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The idea for function card match games was introduced to me by Gina Griffin-Evans.

Polynomial Graph Match

Play in groups of four students.

Polynomial Graph Match

- 1) Separate cards by categories: graph, equation, sign pattern #-line, and solutions to equations and inequalities.
- 2) Lay graphs down in alphabetical order.
- 3) Find three corresponding equation, sign pattern and solution cards to make 4-card match.
- 4) Record letters and numbers of cards on answer sheet grid.

TEACHER NOTE:

To make card sets, photocopy the following pages as a collated set of cards.

For a class of 28 make 7 collated sets.

Indicate the cards that belong to the same set using different colored paper for each set, or by marking the back of each card belonging to a set with a symbol. Use a different symbol for each set. If one card is found in a desk or on the floor you will be able to match it to the correct set easily.

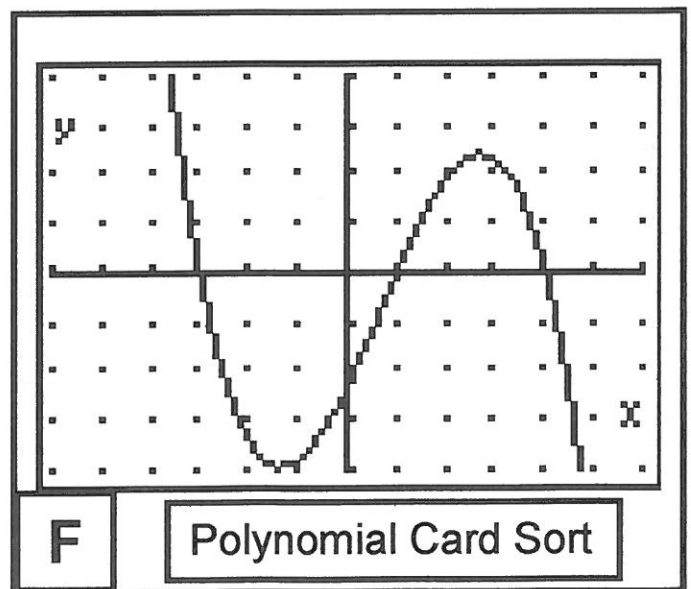
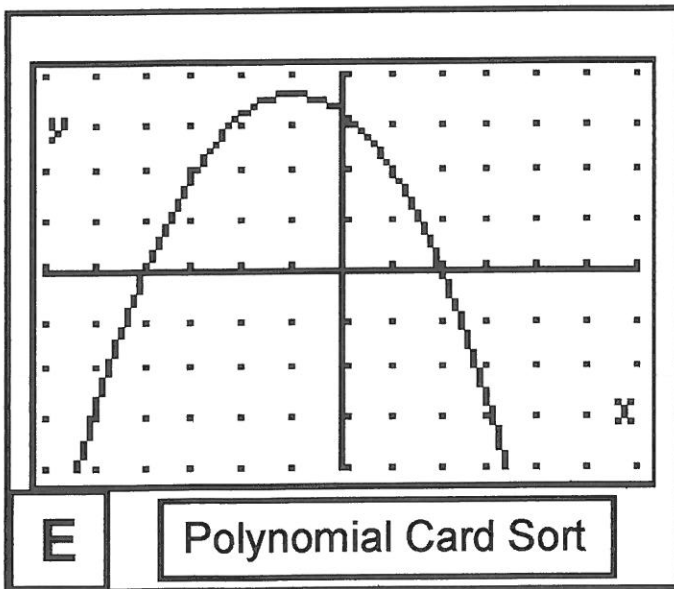
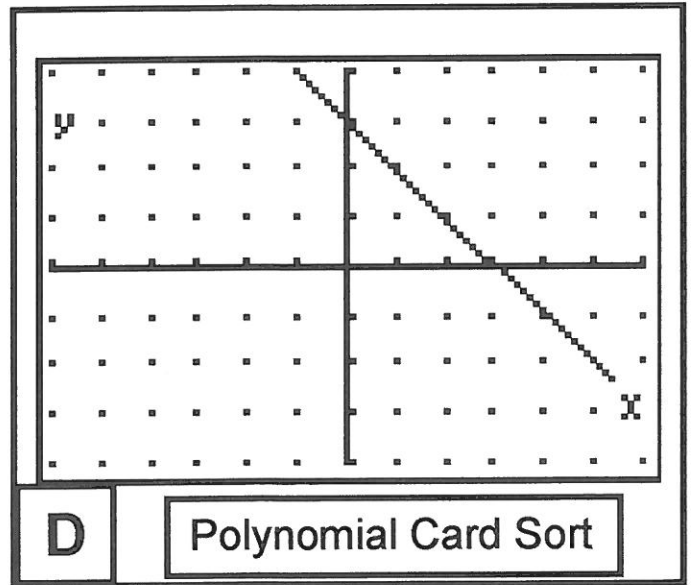
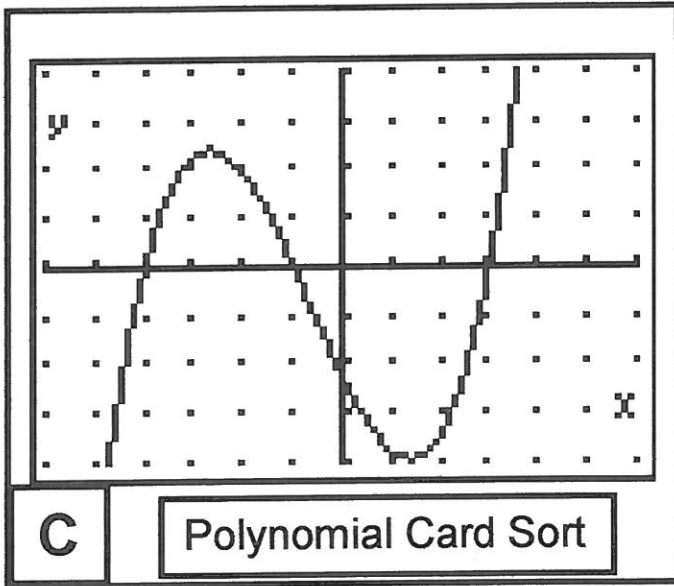
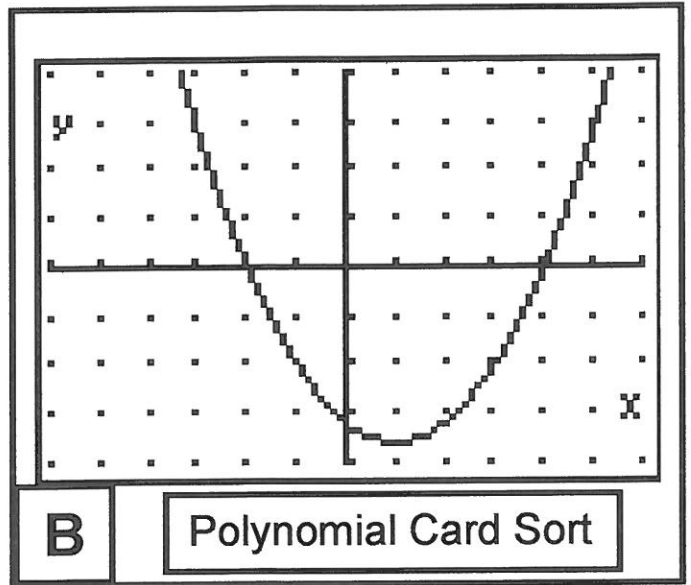
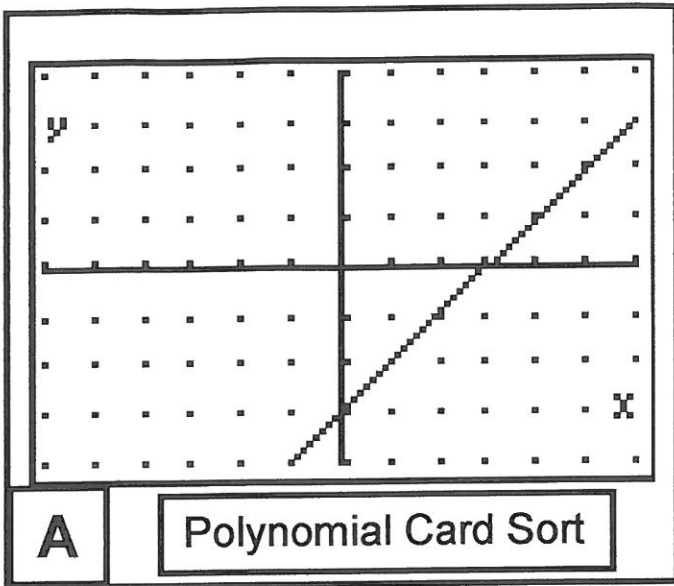
Laminate each page.

