams complete the information table to represent each item in their playground<br>• Students individually complete Formative Assessment A: Area of "Use Zone" | • The formative assessment is to ensure students can calculate area of a rectangle.<br>• The Area of the Use Zone is helpful in the next section when teams determine ground coverage. | 4.MD.A.2<br>5.NBT.B.5<br>5.G.A.2 |
| **Learning Task 3** | **Overview** | **Teacher Notes** | **CCSS** |
| Day 6 | • Class discussion about safety within a playground.<br>  • Most injuries occur from falls.<br>  • Teacher can show the article: ***Playground Safety Applicable Standards Guidelines and Protective Surfacing*** to show that there are guidelines for each type of ground coverage.<br>  • Emphasize to the class that the depth of the ground coverage is based on the fall height of the system selected.<br>• The teams need to include ¼ times more than the required amount due to the material compressing over time. | • http://www.chalmersinsurancegroup.com/docs/Playground-Safety-Applicable-Standards-Guidelines-and-Protective-Surfacing-RC80950.pdf<br>• The chart on page 2 is critical for this aspect of the task.<br>• Teams recorded the fall height on the forms when selecting playground features and systems during learning task 2.<br>• This is a demanding/complex day involving multiplying and adding fractions. Allow teams time to problem solve prior to offering assistance. | 5.MD.C.5<br><br>5.NF.B.4<br>5.MD.A.1 |
| Day 7 | •Ground Coverage Continued:<br>•Teams select ground coverage.<br>•Determine depth necessary based on fall height. (round up to nearest whole inch)<br>•Determine total volume of ground coverage needed.<br>•Determine cost of ground coverage. | •Continue to allow teams the opportunity to problem solve regarding the depth of ground coverage.<br>•Monitor teams and provide assistance as needed | 5.MD.C.5<br>5.NF.B.4<br>5.MD.A.1<br>5.NBT.B.7 |
| Day 8 | •Teams finalize ground coverage: depth, volume, and cost.<br>•Peer review/check other teams' work on depth, volume and cost. | • Focus on individual team members sharing the process of determining the depth, volume and cost with a student from a different team | 5.MD.C.5<br>5.NF.B.4<br>5.MD.A.1<br>5.NBT.B.7 |
| Day 9 | •Teams make any necessary modifications to depth, volume, and cost of ground coverage based on peer check in Day 8.<br>•Students individually complete Formative Assessment B | • Formative assessment focuses on depth, volume and cost given a specific playground system. | 5.MD.C.5<br>5.NF.B.4<br>5.MD.A.1<br>5.NBT.B.7 |
| **Learning Task 4** | **Overview** | **Teacher Notes** | |
| Day 10 | •Teams begin to create presentation. | • Share rubric for team presentations with students.<br>• Team presentations can include a PowerPoint, iMovie, Poster, or other | |



| | | | |
|---|---|---|---|
| Day 11 | •Teams finalize and practice presentations | • Remind teams everyone needs to have a meaningful part in the presentation. | |
| Day 12 | •Team Presentations | • Set protocols for students who are not currently presenting. | |
| Day 13 | •Students individually complete Culminating Performance Task | Assessment includes concepts from each learning task. | 5.MD.C.5<br>5.NF.B.4<br>5.MD.A.1 |

**Culminating Project**

**The Ideal Playground**

You and your team will design what you consider the best playground. You will present your playground and highlight why your playground is fun, safe, and promotes fitness.

Your team will also need to show how your playground meets all the requirements listed below.

**Playground Requirements:**

- Playground fits within a rectangular area that is 70 feet wide and 90 feet long
- Includes at least one playground system
- Includes at least one individual feature
- Shows consideration of the survey data of what activities students say are "fun"
- Includes activities that promote fitness
- Meets the groundcover guidelines for safety



Student Survey

# What makes a playground fun?

Tell how much you enjoy each playground feature.

| | I do not enjoy this activity | This activity is OK | I like this activity | I really like this activity | This is my favorite activity |
|---|---|---|---|---|---|
| Swings | | | | | |
| Slides | | | | | |
| Climbing walls | | | | | |
| Rope bridges | | | | | |
| Teeter totter | | | | | |
| Balance beams | | | | | |

