Introduction
The state-mandated school closures through the end of the 2019-2020 school year not only changed the way schools delivered instruction but impacted how students were expected to learn grade level and course content. As districts prepare for the 2020-2021 school year, the Department is providing a series of Student Readiness Toolkits to help educators reflect on their instructional practices and support them in determining where their students are in their acquisition and retention of knowledge and skills.

Background
The items contained in the Student Readiness Toolkits have been selected from the pool of released items from previous spring administrations of the Ohio State Tests. The items are grouped together by Reporting Category and Critical Area of Focus. The collection of items as a whole is not representative of a single test form. The items presented are selected to offer a range of opportunity to work with each reporting category, but do not comprise an actual test statistically. They are chosen to offer a range of experience with items of varying levels of difficulty or complexity.

Items contained in the Student Readiness Toolkits are reflective of the 2017 Ohio Learning Standards for Mathematics. All items satisfy the criteria set forth by the grade level/course Test Specifications and the Content Elaborations and Expectations for Learning established by the grade level/course Model Curriculum.

How These Items Can Be Used
The Student Readiness Toolkits documents can be used to support instruction in a variety of ways. Districts can choose to administer the:

- Previous grade level Student Readiness Toolkits items to acquire data and gather information on student understanding of previous grade level content to begin the new school year;
- Current grade level Student Readiness Toolkits items in sections as instructional unit of study pre-assessments based on the grade level/course Critical Areas of Focus or local unit of study;
- Current grade level Student Readiness Toolkits items in its entirety;
- Problems may be individually selected for use during local instruction; or
- Problems may be selected for use on local assessments.

How to Identify Released Items
At the bottom of the page for each released item there is a page number and a year. For example: 3 (2018), identifies the item can be found on page 3 of the 2018 Released Item document for the grade level or course. Released Item Scoring Guides for Mathematics are available in the Test Portal in the Student Practice Resources for Mathematics folder under the Student Practice Resources.

The Released Item Release Scoring Guides sample responses and scoring rationales that can help educators plan and deliver instruction by providing example responses for each question along with scoring rationales for each response.

- 2017 Item Release Scoring Guide Grade 5
- 2018 Item Release Scoring Guide Grade 5
- 2019 Item Release Scoring Guide Grade 5
Using Released Test Items to Plan Instruction after COVID-19

The following questions can be answered individually or as a teacher team in the review of the state released items and subsequent reflection on the local curriculum, instructional practices, and assessments (both formative and summative) along with the previous learning opportunities for students.

- What are the math concepts evident in the release item(s)?
  - What is the math a student needs to know in this item?
  - Specifically, what previous grade level standards impact the ability to answer this item?

- What math strategies can a student use to answer the item?
  - Identify examples of how these can be included in your instruction.

- Does the item focus on procedural fluency or conceptual understanding?
  - Procedural Fluency follow-up:
    - What are the procedures and/or skills a student needs to know?
    - What experiences do students have to be prepared to demonstrate this learning?
    - What experiences can be used to move toward the desired outcome(s)?

  - Conceptual Understanding follow-up:
    - What mathematical understanding is evident in the item?
    - What tasks can be used to develop that mathematical understanding?

- Does the item require the student to make connections across standards? If so, what are they?
  - What previous grade level expectations are evident in the item?
  - What experiences can improve the students’ ability to demonstrate these learning expectations?

- Which Standards for Mathematical Practice are most evident in the item?
  - What types of experiences will improve student success?
Preparing for Instruction
Identify a grade level Critical Area of Focus, a mathematical topic of related standards, think about what your typical instruction for this critical area of focus looks like, then determine the changes likely needed to grow all students mathematically.

- What was present in past instruction that helped students perform well?
  - Using the Gap Analysis, Critical Area of Focus, Learning Progressions, and Model Curriculum documents, what previous learning is likely absent or weak?
  - What experiences would support bridging the gap(s)?
  - How could you strengthen the Standards for Mathematical Practice to help support/enhance learning?
  - Specifically, what tasks would be used?

- What does typical instruction include?
  - Models/Representations? What models/representations need introduction?
  - 1-step, 2-step, or Multi-step problems? Is more experience needed? What?
  - Routine and Non-routine problems? Is more experience needed? What?
  - Mathematical and Real-world contexts? Is more experience needed? What rich tasks could incorporate multiple standards?