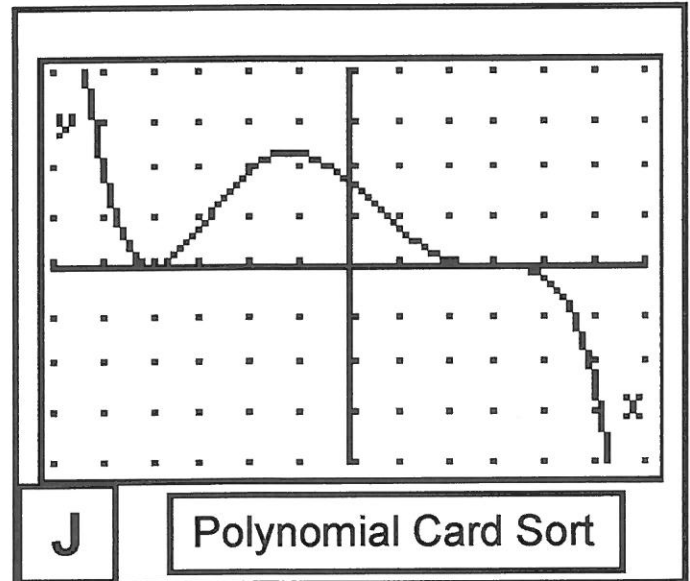
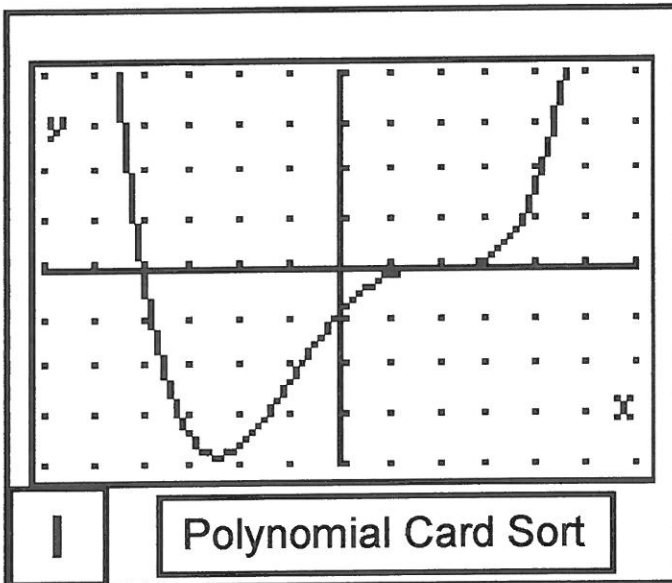
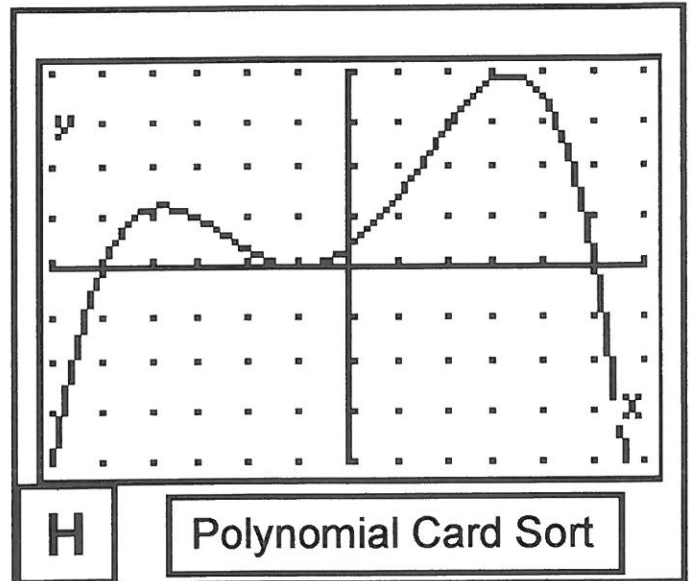
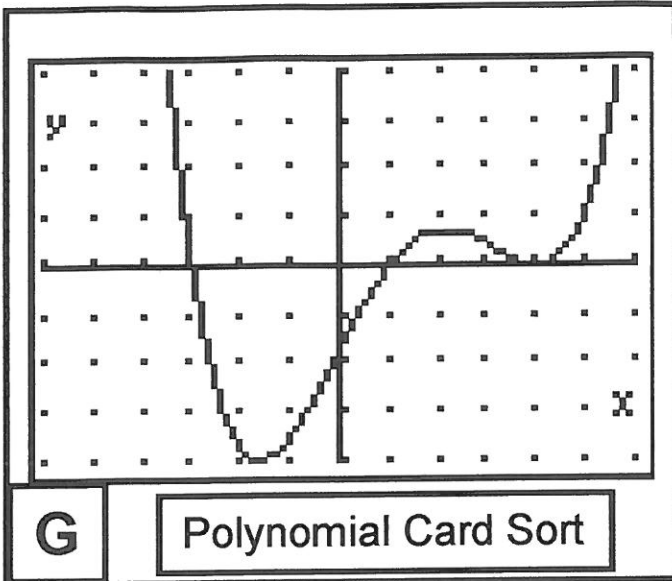
Get 7 zip-lock bags, one for each card set.

