

Classifying Functions

Instructions: Use the function cards to complete the following activities. Cut out the function cards. The numbers on the cards are referenced within the activities below. You will be sorting the function cards into different groups based on their characteristics. Write down your groupings on a separate piece of paper.

Examples:

- Sort cards 17, 22, and 27 into two piles based on the type of representation used.

Solution: Cards 17 and 22 are graphs and card 27 is a word problem, so cards 17 and 22 should be grouped together.

graphs	words
17	27
22	

- Sort cards 1, 6, and 7 into two piles based on the type of functions involved.

Solution: Cards 6 and 7 represent quadratic equations and card 1 represents an exponential function, so cards 6 and 7 should be grouped together.

quad	exp
6	1
7	

Investigation

- Consider cards 1, 12 and 27. Sort these cards into two piles. Describe the criteria used for your grouping.
- Sort all 28 cards into four piles. Describe the criteria used for your grouping.
- Sort cards 3, 15 and 19 into two piles using criteria that are different from those used for previous questions. Describe how your criteria for sorting these cards is different from the criteria used for questions #1 and #2.

4. Describe how cards 10, 12 and 27 are alike.
5. Describe how cards 6, 8 and 21 are alike.
6. Sort cards 9, 13, 17 and 22 into two different piles, two different ways. Organize the cards into a 2×2 matrix using the two sets of criteria. The matrix below can be used as a model (where C_1 and C_2 represent one type of criteria and D_1 and D_2 represent a different type of criteria).

	C_1	C_2
D_1		
D_2		

7. Sort cards 1, 6, 12, 16, 17, 21, 25 and 28 into two piles. Describe the criterion you used to sort the cards.
8. Sort cards 1, 6, 7, 16, 18, 20, 21, 26 and 28 into three piles two different ways using two different criteria for sorting.
9. Select a card that satisfies the following “analogies” and explain your reasoning:
 - a. Card 25 is to card 21 as card 11 is to what card?
 - b. Card 4 is to card 3 as card 16 is to what card?
 - c. Card 5 is to card 14 as card 27 is to what card?
10. Maria has sorted cards 6, 12 and 26 into one pile and cards 7, 10 and 20 into another pile. What criteria could Maria have used to sort the cards?
11. Alberto has sorted cards 5, 13 and 14 into one pile and cards 2, 10 and 27 into another pile. What criteria could Alberto have used to sort the cards?
12. What are the seven different types of functions represented within the cards? What are the four different representations used among the cards? Create a 7×4 matrix to organize the cards by these criteria.