

ISTEP+ Mathematics Assessment for Grades 3-8

Part 1 (March) Section Information

This document provides examples of the types of items on the *ISTEP+* Applied Skills Assessment. The sample items can serve as models when teachers are constructing items for classroom assessment. It should be noted that this document is not a practice test.

On this website, <http://www.doe.in.gov/assessment/istep-grades-3-8>, you may access other critical mathematics information related to the ISTEP+ Assessments, such as:

- Test Blueprints
- Instructional and Assessment Guidance
- A **MUST** see WebEx recording and accompanying PowerPoint presentation containing critical mathematics information located in the Instructional and Assessment Guidance section
- Calculator Policy
- Reference Sheets
- Applied Skills Rubrics also found on the last pages of this document

Grade 3

Sample Applied Skills

Questions

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

1. Anna works at a bakery. Each day Anna makes at least 625 muffins to sell. One morning, she makes 244 apple muffins, 285 banana muffins, and 126 pumpkin muffins. Anna drops 10 of the apple muffins and cannot sell them.

Part A

On the lines below, explain whether or not Anna will still have at least 625 muffins to sell.

Part B

At the end of the day, there are 20 apple muffins, 8 banana muffins, and 5 pumpkin muffins left.

What is the TOTAL number of muffins sold that day?

Show All Work

Answer _____ muffins

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

Process Standards: 1, 3 Item Type: Constructed-Response Points: 2-Content, 2-Process DOK: 3	Content Standard: 3.AT.1: Solve real-world problems involving addition and subtraction of whole numbers within 1000 (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).
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Exemplary Response:

Part A

Anna will have made enough muffins to meet the usual 625 sold.

Add $244 + 285 + 126 = 655$ muffins made.

$655 - \text{the } 10 \text{ she dropped} = 645$

645 is more than the usual 625 sold.

OR other valid explanation

AND

Part B

$20 + 8 + 5 = 33$ muffins left

$645 - 33 = 612$ muffins sold

OR other valid process

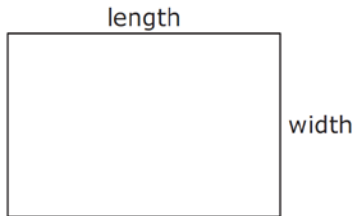
AND

612

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

2. Part A

Willie drew this rectangle.



Use words, numbers, or pictures to describe how to find the perimeter of the rectangle.
Use the terms LENGTH and WIDTH in your answer.

Part B

The perimeter of the rectangle is 28 units. The length is 8 units.

What is the width, in units, of the rectangle?

Show All Work

Answer _____ units

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

Process Standards: 1, 2, 3, 6 Item Type: Constructed-Response Points: 2-Content, 2- Process DOK: 3	Content Standard: 3.M.7: Find perimeters of polygons given the side lengths or by finding an unknown side length.
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Exemplary Response:

Part A

Perimeter is found by adding the two lengths and two widths.

OR other valid response

AND

Part B

$P = 28$ units

length = 8 units

$28 - 8 = 20$

$20 - 8 = 12$

12 is the total of the other two sides.

$6 + 6 = 12$

OR other valid process

AND

6 units

Or other valid process

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

3. The clock shows the time at which students arrive at a park one afternoon to play a game.



Part A

After the students arrive, they have 30 minutes to practice before the first game begins.

What time does the first game begin?

Answer _____ p.m.

Part B

It took 40 minutes to play the first game and 50 minutes to play the second game. How long, in minutes, did they spend in all playing the two games?

Show All Work

Answer _____minutes

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

Part C

The students want to play a third game, but the park closes at 5:45 p.m.

On the lines below, explain whether or not the teams are **LIKELY** to have enough time to play a third game before the park closes. Include the time the second game ends in your answer.

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

Process Standards: 1, 2, 3, 6 Item Type: Extended-Response Points: 3-Content, 3-Process DOK: 3	Content Standard: 3.M.3: Tell and write time to the nearest minute from analog clocks, using a.m. and p.m., and measure time intervals in minutes. Solve real-world problems involving addition and subtraction of time intervals in minutes.
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Exemplary Response:

Part A

4:00

AND

Part B

$40 + 50 = 90$

AND

90 minutes

AND

Part C

No, they are not likely to have enough time because the park closes in 15 minutes.

