



Liste des Gizmos

Math 10-20-30

Square roots

[Exploration Guide](#) [Projection Tip \(Browser Zooming\)](#) [Standard Gizmo Features](#)

The diagram shows a large rectangle on a grid with a total width of 12.8 and a total height of 12.8. The area is composed of several colored regions: a large red square (12x12), a vertical blue strip (12x0.8), a horizontal green strip (0.8x12), and a small purple square (0.8x0.8). The total area is labeled as 163.84.

$\sqrt{163.84} = 12.8$
$12.8 \cdot 12.8 = 163.84$
$12 \cdot 12 = 144$
$12 \cdot 0.8 = 9.6$
$12 \cdot 0.8 = 9.6$
$0.8 \cdot 0.8 = 0.64$
Total = 163.84

Show grid

Explor^elearning ☰ ☒ ☒ ☒ ☒ ☒

Ordering and Approximating Square Roots

$5 \cdot 5 = 25$ $\sqrt{25} = 5$	$7.3 \cdot 7.3 = 53.29$ $\sqrt{53.29} = 7.3$	$8 \cdot 8 = 64$ $\sqrt{64} = 8$
-------------------------------------	---	-------------------------------------

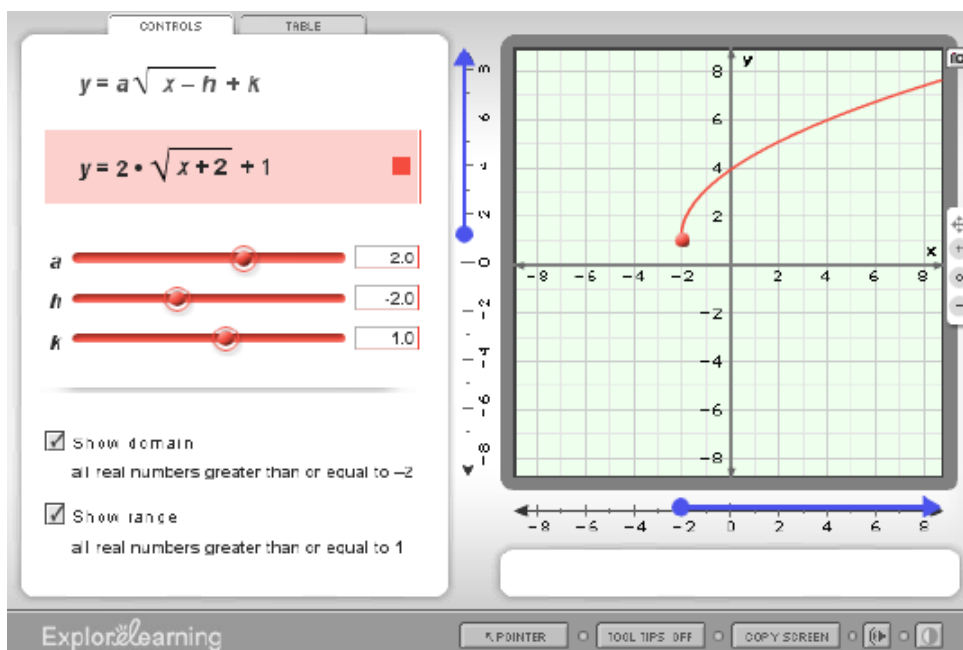
Below the area models is a number line from 0 to 100 with markers every 10 units. Three colored dots are placed on the line: a red dot at 25, a blue dot at 53.29, and a green dot at 64.