# What makes a playground fun?

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|---|---|---|---|---|---|
| Swings | | | | | |
| Slides | | | | | |
| Climbing walls | | | | | |
| Rope bridges | | | | | |
| Teeter totter | | | | | |
| Balance | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| beams | | | | | |

Playground Information Form

**Complete this form for each system and feature you include in your ideal playground. Then use the information to complete the table to represent all of the equipment in your playground**

Name: _____

Is this an individual feature or a playground system? _____

Name and Model Number of item: _____

Appropriate age range for this item: _____

Dimensions for the "Use Zone" _____

Area of "Use Zone" _____

Fall Height: _____

Approximate price: _____

Why did your team select this item?



# Playground Information Table

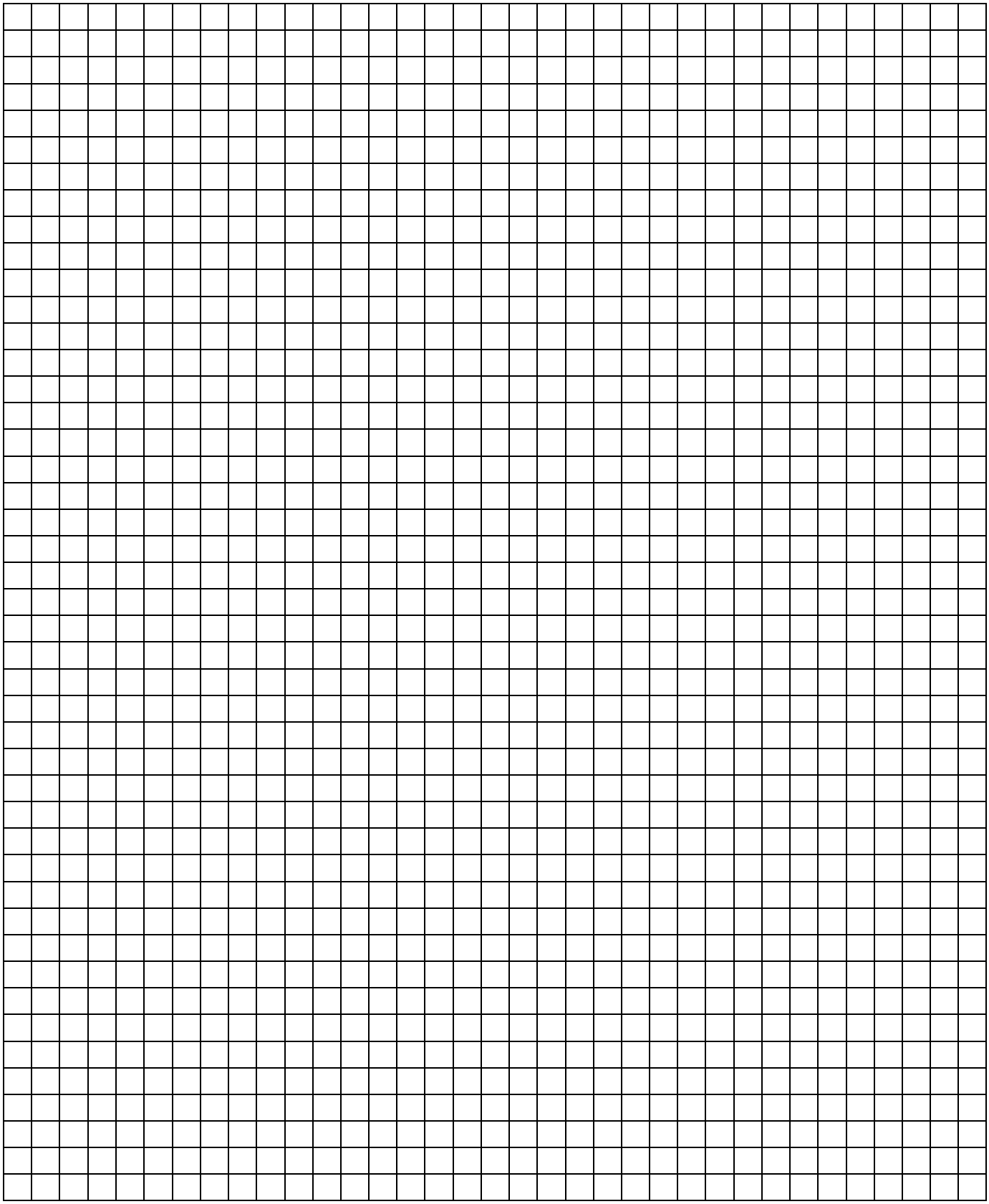
**Complete this form to represent all of the systems and features included in your ideal playground**