- Did the mathematical contexts use numbers and operations appropriate for the grade level?
  - How could those numbers be modified to highlight the mathematical understanding needed and increase access for all students?

- Were the real-world contexts familiar or unfamiliar to the students?
  - How do you know?
  - What is needed now?

- Did the instruction allow opportunities for student reasoning and communication?
  - Productive struggle?
  - Student analysis of individual work, thinking and reasoning of others?
  - Descriptions, explanations and justifications?
  - Error analysis and reasonableness of answers?
  - What changes are needed to strengthen the Standards for Mathematical Practice?

- From this analysis, what overall changes are needed in instruction?
  - What instructional strategies should be maintained?
  - What instructional strategies require modification?
  - What needs to happen next to increase learning for all students?
    - Resources
    - Instructional Strategies
    - Professional Development
      - Do I need to seek out professional learning opportunities? What opportunities do I have for growing my own learning? What supports do I have to make these changes?
Grade 5
Reporting Category:

Fractions

CRITICAL AREA OF FOCUS #1
Developing fluency with addition and subtraction of fractions and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions).
Question 17

An equation is shown.

$$\frac{5}{9} - \square = \frac{12}{54}$$

What is the missing fraction in the equation? Enter the fraction in the box.

Points Possible: 1

Content Cluster: Use equivalent fractions as a strategy to add and subtract fractions.

Content Standard: Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$. (In general, $\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}$..) (5.NF.1)
Question 30

Fernando represents an expression using the model shown.

What is the sum of the fractions represented by the model? Enter the number in the box.
**Points Possible:** 1

**Content Cluster:** Use equivalent fractions as a strategy to add and subtract fractions. (Fractions need not be simplified).

**Content Standard:** Add and subtract fractions with unlike denominators (including mixed numbers and fractions greater than 1) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, use visual models and properties of operations to show* $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$. *In general,* $\frac{a}{b} + \frac{c}{d} = (\frac{a}{b} \times \frac{d}{d}) + (\frac{c}{d} \times \frac{b}{b}) = \frac{(ad + bc)}{bd}$. *(5.NF.1)*

**Depth of Knowledge:** Level 2
Use models to represent mathematical concepts
Solve a routine problem requiring multiple steps/decision points, or the application of multiple concepts.
Question 3

What is the value of $5 \frac{1}{3} - 4 \frac{1}{2}$? Enter the number in the box.

Points Possible: 1

**Content Cluster:** Use equivalent fractions as a strategy to add and subtract fractions.

**Content Standard:** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example,*

$2 + \frac{5}{8} = \frac{15}{15} = 23$. (*In general, $a + c = ((ad+bc))$ (5.NF.1)*

16 (2017)
Kim’s cookie recipe requires $\frac{3}{4}$ cup of brown sugar. Kim has $\frac{1}{2}$ cup of brown sugar.

How much more brown sugar does Kim need? Enter the number in the box.
Points Possible: 1

Content Cluster: Use equivalent fractions as a strategy to add and subtract fractions. (Fractions need not be simplified).

Content Standard: Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result $\frac{2}{5} + \frac{1}{2} = \frac{3}{7}$, by observing that $\frac{3}{7} < \frac{1}{2}$. (5.NF.2)

Depth of Knowledge: Level 1
f. Measure
i. Solve a one-step word problem
Question 39

In a gym class, $\frac{3}{8}$ of the students play basketball and $\frac{5}{12}$ play volleyball. The remaining students play soccer.

What fraction of the students in the class play soccer? Enter the number in the box.

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Points Possible: 1

Content Cluster: Use equivalent fractions as a strategy to add and subtract fractions.

Content Standard: Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result $\frac{2}{5} + \frac{1}{2} = \frac{3}{7}$, by observing that $\frac{3}{7} < \frac{1}{2}$. (5.NF.2)
Petra has 6 feet (ft) of ribbon. She wants to make 8 bows that are exactly the same, and use all of her ribbon.

Which model best represents how Petra should divide the ribbon?
Points Possible: 1

Content Cluster: Apply and extend previous understandings of multiplication and division to multiply and divide fractions. (Fractions need not be simplified).