Show perfect squares

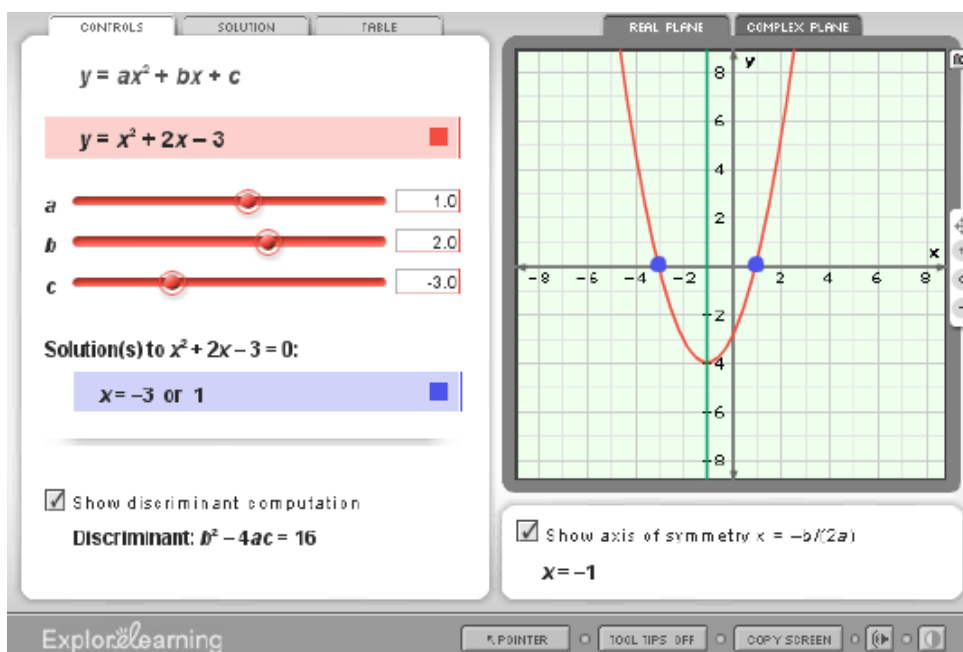
Explor^elearning ☰ ☒ ☒ ☒ ☒ ☒



Function Involving Square Roots



Roots of a Quadratic





Exponents and Power Rules

[Lesson Materials](#)

[Projection Tip \(Browser Zooming\)](#)

[Standard Gizmo Features](#)

Rewrite with a single exponent $(3^4)^5$

$3^{(4 \cdot 5)}$	Use the rule for raising a power to a power.
3^{20}	Multiply the exponents.

Solution steps: (drag the next solution step into the window above)

Good Job! Click 'New' to start a new problem.

Undo
New

ExplorLearning % POINTER TOOL TIPS OFF COPY SCREEN [Navigation icons]

Permutations and Combinations

TREE LIST NOTATION

1
2

SIMULATE RESET

Number of tiles in box: 1 2 3 4 5

Number of draws from box: 1 2 3 4 5

Is order important? Yes No

A — E — AE
 I — AI

E — A — EA
 I — EI

I — A — IA
 E — IE

ExplorLearning % POINTER TOOL TIPS OFF COPY SCREEN [Navigation icons]



Solving Linear Systems by Graphing

STANDARD | SLOPE-INTERCEPT | TABLE

$y = mx + b$

$y = x + 1$

$y = -2x + 1$

m

b

Check solution at the point

$y = mx + b$
 $(1) = 1(0) + 1$
 $1 = 1$ ✓

$y = mx + b$
 $(1) = -2(0) + 1$
 $1 = 1$ ✓

(0, 1) is a solution to both equations.

ExplorLearning

POINTERS TOOLS OFF COPY SCREEN

Linear Inequalities in Two Variables – Activity A

$y > mx + b$

$y > 2x - 3$

$\leq < = > \geq$

m

b

Show solution test

$y > 2x - 3$
 $-1.67 > 2(3.07) - 3$
 $-1.67 > 6.13 - 3$
 $-1.67 > 3.13$

(3.07, -1.67) is not a solution. ✗

ExplorLearning

POINTERS TOOLS OFF COPY SCREEN



Sine, Cosine and Tangent

SINE COSINE TANGENT

$\sin A \approx 0.707$

$m \angle A$ (degrees)

