

Tennessee Comprehensive Assessment Program

TCAP/CRA 2013



5

Anchor Set

Grade 5 – Broken Crackers Task

SECURE MATERIAL - Reader Name: _____

Tennessee Comprehensive Assessment Program

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Part 2: Constructed Response Task Section

Broken Crackers Task

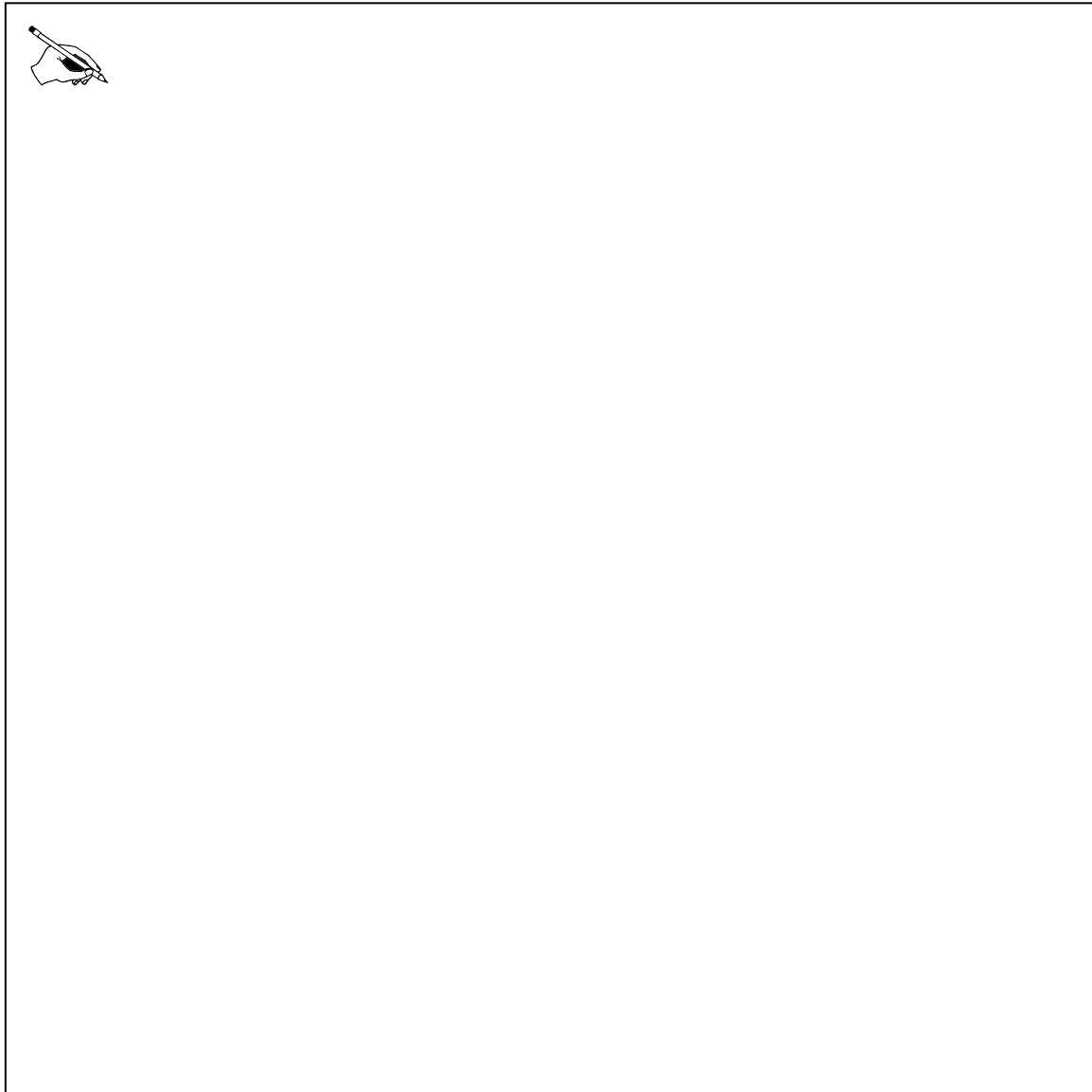
When Miriam opened her bag of crackers, all of them had broken. She found 32 pieces.

One-half of the total pieces were cracker halves.

One-fourth of the total pieces were cracker fourths.

The rest of the pieces were cracker eighths.

How many crackers were in Miriam's bag before any of them broke? Show your work with equations or diagrams. Label your equations or diagrams to clearly explain your thinking.