Name: _____

| Name and Model Number | System or Feature | Age Range | Dimensions for Use Zone (in feet) | Area of Use Zone (square feet) | Fall Height (inches) | Price | Why did your team select this item |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |



Grid paper for playground sketch



**Area of "Use Zone"**

**Formative Assessment A**

Name: _____ Date: _____

Mia and Tony selected the playground system pictured below.


Nucleus
NU-1612

**Ages:** 2-5
**Capacity:** 62
**Use Zone:** 42' x 36'
**Fall Height:** 56"
**Approximate List Price*:** $36,900

Tony and Mia are discussing the area of the "Use Zone".

- Tony says the area of the "Use Zone" is 156 square feet.
- Mia says the area of the "Use Zone" is 1,512 square feet.

Which student is correct?

Support your answer using words and numbers.

**Area of "Use Zone"**

**Formative Assessment A – Rubric and Exemplar**

Rubric:

**2 – Points:**

Student needs to say that Mia is correct (1 point)

AND

Support answer using words and numbers. (1 point)

**1 Point:**

Student agrees with Mia but does not support answer

**Or**

Student shows how to compute the area but does not relate this to which student's statement is correct.

**Exemplar:**

The information says the use zone is 42 feet by 36 feet. To calculate the area you need to multiply 42 x 36, which equals 1,512 square feet. Mia is correct.

**Ground Material Needed**

**Formative Assessment B**

Name: _____ Date: _____

Mia and Tony selected the playground system pictured below.


Nucleus
NU-1612

**Ages:** 2-5
**Capacity:** 62
**Use Zone:** 42' x 36'
**Fall Height:** 56"
**Approximate List Price*:** $36,900

Tony and Mia agree to use pea gravel for groundcover.

Review the guidelines for loose fill groundcover.

| Minimum Compressed Loose Fill Groundcover | | |
|---|---|---|
| **Inches of Loose Fill Material** | | **Protects to Fall Height** *(feet)* |
| 6* | Shredded/recycled rubber | 10 |
| 9 | Sand | 4 |
| 9 | Pea Gravel | 5 |
| 9 | Wood Mulch | 7 |
| 9 | Wood Chips | 10 |

Remember to include $\frac{1}{4}$ **times more** material than the recommended depth.

Round the depth up to the nearest whole inch.

How many cubic feet of pea gravel is needed?

Use words and numbers to support your answer.

**Ground Material Needed**

**Formative Assessment B – Rubric and Exemplar**

Rubric:

3 Points:

Student

- Student calculates the depth of pea gravel necessary:
    - Converts fall height from inches to feet. (4.75 ft) or student states that 9 inches of pea gravel protects to a fall height of 5 feet which is greater than the fall height listed.
    - Students calculates 1/4 times more than 9 inches (11.25 inches)
    - Student rounds up to nearest whole inch (12 inches)
- Student calculates volume of pea gravel needed (1516 cu. Ft)
- Student uses words and numbers to explain process.

**2 – Points:**

Student provides 2 of the 3 listed above.

**1 Point:**

Students provides 1 of the 3 listed above.

**Exemplar:**

The fall height for this is system is 56 inches, which is just under 5 feet. 9 inches of pea gravel protects to a fall height of 5 feet. Since we need ¼ times more we need ¼ x 9 + 9 = 11 ¼ inches of pea gravel. Rounding up makes it a depth of 12 inches of pea gravel. 12 inches = 1 foot. The use zone for this system is 42 x 36 feet. To find the cubic feet of pea gravel needed you multiply 42 x 36 x 1 = 1516 cubic feet of pea gravel.