Content Standard: Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie? (5.NF.3)

Depth of Knowledge: Level 2

C. Use models to represent mathematical concepts
Question 21

An expression is given.

50 ÷ 6

Estimate the value of the expression.

Select the section on the number line to show the two numbers that your estimate lies between.

Points Possible: 1

Content Cluster: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Content Standard: Interpret a fraction as division of the numerator by the denominator ($a/b = a ÷ b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie? (5.NF.3)
Question 32

Franklin has a bag of 24 gumballs. There are red, blue, and green gumballs.

- $\frac{3}{8}$ of the gumballs are red.
- $\frac{5}{12}$ of the gumballs are blue.

How many of the gumballs in Franklin’s bag are green?
Points Possible: 1

Content Cluster: Apply and extend previous understandings of multiplication and division to multiply and divide fractions. (Fractions need not be simplified).

Content Standard: Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. (5.NF.4)

a. Interpret the product \((\frac{a}{b}) \times q\) as \(a\) parts of a partition of \(q\) into \(b\) equal parts, equivalently, as the result of a sequence of operations \(a \times q \div b\). For example, use a visual fraction model to show \((\frac{2}{3}) \times 4 = \frac{8}{3}\) and create a story context for this equation. Do the same with \((\frac{2}{3}) \times (\frac{4}{5}) = \frac{8}{15}\). (In general, \((\frac{a}{b}) \times (\frac{c}{d}) = \frac{ac}{bd}\).)

Depth of Knowledge: Level 3

f. Perform procedure with multiple steps and multiple decision points
Question 1

An expression is shown.

\[
\frac{3}{11} \times 12
\]

What is the value of the expression? Enter the number in the box.

Points Possible: 1

Content Cluster: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Content Standard: Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

a. Interpret the product \((\ell) \times q\) as a parts of a partition of \(q\) into \(b\) equal parts; equivalently, as the result of a sequence of operations \(a \times q + b\). For example, use a visual fraction model to show \((\ell) \times 4\) \(= \frac{8}{3}\), and create a story context for this equation. Do the same with \((\ell) \times (\ell)\) \(= \frac{8}{15}\).

(In general, \((\ell) \times (\ell) = \ell\).) (5.NF.4a)
Jace is told that the area of a rectangle is $\frac{5}{12}$ square inch. Jace draws the figure shown to represent a rectangle that could have that area.

Jace's drawing is based on an incorrect side length.

A. What is the length of a side that is incorrect? Enter the number in the first box.

B. What is the correct length of this side? Enter the number in the second box.

A. ___________ in.

B. ___________ in.

Points Possible: 1

Content Cluster: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Content Standard: Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. (5.NF.4)

b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
Question 18

Select the three rectangles that have an area of $\frac{20}{36}$ square unit.

- [ ] $\frac{5}{4}$ unit
- [ ] $\frac{4}{36}$ unit
- [ ] $\frac{1}{2}$ unit
- [ ] $\frac{20}{18}$ unit
- [ ] $\frac{10}{12}$ unit
- [ ] $\frac{10}{18}$ unit

Points Possible: 1

Content Strand: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Content Standard: Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. (5.NF.4b)
Question 14

Kelsey’s mom bought a cell phone for $200. Now the cell phone is worth half as much as Kelsey’s mom paid for it.

Which expression represents the amount of money, in dollars, the cell phone is worth now?

A. $200 \times \frac{1}{2}$
B. $200 + \frac{1}{2}$
C. $200 \div \frac{1}{2}$
D. $200 - \frac{1}{2}$

Points Possible: 1

Content Cluster: Apply and extend previous understandings of multiplication and division to multiply and divide fractions. (Fractions need not be simplified).

Content Standard: Interpret multiplication as scaling (resizing). (5.NF.5)
  a. Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.

Depth of Knowledge: Level 2
  k. Make direct translations between problem situations and symbolic notation
Question 7

Select the two expressions that have a value greater than 253.