45.00

Show side lengths

OPP = 9.9
ADJ = 9.9
HYP = 14

Show sine computation

$$\sin 45^\circ = \frac{\text{OPP}}{\text{HYP}}$$
$$= \frac{9.9}{14}$$
$$= 0.707$$

Click to measure lengths Click to measure angles

Click to measure lengths Protractor angle 24.47°

ExplorLearning % POINTER TOOL TIPS OFF COPY SCREEN

Cosine Function

$y = \cos(0.500\pi) = 0.000$

y 1
X 1
0
-1

θ 0.500π

Degrees Radians

Show reference triangle Show curve

ExplorLearning % POINTER TOOL TIPS OFF COPY SCREEN



Tangent Function

$y = \tan(46^\circ) \approx 1.036$

θ Degrees Radians

Show reference triangle Show curve

$$\tan 46^\circ = \frac{\sin 46^\circ}{\cos 46^\circ} = \frac{0.7193}{0.6947} = 1.036$$

ExplorLearning

Absolute Value with Linear Functions – Activity B

CONTROLS DATA

$f(x) = ax + b$
 $f(x) = x + 1$

a
 b

Show $y = f(x)$
 $y = x + 1$

Show $y = f(|x|)$
 $y = |x| + 1$

Show $y = |f(x)|$
 $y = |x + 1|$

Show probe

x	f(x)	f(x)	f(x)
2.0	1(2.0) + 1	1(2.0) + 1	1(2.0) + 1
2.0	3.0	3.0	3.0

ExplorLearning



Quadratics in Polynomial Form – Activity A

CONTROLS **TABLE**

$y = ax^2 + bx + c$

$y = x^2 + 2x + 1$

a

b

c

Show vertex and intercepts

- **Vertex:** (-1, 0)
- **y-intercept:** 1
- **x-intercept(s):** -1

Show vertex trail

Show axis of symmetry

ExplorLearning % POINTER TOOL TIPS OFF COPY SCREEN [Navigation icons]

Operations with Radical Expressions

$4\sqrt{18} + 7\sqrt{2}$ **Add the radical expressions.**

$4\sqrt{9 \cdot 2} + 7\sqrt{2}$ **Perfect square factor.**

Solve on steps: (drag the next solution step into the window above)