Presentation Preparation

Name: _____ Team: _____ Date: _____

When you present your playground, everyone in your group should know how and why you designed your playground the way you did. Use the form below to help plan for your presentation.

| **Part of Presentation** | **Name of team member** |
|---|---|
| Who will introduce your team and the purpose of the presentation? | |
| Who will introduce the sketch of your ideal playground? | |
| Materials Specialist:<br>➢ Explain the different types of features and systems included in your playground.<br>➢ Which items are individual features and which are systems?<br>➢ Explain where the Use Zone is for each item. | |
| Profile Specialist:<br>➢ Explain why you chose specific features such as slides, swings, benches, etc.<br>➢ Explain a few benefits for selecting the features.<br>➢ What is the age range of people using each feature in your playground? | |
| Fitness Specialist:<br>➢ Explain how each item in your playground promotes fitness.<br>➢ Explain how people with physical handicaps (such as wheelchairs) can use your playground. | |
| Safety Specialist:<br>➢ Explain how you calculated the depth of the groundcover needed to protect from injuries from falls.<br>➢ Explain what other features makes your playground safe. | |
| Who will explain and show the total budget? | |
| Who will summarize the project? | |



**Culminating Individual Performance Task**

Name: _____ Date: _____

Your school is getting a new playground system.

The school has identified two possible playground systems.

The information for each system is listed beside each picture below.

**System 1**


Voltage
3D-2415

**Ages:** 5-12
**Capacity:** 51
**Use Zone:** 41' x 33'
**Fall Height:** 84"
**Approximate List Price*:** $21,300

**System 2**


## Voltage 3D-2019

**Ages:** 5-12
**Capacity:** 80
**Use Zone:** 56' x 37'
**Fall Height:** 100"
**Approximate List Price*:** $35,500

1. Explain why each playground is considered a system rather than an individual feature.

2. Use the information for System 1 and 2 to help you answer this question.

   What is the difference, in dollars, between the list prices of the playgrounds?

3. Use the information for System 1 and 2 to help you answer this question.

   Complete the table to show the fall height, in **feet**, for each playground.

| **Playground** | Fall Height (in **feet**) |
|---|---|
| System 1 | |
| System 2 | |

4. Which playground system would need more cubic feet of groundcover? Use words and numbers to support your answer.

5. Write a letter to your teacher explaining which playground system the school should purchase. Include the following in your letter:
    - What aspects of the system are fun and promote fitness.
    - Which type of groundcover you think the school should use and the depth that is needed.
    - Use words and numbers to support your answer.

    Use the guideline below to make your recommendation for the type of groundcover.



| Minimum Compressed Loose Fill Groundcover | | |
|---|---|---|
| **Inches of Loose Fill Material** | | **Protects to Fall Height** *(feet)* |
| 6* | Shredded/recycled rubber | 10 |
| 9 | Sand | 4 |
| 9 | Pea Gravel | 5 |
| 9 | Wood Mulch | 7 |
| 9 | Wood Chips | 10 |

**Culminating Individual Performance Task**

**Rubric and Exemplars**

1. Explain why each playground is considered a system rather than an individual feature.

**Rubric: 1 Point:**

Student states that both are considered a system because they each have multiple layers and features.

**Exemplar:**

> Both playgrounds are a system because they have more than one feature. System 1 has platforms, slides, climbing areas, as well as other features. System 2 has slides, tunnels, climbers, and other features. An individual feature would only have one thing, like one slide, or one climber. Both of these systems have many features.

2. Use the information for System 1 and 2 to help you answer this question.

What is the difference, in dollars, between the list prices of the playgrounds?

**Rubric: 1 Point:**

Student provides correct difference in cost.

