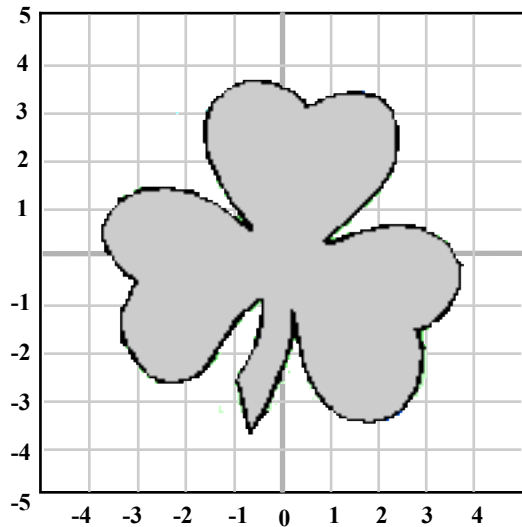# MathFLIX CHALLENGE

Direct and Indirect Measurement of Area

Direct Estimate

Find the area of the shamrock by counting squares.

Color all the unshaded squares red.
# of unshaded squares _____ Multiply # by 1 _____

Color all the squares that are half shaded yellow.
# of 1/2 shaded squares _____ Multiply # by 1/2 _____

Color all the squares that are less than half shaded blue.
# of 1/4 shaded squares _____ Multiply # by 1/4 _____

What is the total area of the large square? _____
Subtract the total # of colored squares? _____
Area of shamrock = _____

Indirect Estimate

You can use an indirect method of measurement to find the area of the shamrock by using chance or probability. The ordered pairs listed here have been determined by flipping two coins (heads+ and tails -) and rolling two dice (1=1, 2=2, 3=3, 4=4, 5=5, 6=0). The more points you plot, the more accurate your estimate. Find the total number of points inside the shamrock represented by the 25 trials.

Express the total as a fraction.

$$\frac{\text{Points inside shamrock}}{\text{Total \# of points}} \qquad \frac{}{25}$$

To estimate the shamrock's area, multiply the fraction by 100 (total # of unit squares in large square).

#	Coordinates	Inside Shamrock	#	Coordinates	Inside Shamrock
1	(+2, +2)	√	14	(+2, 0)	
2	(+1, +4)		15	(+4, - 5)	
3	(- 4, - 4)		16	(+5, +4)	
4	(- 2, +2)		17	(+5, - 4)	
5	(- 3, +4)		18	(- 3, - 4)	
6	(- 2, - 2)		19	(- 1, 0)	
7	(0, - 1)		20	(- 1, +5)	
8	(-3, 0)		21	(- 1, +2)	
9	(+1, +2)		22	(- 2,+4)	
10	(0, - 3)		23	(- 3, +1)	
11	(+3, -1)		24	(0, +4)	
12	(+4, +3)		25	(+4, +5)	
13	(- 3,+5)				