

Name(s) \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

## Activity Guide - Representing Information



### Storing Information

#### Activity 1

In this activity, you will store your “yes” or “no” answers to the following questions in your deck of cards. You can use as many or as few cards as you want to store your answers.

First, you and your group must decide on how you will encode a “yes” or a “no” using only playing cards. Discuss with your group and write down your encoding scheme below.

Yes: \_\_\_\_\_

No: \_\_\_\_\_

Now, read the following questions, and fill in the chart with your “yes” or “no” answers and the way you would store the answer using the playing cards.

Are you wearing any green today? \_\_\_\_\_

Do you have a pet at home? \_\_\_\_\_

Did you go to bed before ten last night? \_\_\_\_\_

Do you like to play soccer? \_\_\_\_\_

Can you walk to school? \_\_\_\_\_

Now, store your answers in a set of cards and exchange with someone in your group, and retrieve that person’s answers below.

Are you wearing any green today? \_\_\_\_\_

Do you have a pet at home? \_\_\_\_\_

Did you go to bed before ten last night? \_\_\_\_\_

Do you like to play soccer? \_\_\_\_\_

Can you walk to school? \_\_\_\_\_

Check your answers with your partner. Did you retrieve the answers correctly?

## Activity 2

Of course, we need more than just “yes” or “no” when we store information.

In this activity, you will develop a set of rules for storing the letters of the alphabet, and use it to store the initials of the students in your group. Fill out the following chart with how you will encode each of the letters so that they can be stored in the cards.

A: \_\_\_\_\_

N: \_\_\_\_\_

B: \_\_\_\_\_

O: \_\_\_\_\_

C: \_\_\_\_\_

P: \_\_\_\_\_

D: \_\_\_\_\_

Q: \_\_\_\_\_

E: \_\_\_\_\_

R: \_\_\_\_\_

F: \_\_\_\_\_

S: \_\_\_\_\_

G: \_\_\_\_\_

T: \_\_\_\_\_

H: \_\_\_\_\_

U: \_\_\_\_\_

I: \_\_\_\_\_

V: \_\_\_\_\_

J: \_\_\_\_\_

W: \_\_\_\_\_

K: \_\_\_\_\_

X: \_\_\_\_\_

L: \_\_\_\_\_

Y: \_\_\_\_\_

M: \_\_\_\_\_

Z: \_\_\_\_\_

Now, use your system to store the initials of the members of your group in a set of cards. If you don't use all your cards, put the extra away for the next activity. Leave the cards and the rules on the table so another group can retrieve the information about your initials.

## Information Retrieval

Use the rules that the other group has provided to retrieve the information about their initials from their set of cards. You may need some extra space to write down the relevant encoded information.

### Questions:

Were some rules easier to understand or use than others? Why was this the case?

Did you notice any patterns across the rules? Are there some things that every group needed to account for to have good rules?

### Activity 3

This time, you won't know what your message is until after you have come up with your system for storing it, but you do know that it's only 10 letters long. That means you have 5 cards to use for each letter in the message, and the only information you can use about those 5 cards is whether they are face up or face down.

Write the code for each letter in the chart below, using "U" for face up, and "D" for face down.

A: \_\_\_\_\_

N: \_\_\_\_\_

B: \_\_\_\_\_

O: \_\_\_\_\_

C: \_\_\_\_\_

P: \_\_\_\_\_

D: \_\_\_\_\_

Q: \_\_\_\_\_

E: \_\_\_\_\_

R: \_\_\_\_\_

F: \_\_\_\_\_

S: \_\_\_\_\_

G: \_\_\_\_\_

T: \_\_\_\_\_

H: \_\_\_\_\_

U: \_\_\_\_\_

I: \_\_\_\_\_

V: \_\_\_\_\_

J: \_\_\_\_\_

W: \_\_\_\_\_

K: \_\_\_\_\_

X: \_\_\_\_\_

L: \_\_\_\_\_

Y: \_\_\_\_\_

M: \_\_\_\_\_

Z: \_\_\_\_\_

Now, get your secret message from your teacher and use your system to store it into the cards. Leave the cards and the rules on the table so another group can retrieve the message.

## Information Retrieval

Use the rules from the other group to retrieve the message from their deck of cards. You may want to write down the sequence of face up and face down cards first.

### Questions:

How did changing the definition of the problem change your plan to solve it?

Did you notice any patterns across the rules? Are there some things that every group needed to account for to have good rules?

You were given about five cards to store each letter. Could you have completed the challenge if you'd only had three cards per letter? Why or why not?