

**OGAP Fraction Item Bank Answer Key  
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<b>Fraction Topic</b>	<b>Item ID</b>	<b>Solutions</b>
Compare and Order	CB01	Answer: $17/33 > 16/34$ : Possible explanation: $16/34$ is $1/34$ less than $1/2$ ; $17/33$ is one-half/33 greater than $1/2$ . Therefore, $17/33 > 16/34$ .
Compare and Order	CB02	Answer: $7/15$ , $2/5$ , and $4/9$ are less than $1/2$ . Possible explanation: $7/15$ is less than $1/2$ because half of 15 is $7\ 1/2$ . So $7.5/15 = 1/2$
Compare and Order	CB03	Answer: $2/3$ , $4/7$ and $5/9$ are greater than $1/2$ . Possible explanation: $1.5/3$ , $3.5/7$ and $4.5/9$ are exactly $1/2$ . Each of these fractions is greater than $1/2$ .
Compare and Order	CB04	Answer: $5/12$ . Possible explanation: Each fraction is one unit fraction from half. $1/4$ is greater than $1/12$ so $1/12$ away from $1/2$ is closer than $1/4$ away from $1/2$ .
Compare and Order	CB05	Answer: $7/6$ . Possible explanation: $1/6$ is smaller than $1/5$ so $7/6$ is closer to 1.
Compare and Order	CB06	Answer: $5/8$ . Possible explanation: $5/8$ is $1/8$ greater than $1/2$ . $4/7$ is $.5/7$ away from $1/2$ . $1/8$ is greater than $.5/7$ so $5/8$ will be closer to 1.
Compare and Order	CB07	Answer: $6/8$ . Possible explanation: $6/8$ is equal to $3/4$ . Since $1/4$ s are larger than fifths than $3/4$ is will larger than $3/5$ .
Compare and Order	CB08	Answer: $13/16$ . Possible explanation: $13/16$ is $3/16$ away from 1. $7/10$ is $3/10$ away from 1. $3/16$ is smaller than $3/10$ which means it is closer to 1.
Compare and Order	CB09	Answer: $7/8$ . Possible explanation: Both fractions are a unit fraction away from 1. Since $1/8$ is smaller it means that it is closer to 1.
Compare and Order	CB10	Answer: $11/12$ . Possible explanation: Both fractions are a unit fraction away from 1. Since $1/12$ is smaller than $1/6$ , $11/12$ will be closer to 1.
Compare and Order	CB11	Answer: $3/4$ . Possible explanation: Both fractions are a unit fraction away from 1 although $3/4$ is less than 1 and $3/2$ is greater than 1. Since $1/4$ is less than $1/2$ it is closer to 1.
Compare and Order	CB12	Answer: $4/10$ . Possible explanation: Both fraction are a unit fraction away from $1/2$ . Since $1/10$ is less than $1/8$ , $4/10$ will be closer to $1/2$ .
Compare and Order	CB13	Answer: $10/22$ . Possible explanation: $10/22$ is close to $1/2$ while $16/18$ is actually closer to 1 whole.
Compare and Order	CB14	Answer: $3/8$ is $1/8$ less than $1/2$ . $2/3$ is $.5/3$ greater than $1/2$ .
Compare and Order	CB15	Answer: Both $3/5$ and $3/4$ are greater than $1/2$ and less than 1. $5/3$ is greater than 1. Possible explanation: $3/5$ is greater than $2.5/5$ which equals $1/2$ . $5/3$ is greater than $3/3$ which equals 1.
Compare and Order	CB16	Answer: Both $5/6$ and $3/2$ are greater than $1/2$ . $5/6$ is $2/6$ greater than $1/2$ and $3/2$ is greater than 1.
Compare and Order	CB17	Answer: $1/4$ is less than $1/2$ since $2/4$ equals $1/2$ . $6/12$ is exactly $1/2$ . $9/10$ is $4/10$ greater than $1/2$ .
Compare and Order	CB18	Answer: $1/8$ is less than $1/2$ since $4/8=1/2$ . $2/3$ is greater than $1/2$ and less than 1. $9/8$ is greater than 1 as $8/8$ equals 1.
Compare and Order	CF01	Answer: Kim. Work should prove that $2/3$ is greater than $3/6$ .

Compare and Order	CF02	Answer: Jen. Work should prove that $\frac{2}{3}$ is greater than $\frac{3}{5}$ .
Compare and Order	CF03	Answer: Bob. Work should prove that $\frac{3}{8}$ is greater than $\frac{3}{10}$ .