AND

The second game ended at 5:30 p.m. The park closes at 5:45 p.m. They must finish in 15 minutes and each other game took at least 40 minutes.

Grade 4

Sample Applied Skills

Questions

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

1. Part A

1 kilogram = 1,000 grams

John's pumpkin has a mass of 2 kilograms. The mass of Greg's pumpkin is 500 grams less than John's pumpkin. What is the mass, in grams, of Greg's pumpkin?

Show All Work

_____ grams

Part B

John thinks the mass of the two pumpkins, in grams, is greater than 3,000 grams. Use words, numbers, and/or symbols to explain if John is correct.

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

Process Standards: 1, 3 Item Type: Constructed-Response Points: 2-Content, 2-Process DOK: 2	Content Standard: 4.M.3: Use the four operations (addition, subtraction, multiplication and division) to solve real-world problems involving distances, intervals of time, volumes, masses of objects, and money. Include addition and subtraction problems involving simple fractions and problems that require expressing measurements given in a larger unit in terms of a smaller unit.
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Exemplary Response:

- $2,000 - 500 = 1,500$
- Or other valid process
AND
- 1,500 grams

AND

- Yes, the mass of the two pumpkins is 3,500 grams, which is greater than 3,000 grams.
OR
- $2,000 \text{ grams} + 1,500 \text{ grams} = 3,500 \text{ grams}$. $3,500 > 3,000$

Or other valid response

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

2. Emma's cat had a litter of 8 kittens. Emma gives 1 kitten to her uncle and 1 kitten to her cousin.

Part A

What fraction of the litter of kittens does Emma have LEFT? Write your answer as a fraction.

Answer _____

Part B

Emma gives $\frac{4}{6}$ of the remaining kittens to friends.

How many kittens does Emma have LEFT?

Show All Work

Answer _____ kittens

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

Process Standards: 1 Item Type: Constructed-Response Points: 2-Content, 2-Process DOK: 3	Content Standard: 4.AT.5: Solve real-world problems involving addition and subtraction of fractions referring to the same whole and having common denominators (e.g., by using visual fraction models and equations to represent the problem).
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Exemplary Response:

Part A

$$\frac{6}{8} \text{ OR } \frac{3}{4}$$

OR other valid response

AND

Part B

$$\frac{6}{6} - \frac{4}{6} = \frac{2}{6}$$

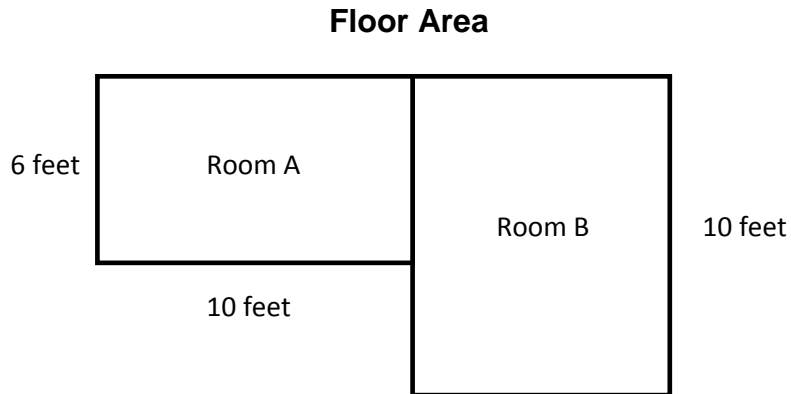
OR other valid process

AND

2 kittens

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

3. Morgan is buying carpet for the two rooms shown in the diagram.



Part A

What is the floor area, in square feet, of Room A?

Show All Work

Answer _____ square feet

Part B

The total floor area of Room A and Room B is 140 square feet. What is the area, in square feet, of Room B?

Show All Work

Answer _____ square feet

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

Part C

What is the PERIMETER, in feet, of Room B?

