

## Problem of the Month



### Pick a Pocket



#### **Level A:**

Examine the number of pockets each student in your class is wearing.

Count the number of pockets worn by each student.

Make a table of the number of pockets worn by each student.

Draw a graph using the data from the table.

What is the largest amount of pockets worn by a student?

What is the smallest number of pockets anyone wore?

What is the total number of pockets worn by all the students?

Tomorrow, if we surveyed the class would we have the same number of pockets? Explain.

**Level B:**

What is the mode (most common number of pockets worn by the students)?

Find the mean average of pockets in your class.

Find the median number of pockets in your class.

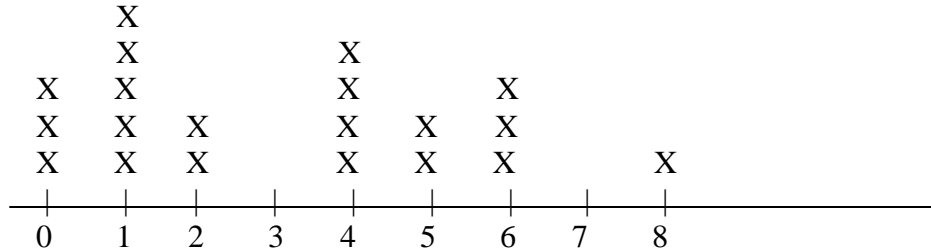
Find the range of the data (the largest number minus the smallest number).

If a new student walked into our class, how many pockets might the new student be wearing? Which mathematical measure might be the best one to use for such a prediction? Explain your answer.

Create a new set of data, different from your class, that has the same mean and median as your class data.

### Level C:

In Dia's class they made a line plot of the different number of pockets worn by the students.



Each student wrote what they thought was the typical number of pockets for a student in their class.

Explain why or why not you think each statement make sense mathematically.

Raul: I think 3.7 is typical because I found the average by adding the numbers that have X's on them like  $0+1+2+4+5+6+8 = 26$  and 26 divided by the 7 numbers  $= 3.7$

Joanne: I found the median but first I ignored each zero, since they don't have pockets. Therefore, there are 17 other X's and the ninth one would be in the middle. I started counting X's from the right side moving left and I landed on the X over the number 4. So, I think 4 pockets are typical for our class.

Austin: I think 8 pockets are way out of the normal range, so I am going to ignore it. Therefore, the numbers that have pockets go from 0 to 6 and  $(0 + 6)/2 = 3$ . Therefore, 3 is my choice for most typical, because it is in the middle.

Ming: I calculated the following way to find an answer.  
 $3 \times 0 + 5 \times 1 + 2 \times 2 + 4 \times 4 + 2 \times 5 + 3 \times 6 + 1 \times 8 = 61$   
 $61 / 20 = 3.1$  I think 3 is typical.

### Level D:

You just got a new video game called Drop in the Pocket. It simulates a new type of game of pool. There is one pocket (hole) in the middle of the table. You hit a ball from a starting point trying to sink it in the pocket. If you miss it, the game tells you how many millimeters you are from the pocket. You and your two friends each try playing by taking turns for five rounds. None of you actually make it in the pocket. At the end of the round the game shows the results.

Round	Player A	Player B	Player C
1	100	184	99
2	40	64	200
3	312	76	165
4	60	52	129
5	152	288	84

Use mathematics to determine who was the best player over the five rounds. Explain a method or system that might be used to judge a winner or keep score of the game.

## Level E:

You are a manager for a clothing manufacturer. You work in the department that makes denim pants. You have workers who sew pockets onto the pants. You want to award one of them as Employee of the Month. So for twelve days you track the number of pants they sew each day. Below are the numbers of completed pants by the two most productive employees for each of the 12 days. Use mathematics to determine which of the two employees should get the award. Remember you might have to explain to the other employee why they didn't get chosen so you must use a mathematical measure to be most objective.

Day	Employee Ariana	Employee Brian
1	32	49
2	75	45
3	38	51
4	42	49
5	47	63
6	68	56
7	51	51
8	51	48
9	58	52
10	31	42
11	51	51
12	65	52

## Problem of the Month



### Pick a Pocket



### Primary Version Level A

**Materials:** A large poster with the scale for a line, a Post-it note for each student.

**Discussion on the rug:** (Teacher points to a pocket that someone is wearing) "What do you call this? "What is it used for?" (Teacher solicits answers from students) "How many pockets do you think are in this class?" Why did you make that guess?" (Teacher solicits answers from students) "How might we find out how many pockets each of us have and all of us have together?" (Teacher solicits answers from students and then states that the class will investigate this question)

**In small groups:** (Each student gets sticky note. They write the number of pockets they have on the note. Students one by one come up to a line plot and place their note over the corresponding number.) "Looking at our graph who can tell me... Which student(s) have the most pockets?

Which students have the least number of pockets?

How many pockets do we have in total?"

"If we had a new student come into our class, how many pockets do you think that student might wear? Explain why you think it would be that number."

(At the end of the investigation have students either discuss or dictate a response to this summary question)