Compare and Order	CF04	Answer: Chocolate. Work should prove that $\frac{2}{5}$ is equal to $\frac{4}{10}$ . $\frac{4}{10}$ is greater than $\frac{3}{10}$ .
Compare and Order	CF05	Answer: Art. Work should prove that $\frac{5}{6}$ is greater than $\frac{3}{4}$ .
Compare and Order	CF06	Answer: Walk. Work should prove that $\frac{2}{5}$ is equal to $\frac{4}{10}$ and $\frac{6}{10}$ is greater than $\frac{4}{10}$ .
Compare and Order	CF07	Answer: Spinner B. Work should prove that $\frac{2}{5}$ is equal to $\frac{4}{10}$ and $\frac{4}{10}$ is greater than $\frac{3}{10}$ .
Compare and Order	CF08	Answer: George. Work should prove that $\frac{2}{3}$ is greater than $\frac{5}{8}$ .
Compare and Order	CF09	Answer: Don. Work should prove that $\frac{5}{6}$ is greater than $\frac{3}{6}$ .
Compare and Order	CF10	Answer: No. Jill is not correct. Possible explanation: $\frac{7}{12}$ is $\frac{5}{12}$ away from the whole. $\frac{11}{16}$ is $\frac{5}{16}$ away from the whole. Since $\frac{5}{16}$ is greater than $\frac{5}{12}$ than $\frac{11}{16}$ is closer to 1.
Compare and Order	CF11	Answer: No. Jack is incorrect. Possible explanation: Both fractions are a unit fraction away from 1 whole. Since $\frac{1}{6}$ is greater than $\frac{1}{8}$ , $\frac{7}{8}$ is actually closer to 1.
Compare and Order	CF12	Answer: No. Mary is incorrect. Possible explanation: Both fractions are a unit fraction away from 1 whole. Since $\frac{1}{3}$ is greater than $\frac{1}{4}$ than $\frac{3}{4}$ is closer to 1.
Compare and Order	CF13	Answer: $\frac{8}{25}$ . Possible explanation: Since $\frac{8}{25}$ is equal to $\frac{16}{50}$ we can see that $\frac{16}{50}$ is greater than $\frac{15}{50}$ .
Compare and Order	CF14	Answer: $\frac{41}{80}$ . Possible explanation: $\frac{27}{56}$ is $\frac{1}{56}$ less than $\frac{1}{2}$ . $\frac{41}{80}$ is $\frac{1}{80}$ greater than $\frac{1}{2}$ so $\frac{41}{80}$ is greater.
Compare and Order	CF15	Answer: $\frac{17}{33}$ . Possible explanation: $\frac{16}{34}$ is less than $\frac{1}{2}$ and $\frac{17}{33}$ is greater than $\frac{1}{2}$ .
Compare and Order	CF16	Answer: $\frac{5}{8}$ . $\frac{5}{8}$ is $\frac{1}{8}$ greater than $\frac{1}{2}$ . $\frac{41}{80}$ is $\frac{1}{80}$ away from $\frac{1}{2}$ . Since $\frac{1}{8}$ is greater than $\frac{1}{80}$ than $\frac{5}{8}$ is greater than $\frac{41}{80}$ .
Compare and Order	CF17	Answer: $\frac{7}{12}$ . Possible explanation: $\frac{3}{8}$ is less than $\frac{1}{2}$ . $\frac{7}{12}$ is greater than $\frac{1}{2}$ .
Compare and Order	CF18	Answer: No. Gabby is incorrect. Possible explanation: $\frac{6}{5}$ is greater than 1 and $\frac{13}{16}$ is less than 1. Therefore, $\frac{6}{5}$ is greater than $\frac{13}{16}$ .
Compare and Order	CF19	Answer: John's line is longer. Possible explanation: John's lines is 9 inches long.
Compare and Order	CF20	Answer: Stephanie's pencil is shorter. Possible explanation: Phil's pencil is 8 inches long.
Compare and Order	CF21	Answer: Max. Work should prove that $\frac{2}{3}$ hr is longer than $\frac{1}{2}$ hr.
Compare and Order	CF22	Answer: Carol's line is longer. Possible explanation: Since $\frac{1}{4}$ of a foot is 3 inches and Carol drew a line that is 4 inches, Carol's line is longer.
Compare and Order	CF23	Answer: Kickball used more of the gym. Work should prove that $\frac{1}{2}$ is greater than $\frac{1}{3}$ .

Compare and Order	OF01	Answer: $5/19, 5/12, 5/9, 5/7, 5/3$ . Possible explanation: Each of the fractions is composed of 5 unit fractions. Since the unit fraction with the greater denominator is a smaller fraction, this will also be true with 5 of each unit fractions.