Use a paper cutter to cut the cards for one set and seal in the zip-lock bag as you cut.

Sets can be easily stored in a plastic bin or larger zip-lock bag.

Photocopy a blank answer grid with the completed answer key on the reverse side. Laminate this sheet and store with the card sort. Photocopy blank grids as needed. A transparency of the answer key is also a convenient way to check student answers quickly.





1 Polynomial Card Sort

$$y = k(x - 3)$$

$$k = 1 > 0$$

4 Polynomial Card Sort

$$y = k(x + 2)(x - 4)$$

$$k > 0$$

7

Polynomial Card Sort

$$y = k(x + 4)(x + 1)(x - 3)$$

$$k > 0$$

9

Polynomial Card Sort

$$y = k(x - 3)$$

$$k = -1 < 0$$

5

Polynomial Card Sort

$$y = k(x - 2)(x + 4)$$

$$k < 0$$

10

Polynomial Card Sort

$$y = k(x + 3)(x - 1)(x - 4)$$

$$k < 0$$

6

Polynomial Card Sort

$$y = k(x + 3)(x - 1)(x - 4)^2$$

$$k > 0$$

3

Polynomial Card Sort

$$y = k(x + 5)(x + 1)^2(x - 5)$$

$$k < 0$$

8

Polynomial Card Sort

$$y = k(x + 4)(x - 2)^3$$

$$k > 0$$

2

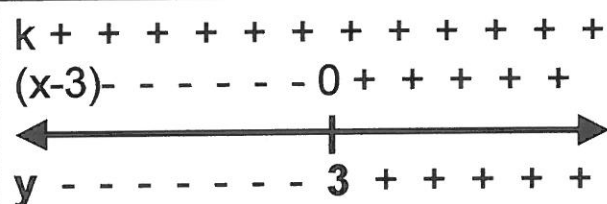
Polynomial Card Sort

$$y = k(x + 4)^2(x - 3)^3$$

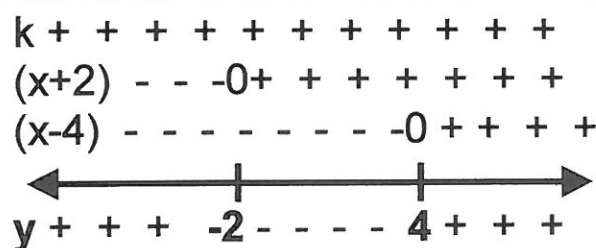
$$k < 0$$

K

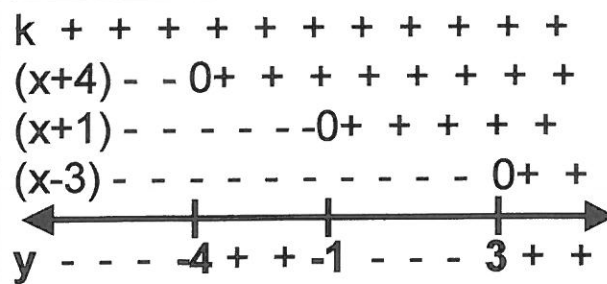
Polynomial Card Sort

**T**

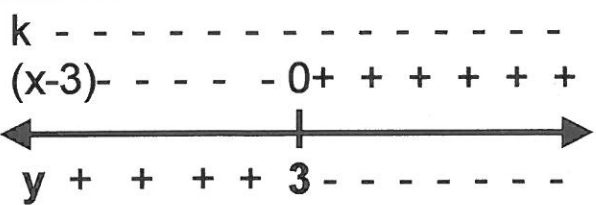
Polynomial Card Sort

**Q**

Polynomial Card Sort

**N**

Polynomial Card Sort



M Polynomial Card Sort

k - - - - -
 $(x+4)$ - - -0+ + + + + + + +