**Exemplar**: $14,200



3. Use the information for System 1 and 2 to help you answer this question.

   Complete the table to show the fall height, in **feet**, for each playground.

| **Playground** | Fall Height (in **feet**) |
|---|---|
| System 1 | |
| System 2 | |

**Rubric:**

2 Points: Students provides correct fall height (in feet) for each system

1 Point: Student provides one correct fall height (in feet)

**Exemplar:**

| **Playground** | Fall Height (in **feet**) |
|---|---|
| System 1 | 7 |
| System 2 | $8\frac{1}{3}$ |

4. Which playground system would need more cubic feet of groundcover?
   Use words and numbers to support your answer.

**Rubric:**

**2 Points:**

Students states that System 2 needs more cubic feet of groundcover

AND

Supports answer with numbers and words

**Scoring Note:**

Student does not have to calculate the volume to earn full credit for this item. Student must explain why one system will require more groundcover than the other system.

**1 Point:**

Students states that system 2 needs more cubic feet of groundcover but does not support answer

OR

Students calculates cubic feet of groundcover needed for each system but does not make a comparison.

**Exemplar:**

> System 2 will need more cubic feet of groundcover. I know this because system 2 has a greater use zone and a greater fall height than system 1. To find the volume for the groundcover, you multiply the area of the use zone by the depth of the groundcover. The depth of the groundcover is based on the fall height. Since system 2 has both a greater area and a greater fall height, it will need more ground cover.



5. Write a letter to your teacher explaining which playground system the school should purchase. In your letter, include what aspects of the system are fun and promote fitness. Explain which type of groundcover the school should use and what depth is needed.

**Rubric:**

**2 Points:**

Student identifies elements within the system that are fun and that promote fitness

AND

Student explains the benefit of the groundcover selected and the required depth necessary to reduce injuries from falls.

**1 Point:**

Student's letter only attends to 1 of the 2 aspects listed above.

**Exemplar:**

Dear Mrs. Johnson,

I suggest that the school choose system 2. I think system 2 provides more opportunities for fun and fitness. There are at least four climbers on this system. Climbers promote fitness and upper body strength. There are two tunnels and three slides included in this system. Students report that tunnels and slides are fun. The school can ensure the safety by making sure the groundcover is an appropriate depth. This system has a fall height of 100 inches, which is 8 1/3 feet. Shredded/recycled rubber and wood chips protect to a fall height of 10 feet. I suggest using shredded/recycled rubber because this is better for the environment. The depth of the shredded/recycled rubber needs to be 7 ½ inches or rounded to 8 inches.

Scoring Note:



System 1: Groundcover choices: wood mulch at 1foot depth, Shredded/recycled rubber with depth between 5 and 6 inches, wood chips with a depth between 8 and 12 inches.

System 2: Ground cover choices: wood chips with a depth of 12 inches, Shredded/recycled rubber with a depth of 7.5 or 8 inches.