Compare and Order	OF02	Answer: $4/50, 4/33, 4/20, 4/11, 4/9$ . Possible explanation: Each of the fractions is composed of 4 unit fractions. Since the unit fraction with the greater denominator is a smaller fraction, this will also be true with 4 of each unit fractions.
Compare and Order	OF03	Answer: $3/12, 5/12, 7/12, 8/12, 11/12$ . Possible explanation: Each fraction is composed of multiple copies of twelfths. So, 3 ( $1/12$ ) size pieces will be less than 5 ( $1/12$ ) size pieces.
Compare and Order	OF04	Answer: $1/8, 1/6, 1/5, 1/2$ . Possible explanation: Each fraction is a unit fraction. The unit fraction with the greater denominator is a smaller fraction since there are more pieces in the same size whole.
Compare and Order	OF05	Answer: $3/4, 4/5, 7/8$ . Possible explanation: Each of these fractions is one unit fraction from the whole. Since $1/4$ is less than $1/5$ is less than $1/8$ , $3/4$ will be farthest from the whole and therefore the smallest fraction.
Compare and Order	OF06	Answer: $3/5, 3/4$ . Possible explanation: Each of these fractions is composed of 3 unit fractions. Since $1/5$ is less than $1/4$ , $3/5$ will be less than $3/4$ .
Compare and Order	OF07	Answer: $1\ 1/8, 1\ 1/6, 1\ 1/3, 1\ 4/5$ . Possible explanation: Since all of these fractions are made up of a whole and a unit fraction you can disregard the whole. $1/8$ is less than $1/6$ is less than $1/3$ is less than $4/5$ .
Compare and Order	OF08	Answer: $10/7, 1\ 3/8$ . Possible explanation: $10/7 = 1\ 3/10$ . Since both of these fractions are composed of a whole and 3 additional unit fractions, and $1/10$ is less than $1/8$ ... this tells us that $1\ 3/10$ is less than $1\ 3/8$ .
Compare and Order	D01	Answer: Any fraction equivalent to $1/2$ . Possible explanation: $1/2$ is in the middle between $2/5$ and $3/5$ .
Compare and Order	D02	Answer: Any fraction equivalent to $1/2$ . Possible explanation: $1/2$ is in the middle between 0 and 1.
Compare and Order	D03	Answer: Any fraction equivalent to $11/6$ . Possible explanation: The arrow points to the spot that is $1/6$ away from 2.
Compare and Order	D04	Answer: Any fraction equivalent to $13/16$ . Possible explanation: The arrow points to the spot that is halfway between $6/8$ and $7/8$ .
Compare and Order	D05	Answer: Any fraction equivalent to $5/8$ . Possible explanation: The arrow points to the spot that is halfway between $1/2$ and $3/4$ .
Compare and Order	D06	Answer: Any fraction equivalent to $3\ 7/8$ . Possible explanation: The arrow points to the spot that is $1/8$ away from 4.
Compare and Order	D07	Answer Part A) Any fraction that is greater than $1/2$ and less than 1 with explanation. Answer Part B) Any fraction that is greater than $1/2$ and less than $3/4$ with explanation.
Compare and Order	D08	Answer: Any fraction that is greater than 1 but less than $5/4$ with explanation.
Compare and Order	D09	Answer: Any two fractions that are greater than $2/5$ and less than $4/5$ with explanation.

Equivalence	E01	Answer: Student must show model that proves that $3/4=6/8=12/16$ .
Equivalence	E02	Answer: Student must show model that proves that $6/10=9/15$ .
Equivalence	E03	Answer: Student must show model that proves that $1/4=2/8$ .
Equivalence	E04	Student must show model that proves that $2/3=4/6=6/9$ .
Equivalence	E05	Possible Answer: $1/4$ and $4/16$ are equivalent. Both fractions are half of a half.
Equivalence	E06	Answer: Student must use number line to prove that $3/10 = 30\%$ which is the same as $30/100$ .
Equivalence	E07	Answer: Student must explain that $1/2$ and $4/8$ are equivalent but $1/8$ is 4 times smaller.
Equivalence	E08	Answer: Yes. Sam is correct. Possible explanation: Student must explain that all the fractions are equivalent. Student may note that $3/6$ is not obvious with the number line partitioning but it is still equivalent.
Equivalence	E09	Answer: Bob and Meg ate the same amount of pizza.
Equivalence	E10	Answer: $15/20$ is the fraction that is not equivalent. $15/20=3/4$
Equivalence	E11	Answer: $20/30$ is the fraction that is not equivalent. $20/30=2/3$ .
Equivalence	E12	Answer: Student must use model to prove equivalence.