 $(x-2)$ - - - - - - -0+ + + + +
 y - - - -4+ + + 2- - - -

A horizontal number line with arrows at both ends. Two tick marks are present, labeled -4 and 2. Vertical lines connect these tick marks to the corresponding terms in the polynomial expressions above.

P Polynomial Card Sort

k - - - - -
 $(x+3)$ - - -0+ + + + + + + + +
 $(x-1)$ - - - - - - -0+ + + + + +
 $(x-4)$ - - - - - - - - -0+ + +
 y + + + -3- - - 1+ + + 4- - -

A horizontal number line with arrows at both ends. Three tick marks are present, labeled -3, 1, and 4. Vertical lines connect these tick marks to the corresponding terms in the polynomial expressions above.

S Polynomial Card Sort

k + + + + + + + + + + + + + +
 $(x+3)$ - - 0+ + + + + + + + + +
 $(x-1)$ - - - - - - -0+ + + + + + +
 $(x-4)^2$ + + + + + + + + 0+ +
 y + + + + -3- - 1+ + + 4+ + +

A horizontal number line with arrows at both ends. Three tick marks are present, labeled -3, 1, and 4. Vertical lines connect these tick marks to the corresponding terms in the polynomial expressions above.

O Polynomial Card Sort

k - - - - -
 $(x+5)$ - - 0+ + + + + + + + + +
 $(x+1)^2$ + + + + + +0+ + + + + +
 $(x-5)$ - - - - - - - - -0+ + +
 y - - - - -5+ + -1+ + + 5- - -

A horizontal number line with arrows at both ends. Three tick marks are present, labeled -5, -1, and 5. Vertical lines connect these tick marks to the corresponding terms in the polynomial expressions above.

