Theodore Bear

The new Theodore Bear Company has hired you as a marketing consultant. They are designing teddy bears to sell to 4th and 5th grade students and would like to know what features are most typical for teddy bears owned by students your age. Their largest competitors are the Vermont Teddy Bear Company. In order to survive in the tough teddy bear market, they need your expertise and input on this important matter.

Select information to investigate (No more than 2 questions due to time constraints)

•Collect data

- •Organize data
- Draw conclusions

Communicate your conclusion to the Theodore Bear Company Board of Directors in a letter addressed to the Chairperson of the Board.

You should communicate your solution in the following manner:

A letter that describes, the task, how you defined "typical", what you did to get your conclusion, the reasoning behind your decision making, your conclusions about the typical teddy bear, "I noticed..." statements and recommendations to the company.

A visual mathematical representation that supports your solution, so the chairperson of the board can use your representation to convince fellow board members of your conclusions.

You will be graded on how well you understood the problem, on your strategy and decision making, on your "I noticed" statements, on your use of math language, on your mathematical representation and on your overall presentation. Grade Levels 3 - 5

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Context

Every week, my team teaching partner and I choose a special way to celebrate Friday. This particular week, we chose Teddy Bear Day, where students brought in their teddy bears to share. In math class we presented this problem for students to solve with the assistance of their bears!

What This Task Accomplishes

This task provides students with an open-ended task that is hands-on in nature. It allows students to bring to the task their own "bag of math tricks" while at the same time focusing on statistics.

What the Student Will Do

Students will begin by defining "typical", collect and organize their data, draw conclusions and then make recommendations to the company.

Time Required for the Task

2 hours

Interdisciplinary Links

This activity is similar to the task "Define the Typical Member of Our Class" (*Exemplars*, Volume 2, Number 3, November, 1994.), except I found students to be more creative and more mathematically engaged while approaching this task. As a follow-up to this activity you might have students define other typical groups.

Teaching Tips

I made sure to have extra bears on hand that students could borrow in case they either did not have one or forgot theirs at home.

Suggested Materials

- Measuring tapes
- Rulers
- Yard sticks
- Scales and gram stackers
- Chart paper
- Unifix cubes
- Calculators
- Computers
- Markers
- Crayons
- Stickers
- Sticky notes
- Paper clips
- Graph paper
- Stencils
- Class lists

Possible Solutions

Solutions will vary depending on the type of investigations students perform. Some students will provide a very basic response, while others may get into averages including the mean, mode and median.

Benchmark Descriptors

Novice

A solution that has not addressed "typical". A solution that makes no mathematical conclusion. A solution that misunderstands the task: Making a recommendation to the company. A solution that does not attempt to display information in a meaningful way. A solution that has no reasoning or has incorrect reasoning. A solution that has so many mathematical errors that an accurate conclusion could not be drawn. A solution which has week or random collection of information.

Apprentice

A solution which addresses typical based on one criterion. A solution which makes a basic mathematical conclusion. A solution which attempts to display information in a meaningful way. A solution which has some correct reasoning. A solution which may have a few mathematical errors. A solution which has a basic method for the collection of information.

Practitioner

A solution which addresses typical based on two criteria. A solution which makes a sound mathematical conclusion. A solution which displays information in a meaningful way. A solution which exhibits clear, correct reasoning. A solution free of mathematical errors. A solution with a methodical and reasoned system for data collection.

Expert

A solution that addresses typical based on two criteria and makes a mathematical connection among the two. A solution that makes a sophisticated mathematical conclusion that may include a percentage, ratio or average. A solution that displays information in a sophisticated fashion (may combine two types of information in one representation). A solution that clearly explains reasoning and decision making. A solution in which a sophisticated method of data collection is used (utilizing resources other than simply questioning peers orally, perhaps using a spreadsheet or data base, a written survey or random sampling).

Novice

Dear Theodore Bear Company 4

My name is chad and I had to viger out the typical teddy bear. I made a graph that shows you have many people have. Vermont teddy bears and how many peple do not have vermont teddy bears. I thik people should have more vermont teddy bears. I asked people if they had a vermont teddy bear or not. The typical teddy bear is a vermont teddy bear. I Recommed that people should have more vermont teddy bears.