Show All Work

Answer _____ feet

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

Process Standards: 1, 3 Item Type: Extended-Response Points: 3-Content, 3-Process DOK: 3	Content Standard: 4.M.4: Apply the area and perimeter formulas for rectangles to solve real-world problems and other mathematical problems. Recognize area as additive and find the area of complex shapes composed of rectangles by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts; apply this technique to solve real-world problems and other mathematical problems.
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Exemplary Response:

Part A

$$6 \times 10 = 60$$

OR other valid process

AND

60 square feet

AND

Part B

$$140 - 60 = 80$$

OR other valid process

AND

80 square feet

AND

Part C

$$80 \div 10 = 8$$

$$2 \times 10 + 2 \times 8 = 36$$

OR other valid process

AND

36 feet

Grade 5
Sample Applied Skills
Questions

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

1. Part A

Edward can read $\frac{3}{4}$ of a book in 1 week. At this pace, how many books can he read in 8 weeks?

Show All Work

Answer _____ books

Part B

Edward reads 12 books during the summer. Out of the 12 books he reads, $\frac{2}{3}$ of them are nonfiction. Edward claims he has read 8 nonfiction books.

Is Edward correct? Use words, numbers, and/or symbols to support your answer.

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

Process Standards: 1, 2, 3, 4 Item Type: Constructed-Response Points: 2-Content, 2-Process DOK: 2	Content Standard: 5.AT.3: Solve real-world problems involving multiplication of fractions, including mixed numbers (e.g., by using visual fraction models and equations to represent the problem).
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Exemplary Response:

- 6 books

Sample process

- $\frac{3}{4} \times 8 = \frac{24}{4}$ or 6
- Yes, his claim is correct.

Sample process

- $\frac{2}{3} \times 12 = \frac{24}{3} = 8$

OR

Other valid response

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

2. Part A

Ms. Miller and Mr. Hart both have fish and gerbils in their classrooms. Mr. Hart has twice as many fish as Ms. Miller. He has 3 more gerbils than Ms. Miller.

Write an expression that represents the number of fish in Mr. Hart's classroom.

Write a second expression that represents the number of gerbils in Mr. Hart's classroom. Define the variables in your expressions.

Define each variable:

Fish: _____

Gerbils: _____

Expression 1: _____

Expression 2: _____

Part B

Ms. Miller has 8 fish and 4 gerbils in her classroom. What is the total number of fish and gerbils in Mr. Hart's classroom?

Show all work.

Answer _____ fish and gerbils

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

Process Standards: 1, 2, 4, 6, 7 Item Type: Constructed-Response Points: 2-Content, 2-Process DOK: 3	Content Standard: 5.AT.8: Define and use up to two variables to write linear expressions that arise from real-world problems, and evaluate them for given values.
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Exemplary Response:

Fish: Let f represent the number of fish in Ms. Miller's classroom.

Gerbils: Let g represent the number of gerbils in Ms. Miller's classroom.

Expression 1: $2 \times f$

Expression 2: $g + 3$

OR other valid definition of variables and expressions

AND

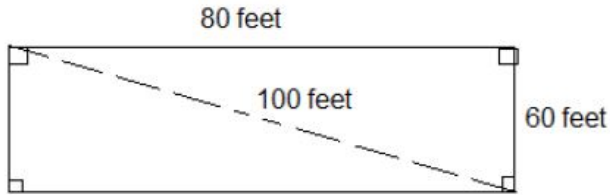
23

Sample Process:

- $(8 \times 2) + (4 + 3)$
- $16 + 7$
- 23

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

3. Joan and Sharon share a rectangular plot of land. They separate the land into two equal plots, as shown by the dotted line in the diagram.



Part A

Joan and Sharon plan to put a fence around the rectangular plot of land and through the land to separate their plots.

What is the length, in feet, of the fence needed?

Show All Work

Answer _____ feet

Part B

What is the area, in square feet, of Sharon's plot of land?

Show All Work

Answer _____ square feet

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

Part C

Draw a picture that shows a different way Joan and Sharon can split the plot of land into two halves so that they use less fencing.

Part D

Based on your picture in Part C, how much less fencing, in feet, is used?

