

# Mathematics Toolkit: Grade 5 Objective 3.C.2.b

Standard 3.0 Knowledge of Measurement

Topic C. Applications in Measurement

Indicator 2. Calculate equivalent measurements

Objective b. Determine equivalent units of measurement

Assessment Limits:

Use seconds, minutes, and hours or pints, quarts, and gallons

## Table of Contents

### Objective 3.C.2.b Tools

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- Sample Item #1 - Selected Response (SR)
- Sample Item #2 - Selected Response (SR)
- Sample Item #3 - Selected Response (SR)
- Sample Item #4 - Selected Response (SR)
- Sample Item #5 - Brief Constructed Response (BCR)

### Scoring Rubric

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- Rubric - Brief Constructed Response

## Sample Item #1 - Selected Response (SR) Item

Mathematics Grade 5 Objective 3.C.2.b

Donna is mixing different colors of paint together to match the color of her house. The amounts of paint are shown below.

2 gallons of white paint  
2 quarts of yellow paint  
1 quart of blue paint

3 quarts of red paint  
1 quart of brown paint  
2 pints of orange paint

How many gallons of paint will Donna have after she has mixed all of the paint colors together?

- A. 3 gallons
- B. 4 gallons
- C. 6 gallons
- D. 11 gallons

Correct Answer:

B

## Sample Item #2 - Selected Response (SR) Item

Mathematics Grade 5 Objective 3.C.2.b

Terry is making drinks from a mix for the fifth grade class party. The ingredients for making the drinks are listed in the chart below.

<b>Summer Cooler</b>
<b>1 pint of drink mix</b>
<b>4 quarts of water</b>
<b>6 cups of fruit</b>
<b>Makes 6 quarts.</b>

Terry wants to make 12 quarts of drinks. How many gallons of water will she need?

- A. 2 gallons
- B. 4 gallons
- C. 6 gallons
- D. 12 gallons

Correct Answer:

A

Answer Annotation

- A. Correct answer
- B. 4 quarts, the original amount of water
- C. Makes 6 quarts
- D. 12 quarts of drinks

## Sample Item #3 - Selected Response (SR) Item

Mathematics Grade 5 Objective 3.C.2.b

Terry is making drinks from a mix for the fifth grade class party. The ingredients for making the drinks are listed in the chart below.

<b>Summer Cooler</b>
<b>1 pint of drink mix</b>
<b>4 quarts of water</b>
<b>6 cups of fruit</b>
<b>Makes 6 quarts.</b>

Terry wants to make 3 gallons of drinks. How many gallons of water will she need?

- A. 2 gallons
- B. 4 gallons
- C. 6 gallons
- D. 12 gallons

Correct Answer:

A

Answer Annotation

- A. Correct answer
- B. 4 quarts, the original amount of water
- C. Makes 6 quarts
- D. 12 quarts of drinks

## Sample Item #4 - Selected Response (SR) Item

Mathematics Grade 5 Objective 3.C.2.b

Mario spends about 45 minutes a day practicing his drums. He practices four days a week. How many hours a week does he practice?

- A. 2 hours
- B. 3 hours
- C. 4 hours
- D. 5 hours

Correct Answer:

B

Answer Annotation

- A. a half hour a day, 4 days a week
- B. Correct answer
- C. Four days a week
- D. an hour a day, 5 days a week

## Sample Item #5 - Brief Constructed Response (BCR) Item

Mathematics Grade 5 Objective 3.C.2.b

Tonya's dad is making a concrete patio in their backyard. Concrete is made from cement, sand, gravel and water. It takes twice as much sand as cement to make the concrete mix.

Tonya's dad used 3 gallons of sand in the mix.

Step A

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How many quarts of cement did he use?

Step B

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Explain how you found your answer. Use what you know about measurement in your explanation. Use words, numbers and/or symbols in your explanation.

Correct Answer:

Step A

6 quarts

Answer Annotation

Sample correct response: He used half as much cement as sand. One half of 3 gallons is  $1\frac{1}{2}$  gallons. Each gallon is 4 quarts. A  $\frac{1}{2}$  gallon would be  $\frac{1}{2}$  of 4 quarts or 2 quarts. So  $1\frac{1}{2}$  gallons is 4 quarts plus 2 quarts which is 6 quarts.

## Rubric - Brief Constructed Response (BCR)

### Score 2

The response demonstrates a complete understanding and analysis of a problem.

- Application of a reasonable strategy in the context of the problem is indicated.
- Explanation<sup>1</sup> of and/or justification<sup>2</sup> for the mathematical process(es) used to solve a problem is clear, developed, and logical.
- Connections and/or extensions made within mathematics or outside of mathematics are clear.
- Supportive information and/or numbers are provided as appropriate.<sup>3</sup>

### Score 1

The response demonstrates a minimal understanding and analysis of a problem.

- Partial application of a strategy in the context of the problem is indicated.
- Explanation<sup>1</sup> of and/or justification<sup>2</sup> for the mathematical process(es) used to solve a problem is partially developed, logically flawed, or missing.
- Connections and/or extensions made within mathematics or outside of mathematics are partial or overly general, or flawed.
- Supportive information and/or numbers may or may not be provided as appropriate.<sup>3</sup>

### Score 0

The response is completely incorrect, irrelevant to the problem, or missing.<sup>4</sup>

### Notes:

- <sup>1</sup> Explanation refers to students' ability to communicate how they arrived at the solution for an item using the language of mathematics.
- <sup>2</sup> Justification refers to students' ability to support the reasoning used to solve a problem, or to demonstrate why the solution is correct using mathematical concepts and principles.
- <sup>3</sup> Students need to complete rubric criteria for explanation, justification, connections and/or extensions as cued for in a given problem.
- <sup>4</sup> Merely an exact copy or paraphrase of the problem will receive a score of "0".

Rubric Document Date: August 2003