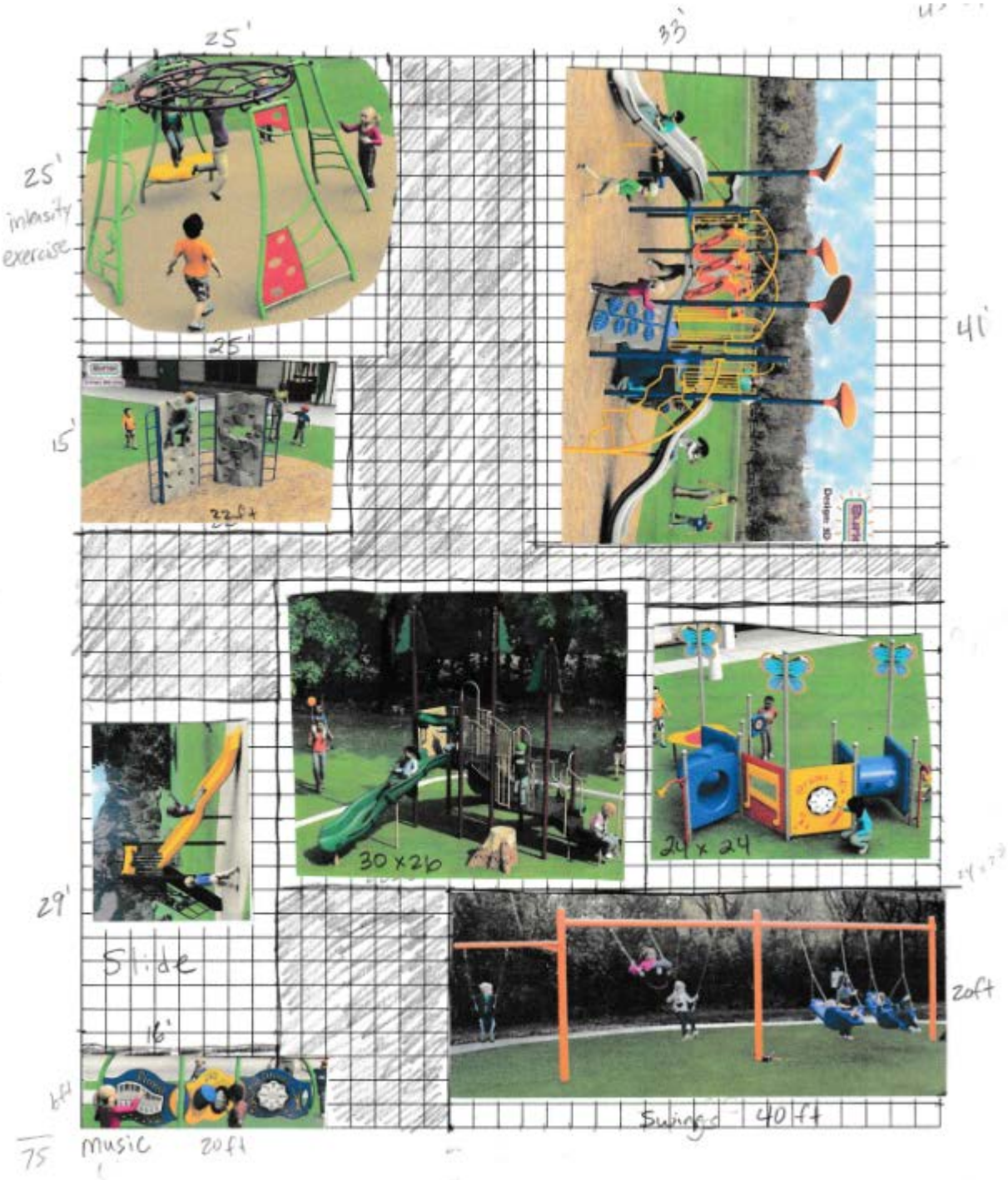


**Culminating Task**

Sample Student Work

Playground Diagram Sample 1

Playground Diagram Sample 2:



## Information Table

**Complete this form for each system and feature you include in your ideal playground**

Name: Student Sample

| Name and Model Number | System or Feature | Age Range | Dimensions for Use Zone (in feet) | Area of Use Zone (square feet) | Fall Height (inches) | Price | Why did your team select this item |
|---|---|---|---|---|---|---|---|
| Burke Basics 2321 | individual | 2-12 | 1 x 1<br>6 x 1 | 1<br>6 | 0 | $6,600 each | This creates a musical area. Want 6 total |
| Sings | Individual | 5-12 | 20 x 40 | 800 | 120 | $2000 | Data shows that students like to swing |
| Burke Basics BB-1932 | System | 5-12 | 22 x 15 | 330 | 85 | $4000 | Standalone climbing wall |
| Intensity IN-2424 | System | 5-12 | 25 x 25 | 625 | 80 | $6300 | Specific for exercise. Upper body and cardio |
| Voltage 2133 | Individual | 5-12 | 16 x 29 | 464 | 64 | $4300 | Standalone slide |
| Voltage 2415 | System | 5-12 | 41 x 33 | 1353 | 84 | $21,300 | Major system that students can play on and socialize. Students can climb, slide, and play. |
| Voltage 2236 | System | 5-12 | 26 x 30 | 780 | 56 | $14,300 | This system adds another slide and a place for kids to hang out that looks more like nature |
| Little Buddies 2144 | System | 2-5 | 24 x 24 | 576 | 0 | $11,100 | This system provides a play area for younger kids. |
| **Totals** | | | | 4934 | Max: 10 feet | $102,900 | |

# Presentation Rubric
## Grades 3-5

| | Emerging (Below Standard) | E/D | Developing (Approaching Standard) | D/P | Proficient (At Standard) | P/A | Advanced (Above Standard) |
|---|---|---|---|---|---|---|---|
| **Explanation of Ideas and Information** | • Uses inappropriate facts and irrelevant details to support main ideas | | • Chooses some facts and details that support main ideas, but there may not be enough, or some are irrelevant | | • Chooses appropriate facts and relevant, descriptive details to support main ideas and themes (CC 3-5.SL.4) | | • Monitors for reasonableness<br>• identifies sources of error<br>• adapts appropriately |
| **Organization** | • Does not include everything required in presentation.<br>• Presents ideas in an order that does not make sense<br>• Does not plan timing of presentation; presentation is too short or too long | | • Includes almost everything required in presentation.<br>• Most of the presentation follows a logical order<br>• Overall presentation is within the correct time, but some parts of the presentation were too long or too short | | • Includes everything required in presentation<br>• Presents ideas in an order that makes sense (CC 3-5.SL.4)<br>• Organizes time well. No part of the presentation is too short or too long | | • Uses multiple presentations (diagrams, tables, and graphs) and key explanations to enhance the audience's understanding |
| **Eyes & Body** | • Does not look at audience; reads notes<br>• Fidgets or slouches a lot | | • Makes some eye contact, but reads notes or slides most of the time<br>• Fidgets or slouches a little | | • Keeps eye contact with audience most of the time; only glances at notes<br>• Has a confident posture | | • Uses gestures and eye contact appropriately to emphasize or highlight specific points |
| **Voice** | • Speaks too quietly or not clearly<br>• Does not speak appropriately for the situation (may be too informal or uses slang) | | • Speaks loudly and clearly most of the time<br>• Speaks appropriately for the situation most of the time | | • Speaks loudly and clearly<br>• Speaks appropriately for the situation, using formal English when appropriate (CC 3-5.SL.6) | | • Uses inflections and intonation to maintain audience's attention and to highlight specific points |
| **Presentation Aids** | • Does not use audio/visual aids or media<br>• Uses inappropriate or distracting audio/visual aids or media | | • Uses audio/visual aids or media, but they sometimes distract from the presentation, or do not add to ideas and themes | | • Uses well-produced audio/visual aids or media to add to main ideas and themes (CC 3-5.SL.5) | | • Uses accurate representations including units of measure and labels, uses formal notations as appropriate |
| **Response to Audience Questions** | • Does not answer audience questions | | • Answers some audience questions, but not clearly or completely | | • Answers audience questions clearly and completely | | • Provides additional examples or information to answer audience questions and to improve understanding |
| | | | | | | | |
| **Participation in Team Presentations** | • Not all team members participate, only one or two speak | | • All team members participate, but not equally | | • All team members equally participate, and are able to answer questions | | • Listens to and shows support of all team members |

**Culminating Task Rubric**
**Grades 3-5**

| | Emerging (Below Standard) | E/D | Developing (Approaching Standard) | D/P | Proficient (At Standard) | P/A | Advanced (Above Standard) |
|---|---|---|---|---|---|---|---|
| **Problem Solving** | • Ignores requirements within the task<br>• Does not organize materials or calculations<br>• Does not use tools appropriately<br>• Does not persevere in solving the task | | • Incorporates most of the requirements within the task<br>• Organizes most of the materials and calculations.<br>• Uses most tools appropriately<br>• Attempts to persevere in solving the task | | • Responds to all of the requirements within the task<br>• Organizes materials and calculations<br>• Uses tools appropriately<br>• Perseveres in solving the task | | • Monitors for reasonableness within the task<br>• identifies sources of error while researching<br>• adapts appropriately to changes within the task<br>• Encourages others to persevere in solving the task. |
| **Reasoning and Proof** | • Provides incorrect solution without justifications<br>• Results are incorrectly interpreted within the task. | | • Provides partially correct solution or a correct solution without any justification<br>• Results are mostly interpreted correctly within the task | | • Provides a correct solution with supporting evidence.<br>• Results are interpreted correctly within the task | | • Monitors for reasonableness, identifies sources of error, and adapts appropriately |
| **Mathematical Connections** | • Little or no evidence of applying math skills and knowledge to given task<br>• Does not attend to precision | | • Applies skills and knowledge to given task, but may include errors<br>• Attends to precision most of the time | | • Applies skills and knowledge to the given task<br>• Attends to precision | | • Identifies and generalizes the underlying mathematics in the given task |
| **Communication and Representation** | • Little or no evidence of collaborating with others<br>• Little or no evidence of communicating ideas or information relating to the task<br>• Uses representations (diagrams, tables and graphs) in ways that confuse the audience | | • Collaborates well with others most of the time<br>• Attempts to communicates ideas and information relating to the task<br>• Uses representation (diagrams, tables, and graphs) that support audience understanding but may be incomplete | | • Effectively communicates ideas and information relating to the task<br>• Uses representations (diagrams, tables, and graphs) that support audience understanding | | • Encourages others to collaborate<br>• Listens to builds upon the ideas of others<br>• Analyze information from a variety of sources and identify which information is most appropriate |