Scoring Guide

The CCSS for Mathematical Content (3 points)

- 5.NF.B.3 Indicates a number of wholes that is half the number of halves and indicates a number of wholes that is one-fourth the number of fourths. **(1 Point)** _____
- 5.NF.B.4 Finds fraction(s) of a whole number. Each attempt must be solved correctly and should not include any incorrect fractions. Students may do this by: _____
- Multiplying $\frac{1}{2} \times 32$ and $\frac{1}{4} \times 32$; or
 - Dividing 32 in 2 equal groups and 4 equal groups. **(1 Point)**
- 5.NF.B.6 Uses a two-step process to solve the task: finds the fractional portion of 32 and then finds the number of wholes that each of those results represents. **(1 Point)** _____

The CCSS for Mathematical Practice (4 points)

- MP1 Recognizes and follows an appropriate solution path to find the number of whole crackers. **(1 Point)** _____
(MP1: Make sense of problems and persevere in solving them.)
- MP2 Translates the products of each fraction of 32 into whole crackers. **(1 Point)** _____
(MP2: Reason abstractly and quantitatively.)
- MP4 Writes equations or draws diagrams that represent the $\frac{1}{2}$ of and $\frac{1}{4}$ of the whole (32 pieces). **(1 Point)** _____
(MP4: Model with mathematics.)
- MP6 Student provides equations or diagrams to show each step of the process used to determine the answer of 11 whole crackers. **(1 Point)** _____
(MP6: Attend to precision.)

TOTAL POINTS: 7

The CCSS for Mathematical Content Addressed In This Task

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

5.NF.B.3	Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). 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. <i>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?</i>
5.NF.B.4	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
5.NF.B.6	Solve real-world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

The CCSS for Mathematical Practice*

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

* Gray type indicates Mathematical Practices not addressed in this assessment.

2. Broken Crackers Task


When Miriam opened her bag of crackers, all of them had broken. She found 32 pieces.

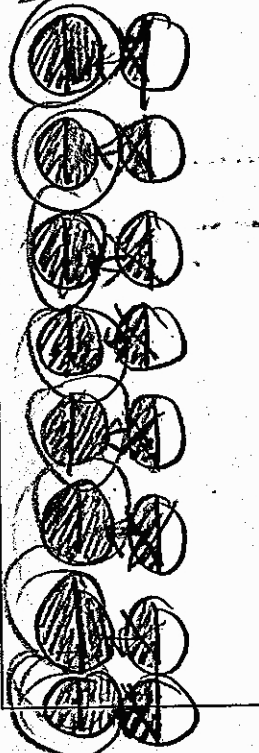
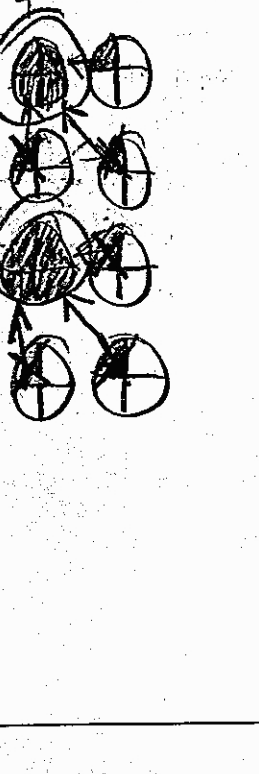
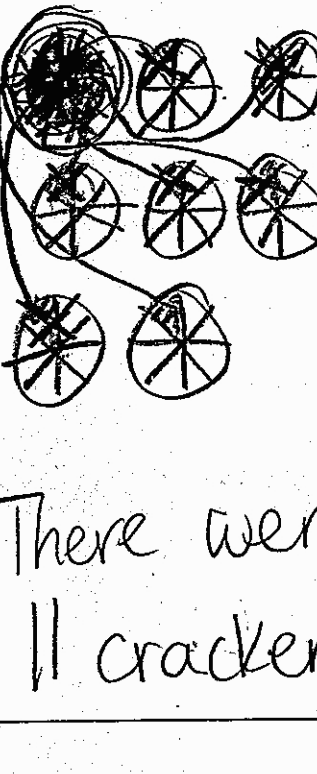
One-half of the total pieces were cracker halves.

One-fourth of the total pieces were cracker fourths.

The rest of the pieces were cracker eighths.

How many crackers were in Miriam's bag before any of them broke? Show your work with equations or diagrams. Label your equations or diagrams to clearly explain your thinking.

 Total: 32 pieces $\frac{1}{2}$ = halves $\frac{1}{4}$ = fourths
rest = eighths: $2 \text{ halves} = 1 \text{ whole}$ $8 \text{ eighths} = 1 \text{ whole}$ $\frac{4}{4} = 1 \text{ whole}$

$32 \div 2 = 16$ $\frac{1}{2} \text{ of } 32 = 16$	$32 \div 4 = 8$ $\frac{1}{4} \text{ of } 32 = 8$	$8 + 16 = 24$ <small>fourths halves pieces</small> $32 - 24 = 8 \text{ left}$
		 <p>There were 11 crackers.</p>

Anchor 1

Litho 0097

Total Content Points: 3 (5.NF.B.3, 5.NF.B.4, 5.NF.B.6)

Total Practice Points: 4 (MP1, MP2, MP4, MP6)

By writing the equation $32 \div 2 = 16$ and drawing a diagram depicting 16 halves combining to form 8 wholes, which indicates a number of wholes made by half pieces, or half the number of halves; and by writing the equation $32 \div 4 = 8$ and drawing a diagram depicting 8 fourths combining to form 2 wholes, which indicates a number of wholes made by fourth pieces, or one-fourth the number of fourths, the student interprets fractions as division of numerators by denominators (5.NF.B.3). The student extends understanding of multiplication to multiply whole numbers by fractions, dividing 32 into 2 equal groups and 4 equal groups (5.NF.B.4). A two-step process is used to solve a real-world problem involving multiplication of fractions: the student finds the fraction

portions of 32 $\left(\frac{16}{32}, \frac{8}{32}, \text{ and } \frac{8}{32}\right)$ and then finds the number of wholes each of those

results represents (8, 2, and 1), arriving at the correct solution of 11 whole crackers (5.NF.B.6). The student makes sense of the problem and perseveres in solving it by following an appropriate solution path to find the number of whole crackers (MP1). The student reasons abstractly and quantitatively by translating the products of each fraction of 32 into whole crackers (MP2). The student models with mathematics by writing equations representing $\frac{1}{2}$ and $\frac{1}{4}$ of the original 32 pieces and by drawing diagrams representing the combining of cracker pieces into whole crackers (MP4). The student attends to precision, showing each step of the process used to determine the answer of 11 whole crackers (MP6).

Total Awarded Points: 7 out of 7

2. Broken Crackers Task

When Miriam opened her bag of crackers, all of them had broken. She found 32 pieces.

One-half of the total pieces were cracker halves. 16 8

One-fourth of the total pieces were cracker fourths. 8 2

The rest of the pieces were cracker eighths. 8 1

How many crackers were in Miriam's bag before any of them broke? Show your work with equations or diagrams. Label your equations or diagrams to clearly explain your thinking.

Handwritten work showing calculations and a diagram of 32 cracker pieces:

- $\frac{1}{2}$ of 32 = 16
- $\frac{1}{4}$ of 32 = 8
- $\frac{1}{8}$ is the rest of 32
- Diagram of 32 cracker pieces, with 16 halves, 8 fourths, and 8 eighths.
- Calculations on the right:
 - halved = 16
 - $16 \div 2 = 8$
 - fourths = 8
 - $8 \div 4 = 2$
 - eighths = 8
 - $8 \div 8 = 1$
 - Vertical addition: $8 + 2 + 10 + 1 = 21$

11 She had eleven
Crackers
before they broke

Anchor 2

Litho 0026

Total Content Points: 3 (5.NF.B.3, 5.NF.B.4, 5.NF.B.6)

Total Practice Points: 4 (MP1, MP2, MP4, MP6)

The student interprets fractions as division of numerators by denominators and indicates a number of wholes from half pieces, which is half the number of halves

$\left(\frac{1}{2} \text{ of } 32 = 16, 16 \div 2 = 8\right)$, and a number of wholes from fourth pieces, which is one-

fourth the number of fourths $\left(\frac{1}{4} \text{ of } 32 = 8, 8 \div 4 = 2\right)$ (5.NF.B.3). The student divides 32

into two equal groups and 4 equal groups (5.NF.B.4). A two-step process is used to solve a real-world problem involving multiplication of fractions: the student finds the fraction

portions of 32 $\left(\frac{16}{32}, \frac{8}{32}, \text{ and } \frac{8}{32}\right)$ and then finds the number of wholes each of those

results represents (8, 2, and 1), arriving at the correct solution of 11 whole crackers (5.NF.B.6). The student makes sense of the problem and perseveres in solving it by following an appropriate solution path to find the number of whole crackers (MP1). The student reasons abstractly and quantitatively by translating the products of each fraction of 32 into whole crackers (MP2). The student models with mathematics by drawing a diagram that represents combining the 32 cracker pieces into 11 whole crackers (MP4). The response demonstrates attention to precision by showing each step of the process used to determine the answer of 11 whole crackers (MP6).

Total Awarded Points: 7 out of 7

Anchor 3

Litho 0081

Total Content Points: 3 (5.NF.B.3, 5.NF.B.4, 5.NF.B.6)

Total Practice Points: 3 (MP1, MP2, MP4)

The student indicates a number of wholes from half pieces, which is half the number of halves (divides 2 into 32 to get 16 halves and then divides 2 into 16 halves to get 8 crackers); and indicates a number of wholes from fourth pieces, which is one-fourth the number of fourths (divides 4 into 8 fourths to get 2 crackers) (5.NF.B.3). The student divides 32 into two equal groups (16 halves) and 4 equal groups (8 fourths) (5.NF.B.4). A two-step process is used to solve a real-world problem involving multiplication of fractions: the student finds the fraction portions of 32 $\left(\frac{16}{32}, \frac{8}{32}, \text{ and } \frac{8}{32}\right)$ and then finds

the number of wholes each of those results represents (8, 2, and 1), arriving at the correct solution of 11 whole crackers (5.NF.B.6). The student makes sense of the problem and perseveres in solving it by following an appropriate solution path to find the number of whole crackers (MP1). The student reasons abstractly and quantitatively by translating the products of each fraction of 32 into whole crackers (MP2). The student models with mathematics by writing equations that represent combining cracker pieces into whole crackers (divides 2 into 16 halves to get 8 wholes, 4 into 8 fourths to get 2 wholes, and 8 into 8 eighths to get 1 whole) (MP4). The student shows most steps of the process used to determine the answer of 11 crackers, but does not show how he or she determined that there would be 8 cracker fourths, thus not sufficiently attending to precision (no credit for MP6).

Total Awarded Points: 6 out of 7

2. Broken Crackers Task

When Miriam opened her bag of crackers, all of them had broken. She found 32 pieces.

One-half of the total pieces were cracker halves.

One-fourth of the total pieces were cracker fourths.

~~One-fourth~~
The rest of the pieces were cracker eighths.

How many crackers were in Miriam's bag before any of them broke? Show your work with equations or diagrams. Label your equations or diagrams to clearly explain your thinking.

Cracker Bag

Picture Cracker Bag

$\frac{1}{2} \div 2 = \frac{1}{4}$ Equations?

$\frac{1}{4} \div 4 = \frac{1}{16}$

$\frac{1}{4} \div 8 = \frac{1}{32}$

Explanation

There were 11 crackers before they got crushed. I used division and addition to find this answer.

$= \frac{11}{32}$

$$\begin{array}{r} \frac{1}{32} \\ + \frac{2}{32} \\ + \frac{8}{32} \\ \hline \frac{11}{32} \end{array}$$

Anchor 4

Litho 0049

Total Content Points: 3 (5.NF.B.3, 5.NF.B.4, 5.NF.B.6)

Total Practice Points: 3 (MP1, MP2, MP4)

The student interprets fractions as division of numerators by denominators by writing $\frac{1}{2} \div 2 = \frac{1}{4}$ to indicate half the number of halves and $\frac{1}{4} \div 4 = \frac{1}{16}$ to indicate one-fourth the number of fourths. The resultant numbers are given as 8 out of 32 $\left(\frac{1}{4} \text{ as } \frac{8}{32}\right)$ and 2 out of 32 $\left(\frac{1}{16} \text{ as } \frac{2}{32}\right)$, which shows how many whole crackers are created by each type of fractional piece (5.NF.B.3). A two-step process is used to solve a real-world problem involving multiplication of fractions: the student finds the fraction portions of 32 represented by half of the pieces being cracker halves $\left(\frac{1}{4}\right)$, one-fourth of the pieces being cracker fourths $\left(\frac{1}{16}\right)$, and one-fourth of the pieces being cracker eighths $\left(\frac{1}{32}\right)$, and then finds the number of wholes each of those results represents (8, 2, and 1), arriving at the correct solution of 11 whole crackers (5.NF.B.6). The student extends understanding of multiplication to correctly multiply fractions by fractions (5.NF.B.4). The student makes sense of the problem and perseveres in solving it by following an appropriate solution path to find the number of whole crackers (MP1). The student reasons abstractly and quantitatively by translating the products of each fraction into whole crackers (MP2). The student models with mathematics by writing equations representing half the number of halves, one-fourth the number of fourths, and one-fourth the number of eighths (MP4). While the student shows most of the process used to determine the answer of 11 crackers, some steps are missing (the student does not show how $\frac{1}{4}$ becomes 8 out of 32, etc.) and the response is characterized by a lack of precision in terms of the meanings of fractions (for instance, using $\frac{11}{32}$ to mean 11 whole crackers made up of 32 pieces) (no credit for MP6).

Total Awarded Points: 6 out of 7

2. Broken Crackers Task


When Miriam opened her bag of crackers, all of them had broken. She found 32 pieces.

One-half of the total pieces were cracker halves.

One-fourth of the total pieces were cracker fourths.

The rest of the pieces were cracker eighths.

How many crackers were in Miriam's bag before any of them broke? Show your work with equations or diagrams. Label your equations or diagrams to clearly explain your thinking.



32^{pieces} half of the crackers = 16 halves
 32^{pieces} fourth of the crackers = 8 fourths
 $32^{\text{pieces}} - 24 = 8$ were $\frac{1}{8}$ $\frac{24^{\text{pieces}}}{}$
 16 halves = 8 wholes
 8 fourths = 2 wholes
 8 eighths = 1 whole

 11

 $8 + 2 + 1 =$ she started with eleven crackers

Anchor 5

Litho 0050

Total Content Points: 3 (5.NF.B.3, 5.NF.B.4, 5.NF.B.6)

Total Practice Points: 2 (MP1, MP2)

The student indicates a number of wholes from halves, which is half the number of halves (32 pieces – half of the crackers = 16 halves, 16 halves = 8 wholes), and a number of wholes from fourth pieces, which is one-fourth the number of fourths (32 pieces – fourth of the crackers = 8 fourths, 8 fourths = 2 wholes) (5.NF.B.3). The student finds half of 32 and one-fourth of 32 (5.NF.B.4). A two-step process is used to solve a real-world problem involving multiplication of fractions: the student finds the fraction portions of 32 $\left(\frac{16}{32}, \frac{8}{32}, \text{ and } \frac{8}{32}\right)$ and then finds the number of wholes each of those results represents (8, 2, and 1), arriving at the correct solution of 11 whole crackers (5.NF.B.6). The student makes sense of the problem and perseveres in solving it by following an appropriate solution path to find the number of whole crackers (MP1). The student reasons abstractly and quantitatively by translating the products of each fraction into whole crackers (MP2). While the student verbally describes taking fractions of the whole, he or she fails to use equations or diagrams to model either $\frac{1}{2}$ and $\frac{1}{4}$ of 32 or the combination of cracker pieces into whole crackers (no credit for MP4). While the student attempts to show each step of the process used to determine the answer of 11 whole crackers, the verbal descriptions of finding the fraction portions of 32 and of combining those portions into whole crackers are both weak, since neither equations nor diagrams are provided (no credit for MP6).

Total Awarded Points: 5 out of 7

2. Broken Crackers Task

When Miriam opened her bag of crackers, all of them had broken. She found 32 pieces.

One-half of the total pieces were cracker halves.

One-fourth of the total pieces were cracker fourths.

The rest of the pieces were cracker eighths.

How many crackers were in Miriam's bag before any of them broke? Show your work with equations or diagrams. Label your equations or diagrams to clearly explain your thinking.

$8 + 2 + 2 = 12$ She had 12 crackers

$\times 10$ pieces
 (8 cracker halves)

$\times 8$ pieces
 (2 cracker halves)

$\times 22$ pieces
 (2 cracker halves)

Anchor 6

Litho 0030

Total Content Points: 2 (5.NF.B.3, 5.NF.B.4)

Total Practice Points: 1 (MP1)

The student indicates a number of wholes from half pieces, which is half the number of halves (says 16 half pieces is 8 crackers), and a number of wholes from fourth pieces, which is one-fourth the number of fourths (says 8 one-fourth pieces is 2 crackers) (5.NF.B.3). In doing so, the student first finds half of 32 (16) and one-fourth of 32 (8) (5.NF.B.4). The student attempts to use a two-step process to solve the problem, but does not correctly find the number of cracker eighths and does not correctly translate the number found (22) into wholes, arriving at an incorrect solution of 12 whole crackers (no credit for 5.NF.B.6). While some of the calculations are incorrect, the student does recognize and follow the appropriate solution path of attempting to find the fractional portions of 32 and translate each of these into whole crackers, persevering to get a final answer to the problem (MP1). The student does not consistently translate correctly the products of each fraction of 32 into whole crackers (22 cracker eighths would translate to $2\frac{3}{4}$ crackers, not 2 crackers) (no credit for MP2). The student fails to use equations or diagrams either to model $\frac{1}{2}$ and $\frac{1}{4}$ of 32 or to model the combination of cracker pieces into whole crackers. The given diagrams depicting a single whole divided into 2, 4, and 8 pieces are inadequate (no credit for MP4). The student fails to show each step of the process used to determine his or her answer (no credit for MP6).

Total Awarded Points: 3 out of 7

2. Broken Crackers Task

When Miriam opened her bag of crackers, all of them had broken. She found 32 pieces.

One-half of the total pieces were cracker halves.

One-fourth of the total pieces were cracker fourths.

The rest of the pieces were cracker eighths.

How many crackers were in Miriam's bag before any of them broke? Show your work with equations or diagrams. Label your equations or diagrams to clearly explain your thinking.

The student's work is contained within a rectangular box. At the top left, there is a small drawing of an eye. The work consists of several parts:

- Three equations, each with a circled number and a circled result:
 - ① $\frac{1}{2} \times \frac{32}{1} = \frac{32}{2} = 16$
 - ② $\frac{1}{4} \times \frac{32}{1} = \frac{32}{4} = 8$
 - ③ $\frac{1}{8} \times \frac{32}{1} = \frac{32}{8} = 4$
- A vertical addition problem on the right side:

$$\begin{array}{r} 16 \\ 8 \\ + 4 \\ \hline 28 \end{array}$$
 The result 28 is circled.
- The text "answer = 28" with the 28 circled.
- Three long division problems at the bottom, each with a circled number:
 - ① $2 \overline{) 32}$ showing $2 \times 16 = 32$ and a remainder of 0.
 - ② $4 \overline{) 32}$ showing $4 \times 8 = 32$ and a remainder of 0.
 - ③ $8 \overline{) 32}$ showing $8 \times 4 = 32$ and a remainder of 0.

Anchor 7

Litho 0035

Total Content Points: 1 (5.NF.B.4)

Total Practice Points: 1 (MP4)

The student fails to indicate the number of wholes from halves, which is half the number of halves, and the number of wholes from fourth pieces, which is one-fourth the number of fourths (no credit for 5.NF.B.3). The student multiplies whole numbers by fractions to find half of 32 and one-fourth of 32 (5.NF.B.4). A two-step process is not used to solve the task, since the student does not translate the fractional portions of 32 into whole crackers and therefore arrives at an incorrect solution of 28 (no credit for 5.NF.B.6).

The student fails to recognize and follow an appropriate solution path to find the number of whole crackers (no credit for MP1). The student fails to translate any of the products of each fraction of 32 into whole crackers (no credit for MP2). The student models with

mathematics by writing equations representing $\frac{1}{2}$ and $\frac{1}{4}$ of the whole

$\left(\frac{1}{2} \times \frac{32}{1} = \frac{32}{2} = 16, \frac{1}{4} \times \frac{32}{1} = \frac{32}{4} = 8\right)$ (MP4). The student does not show the necessary steps

for determining the number of cracker eighths or for translating the fractions of 32 into whole crackers (no credit for MP6).

Total Awarded Points: 2 out of 7

2. Broken Crackers Task

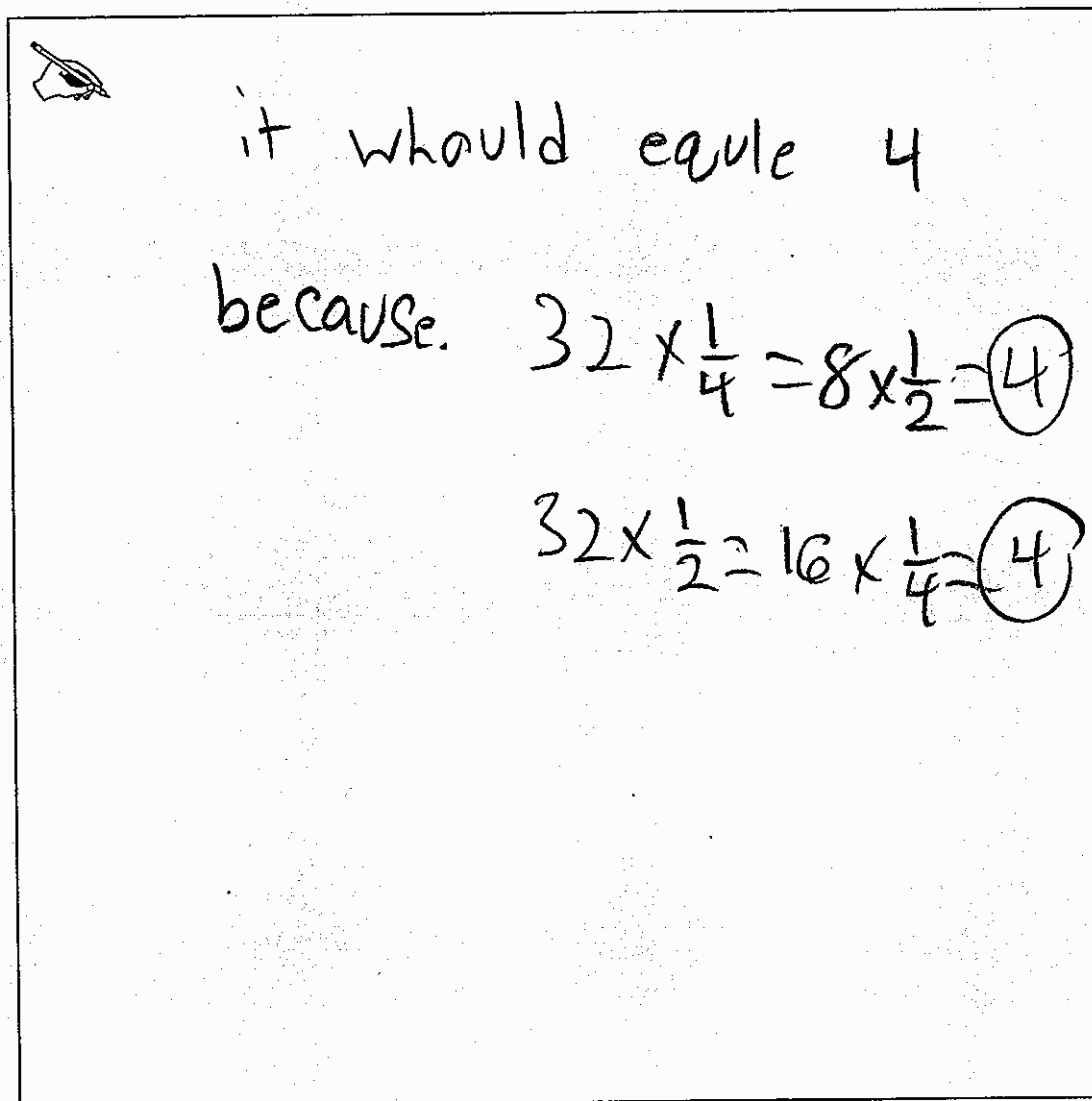
When Miriam opened her bag of crackers, all of them had broken. She found 32 pieces.

One-half of the total pieces were cracker halves.

One-fourth of the total pieces were cracker fourths.

The rest of the pieces were cracker eighths.

How many crackers were in Miriam's bag before any of them broke? Show your work with equations or diagrams. Label your equations or diagrams to clearly explain your thinking.



it would equal 4

because. $32 \times \frac{1}{4} = 8 \times \frac{1}{2} = 4$

$32 \times \frac{1}{2} = 16 \times \frac{1}{4} = 4$

Anchor 8

Litho 0067

Total Content Points: 1 (5.NF.B.4)

Total Practice Points: 0

The student fails to indicate the number of wholes from halves, which is half the number of halves, and the number of wholes from fourths, which is one-fourth the number of fourths (no credit for 5.NF.B.3). The student multiplies whole numbers by fractions to find half of 32 and one-fourth of 32 (5.NF.B.4). The student attempts to use a two-step process to solve the problem, but does not find the number of cracker eighths and does not correctly translate the number of cracker halves and fourths into wholes, arriving at an incorrect solution of 4 whole crackers (no credit for 5.NF.B.6). The student fails to recognize and follow an appropriate solution path to find the number of whole crackers, since no attempt is made to deal with the cracker eighths (no credit for MP1). The student does not correctly translate any of the products of the fraction of 32 into whole crackers (no credit for MP2). While the student attempts to model with mathematics by writing

equations, these equations are incorrect $\left(32 \times \frac{1}{4} = 8 \times \frac{1}{2} = 4 \right)$ represents 8 as being

equivalent to 4; $32 \times \frac{1}{2} = 16 \times \frac{1}{4} = 4$ represents 16 as being equivalent to 4) (no credit

for MP4). The student does not show the necessary steps for determining the number of cracker eighths, for translating this number of eighths into whole crackers, or for determining the total number of whole crackers (no credit for MP6).

Total Awarded Points: 1 out of 7

2. Broken Crackers Task

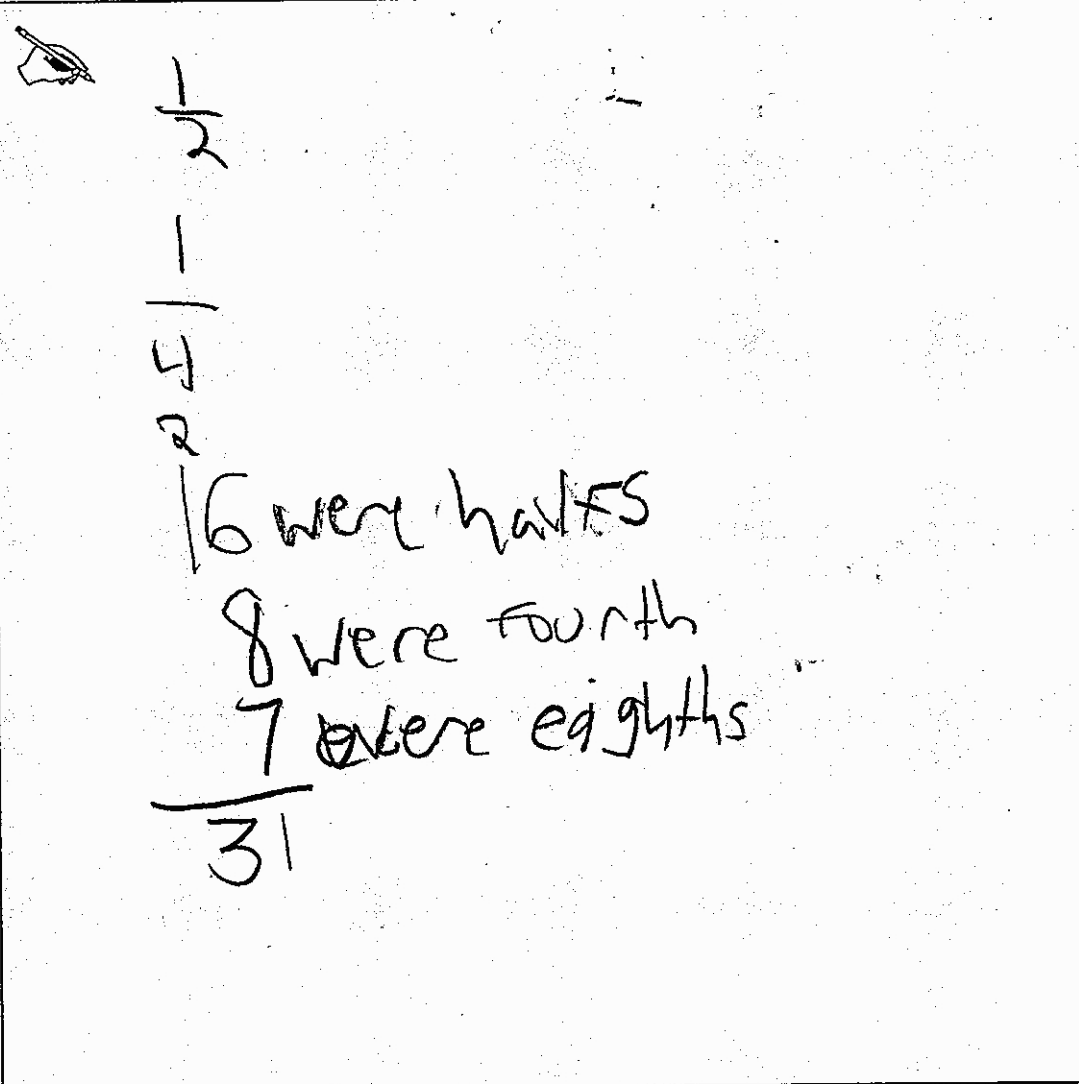
When Miriam opened her bag of crackers, all of them had broken. She found 32 pieces.

One-half of the total pieces were cracker halves.

One-fourth of the total pieces were cracker fourths.

The rest of the pieces were cracker eighths.

How many crackers were in Miriam's bag before any of them broke? Show your work with equations or diagrams. Label your equations or diagrams to clearly explain your thinking.



Handwritten work showing a diagram of a cracker being broken into halves, fourths, and eighths, and a list of counts for each piece size.

Diagram: A cracker is shown being broken into two halves. One half is further broken into four equal parts (fourths). One of these fourths is further broken into eight equal parts (eighths).

Handwritten text:

- 16 were halves
- 8 were fourths
- 7 were eighths

Handwritten number: 31

Anchor 9

Litho 0084

Total Content Points: 1 (5.NF.B.4)

Total Practice Points: 0

The student fails to indicate the number of wholes from halves, which is half the number of halves, and the number of wholes from fourths, which is one-fourth the number of fourths (no credit for 5.NF.B.3). The student finds half of 32 (“16 were halves”) and one-fourth of 32 (“8 were fourth”) (5.NF.B.4). A two-step process is not used to solve the task, since the student does not translate the fractional portions of 32 into whole crackers and arrives at an incorrect solution of 31 (no credit for 5.NF.B.6). The student fails to recognize and follow an appropriate solution path to find the number of whole crackers (no credit for MP1). The student does not translate any of the products of each fraction of 32 into whole crackers (no credit for MP2). The student does not use equations or diagrams either to model $\frac{1}{2}$ and $\frac{1}{4}$ of 32 or to model the combination of fractions into whole crackers (no credit for MP4). The necessary steps for determining the number of cracker eighths or for translating the fractions of 32 into whole crackers are not shown (no credit for MP6).

Total Awarded Points: 1 out of 7

2. Broken Crackers Task

When Miriam opened her bag of crackers, all of them had broken. She found 32 pieces.

One-half of the total pieces were cracker halves.

One-fourth of the total pieces were cracker fourths.

The rest of the pieces were cracker eighths.

How many crackers were in Miriam's bag before any of them broke? Show your work with equations or diagrams. Label your equations or diagrams to clearly explain your thinking.

$$\begin{array}{r} 16 \\ 2 \overline{) 32} \\ \underline{32} \\ 0 \end{array}$$

$$\frac{1}{2} \times 16 = 8$$

8 halves

$$\frac{1}{4} \times 16 = 4$$

4 $\frac{1}{4}$ crackers

20 rest of the pieces

Anchor 10

Litho 0082

Total Content Points: 0

Total Practice Points: 0

The student indicates a number of wholes made from halves, which is half the number of halves (by dividing 32 by 2 and then multiplying $\frac{1}{2}$ times 16 to get 8), but does not indicate a number of wholes made from fourths, which is one-fourth the number of fourths (no credit for 5.NF.B.3). The student finds half of 32 but does not find one-fourth of 32 (no credit for 5.NF.B.4). A two-step process to solve the task is not used, since the student does not find each of the fractional portions of 32, does not translate them into whole crackers, and does not provide a final answer in terms of whole crackers (no credit for 5.NF.B.6). The student fails to recognize or follow an appropriate solution path to find the number of whole crackers (no credit for MP1). The student fails to translate the products of each fraction of 32 into whole crackers (no credit for MP2). Because the only relevant equations deal with determining half the number of cracker halves, not enough of the process is shown to receive credit for adequate use of equations or diagrams to model the given mathematical situation (no credit for MP4). The student does not show the necessary steps for determining the number of cracker fourths or eighths, translating these fractions into whole crackers, or determining the total number of whole crackers (no credit for MP6).

Total Awarded Points: 0 out of 7

2. Broken Crackers Task

When Miriam opened her bag of crackers, all of them had broken. She found 32 pieces.

One-half of the total pieces were cracker halves.

One-fourth of the total pieces were cracker fourths.

The rest of the pieces were cracker eighths.

How many crackers were in Miriam's bag before any of them broke? Show your work with equations or diagrams. Label your equations or diagrams to clearly explain your thinking.

P
one-half

one-fourth

E

$$\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$$
$$\frac{1}{8} \times 32 = 4 \text{ crackers}$$

Anchor 11

Litho 0052

Total Content Points: 0

Total Practice Points: 0

The student does not indicate the number of wholes made from halves, which is half the number of halves, and the number of wholes made from fourths, which is one-fourth the number of fourths (no credit for 5.NF.B.3). The student fails to find half of 32 and one-fourth of 32 (5.NF.B.4). A two-step process is not used to solve the task, since the student does not find any of the fractional portions of 32, does not translate them into whole crackers, and arrives at an incorrect solution of 4 crackers (no credit for 5.NF.B.6). The student fails to recognize and follow an appropriate solution path to find the number of whole crackers (no credit for MP1). The student fails to translate the products of each fraction of 32 into whole crackers (no credit for MP2). The student does not use equations or diagrams either to model $\frac{1}{2}$ and $\frac{1}{4}$ of 32 or to model the combination of fractions into whole crackers. The given diagrams depicting a single whole divided into 2 and 4 pieces are inadequate (no credit for MP4). The student fails to show any of the necessary steps for determining the number of whole crackers (no credit for MP6).

Total Awarded Points: 0 out of 7