☐ $253 \times \frac{3}{4}$

☐ $253 \times \frac{5}{5}$

☐ $253 \times \frac{9}{2}$

☐ $253 \times \frac{6}{7}$

☐ $253 \times \frac{4}{1}$

Points Possible: 1

Content Cluster: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Content Standard: Interpret multiplication as scaling (resizing), by:

a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. (5.NF.5a)
Question 5

The area of Tracy’s backyard is $1 \frac{1}{3}$ acres. She plants a garden that takes up $\frac{1}{3}$ of the backyard. What is the area, in acres, of the garden?

A  $\frac{4}{9}$ acre  
B  1 acre  
C  $1 \frac{2}{3}$ acres  
D  4 acres

Points Possible: 1

Content Cluster: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Content Standard: Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. (5.NF.6)
Question 35

At a school, $\frac{3}{5}$ of the students play a musical instrument. Of those students, $\frac{3}{16}$ play the trumpet.

What fraction of all of the students in the school play the trumpet? Enter the number in the box.

Points Possible: 1

Content Cluster: Apply and extend previous understandings of multiplication and division to multiply and divide fractions. (Fractions need not be simplified).

Content Standard: Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. (5.NF.6)

Depth of Knowledge: Level 2
d. Solve a routine problem requiring multiple steps/decision points, or the application of multiple concepts
A fraction model that represents a multiplication expression is shown.

Enter the missing factor and the product.

**Factor:**

**Product:**

Points Possible: 1

**Content Cluster:** Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

**Content Standard:** Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. (5.NF.6)
Molly makes 5 gallons of soup in a pot. Then, she fills bowls that each hold \( \frac{1}{16} \) gallon of soup until the pot is empty.

How many bowls does Molly fill? Enter the number in the box.

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Points Possible: 1

Content Cluster: Apply and extend previous understandings of multiplication and division to multiply and divide fractions. (Fractions need not be simplified).

Content Standard: Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. In general, students able to multiply fractions can develop strategies to divide fractions by reasoning about the relationship between multiplication and division, but division of a fraction by a fraction is not a requirement at this grade. (5.NF.7)
c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?

Depth of Knowledge: Level 2
d. Solve a routine problem requiring multiple steps/decision points, or the application of multiple concepts
Question 12

A pet store owner has a \( \frac{1}{2} \)-pound bag of dog treats that she divides evenly among 16 dogs.

What amount of dog treats, in pounds, does each dog receive?

(A) \( \frac{1}{32} \) pound

(B) \( \frac{1}{18} \) pound

(C) 8 pounds

(D) 32 pounds

Points Possible: 1

Content Cluster: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Content Standard: Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.\(^1\)

c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share \( \frac{1}{2} \) lb of chocolate equally? How many \( \frac{1}{3} \) cup servings are in 2 cups of raisins? (5.NF.7c)
Question 45

A potter has 2 pounds (lb) of clay. She makes square tiles that each use $\frac{1}{6}$ pound of clay.

Place square tiles in the blank box to represent the total number of tiles the potter can make.

- You may use the square tile more than once.
Content Cluster: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Content Standard: Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (5.NF.7)

b. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share \( \frac{1}{2} \) lb of chocolate equally? How many \( \frac{1}{3} \)-cup servings are in 2 cups of raisins?
CRITICAL AREA OF FOCUS #2
Extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations.
Question 44

Which number rounds to 2.7?

A  2.78
B  2.71
C  2.64
D  2.61

Points Possible: 1

Content Cluster: Understand the place value system.

Content Standard: Use place value understanding to round decimals to any place. (5.NBT.4)
Question 6

An expression is given.

\[ 3 \times (3.5 + 1.77) \]

What is the value of the expression? Enter the number in the box.

Points Possible: 1

Content Cluster: Write and interpret numerical expressions.

Content Standard: Use parentheses in numerical expressions, and evaluate expressions with this symbol. Formal use of algebraic order of operations is not necessary. (5.OA.1)

Depth of Knowledge: Level 1
g. Perform a specified or routine procedure (e.g., apply rules for rounding)
f. Evaluate an expression
Question 4

An expression is shown.
8 + (37 − 19)
Which statement describes the expression?

A 19 less than the value of 8 times 37
B 8 more than the value of 37 minus 19
C 8 times greater than the value of 37 minus 19
D 37 times greater than the value of 8 minus 19

Points Possible: 1

Content Cluster: Write and interpret numerical expressions.