$4 \cdot 9\sqrt{2} + 7\sqrt{2}$ $4 \cdot 2\sqrt{9} + 7\sqrt{2}$

$4 \cdot 2\sqrt{3} + 7\sqrt{2}$ $4 \cdot \sqrt{9} \cdot \sqrt{2} + 7\sqrt{2}$

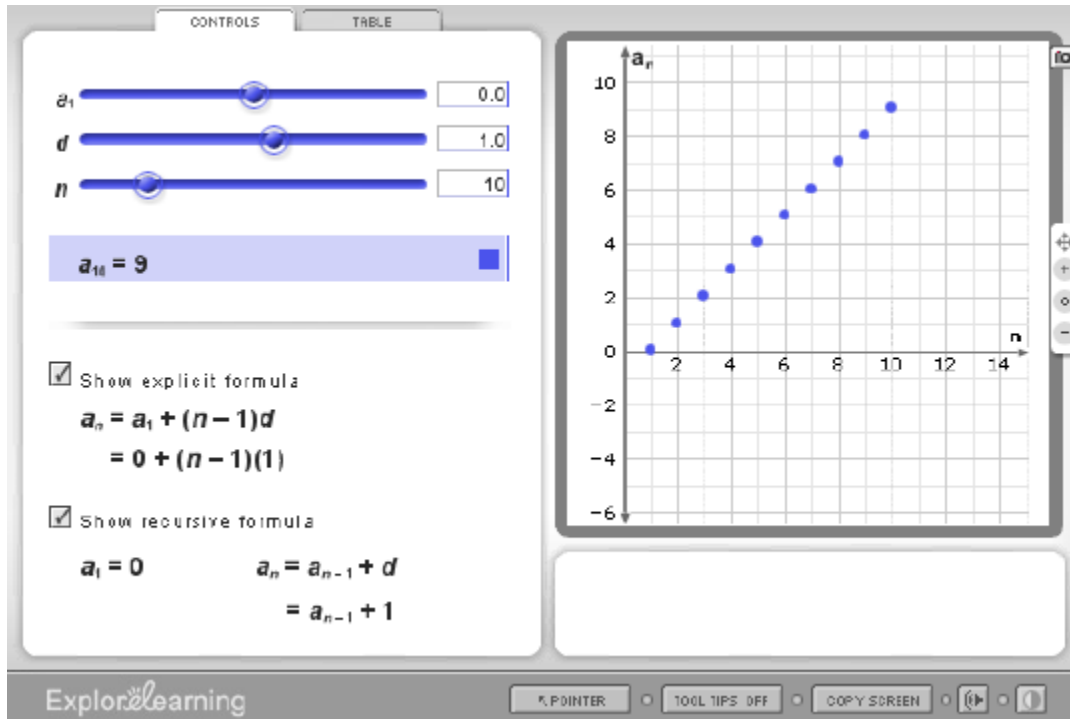
Undo

New

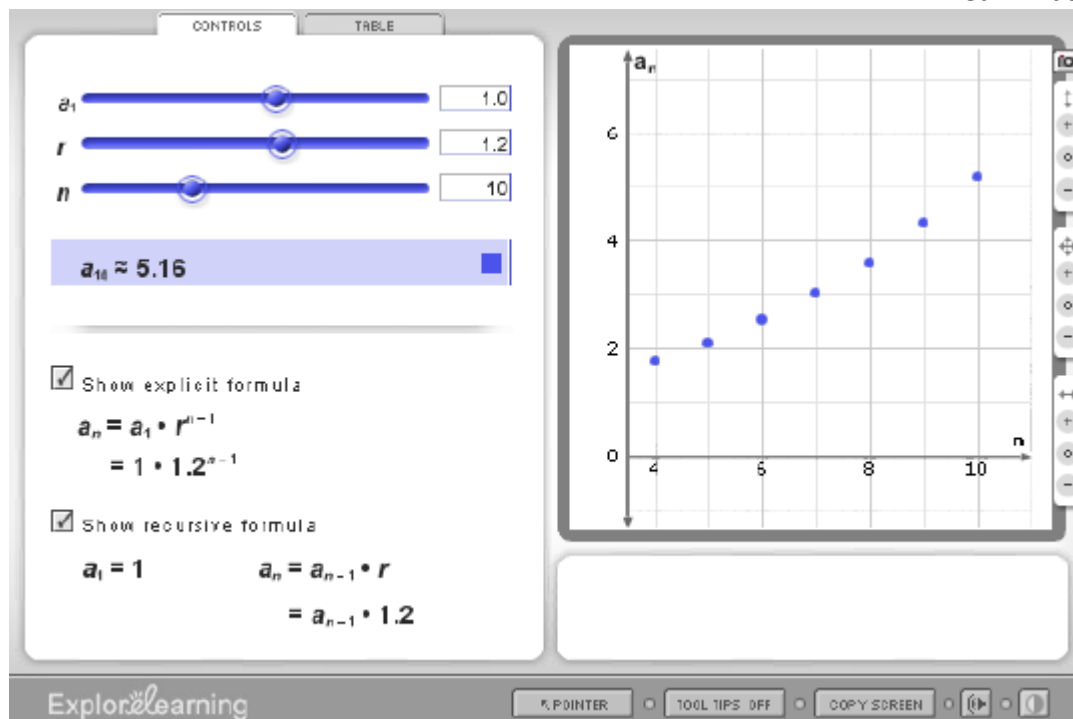
ExplorLearning % POINTER TOOL TIPS OFF COPY SCREEN [Navigation icons]