Equivalence	E13	Answer: Student must use model to prove equivalence.
Equivalence	E14	Answer: Student must explain that $2/10$ and $20/100$ are equivalent.
Equivalence	E15	Answer: Student must explain that $60/100$ , $6/10$ and $3/5$ are equivalent.
Equivalence	E16	Answer: Student must explain that multiplying by $2/2$ , $3/3$ , and $4/4$ is the same as multiplying by 1. Since multiplying any number by 1 will get you that number, multiplying a fraction by 1 will get you an equivalent fraction.
Equivalence	E17	Answer: Student must use the model to prove that $8/10=4/5$ .
Equivalence	E18	Answer: Student must use the given strategy to find equivalent fractions.
Equivalence	E19	Answer: Yes. Jasmine is correct. Possible explanation: The fraction will be equivalent but it will not be a whole number since 10 is not divisible by 3.
Equivalence	E20	Answer: No $3/5$ is not equal to $8/15$ . $3/5=9/15$ .
Equivalence	E21	Answer: Yes. $2/7 = 6/21$
Equivalence	E22	Possible Answer: Student should use the models to show that the fractions are equivalent. Student should state that there are 4 times the number of pieces and each piece is $1/4$ the size of $1/6$ .
Equivalence	E23	Answer Part A) $2/3$ . Answer Part B) $6/9$ . Yes, the fractions are equivalent because they both take up the same space on the area model.
Equivalence	E24	Answer Part A) $1/4$ . Answer Part B) $2/8$ . Yes, the fractions are equivalent because they both take up the same space on the area model.
Equivalence	E25	Answer Part A) She has 4 times more pieces and each piece is $1/5$ the size in the model of $20/24$ . Answer Part B) Student must explain that multiplying by $2/2$ , $3/3$ , $4/4$ is the same as multiplying by 1, and therefore results in an equivalent fraction.
Equivalence	E26A	Answer: Student must explain that the number line shows all three fractions are equivalent.
Equivalence	E26B	Answer: Student must explain how the area model shows all three fractions are equivalent.

Partitioning	P01	Answer: Student must accurately shade the area model.
Partitioning	P02	Answer: Student must accurately shade the area model.
Partitioning	P03	Answer: Figure B and C are both $\frac{1}{2}$ .
Partitioning	P04	Answer: 2 pieces.
Partitioning	P05	Answer: Student must cut each third into thirds again.
Partitioning	P06	Answer: Each child will get $\frac{2}{3}$ brownies each.
Partitioning	P07	Answer: Sam is incorrect. Possible explanation: $\frac{12}{16}$ is greater than $\frac{1}{2}$ .
Partitioning	P08	Answer: No. Possible explanation: Square A is $\frac{1}{25}$ greater.
Partitioning	P09	Answer: No. Possible explanation: Square A is exactly half and Square B is greater than $\frac{1}{2}$ .
Partitioning	P10	Answer Part A) 3 cans. Answer Part B) Each student gets $\frac{1}{4}$ of the cans of soda.
Partitioning	P11	Answer Part A) 6 pieces of candy each. Answer Part B) Each student gets $\frac{1}{4}$ of the candy bars.
Partitioning	P12	Answer: 20 pieces of pizza.
Partitioning	P13	Answer: 4 pennies each.

Addition	ASC 01	Answer: Yes, all the ketchup can fit into one bottle. Possible explanation: because $1/5 < 1/2$ . Therefore, $1/2 + 1/5 < 1$
Addition	ASC 02	Answer: No. Possible explanation: $5/8$ is $3/8$ away from 1. $1/4 = 2/8$ so $5/8 + 2/8 < 1$
Addition	ASC 03	Answer: No. Possible explanation: She has $1/24$ cup too much liquid.
Addition	ASC 04	Answer: 1 whole mile. Possible explanation: $7/10$ is $2/10$ greater than $1/2$ so $7/10 + 1/4$ is almost 1.
Addition	ASC 05	Answer: $1/2$ of the pizza. Possible explanation: They ate $3/5$ of the pizza.
Addition	ASC 06	Answer: Closest to $1/2$ . Possible explanation: $3/10 + 4/10 = 7/10$ . Closer to $1/2$ as $2/10$ from $1/2$ and $3/10$ from 1.
Addition	ASC 07	Answer: Yes. Josh has enough yarn. He uses 1 $13/30$ balls of yarn.
Addition	ASC 08	Answer: 1 pound. $4/5 + 1/5 = 5/5 = 1$ pound.
Addition	ASC 09	Answer: 1 $1/24$ cups of liquids.
Addition	ASC 10	Answer: $5/8$ of a pound of mix.