Content Standard: Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product. (5.OA.2)
Question 4

A store only sells 20-pound bags of ice. Over the weekend, the store sells 800 bags of ice, making $3,400. On Monday, the store sells 80 bags of ice. How much money does the store make selling ice on Monday? Enter the number in the box.

$\phantom{00000000}$

 Points Possible: 1

 Content Cluster: Understand the place value system.

 Content Standard: Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. (5.NBT.1)
Question 25

How many times greater is the value of the 4 in 547 than the value of the 4 in 84? Enter the number in the box.

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Points Possible: 1

**Content Cluster:** Understand the place value system.

**Content Standard:** Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and \( \frac{1}{10} \) of what it represents in the place to its left. (5.NBT.1)

**Depth of Knowledge:** Level 2
m. Specify and explain relationships between facts, terms, properties, or operations
Question 16

An equation is shown.

7,982 ÷ 10 □ = 79.82

What is the value of the missing exponent? Enter the number in the box.

Points Possible: 1

Content Cluster: Understand the place value system.

Content Standard: Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. (5.NBT.2)
**Question 34**

Which expression is equivalent to $10^4$?

- A. $10 \times 4$
- B. $10 + 4$
- C. $10 \times 10 \times 10 \times 10$
- D. $10 + 10 + 10 + 10$

**Points Possible:** 1

**Content Cluster:** Understand the place value system.

**Content Standard:** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. (5.NBT.2)

**Depth of Knowledge:** Level 1
a. Recall, observe, or recognize a fact, definition, term, or property
Question 2

A number is shown.
0.023
What is this number described in words?

A. twenty-three hundredths
B. twenty-three thousandths
C. two hundred and three hundredths
D. two hundred and three thousandths

Points Possible: 1

Content Cluster: Understand the place value system.

Content Standard: Read, write, and compare decimals to thousandths.
a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g.,
347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (′/10) + 9 × (′/100) + 2 × (′/1000). (5.NBT.3a)
Question 8

Select the two numbers whose values are between 34.6 and 35.23.

- [ ] 34.230
- [ ] 34.65
- [ ] 35.223
- [ ] 35.32
- [ ] 35.6

Points Possible: 1

Content Cluster: Understand the place value system.

Content Standard: Read, write, and compare decimals to thousandths. (5.NBT.3)

b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
Question 31

A comparison is given.

0.45 > ?

Select the two decimals that make the comparison true.

☐ 0.64
☐ 0.28
☐ 0.52
☐ 0.73
☐ 0.39

Points Possible: 1

Content Cluster: Understand the place value system.

Content Standard: Read, write, and compare decimals to thousandths. (5.NBT.3)

b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

Depth of Knowledge: Level 2

m. Specify and explain relationships between facts, terms, properties, or operations
Question 11

An inequality is shown. The number on the right has a missing digit.

6.85 < 6.8

What number could be the missing digit? Enter the number in the box.

Points Possible: 1

Content Cluster: Understand the place value system.

Content Standard: Read, write, and compare decimals to thousandths.

b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. (5.NBT.3b)
Question 8

Select the boxes to show whether each number rounds to 7, 8, or 9 when rounded to the nearest whole number.

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<td>7.8</td>
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<td>7.352</td>
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<td>8.531</td>
<td>[ ]</td>
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</tbody>
</table>

Points Possible: 1

Content Cluster: Understand the place value system.

Content Standard: Use place value understanding to round decimals to any place. (5.NBT.4)
Question 29

An equation is shown.

1,074 × 64 = □

What is the missing number?

A 10,740
B 64,536
C 65,136
D 68,736

Points Possible: 1

Content Cluster: Perform operations with multi-digit whole numbers and with decimals to hundredths.

Content Standard: Fluently multiply multi-digit whole numbers using the standard algorithm. (5.NBT.5)
Question 23

At a school, 294 students are going on a field trip. They are put into groups of 14 students each.

How many groups of students are there? Enter the whole number in the box.

Points Possible: 1

Content Cluster: Perform operations with multi-digit whole numbers and with decimals to hundredths.

Content Standard: Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (5.NBT.6)

Depth of Knowledge: Level 2
d. Solve a routine problem requiring multiple steps/decision points, or the application of multiple concepts
Question 18

A rectangle with a missing side length is shown.

98 cm

5,488 square centimeters

? 

