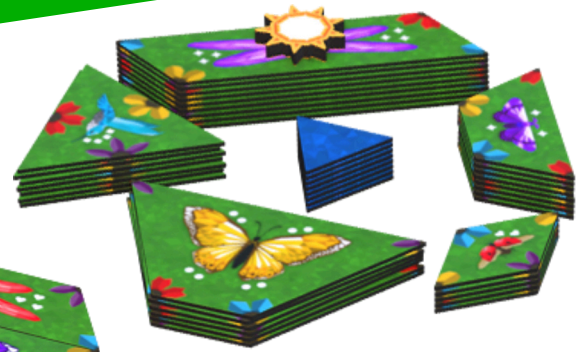
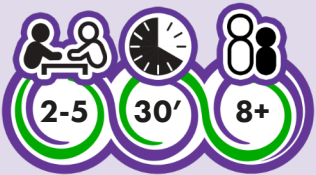


Flutter

Remembering | Understanding | Applying |
Analyzing | Evaluating | Creating



Game details



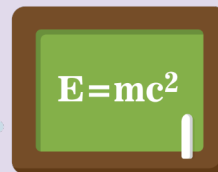
How-to-play



Learning objectives

- Remembering: Recognizing, recalling
- Understanding: Interpreting, classifying, summarizing, inferring, comparing, explaining
- Applying: Executing, implementing
- Analyzing: Differentiating, organizing, attributing
- Evaluating: Checking
- Creating: Generating, planning, producing

Topics



- Organisms
- Ecosystems
- Earth
- Counting & Cardinality
- Operations & Algebraic Thinking
- Measurement
- Geometry



Flutter curriculum standards

Common Core State Standards for Mathematics (corestandards.org)

Grade level	Domain name	Domain code	Standards	Equivalent game mechanics
K	Counting and Cardinality	K.CC	Know number names and the count sequence.	Petal trackers are numbered from 0 to 21
K	Counting and Cardinality	K.CC	Count to tell the number of objects.	Counting matching and mismatched petals
K	Counting and Cardinality	K.CC	Compare numbers.	Compare how many petals you have on your tracker to how many are required to play or enclose a tile
K	Operations and Algebraic Thinking	K.OA	Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	Matching petals are added to your tracker, mismatched petals are subtracted
K	Number and Operations in Base Ten	K.NBT	Work with numbers 11–19 to gain foundations for place value.	Petal trackers go up to 21
K	Measurement and Data	K.MD	Describe and compare measurable attributes.	Different size tiles are worth different amounts of pollen points, each mathematically based on their size
K	Measurement and Data	K.MD	Classify objects and count the number of objects in each category.	Counting number of petals in each of 4 types and counting the number of pollen points
K	Geometry	K.G	Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).	Triangles and many other geometric shapes, environmental relative positioning of tiles, shape rotation
K	Geometry	K.G	Analyze, compare, create, and compose shapes.	Tiles of different sizes, shapes, and colors; ability to use multiple tiles to model larger shapes
1	Operations and Algebraic Thinking	1.OA	Represent and solve problems involving addition and subtraction.	Matching petals are added to your tracker, mismatched petals are subtracted
1	Operations and Algebraic Thinking	1.OA	Add and subtract within 20.	Flutter: Adding and subtracting petals / pollen through tile placement and enclosure
1	Operations and Algebraic Thinking	1.OA	Work with addition and subtraction equations.	Need to have enough petals to pay for a tile placement or enclosure; need to have the highest score to win
1	Measurement and Data	1.MD	Measure lengths indirectly and by iterating length units.	Tiles of different sizes, each created in 1.5" segments
1	Measurement and Data	1.MD	Represent and interpret data.	Tiles and tokens of differing shapes, sizes, and colors that can be organized, counted, and compared
1	Geometry	1.G	Reason with shapes and their attributes.	Tiles of different shapes, sizes, and colors; ability to assemble tiles into other shapes; triangles, trapezoids, and others
2	Operations and Algebraic Thinking	2.OA	Add and subtract within 20.	Adding and subtracting petals / pollen through tile placement and enclosure
2	Operations and Algebraic Thinking	2.OA	Work with equal groups of objects to gain foundations for multiplication.	Placing and enclosing tiles of different sizes requires different groupings of petals
2	Measurement and Data	2.MD	Measure and estimate lengths in standard units.	Tiles all conform to lengths in 1.5" segments
2	Measurement and Data	2.MD	Work with time and money.	Enclosing tiles results in increments of payouts (3 butter fly tiles, worth 8 points each, nets 24 points)
2	Measurement and Data	2.MD	Represent and interpret data.	Measure tiles or groupings of tiles; graph data based on tile and petal categories
2	Geometry	2.G	Reason with shapes and their attributes.	Tiles of varying geometric shapes (triangles, trapezoids, and others)
3	Operations and Algebraic Thinking	3.OA	Represent and solve problems involving multiplication and division.	Groups of pollinators that are worth a specified amount of pollen points each
3	Operations and Algebraic Thinking	3.OA	Understand properties of multiplication and the relationship between multiplication and division.	Groups of pollinators that are worth a specified amount of pollen points each, which can then be reversed
3	Operations and Algebraic Thinking	3.OA	Solve problems involving the four operations, and identify and explain patterns in arithmetic.	When a player cannot pay for an enclosed pollinator, all other players gain half that pollinator's pollen points, round up
3	Number and Operations—Fractions	3.NF	Develop understanding of fractions as numbers.	Use groupings of meadow tiles to demonstrate fractions
3	Measurement and Data	3.MD	Represent and interpret data.	Measure tiles or groupings of tiles; graph data based on tile and petal categories
3	Measurement and Data	3.MD	Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	Use meadow tiles to demonstrate and calculate polygonal perimeters
3	Geometry	3.G	Reason with shapes and their attributes.	Tiles of varying geometric shapes and attributes (rhombuses, and others); perform area calculations
4	Operations and Algebraic Thinking	4.OA	Use the four operations with whole numbers to solve problems.	Use pollinator tiles to represent problems to be solved
4	Measurement and Data	4.MD	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	Use meadow tiles to demonstrate and calculate polygonal perimeters
4	Measurement and Data	4.MD	Geometric measurement: understand concepts of angle and measure angles.	Meadow tiles have varying angles in 60 degree increments
4	Geometry	4.G	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	Use meadow tiles to demonstrate geometric patterns, angle types, parallel lines, etc.
5	Geometry	5.G	Classify two-dimensional figures into categories based on their properties.	Use meadow tiles to demonstrate that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category; classify two-dimensional figures based on properties
6	Ratios and Proportional relationships	6.RP	Understand ratio concepts and use ratio reasoning to solve problems.	Calculate ratio / average number of points per pollinator type or per color
6	Geometry	6.G	Solve real-world and mathematical problems involving area, surface area, and volume.	Use meadow tiles to calculate area of triangles, quadrilaterals, and polygons

NGSS (Next Generation Science Standards):

- **LS1 From Molecules to Organisms: Structures and Processes**
- **LS2 Ecosystems: Interactions, Energy, and Dynamics**
- **ESS2 Earth's Systems**
- **ESS3 Earth and Human Activity**