Math content standards included within this task:_____

# Sample Student Presentation

# BEST PLAYGROUND EVER!

BY:

# OUR PLAYGROUND DESIGN

- Includes four unique systems
- Includes an area for swings
- Has three individual features
- Promotes fun and fitness


25 x 25 ft
33 x 41 feet
15 x 22 ft
29 x 16 ft
30 x 26 ft
24 x24 ft
6 x 20 ft
40 x 20 ft
90 feet
70 feet

## Information Table

**Complete this form for each system and feature you include in your ideal playground**

Name: Student Sample

| Name and Model Number | System or Feature | Age Range | Dimensions for Use Zone (in feet) | Area of Use Zone (square feet) | Fall Height (inches) | Price | Why did your team select this item |
|---|---|---|---|---|---|---|---|
| Burke Basics 2321 | individual | 2-12 | 1 x 1<br>6 x 1 | 1<br>6 | 0 | $6,600 each | This creates a musical area. Want 6 total |
| Sings | Individual | 5-12 | 20 x 40 | 800 | 120 | $2000 | Data shows that students like to swing |
| Burke Basics BB-1932 | System | 5-12 | 22 x 15 | 330 | 85 | $4000 | Standalone climbing wall |
| Intensity IN-2424 | System | 5-12 | 25 x 25 | 625 | 80 | $6300 | Specific for exercise. Upper body and cardio |
| Voltage 2133 | Individual | 5-12 | 16 x 29 | 464 | 64 | $4300 | Stand alone slide |
| Voltage 2415 | System | 5-12 | 41 x 33 | 1353 | 84 | $21,300 | Major system that students can play on and socialize. Students can climb, slide, and play. |
| Voltage 2236 | System | 5-12 | 26 x 30 | 780 | 56 | $14,300 | This system adds another slide and a place for kids to hang out that looks more like nature |
| Little Buddies 2144 | System | 2-5 | 24 x 24 | 576 | 0 | $11,100 | This system provides a play area for younger kids. |

# PLAYGROUND REQUIREMENTS

- Fits in a rectangle that is 90 feet by 70 feet.
- Has both systems and individual features.
- Student surveys showed that slides, swings and tunnels are some favorite activities.
- Promotes fitness through climbing, swinging, and, running.

# GROUNDCOVER

- We selected to use shredded/recycled rubber.  This material is better for the environment and promotes recycling.
- The maximum fall height in our playground is 10 feet.
- 6 inches of shredded/recycled rubber protects to a fall height of 10 feet.
- Adding ¼ times more means we need a depth of 8 inches of shredded/recycled rubber.
- The total area for the “Use Zones” is 4,934 square feet.
- Total volume of shredded/recycled rubber needed is 4934 times 8/12 ft is 3289.3
- We need 3,290 cubic feet of shredded/recycled rubber.

# BUDGET

- Cost of systems and individual features within the playground is $102,900
- Cost for 3290 cubic feet of shredded/recycled rubber is $41,000
- Total budget is $143,900