Enter the value, in centimeters (cm), of the missing side length.

Points Possible: 1

**Content Cluster:** Perform operations with multi-digit whole numbers and with decimals to hundredths.

**Content Standard:** Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (5.NBT.6)
Question 19

An equation is shown.

352 ÷ □ = 22

What is the missing number?

A  14  
B  15  
C  16  
D  17

Points Possible: 1

Content Cluster: Perform operations with multi-digit whole numbers and with decimals to hundredths.

Content Standard: Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (5.NBT.6)
Question 22

A student orders food from the menu shown.

A. What is the cost of 2 hamburgers, 1 bag of chips, and 1 soda? Enter the number in the first box.

B. How much change will the student receive if he pays with a $10 bill? Enter the number in the second box.

A. $ __________

B. $ __________

Points Possible: 2

Content Cluster: Perform operations with multi-digit whole numbers and with decimals to hundredths.

Content Standard: Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. (5.NBT.7)
Question 10

How many inches are there in \(4 \frac{1}{2}\) feet? Enter the number in the box.

\[\text{inches}\]

Points Possible: 1

Content Cluster: Convert like measurement units within a given measurement system.

Content Standard: Know relative sizes of these U.S. customary measurement units: pounds, ounces, miles, yards, feet, inches, gallons, quarts, pints, cups, fluid ounces, hours, minutes, and seconds. Convert between pounds and ounces; miles and feet; yards, feet, and inches; gallons, quarts, pints, cups, and fluid ounces; hours, minutes, and seconds in solving multi-step, real-world problems. (5.MD.1)

Depth of Knowledge: Level 1
k. Recall, identify, or make conversions between and among representations or numbers (fractions, decimals, and percents), or within and between customary and metric measures
A student measured her height to be 51 inches.
Enter the student’s height in feet and inches.

Height: [ ] feet [ ] inches

Points Possible: 1

Content Cluster: Convert like measurement units within a given measurement system.

Content Standard: Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. (5.MD.1)
Grade 5
Reporting Category:

Geometry

CRITICAL AREA OF FOCUS #3
Developing understanding of volume.

CRITICAL AREA OF FOCUS #4
Modeling numerical relationships with the coordinate plane.

CRITICAL AREA OF FOCUS #5
Classifying two-dimensional figures by properties.
Question 9

A rectangular prism is shown.

Which block could be used to find the volume of the rectangular prism?

A rectangular prism is shown.

Which block could be used to find the volume of the rectangular prism?

A. A cube with side length 2 units
B. A cube with side length 3 units
C. A cube with side length 4 units
D. A cube with side length 6 units

Points Possible: 1

Content Cluster: Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Content Standard: Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
b. A solid figure which can be packed without gaps or overlaps using \( n \) unit cubes is said to have a volume of \( n \) cubic units. (5.MD.3b)
Question 36

Which approach is the best to find the volume of a cube?

A. Measure the length of one side and multiply the length by 3.
B. Measure the length of one side and multiply the length by itself.
C. Count the number of 1-cubic-centimeter unit cubes that fit inside the cube.
D. Count the number of 1-square-centimeter unit squares that cover the cube.

Points Possible: 1

Content Cluster: Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Content Standard: Recognize volume as an attribute of solid figures and understand concepts of volume measurement. (5.MD.3)
a. A cube with side length 1 unit, called a "unit cube", is said to have "one cubic unit" of volume, and can be used to measure volume.
Question 5

A rectangular prism is shown.

What is the volume of the prism, in cubic feet?

A 60 cubic feet
B 100 cubic feet
C 120 cubic feet
D 180 cubic feet

Points Possible: 1

Content Cluster: Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Content Standard: Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. (5.MD.4)
Question 15

A rectangular prism is partially filled with one layer and one column of cubes, as shown.

How many more cubes must be added to fill the prism with no gaps?

A 114 cubes  
B 115 cubes  
C 116 cubes  
D 117 cubes

Points Possible: 1

Content Cluster: Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Content Standard: Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. (5.MD.4)
Question 6

A large cube has a volume of 216 cubic meters. It is completely filled with smaller cubes, each with a volume of 8 cubic meters. How many smaller cubes are in the large cube? Enter the number in the box.

