IOWA End-of-Course Assessment Programs

Released Items

PROBABILITY & STATISTICS

1 Taylor and Paulo work part-time at Pete's Za Restaurant waiting tables. The back-to-back stem-and-leaf plot below shows their tips for the time they worked during one month. How do the medians of their tips compare?

Monthly Tips

Taylor		Paulo
7 4	0	9
6 2 1	1	0 1 1 4 7
8 5	2	3 3
	3	4
0	4	

$5 \mid 2 \mid 3$ *represents*
$25 for Taylor and
$23 for Paulo

A The medians are the same.

> CORRECT: The student found Taylor's median $(12 + 16) \div 2 = 14$ and compared it to Paulo's median (14).

B Taylor's median is greater than Paulo's median.

> INCORRECT: The student found Taylor's median to be 16.

C Taylor's median is less than Paulo's median.

> INCORRECT: The student found Taylor's median to be 12.

D There is not a median for Taylor's data.

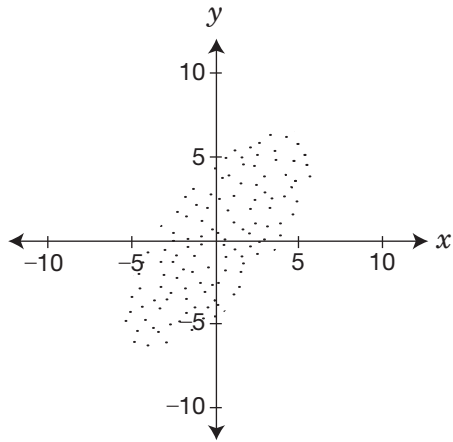> INCORRECT: The student assumed an odd number of values are needed in a set to find the median.

CCSS Conceptual Category:
Statistics and Probability

CCSS Domain:
Interpreting Categorical and Quantitative Data

2 Consider the scatterplot below indicating the relationship between x and y. Suppose a line was fit to the data. What would you expect the slope of the line to be?

A −1

INCORRECT: The student estimated the line of best fit to be $y = -x$.

B 0

INCORRECT: The student estimated that the line of best fit was along or parallel to the x-axis.

C 1

CORRECT: The student estimated the line of best fit to be $y = x$.

D Cannot be determined from the information provided.

INCORRECT: The student thought many lines with different slopes could be drawn between any 2 data points.

CCSS Conceptual Category:
Statistics and Probability

CCSS Domain:
Interpreting Categorical and Quantitative Data

3 **Johnny rolls a standard, six-sided die. What are the odds that he rolls a five?**

A 5:6

> INCORRECT: The student used the ratio of undesirable outcomes (5) to total possible outcomes (6).

B 1:5

> CORRECT: The student used the ratio of desirable outcomes (1) to undesirable outcomes (5).

C 1:6

> INCORRECT: The student used the ratio of desirable outcomes (1) to total possible outcomes (6).

D 5:1

> INCORRECT: The student used the ratio of undesirable outcomes (5) to desirable outcomes (1).

CCSS Conceptual Category:
Statistics and Probability

CCSS Domain:
Conditional Probability and the Rules of Probability

4 Megan's Mega Buffet has a selection of five salads, seven vegetables, three entrées, and two desserts. At lunch, Shyla plans to get two salads, two vegetables, one entrée, and one dessert. How many different meals can she select?

A 29

INCORRECT: The student found $2(5) + 2(7) + 3(1) + 2(1)$.

B 210

INCORRECT: The student found $5 \times 7 \times 3 \times 2$.

C 1,260

CORRECT: The student used combinations $_5C_2 + {_7}C_2 + {_3}C_1 + {_2}C_1$.

D 5,040

INCORRECT: The student used 7!

CCSS Conceptual Category:
Statistics and Probability

CCSS Domain:
Conditional Probability and the Rules of Probability

5 Carl is taking a quiz with five true or false questions and five multiple choice questions. Each multiple choice question has four options. If Carl guesses on every question, what is the probability that he correctly answers all 10 questions?

A $\frac{1}{200}$

> INCORRECT: The student used
> $\left(\frac{1}{5 \times 2}\right)\left(\frac{1}{5 \times 4}\right) = \frac{1}{200}$.

B $\frac{1}{1,024}$

> INCORRECT: The student used
> $\left(\frac{1}{2}\right)^{10}$.

C $\frac{1}{32,768}$

> CORRECT: $\left(\frac{1}{2}\right)^5 \times \left(\frac{1}{4}\right)^5 = \frac{1}{32,768}$.

D $\frac{1}{100,000,000}$

> INCORRECT: The student used
> $\left(\frac{1}{10}\right)^5 \times \left(\frac{1}{10}\right)^2 = \left(\frac{1}{10}\right)^7 = \frac{1}{100,000,000}$.

CCSS Conceptual Category:
Statistics and Probability

CCSS Domain:
Conditional Probability and the Rules of Probability