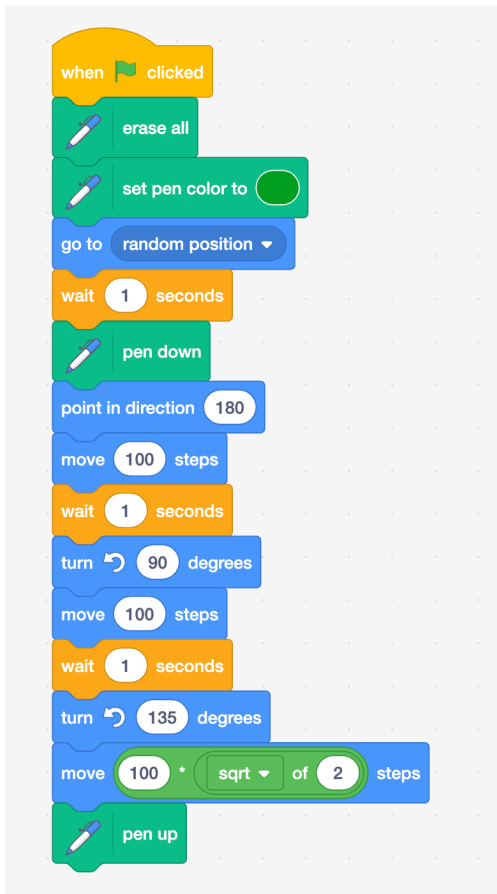


Coding Assignment #3 – Geometric Relationships

Learning Goals: apply coding skills to represent mathematical concepts and relationships related to geometry.

Success Criteria: be able to create a program using Scratch to calculate volume and surface area of various 3D shapes.

Task 1: Read this block of code. What do you think it does? Explain in detail then try it using the link to see if you are right.



What does the program do?

MTH1W

<https://scratch.mit.edu/projects/792862030>

Task 2: Write pseudocode that would tell a program how to calculate the missing side of a right triangle.
Remember the Pythagorean Theorem $a^2 + b^2 = c^2$

Pseudo code:

Task 3: As a class, create a program in Scratch that solves for the missing side of a right triangle.

Task 4: In groups, analyze this program that calculates the volume and surface area of a cone. Press 'See Inside' and analyze the code, sprites, and backdrops to get an idea of how it works.

<https://scratch.mit.edu/projects/788488500>

Task 5: Adapt the program from task 4 to be able to calculate the volume and surface area of rectangular prisms, spheres, triangular based prisms, cylinders, and cones. Start with pseudo code and share the link to your program with your teacher when you are done. The sphere section has been started for you.

Pseudo code:

| Category | Level 1 | Level 2 | Level 3 | Level 4 |
|--|---|--|--|--|
| Knowledge and Understanding Demonstrates knowledge and understanding of powers, exponent rules, and block coding. | demonstrates limited understanding of content | demonstrates some understanding of content | demonstrates considerable understanding of content | demonstrates thorough understanding of content |
| Thinking Use of planning using pseudo code. Shows critical/creative thinking when designing program. | uses planning skills with limited effectiveness | uses planning skills with some effectiveness | uses planning skills with considerable effectiveness | uses planning skills with a high degree of effectiveness |
| Communication Able to use block code to create a program that clearly communicates knowledge of exponent rules. | expresses and organizes ideas and information with limited effectiveness | expresses and organizes ideas and information with some effectiveness | expresses and organizes ideas and information with considerable effectiveness | expresses and organizes ideas and information with a high degree of effectiveness |
| Application Transfer knowledge and skills of how to use coding to evaluate powers to create a new program that applies the quotient rules of powers. | transfers knowledge and skills to new contexts with limited effectiveness | transfers knowledge and skills to new contexts with some effectiveness | transfers knowledge and skills to new contexts with considerable effectiveness | transfers knowledge and skills to new contexts with a high degree of effectiveness |

Comments: