

Alliance for College-Ready Public Schools

2017—2018 Alliance Grade 7 Open Up PRACTICE Interim Assessment 1 Teacher Rationale

Rationale: 2017—2018 Alliance Grade 7 Open Up PRACTICE Interim Assessment 1

About the Teacher Rationale

This document contains the specific definitions for the **2017—2018 Alliance Grade 7 Open Up PRACTICE Interim Assessment 1** assessment. This includes:

- (a) The item number as it appears on the assessment.
- (b) The item.
- (c) The standard, standard description, and Depth of Knowledge (DOK) level of the item.
- (d) The correct answer and rationale for each incorrect response for each multiple-choice item and scoring rubric for each short constructed response or constructed response item.

These specifications have been included to help you look for consistencies in student errors, and the specific cause of the student error — in turn, this should help guide your intervention and re-teach strategies.

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Test Definition File

Item #	Correct Answer(s)	Standard
1	See Scoring Rubric	CCSS.Math.Content.7.NS.A.1.a
2	D	CCSS.Math.Content.7.NS.A.1.b
3	D	CCSS.Math.Content.7.NS.A.1.c
4	D	CCSS.Math.Content.7.NS.A.1.c
5	A	CCSS.Math.Content.7.NS.A.1.d
6	C	CCSS.Math.Content.7.NS.A.1.d
7	D	CCSS.Math.Content.7.NS.A.2.a
8	C	CCSS.Math.Content.7.NS.A.2.a
9	See Scoring Rubric	CCSS.Math.Content.7.NS.A.2.b
10	B	CCSS.Math.Content.7.NS.A.2.b
11	A	CCSS.Math.Content.7.NS.A.2.c
12	B	CCSS.Math.Content.7.NS.A.2.d
13	C	CCSS.Math.Content.7.NS.A.2.d
14	B	CCSS.Math.Content.7.NS.A.3
15	B	CCSS.Math.Content.7.NS.A.3
16	A	CCSS.Math.Content.7.NS.A.3
17	C	CCSS.Math.Content.7.G.A.1
18	A	CCSS.Math.Content.7.G.A.1

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Standards Coverage Summary: CC

Standard	DOK 1	DOK 2	DOK 3	DOK 4	Total
CCSS.Math.Content.7.NS.A.1.a	0	1	0	0	1
CCSS.Math.Content.7.NS.A.1.b	0	1	0	0	1
CCSS.Math.Content.7.NS.A.1.c	0	2	0	0	2
CCSS.Math.Content.7.NS.A.1.d	1	1	0	0	2
CCSS.Math.Content.7.NS.A.2.a	0	2	0	0	2
CCSS.Math.Content.7.NS.A.2.b	1	1	0	0	2
CCSS.Math.Content.7.NS.A.2.c	0	1	0	0	1
CCSS.Math.Content.7.NS.A.2.d	1	1	0	0	2
CCSS.Math.Content.7.NS.A.3	1	2	0	0	3
CCSS.Math.Content.7.G.A.1	0	2	0	0	2
Total	4	14	0	0	18

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Rationale

Question #1 (E213484)

Several situations in which opposite quantities are combined are given below.

Drag and drop into the box those situations for which the opposite quantities combine to make 0.

This question must be answered online.

CCSS.Math.Content.7.NS.A.1.a > DOK 2

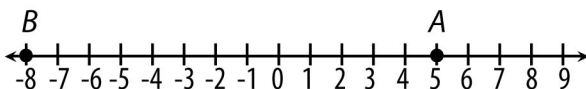
Describe situations in which opposite quantities combine to make 0.

Rationale

- The temperature situation is modeled by the expression $-7 + 10 - 3$, which simplifies to $-10 + 10$: a combination of opposite quantities.
- The water level situation is modeled by the expression $-3 + 5 + 2$, which simplifies to $-3 + 7$: not a combination of opposite quantities.
- The wallet situation is modeled by the expression $10 + 20 - 30$, which simplifies to $30 - 30$: a combination of opposite quantities.
- The elevator situation is modeled by the expression $-27 - 11 + 16$, which simplifies to $-38 + 16$: not a combination of opposite quantities.
- The gas tank situation is modeled by the expression $12 - 4 + 8$, which simplifies to $20 - 4$: not a combination of opposite quantities.
- The jellybean situation is modeled by the expression $7 + 28 - 35$, which simplifies to $35 - 35$: a combination of opposite quantities.

Question #2 (E171047)

In a tug-of-war contest, the green team pulled the center rope marker to point A, then the yellow team recovered and pulled the center marker to point B to win the contest.



Which statement describes how to find the distance between these points?

- A. Subtract 5 from -8 to get -13 .
- B. Add -5 and 8 to get 3 .
- C. Add 5 and -8 to get -3 .
- D. Add 8 and 5 to get 13 .

CCSS.Math.Content.7.NS.A.1.b > DOK 2

Understand $p + q$ as the number located a distance $|q|$ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.

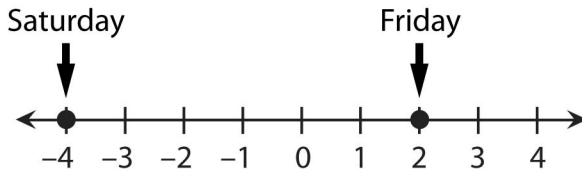
Answer Choice Rationales

- A. This answer reflects a lack of understanding that distance must be positive.
- B. This answer reflects an understand that distance must be positive, but a mistake finding the difference.
- C. This answer reflects a misunderstanding of finding the difference between values on a number line.
- D. **Correct: The answer is found by adding the absolute values or finding the absolute value of the difference.**

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Question #3 (E201309)

The number line shows the change in the level of water in a fish tank above and below the recommended level represented by 0.



Which expression shows how to find the distance between the water levels on Friday and Saturday?

- A. $|2 - 4|$
- B. $|-4 - (-2)|$
- C. $|-4| - 2$
- D. $|2 - (-4)|$

CCSS.Math.Content.7.NS.A.1.c > DOK 2

Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.

Answer Choice Rationales

- A. This answer results from subtracting 4 when the water level on Saturday was actually -4.
- B. This answer results from subtracting -2 when the water level was actually 2 on Friday.
- C. This answer results from only using the absolute value of one of the values on the number line instead of solving for the absolute value of their difference.
- D. **Correct: The distance between two values on the number line is found as the absolute value of their difference. Since the level was 2 on Friday and -4 on Saturday, this expression is the correct way to solve for the difference between them: $|2 - (-4)| = |2 + 4| = |6| = 6$.**

Question #4 (E181752)

Jalal notices the temperature outside at sunrise is -6°F . An hour later, the temperature is 12°F . Which expression represents the change in temperature?

- A. $12 - (-6) = 6$
- B. $-6 - (12) = -18$
- C. $-6 - (12) = -6$
- D. $12 - (-6) = 18$

CCSS.Math.Content.7.NS.A.1.c > DOK 2

Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.

Answer Choice Rationales

- A. This is a correct expression, but it does not correctly change the subtraction to adding the additive inverse.
- B. This expression uses the numbers from the question, but in an incorrect order. The change should be positive, since going from -6 to 12 is movement in the positive direction.
- C. The expression uses the numbers from the question, but in an incorrect order. The change should be positive.
- D. **Correct: This the correct expression; the difference between 12 and -6 is $12 - (-6) = 12 + 6 = 18$.**

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Question #5 (E261852)

Adam recorded the change of the price of gas over 5 months.

Month	Price Change
September	+1.20
October	-0.08
November	+0.74
December	+1.43
January	-2.11

What is the total change in gas price over 5 months?

- A. \$1.18 increase
- B. \$2.19 decrease
- C. \$3.37 increase
- D. \$5.56 Increase

CCSS.Math.Content.7.NS.A.1.d > DOK 2

Apply properties of operations as strategies to add and subtract rational numbers.

Answer Choice Rationales

- A. **Correct: Correct: $1.20 + 0.74 + 1.43 - 0.08 - 2.11 = 3.37 - 2.19 = 1.34$.**
- B. This is the result of adding together the negative adjustments in stock pricing only: $-0.08 + (-2.11) = -2.19$.
- C. This is the result of adding together the positive increases in stock pricing only: $1.20 + 0.74 + 1.43 = 3.37$.
- D. This is the result of adding together all adjustments in stock prices and ignoring the negative numbers: $1.20 + 0.74 + 1.43 + 0.08 + 2.11 = 5.56$.

Question #6 (E179061)

The table shows the weights of four cats.

Cat Weights

Cat	Weight (pounds)
Rex	10.8
Tiny	$12\frac{3}{5}$
Penelope	8.4
Smudge	$9\frac{1}{5}$

What is the total weight of the cats?

- A. 40 pounds
- B. 40.2 pounds
- C. 41 pounds
- D. 41.4 pounds

CCSS.Math.Content.7.NS.A.1.d > DOK 1

Apply properties of operations as strategies to add and subtract rational numbers.

Answer Choice Rationales

- A. This is the result of making a regrouping error.
- B. This is the result of not including the 0.8 from the first number.
- C. **Correct: The sum can be written as $10.8 + 12.6 + 8.4 + 9.2$, and the result of adding the numbers is 41.**
- D. This is the result of including an extra 0.4.

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<p>Question #7 (E259323)</p> <p>Mrs. Martinez has a bowl of candy that she passes out to trick-or-treaters. A group of 5 children dressed in costumes comes to her door. She gives each child 3 pieces of candy from her bowl. Which expression shows the net result of the amount of candy in her bowl?</p> <p>A. $(-5)(-3)$ B. $(5 - (-3))$ C. $(5)(3)$ D. $(5)(-3)$</p>	<p>CCSS.Math.Content.7.NS.A.2.a > DOK 2</p> <p>Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.</p> <p>Answer Choice Rationales</p> <p>A. This is the result of concluding the 5 children are represented by a negative value, as well as the deficit in the candy. B. This is the result of concluding that the difference of the numbers gives the result of the candy left. C. This is the result of concluding that a positive amount of candy was added to the bowl after Mrs. Martinez gave some candy away. D. Correct: This is the result of understanding the product of 5 children and a deficit of 3 pieces of candy per child.</p>
<p>Question #8 (E191302)</p> <p>Look at the expression.</p> $-6\left(\frac{3}{8} + \frac{3}{4}\right)$ <p>Which of the following expressions is equivalent to the one shown?</p> <p>A. $-\frac{9}{4} + \frac{3}{4}$ B. $-\frac{9}{4} - \frac{3}{4}$ C. $-\frac{9}{4} - \frac{9}{2}$ D. $-\frac{9}{4} + \frac{9}{2}$</p>	<p>CCSS.Math.Content.7.NS.A.2.a > DOK 2</p> <p>Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.</p> <p>Answer Choice Rationales</p> <p>A. This is the result of distributing the -6 only across the first term in the parentheses. B. This is the result of distributing the -6 across the first term in the parentheses and the sign of the second term, but neglecting to multiply by 3/4. C. Correct: This is the correct application of the distributive property. D. This is the result of neglecting the negative sign.</p>

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<p>Question #9 (E263624)</p> <p>Which fractions have the same value as $-\frac{1}{4}$?</p> <p>Drag and drop each fraction into the correct column that classifies it as either equal to or not equal to $-\frac{1}{4}$.</p> <p><i>This question must be answered online.</i></p>	<p>CCSS.Math.Content.7.NS.A.2.b > DOK 2</p> <p>Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $\frac{p}{q} = \frac{p \div d}{q \div d} = \frac{p/d}{q/d}$. Interpret quotients of rational numbers by describing real-world contexts.</p> <p>Rationale</p> <ul style="list-style-type: none">The fractions equal to $-(1/4)$: $-(-1/-4)$, $-1/4$, $1/-4$The fractions that are not equal to $-(1/4)$: $-1/-4$ and $-(-1/4)$
<p>Question #10 (E172148)</p> <p>The greatest ocean depth is at a depth of -35,836 feet (35,836 feet below sea level). An unmanned research submarine dives from sea level to that depth in 17 equal steps. At what depth is the submarine located after the first step?</p> <p>A. -35,853 feet B. -2,108 feet C. 2,108 feet D. 33,728 feet</p>	<p>CCSS.Math.Content.7.NS.A.2.b > DOK 1</p> <p>Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $\frac{p}{q} = \frac{p \div d}{q \div d} = \frac{p/d}{q/d}$. Interpret quotients of rational numbers by describing real-world contexts.</p> <p>Answer Choice Rationales</p> <p>A. This is the result of subtracting 17 from -35,836. B. Correct: This is the result of dividing -35,836 by 17. C. This is the result of applying the negative sign to both the numerator and denominator and finding the absolute distance the submarine moves rather than the depth. D. This is the result of dividing 35,836 by 17 to find 2,108 and then subtracting that from 35,836, finding the absolute distance from the point of maximum depth to the depth of the submarine after the first step.</p>


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<p>Question #11 (E201473)</p> <p>Jeremy buys a value pack of cheese crackers that contains $42\frac{1}{2}$ ounces of crackers. He divides this into servings of $1\frac{1}{4}$ ounces each. What is the total number of servings Jeremy can make from the value pack?</p> <p>A. 34 servings B. 44 servings C. 53 servings D. 85 servings</p>	<p>CCSS.Math.Content.7.NS.A.2.c > DOK 2</p> <p>Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>Answer Choice Rationales</p> <p>A. Correct: There are $42\frac{1}{2} = 85/2$ ounces of crackers in the value pack. Jeremy divides it into servings of $1\frac{1}{4} = 5/4$ ounces each. So he can make $85/2 \div 5/4$ servings. Since dividing by a fraction is the same as multiplying by its inverse, this means he can make $85/2 \times 4/5 = 340/10 = 34$ servings.</p> <p>B. This answer results from dividing the whole number part of the dividend by the whole number part of the divisor ($42 \div 1$) and the fractional part of the dividend by the fractional part of the divisor ($1/2 \div 1/4$) and combining the results.</p> <p>C. This answer results from multiplying $85/2$ by $5/4$, instead of by its inverse, and ignoring the remainder.</p> <p>D. This answer results from dividing $85/2$ by $2/4$ instead of $5/4$.</p>
<p>Question #12 (E172361)</p> <p>Alana is converting the fraction $\frac{6}{11}$ to a decimal. She first divides 6 by 11, as shown below.</p> $\begin{array}{r} .5 \\ 11 \overline{)6.0} \\ \underline{-55} \\ 5 \end{array}$ <p>What is Alana's next step?</p> <p>A. Stop dividing because the 5 repeats. B. Add a 0 to the remainder 5, then find the number of times 50 can be divided by 11. C. Add a 0 to the quotient, then find the remainder. D. Stop dividing because a zero has already been added.</p>	<p>CCSS.Math.Content.7.NS.A.2.d > DOK 2</p> <p>Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.</p> <p>Answer Choice Rationales</p> <p>A. This is the result of failing to realize that both the 5 and the 4 repeat, not just the 5.</p> <p>B. Correct: This is the result of converting a rational number until a digit repeats or a 0 is reached.</p> <p>C. This is the result of stopping before a 0 is reached or a number repeats.</p> <p>D. This is the result of failing to recognize that sometimes a zero needs to be added more than once.</p>

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<p>Question #13 (E172354)</p> <p>A radio announcer said that $\frac{5}{8}$ of the population in a certain city have listened to a radio station at some time. What decimal represents this fraction?</p> <p>A. 0.58 B. 1.6 C. 0.625 D. 0.62</p>	<p>CCSS.Math.Content.7.NS.A.2.d > DOK 1</p> <p>Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.</p> <p>Answer Choice Rationales</p> <p>A. This is the result of placing the numerator and denominator in the tenths and hundredths places, respectively.</p> <p>B. This is the result of dividing 8 by 5 instead of dividing 5 by 8.</p> <p>C. Correct: This is the result of correctly converting a rational number to a decimal.</p> <p>D. This is the result of using long division to divide 5 by 8 but not carrying the answer out to enough places.</p>
<p>Question #14 (E201930)</p> <p>Greg's mother fills the tank of her car with gas on Saturday morning. She uses $\frac{1}{4}$ of the tank on Saturday and another $\frac{2}{5}$ of the tank on Sunday. How much gas remains in the gas tank?</p> <p>A. $\frac{3}{20}$ of a tank B. $\frac{7}{20}$ of a tank C. $\frac{9}{20}$ of a tank D. $\frac{13}{20}$ of a tank</p>	<p>CCSS.Math.Content.7.NS.A.3 > DOK 2</p> <p>Solve real-world and mathematical problems involving the four operations with rational numbers.</p> <p>Answer Choice Rationales</p> <p>A. This answer results from finding the positive difference between the given fractions instead of subtracting their sum from 1.</p> <p>B. Correct: The total gas used can be represented as $\frac{1}{4} + \frac{2}{5} = \frac{5}{20} + \frac{8}{20} = \frac{13}{20}$ of the tank of gas. So $1 - \frac{13}{20} = \frac{7}{20}$ of the tank of gas remains.</p> <p>C. This answer results from subtracting the sum of $\frac{1}{4}$ and $\frac{6}{20}$ ($\frac{2}{5}$ of the remaining $\frac{3}{4}$ of the tank), instead of $\frac{2}{5}$ of the total amount in the tank, from 1.</p> <p>D. This answer results from solving for the fractional part of the tank of gas Greg's mother used, not the amount that remains.</p>
<p>Question #15 (E143229)</p> <p>Linda earned \$5.25 and spent \$3.75 one week. The next week she earned \$4.40 and spent \$2.25. How much money did Linda have left after these 2 weeks?</p> <p>A. \$6.00 B. \$3.65 C. \$15.65 D. \$9.65</p>	<p>CCSS.Math.Content.7.NS.A.3 > DOK 2</p> <p>Solve real-world and mathematical problems involving the four operations with rational numbers.</p> <p>Answer Choice Rationales</p> <p>A. This is the amount Linda spent ($\\$3.75 + 2.25$).</p> <p>B. Correct</p> <p>C. This is the sum of all the numbers in the problem ($\\$5.25 + 3.75 + 4.40 + 2.25$).</p> <p>D. This is the amount Linda earned ($\\$5.25 + 4.40$).</p>

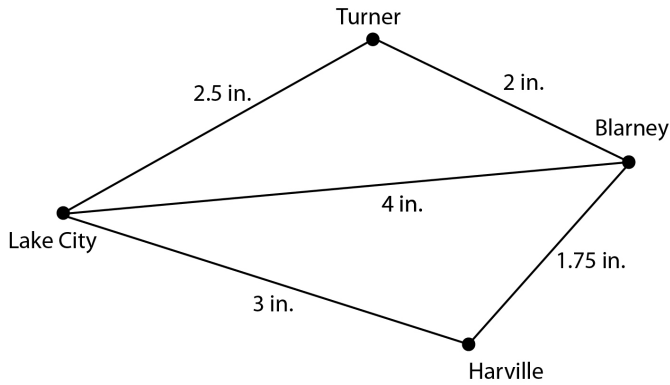
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<p>Question #16 (E259243)</p> <p>What is the value of the expression below?</p> $\frac{1}{3} + 2\left(\frac{1}{6} - \frac{2}{3}\right) \div \frac{3}{4}$ <p>A. -1 B. $-\frac{5}{12}$ C. 0 D. $\frac{5}{3}$</p>	<p>CCSS.Math.Content.7.NS.A.3 > DOK 1</p> <p>Solve real-world and mathematical problems involving the four operations with rational numbers.</p> <p>Answer Choice Rationales</p> <p>A. Correct: This is the result of using the correct order of operations and calculating correctly. The terms inside the parenthesis simplify to -1/2. Multiplied by 2 gives -1. Divided by 3/4 gives -4/3. Adding 1/3 gives -3/3 or -1.</p> <p>B. This is the result of using -1 divided by 3/4 is -3/4 instead of -4/3.</p> <p>C. This is the result of not distributing the 2 over (1/6 - 2/3) and adding the resulting -1/3 to the +1/3 before dividing by 3/4.</p> <p>D. This is the result of making a sign error such that 1/6 - 2/3 results in +1/2.</p>
<p>Question #17 (E261753)</p> <p>Sara made a scale drawing of the playground.</p>  <p>If 2 cm = 5 ft , what is the AREA of the playground?</p> <p>A. 480 ft² B. 600 ft² C. 3,000 ft² D. 12,000 ft²</p>	<p>CCSS.Math.Content.7.G.A.1 > DOK 2</p> <p>Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.</p> <p>Answer Choice Rationales</p> <p>A. This is the result of calculating the area in cm based on the scale drawing, not the actual playground.</p> <p>B. This is the result of calculating the area of the scale drawing (24 cm x 20 cm = 240 square cm) and incorrectly using the scale to convert this number (240 x 5/2 = 600 square feet).</p> <p>C. Correct: This is the result of properly converting the length of 24cm to 60 ft (24 x 5/2) and the width of 20cm to 50 ft (20 x 5/2) and multiplying 60 ft by 50 ft to find the area of the playground (50 ft x 60 ft = 3,000 square feet).</p> <p>D. This is the result of multiplying the length and width of the playground by 5 instead of dividing by 2 first, then calculating the area of the playground.</p>

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Question #18 (E257354)

The map shows the roads from Lake City to three smaller towns.



Liza drove from Lake City to Turner, then to Blarney, then straight back to Lake City. She drove a total of 34 miles. What is the scale of the map?

- A. 1 inch = 4 miles
- B. 1 inch = 8.5 miles
- C. 1 inch = 25.5 miles
- D. 1 inch = 289 miles

CCSS.Math.Content.7.G.A.1 > DOK 2

Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

Answer Choice Rationales

- A. **Correct: This answer is correct. The distance on the map that Liza drove was $2.5 + 2 + 4 = 8.5$ inches. Since $34 \div 8.5 = 4$, the scale of the map is 1 inch = 4 miles.**
- B. This answer results from dividing 34 miles by 4 inches, the straight-line distance from Blarney to Lake City.
- C. This answer results from subtracting $34 - 8.5$.
- D. This answer results from multiplying 34×8.5 .