No mathematical conclusion is drawn.





Novice

2 How many Vermont teddy bears Vermont Not carina Carolynnys Bethanyı Michelle Palmer Jamiel, Elyse 10 Ericz oustin 56 Levy Tommym 4 Ev 5 Chris B 7 Sne Paule Cassi / Speller 6 Trevor 6 Stan 5 Emma 7 Jessia 4 Peter 3 Data collection is weak. SLOYTZ Miliyi

Apprentice

Dear ChairPerson, Our task was to find the typical Teddy Bear, The typical bear is around 40 cms and is white we chose this question because was easier than most of i+ them. There more white bears that are 40 cms. are noticed that most people have big bears. I Tou should make more white bears that are 40 cms. The approach may have led to a more complete solution. Cdor /ength 30 cm White tan y ycm white 45cm light brown Hacm white 200m White 57(m fan 31 cm brown zycm gray your lightbrown 23cm white The conclusion is made based on one attribute: circumference. The tipical bear is in the fiftys

Apprentice



Practitioner

Typical is defined by two characteristics: clothes and circumference.

The student determines method of defining typical.

Dear Chaigenson of the board, "Our dow did a problem to define the "typical" teddy bear. Our dow brought is teddy bears we had at home so we ould figure and the answer. We had to pict for 2 questions to answer. I divided to do what the most "typical" as teddy bear clothes and accomparates Me. I word around the norm and a got my results Me. typical "teddy bears clothes came to a tie there were two teddy bears wearing farmer clothes and as you guessed it there were two teddy bears wearing Christmas dothes Jist there was two teddy bears that had 34 cm, second there was two that had 39 cm third there was two that had 40 cm arou futh there was two that had 27 cm. circunfirences.

I decided to use Mode for the clothes and Michian for the circunferences. I used Node for the clothes because I dids't have different numbers from my results. I used Michian because I thought it would be casier since I had a ded mumber of circunferences.

My conclusions on the "Lypical" tuddy bear are the "Lypical" tuddy bear wears Christmas (or winter) clothes and has a 36 cm inconference. Indiced that there were alot of "typical" tuddy bears in our class. I recommend that you should not always make your teddy bears look the same. You clon't always need your teddy bears to wear the same clotheson have the same fur. They should all be different.

The language of statistics is used correctly.

A conclusion is based on mathematical results.

Practitioner

What is the most common textly bears (incumference is

what the tectly bear clothes are

Media Circum Data collection could be clothes more systematic. 34cm=2 Farmer=2 40 cm= 2 Christmas=2 Clothes Mode 27cm=2 Farmer: Jessica Comboy-Stan 34cm = 2 X39cm Chiran -J. Student = Michelle Christmas - Jamie All work is shown. 110 m-ca XUB cm- 5m 40 cm-m Farmer- Peter Boston shirt - Milly X31 cm- Eric 37 cm- Beth X36cm-Er 49cm-Jam CelTics outfit-ched X39cm Sp 33cm Elyse Boy bear - Tommy. M X 21 cm sot 28 cm - Carin Pants-Eric X 53 cm - Chris 26 cm - Emns Painter shirt-EV X34 cm - Distin 20 cm - Trever Night yown-Sama-Paule X27cmster 40cm - Levy Christ mashet-Scot X57cm Peter Winter hat -sweeter - Dustin 27

Practitioner



Practitioner



Practitioner

The student shows how the median was determined.

Expert

Dear Theodore Bear Co., to My friend Jeremy and I tried & find oot what the typical teddy bear was. We used our class mate's bears and examined ther fur and eve colors. The different eve colors we found were brown, black, white and Blue, The most common eye color was brown, but of 19 bears, 13 had brown. The different fur colors were Brown, black, white, grey, yellow, color was brown, and mustard. The most common of mineteen bears, 8 were brown, $O_{\rm u}$ + looked at for and eye Nex+ T color combinations, There were 10 in all, bears had brown eyes and for than More other combination. This means that any typical teddy bear has brown eyes and the brown for Since the typical teddy bear has brown eyes and brown far I think the Theodore bear company should make teddy-bears with brown eyes and brown fur. The student makes a conclusion based on two attributes and their relationship.

Expert



Expert