Show All Work

Answer _____ feet

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

Process Standards: 1, 2, 4, 5, 7 Item Type: Extended-Response Points: 3-Content, 3-Process DOK: 3	Content Standard: 5.M.3: Develop and use formulas for the area of triangles, parallelograms and trapezoids. Solve real-world and other mathematical problems that involve perimeter and area of triangles, parallelograms and trapezoids, using appropriate units for measures.
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Exemplary Response:

- 380 feet

Sample Process

- $2 \times (80 + 60) + 100 = 380$ feet

AND

- 2,400 square feet

Sample Process

- $60 \times 80 \times 0.5 = 2,400$ square feet

AND



OR other correct picture

AND

- 40 feet OR other correct response

Sample Process

$$100 - 60 = 40$$

OR

Other valid process

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

Constructed-Response Rubric

Content Rubric	
2	A score of two indicates a thorough understanding of the mathematical concepts embodied in the task. The response <ul style="list-style-type: none"> • shows content related work executed correctly and completely.
1	A score of one indicates a partial understanding of the mathematical concepts embodied in the task. The response <ul style="list-style-type: none"> • contains errors in the content related work.
0	A score of zero indicates limited or no understanding of the mathematical concepts embodied in the task.
Process Rubric	
2	A score of two indicates a thorough understanding of the processes related to the task. The response <ul style="list-style-type: none"> • shows an appropriate strategy to solve the problem, and the strategy is executed correctly and completely. • identifies all important elements of the problem and shows a complete understanding of the relationships among them. • attends to precision in explanations and the overall body of work.
1	A score of one indicates a partial understanding of the processes related to the task. The response contains one or more of the following errors. The response <ul style="list-style-type: none"> • shows a strategy that contains minor errors. • identifies some of the important elements of the problem and shows a general understanding of the relationships among them. • contains errors related to the precision of work.
0	A score of zero indicates limited or no understanding of the processes related to the task.

Scoring Notes

- Correct answers ONLY, on all parts of the problem with no work shown, will receive a maximum of 1 point in Content and a maximum of 1 point in Process.
- A student can receive the top score point in Process if an error made in the Content portion is used with an appropriate strategy to solve the problem.
- A computation error deducts a point from either the Content score or Process score depending on where the error occurs. Multiple computation errors may deduct points from the Content score, Process score, or both scores depending on where the errors occur and the number of errors in the response.

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

Extended-Response Rubric

Content Rubric	
3	A score of three indicates a thorough understanding of the mathematical concepts embodied in the task. The response <ul style="list-style-type: none"> • shows content related work executed correctly and completely.
2	A score of two indicates a partial understanding of the mathematical concepts embodied in the task. The response <ul style="list-style-type: none"> • contains minor errors in the content related work.
1	A score of one indicates a limited understanding of the mathematical concepts embodied in the task. The response <ul style="list-style-type: none"> • contains major errors in the content related work.
0	A score of zero indicates no understanding of the mathematical concepts embodied in the task.
Process Rubric	
3	A score of three indicates a thorough understanding of the processes related to the task. The response <ul style="list-style-type: none"> • shows an appropriate strategy to solve the problem, and the strategy is executed correctly and completely. • identifies all important elements of the problem and shows a complete understanding of the relationships among them. • attends to precision in explanations and the overall body of work.
2	A score of two indicates a partial understanding of the processes related to the task. The response contains one or more of the following errors. The response <ul style="list-style-type: none"> • shows a strategy that contains minor errors. • identifies some of the important elements of the problem and shows a general understanding of the relationships among them. • contains minor errors related to the precision of work.
1	A score of one indicates a limited understanding of the processes related to the task. The response contains one or more of the following errors. The response <ul style="list-style-type: none"> • shows a strategy that contains major errors. • shows a limited understanding of the relationships among the elements of the problem. • contains major errors related to the precision of work.
0	A score of zero indicates no understanding of the processes related to the task.

Scoring Notes

- Correct answers ONLY, on all parts of the problem with no work shown, will receive a maximum of 2 points in Content and a maximum of 2 points in Process.

Non-Secure Item*Non-Secure Item***Non-Secure Item***Non-Secure Item**
ISTEP+ Applied Skills Sample for Classroom Use

- A student can receive the top score point in Process if an error made in the Content portion is used with an appropriate strategy to solve the problem.
- A computation error deducts a point from either the Content score or Process score depending on where the error occurs. Multiple computation errors may deduct points from the Content score, Process score, or both scores depending on where the errors occur and the number of errors in the response.