Points Possible: 1

Content Cluster: Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Content Standard: Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. (5.MD.4)
Question 31

Descriptions of two shapes are given.

- Shape 1: A cube with a side length of 6 centimeters.
- Shape 2: A right rectangular prism with the same volume as shape 1, but a different length, width, and height.

Enter a possible length, width, and height for shape 2.

Length: __________ centimeters
Width: __________ centimeters
Height: __________ centimeters

Points Possible: 1

Content Cluster: Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Content Standard: Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. (5.MD.5)

b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.
Question 33

This item has two parts.

Part A. A company sells snack bars in a small box in the shape of a rectangular prism. The small box is shown, with dimensions in inches (in.).

What is the volume, in cubic inches, of the small box? Enter the number in the box.

\[
\text{cubic inches}
\]

\[
\begin{array}{ccc}
1 & 2 & 3 \\
4 & 5 & 6 \\
7 & 8 & 9 \\
0 & . & \frac{a}{b} \\
\end{array}
\]
Part B. The company ships the small boxes of snack bars in a larger box. The larger box is shown, with dimensions in inches (in.).

What is the greatest number of small boxes of snack bars that can be shipped in one larger box? Enter the number in the box.

1  2  3
4  5  6
7  8  9
0  .  2
Points Possible: 2

Content Cluster: Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Content Standard: Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume. (5.MD.5)

Depth of Knowledge: Level 3
f. Perform procedures with multiple steps and multiple decision points
A student is plotting points to create a square. Three of the points are already shown.

Enter the coordinates of the other corner of the square.

( , )

Points Possible: 1

Content Cluster: Graph points on the coordinate plane to solve real-world and mathematical problems.

Content Standard: Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate). (5.G.1)
Question 13

Points Possible: 1

Content Cluster: Graph points on the coordinate plane to solve real-world and mathematical problems.

Content Standard: Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (5.G.2)
Point P is located at \((x, y)\).

Point Q is located 2 units to the right of point P and 3 units up.

Place points P and Q on the coordinate plane to show their possible locations.

- There may be more than one correct answer.

**Points Possible:** 1

**Content Cluster:** Graph points on the coordinate plane to solve real-world and mathematical problems.

**Content Standard:** Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (5.G.2)

**Depth of Knowledge:** Level 3
e. Use concepts to solve non-routine problems
Question 41

Select the two triangles that can be described as acute isosceles.

☐ □ □ □ □
Points Possible: 1

Content Cluster: Classify two-dimensional figures into categories based on their properties.

Content Standard: Identify and describe commonalities and differences between types of triangles based on angle measures (equiangular, right, acute, and obtuse triangles) and side lengths (isosceles, equilateral, and scalene triangles). (5.G.3)
Question 12

Two shapes are shown.

Select whether each statement describes a way in which the two shapes are alike or a way in which they are different.

<table>
<thead>
<tr>
<th>Ways They Are Alike</th>
<th>Ways They Are Different</th>
</tr>
</thead>
<tbody>
<tr>
<td>All four sides are an equal length.</td>
<td>☐</td>
</tr>
<tr>
<td>All four angles are equal in size.</td>
<td>☐</td>
</tr>
<tr>
<td>There are two pairs of parallel sides.</td>
<td>☐</td>
</tr>
<tr>
<td>There are four pairs of perpendicular sides.</td>
<td>☐</td>
</tr>
</tbody>
</table>

Points Possible: 1

Content Cluster: Classify two-dimensional figures into categories based on their properties.

Content Standard: Identify and describe commonalities and differences between types of quadrilaterals based on angle measures, side lengths, and the presence or absence of parallel and perpendicular lines, e.g., squares, rectangles, parallelograms, trapezoids, and rhombuses. (5.G.4)

Depth of Knowledge: Level 2
m. Specify and explain relationships between facts, terms, properties, or operations
Question 27

Pattern X and Pattern Y have the same first term.

- Pattern X uses the rule “Add 1.”
- Pattern Y uses the rule “Add 6.”

Complete the table to show the next two terms in each pattern.

<table>
<thead>
<tr>
<th>Pattern X</th>
<th>1,</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern Y</td>
<td>1,</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Points Possible: 1

Content Cluster: Analyze patterns and relationships.

Content Standard: Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so. (5.OA.3)