R Polynomial Card Sort

k + + + + + + + + + + + + + +
 $(x+4)$ - - -0+ + + + + + + + + +
 $(x-2)^3$ - - - - - - -0+ + + + +
 y + + + -4- - - - 2+ + + +

A horizontal number line with arrows at both ends. Two tick marks are present, labeled -4 and 2. Vertical lines connect these tick marks to the corresponding terms in the polynomial expressions above.

L Polynomial Card Sort

k - - - - -
 $(x+4)^2$ + + 0+ + + + + + + + + +
 $(x-3)^3$ - - - - - - -0+ + + + + +
 y + + + -4+ + + + 3- - - -

A horizontal number line with arrows at both ends. Two tick marks are present, labeled -4 and 3. Vertical lines connect these tick marks to the corresponding terms in the polynomial expressions above.

16

Polynomial Card Sort

$$y > 0 : x \in (-4, 2)$$

$$y = 0 : x = -4, 2$$

$$y < 0 : x \in (-\infty, -4)(2, \infty)$$

13

Polynomial Card Sort

$$y > 0 : (-\infty, -3)(1, 4)$$

$$y = 0 : x = -3, 1, 4$$

$$y < 0 : (-3, -1)(4, \infty)$$

12

Polynomial Card Sort

$$y > 0 : x \in (-\infty, -3)(1, 4)(4, \infty)$$

$$y = 0 : x = -3, 1, 4$$

$$y < 0 : x \in (-3, 1)$$

18

Polynomial Card Sort

$$y > 0 : x \in (-5, -1)(-1, 5)$$

$$y = 0 : x = -5, -1, 5$$

$$y < 0 : x \in (-\infty, -5)(5, \infty)$$

17

Polynomial Card Sort

$$y > 0 : x \in (-\infty, -4)(2, \infty)$$

$$y = 0 : x = -4, 2$$

$$y < 0 : x \in (-4, 2)$$

14

Polynomial Card Sort

$$y > 0 : x \in (-\infty, -4)(-4, 3)$$

$$y = 0 : x = -4, 3$$

$$y < 0 : x \in (3, \infty)$$

11

Polynomial Card Sort

$$y > 0 : x \in (3, \infty)$$

$$y = 0 : x = 3$$

$$y < 0 : x \in (-\infty, 3)$$

19

Polynomial Card Sort

$$y > 0 : x \in (-\infty, -2)(4, \infty)$$

$$y = 0 : x = -2, 4$$

$$y < 0 : x \in (-2, 4)$$

20

Polynomial Card Sort

$$y > 0 : x \in (-4, -1)(3, \infty)$$

$$y = 0 : x = -4, -1, 3$$

$$y < 0 : x \in (-\infty, -4)(-1, 3)$$

15

Polynomial Card Sort

$$y > 0 : x \in (-\infty, 3)$$

$$y = 0 : x = 3$$

$$y < 0 : x \in (3, \infty)$$

Polynomial Card Sort

Polynomial Card Sort

NAME _____
 NAME _____
 NAME _____
 NAME _____

TABLE

Polynomial Card Sort

Graph Letter: A-K	Function Number: 1-10	Sign Pattern Letter: K-T	y<0 y=0 y>0 Number: 11-20
A			
B			
C			
D			
E			
F			
G			
H			
I			
J			

NAME _____
 NAME _____
 NAME _____
 NAME _____

TABLE

Polynomial Card Sort

Graph Letter: A-K	Function Number: 1-10	Sign Pattern Letter: K-T	y<0 y=0 y>0 Number: 11-20
A			
B			
C			
D			
E			
F			
G			
H			
I			
J			

ANSWER KEY**Polynomial Card Sort**

Graph Letter: A-K	Function Number: 1-10	Sign Pattern Letter: K-T	$y < 0$ $y = 0$ $y > 0$ Number: 11-20
A	1	K	11
B	4	T	19
C	7	Q	20
D	9	N	15
E	5	M	16
F	10	P	13
G	6	S	12
H	3	O	18
I	8	R	17
J	2	L	14

Card #13 should have $y < 0$: $(-3, 10)(7, \infty)$
↑
should be $(+)$