

**10th Mathematics Ohio Graduation Test
Data Analysis Standard**

Benchmark A

Question 6	Spring 2003	D
Question 16	Spring 2003	B
Question 37	Spring 2003	B
Question 2	Spring 2004	B
Question 34	Spring 2004	C
Question 22	Spring 2005	B

Benchmark B

Question 29	Spring 2004	A
Question 28	Spring 2005	A

Benchmark C

Question 6	Spring 2004	B
Question 36	Spring 2005	

Sample Response for Item 36 (Extended Response):

The mean salary is \$273.14. The median salary is \$250. The mode salary is \$245.

The management could use the mean salary to argue against pay increases as the mean salary is greater than the average salary in the area.

The labor unions could use the median or mode salary as the median and mode salaries are less than the average salary in the area.

Scoring Guidelines for Item 36:

Score point Description

4 points The focus of this item is to find the three measures of center (mean, median and mode), compare these three measures of center of the Acme employees to the average for the area (\$255), and make an argument for management's position that no pay increase is needed and for the labor union's position that a pay increase is needed. The response contains the correct values for the measures of center that are labeled correctly. The response identifies a measure to support each of the two positions with an appropriate explanation.

3 points The response clearly addresses the task; however, it includes errors in completing one or two of the parts.

For example, the response may:

Contain the correct values for the measures of center labeled correctly. The response contains an appropriate measure choice for one position (management or labor union) with a valid explanation for that choice.

OR

Contain two correct and one incorrect or missing measure of center. The response contains appropriate measure choices for the two positions, based on the calculated measures, with valid explanations for the choices.

OR

Contain three correct measures of center that are labeled correctly and two arguments that demonstrate some understanding of the two positions but are not clearly stated.

2 points The response provides evidence of a partial understanding of the task. The response may adequately address some parts of the task but contains major gaps or flaws in other parts.

For example, the response may:

Contain two correct measures and one incorrect or missing measure. The response contains an appropriate measurement choice for one of the two positions with an appropriate explanation for that choice.

OR

Contain incorrect values for all measures. The response contains two appropriate measure choices for the two positions based on the values of the measures as calculated with an explanation for the choices.

OR

Contain correct values for all measures of center that are labeled accurately, but the arguments for the two positions do not support the correct choice made.

OR

Contain three correct values for the measures of center that are labeled correctly and one argument that demonstrates some understanding of the two positions but is not clearly stated.

1 point The response has significant errors or omissions in the solution of the task. There is evidence of minimal understanding of the task or solution process; however, the response includes significant errors or omissions in most parts of the solution to the task.

For example, the response may:

Contain two or three correct values for the measures that are correctly labeled. The response contains invalid measure choices

and explanations or no attempt to address the two positions of the task.

OR

Contain no correct values for the measures of center. However, the response makes a valid choice and explanation for one position based on the incorrect values for measures of center.

OR

Contain correct values for the measures of center that are missing labels or labeled incorrectly. NO attempt is made to address the two positions.

0 points The response fails to demonstrate minimal understanding of the task.

For example, the response may:

Only have one value for a measure of center identified correctly with invalid or no attempt to address the two positions.

OR

Recopy information from the item with no attempt to answer.
OR
Be blank or state “I do not know” or include unrelated statements or work.

Benchmark D

Benchmark E

Question 34 Spring 2003

C

Benchmark G

Question 16 Spring 2004

C

Question 39 Spring 2004

Sample Response for Item 39 (Short Answer):

The survey location that would produce the least amount of bias would be at the shopping mall because it would provide a random selection of people with different interests. The golf course and the day care center could produce biased results, because they are places where people with common interests would gather. These two locations would not provide an overall community opinion.

Scoring Guidelines for Item 39:

Score point Description

2 Points The response identifies the correct survey location and logically explains the answer.

1 Point The response provides evidence of a partially correct answer and/or solution process. The response shows understanding of some key elements of the task but contains gaps or flaws.

For example, the response may:

Identify the correct survey location but give a vague explanation.

OR

Misunderstand bias and use this misunderstanding to support the claim; e.g., choose the golf course because the student would be more in favor of the recreation center, whereas the other two may be less likely to be in favor of the recreation center.

OR

Show a clear understanding of bias but does not answer the question. For example, the response may address determining which type of facility to build rather than taking the survey.

OR

Identify the incorrect site because of a misconception, but addresses all three locations using the misconception.

0 Points The response indicates inadequate or no understanding of the task, and the task does not meet the requirements for one point.

For example, the response may:

Demonstrate no understanding of bias.

OR
 Identify the Shopping Mall without supporting explanation.
 OR
 Identify an incorrect location(s) and is vague or contradicts the selection.
 OR
 Recopy information provided in the item with no work.
 OR
 Show no apparent understanding of the task.
 OR
 Be blank or the student writes, "I do not know" or includes unrelated statements or work.

Question 39 Spring 2005 C

Benchmark H

Question 41 Spring 2003 C
 Question 43 Spring 2004 D
 Question 17 Spring 2005 B

Benchmark J

Question 30 Spring 2003 Short Answer – No rubric provided
 Question 19 Spring 2004 B
 Question 35 Spring 2004 C
 Question 42 Spring 2005

$\frac{3}{5}$ or 60% The answer depends only on the first number drawn.
 If the first number drawn is 6, 7 or 9, then the four-digit number will be greater than 6,000. The probability of drawing any one of these numbers first is $\frac{3}{5}$ or 60%
 OR
 The number of possible four-digit numbers from the five cards.
 $(5 \times 4 \times 3 \times 2 = 120)$
 The number of possible four-digit numbers having a 6, 7 or 9 as its first digit.
 $(3 \times 4 \times 3 \times 2 = 72)$
 Probability of the number being over 6,000 is $\frac{72}{120}$ or $\frac{3}{5}$

Scoring Guidelines for Item 42:

Score point Description

2 points The focus of this item is to find the probability of creating a four digit number having a value greater than 6,000 when randomly drawing from the specified number cards. The response identifies the probability as $\frac{3}{5}$ or 0.6 or 60%

or equal value and provides a clear explanation that the answer depends only on the first number drawn or accounts for all possibilities.

1 point The response shows a partial understanding of the solution process or key elements of the task. The response may contain gaps or flaws in determining the solution.

For example, the response may:
Contain a correct fraction, decimal or percent for the probability but not state that only the first number matters or does not include an appropriate or complete explanation to support the answer.

OR

State that only the first number is important or provide appropriate explanation but miscalculate the probability or fail to include the probability.

OR

Determine the total possible outcomes (120) or the total possible numbers greater than 6,000 (72) with support; e.g., diagrams, lists, trees or mathematical processes.

0 points The response fails to provide evidence of minimal understanding.

For example the response may:

Include an incorrect answer with flawed work and/or explanation.

OR

Recopy information provided in the question with no work toward a solution.

OR

Be blank or state "I do not know" or include unrelated statements or work.

Benchmark K

Question 10

Spring 2003

Extended Response – Rubric not available