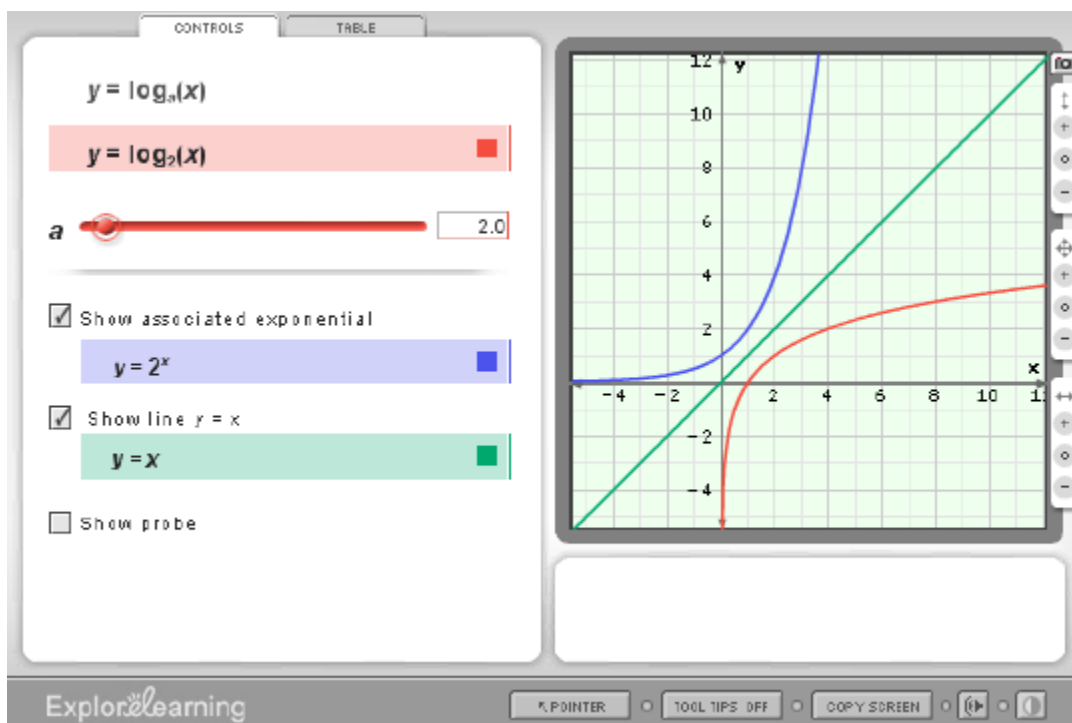
Arithmetic Sequences



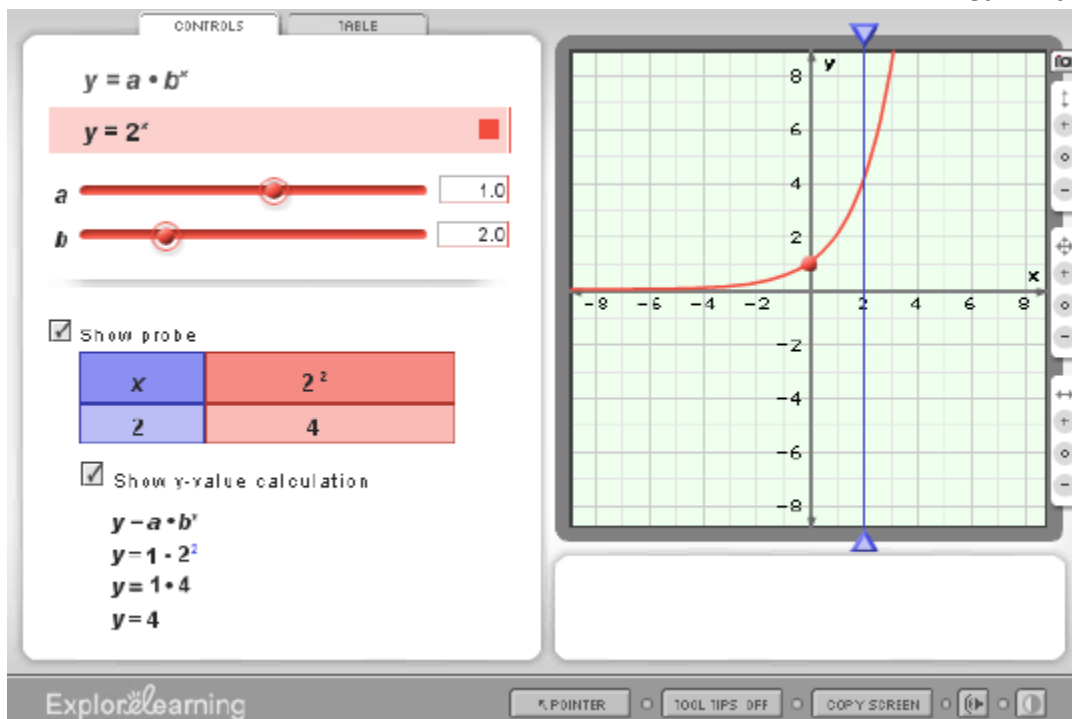
Geometric Sequences



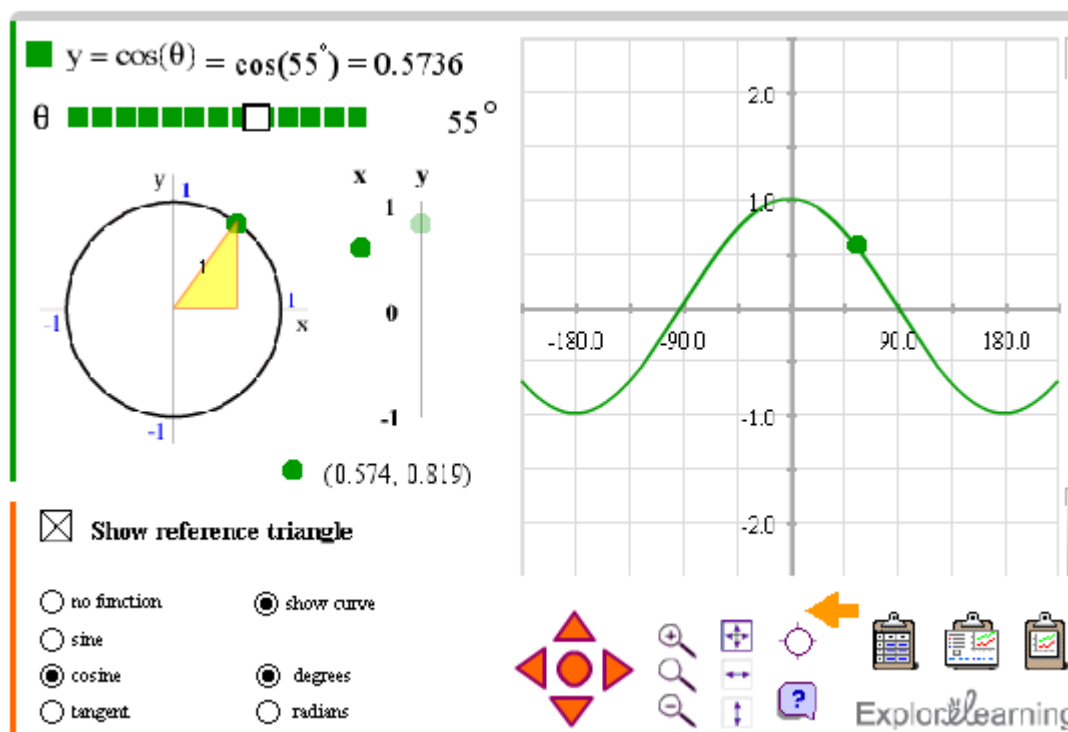
Logarithmic Functions – Activity A



Exponential Functions – Activity A



Unit Circle



Pyramids and Cones



Shape of base: Triangle

Base edge: 10.0

Height: 7.3

Show pyramid/cone volume
 $V = 105.36 \text{ units}^3$

Show area of base
 $A = 43.3 \text{ units}^2$

Show prism/cylinder
 $V = 316.09 \text{ units}^3$

Drag to rotate Drag to skew

ExplorLearning

PRINT TOOL TIPS OFF COPY SCREEN

Modeling the Factorization of $x^2 + bx + c$

Factor the polynomial:
 $x^2 + 6x + 5$

You have successfully modeled the polynomial.

1.) Now drag tiles from the left box into the right box and arrange them into a solid rectangle.

2.) Click 'Continue' when you are done.

New Continue

	x	1	1	1	1	1
x	x^2	x	x	x	x	x
1	x	1	1	1		

Width: $x + 5$

Height: $x + 1$

ExplorLearning

PRINT TOOL TIPS OFF COPY SCREEN

Bisectors in Triangles



The interface shows a geometry simulation. On the left, under the 'CONSTRAINT' tab, there is a dropdown menu set to 'Point C on perpendicular bisector of segment AB'. Below it are two checkboxes: 'Show distances from point C to endpoints of segment AB' (checked) and 'Trace motion of point C' (unchecked). The main workspace displays a triangle with vertices A, B, and C. A vertical line with arrows at both ends passes through C and the midpoint of segment AB, with a right-angle symbol at the intersection. Two boxes labeled '21.03' are placed next to the lines connecting C to A and C to B. At the bottom of the workspace, there are four checkboxes: 'Ruler length: 20' (checked), 'Click to measure lengths' (unchecked), 'Click to measure angles' (unchecked), and another 'Click to measure angles' (unchecked). The bottom of the interface features the 'ExplorLearning' logo and navigation buttons: 'POINTERS', 'TOOL TIPS OFF', 'COPY SCREEN', and navigation arrows.

Binomial probabilities

The interface shows a probability simulation. On the left, under the 'CONTROLS' tab, there are three sliders: 'Number of trials' (n) set to 2, 'P(Success) P(S)' set to 0.50, and 'P(Failure) P(F)' set to 0.50. There is also a checked checkbox for 'Automatically zoom the tree'. The main workspace, under the 'TREE DIAGRAM' tab, displays a tree diagram for two trials. The first trial branches into 'S' (0.50) and 'F' (0.50). The 'S' branch further branches into 'S' (0.50) and 'F' (0.50), leading to outcomes 'SS' and 'SF'. The 'F' branch further branches into 'S' (0.50) and 'F' (0.50), leading to outcomes 'FS' and 'FF'. The right side of the workspace has zoom controls: a plus sign, a minus sign, and a reset icon. The bottom of the interface features the 'ExplorLearning' logo and navigation buttons: 'POINTERS', 'TOOL TIPS OFF', 'COPY SCREEN', and navigation arrows.

Probability Simulations



Number of spinners: 1 2


Sections 6

Number 2

≤ < = ≠ > ≥ 2

Favorable outcome: = 2

Run trial



Trial 2: Not a favorable outcome since 6 is not equal to 2.

Trial	= 2	= 2	= 2
1	1	2	No
2	6	2	No

Clear trials

Event	Actual outcomes	Experimental probability
$P(\text{ = 2})$	0	$\frac{0}{2} = 0\%$
$P(\text{not = 2})$	2	$\frac{2}{2} = 100\%$

ExplorLearning

POINTER TOOLS TIPS OFF COPY SCREEN