Multiple operations	ASC 11	Answer: Jar is $1/12$ full of candy.
Multiple operations	ASC 12	Answer: Jar is $1/3$ full of candy.
Multiple operations	ASC 13	Answer: $1/6$ of the gym space is left for volleyball
Subtraction	ASC 14	Answer: He was $8/15$ of a mile from home.
Subtraction	ASC 15	Answer: He was 1 $3/40$ miles from school.
Multiple operations	ASC 16	Answer: The container has $11/12$ cups space that is not used.
Addition	ASC 17A	Answer: 6 $5/12$ yards of fabric
Addition	ASC 17B	Answer: Yes. Sample explanation: Chris separated the whole numbers from fractional parts. She added the whole numbers first and then turned the fractional parts into equivalent fractions in twelfths.
Addition	ASC 18	Answer: No. She did not meet goal. Possible explanation: She is $1/8$ mile away from the goal.
Multiple operations	ASC 19	Answer: Fiona needs a wreath, bracelet and plant to use 6 $1/2$ yards. Sample explanation: wreath and plant pot together need 5 yards. So we need the bracelet which uses 1 $1/2$ yards.
Addition	ASC 20	Answer: Richard worked 5 $17/20$ hours.
Addition	ASC 21	Answer: Eliza would need to go to grocery store, bike path, Kelyn's house and the movie theatre to ride 16 $3/10$ miles.
Addition	ASC 22	Answer: Alison needs to make brownies, cookies and peanut butter bars. $1 + 1 + 1 = 3$ and $2/3 + 2/3 + 2/3 = 6/3$ . $3 + 6/3 = 5$ .
Subtraction	ASC 23	Answer: Sandy ran 2 $13/20$ miles more on the first week.
Subtraction	ASC 24	Answer: Both Hannah and Brent are correct. Possible explanation: Hannah kept the fractions in mixed number form and found equivalent fractions with sixths. Brent turned the fractions into improper fractions but also turned the fractions into sixths.
Subtraction	ASC 25	Answer: Silver and magenta. Possible explanation: I looked for two fractions that were almost 4 yards difference. $5 \frac{1}{3} - 1 \frac{2}{3}$ seemed to be about 4 yards apart so I checked with exact subtraction.
Subtraction	ASC 26	Answer: Anne canned 3 $2/15$ pounds more bean than carrots.

Subtraction	ASI 01	Answer: B. Possible explanation: $4/5$ is a little less than 1. A little less than one subtract $1/2$ would be a little less than $1/2$ .
Subtraction	ASI 02	Answer: C. Possible explanation: $11/12$ is a little less than 1. $1/10$ is close to 0. A little less than 1 subtract $1/10$ would be very close to 1.
Subtraction	ASI 03	Answer: B. Possible explanation: $3/10$ is a little greater than $1/4$ . $1/8$ is half of $1/4$ . A little greater than $1/4$ subtract $1/8$ will be close to 0.
Subtraction	ASI 04	Answer: H. Possible explanation: $5/8$ is $1/8$ over $1/2$ . So, $5/8 - 1/2$ will be close to 0.
Addition	ASI 05	Answer: A. Possible explanation: $3/8$ is almost $1/2$ . $1/2$ is $2/3$ will be greater than 1 and less than 1.5.
Addition	ASI 06	Answer: B. Possible explanation: $5/6$ is almost 1. $3/4$ is almost 1. $1 + 1 = 2$
Addition	ASI 07	Answer: B. Possible explanation: $1/8 + 2/8 = 1/8 + 1/8 + 1/8 = 3/8$ . $3/8$ is less than $1/2$ .
Addition	ASI 08	Answer: C. Possible explanation: $2/6$ is less than $1/2$ . $3/6$ is exactly $1/2$ . So, the answer will be slightly less than 1.
Addition	ASI 09	Answer: D. Possible explanation: $1/12$ is close to 0. $7/8$ is close to 1. Adding these two fractions will make a sum close to 1.
Addition	ASI 10	Answer: D. Possible explanation: $5/6$ is almost 1. $7/8$ is almost 1. So, $1 + 1 = 2$ .
Addition	ASI 11	
Addition	ASI 12	Answer: G. Possible explanation: $2/5$ is close to $1/2$ . $3/8$ is close to $1/2$ . $1/2 + 1/2 + 1/6$ will be a little greater than 1.
Multiple operations	ASI 13	Answer: $2/3 - 1/9$ is less than 1 because you are subtracting from less than 1. $2/3 + 2/6$ is equal to 1 because $2/6$ is equal to $1/3$ . $2/3 + 5/5$ is greater than 1 because you are adding to a whole ( $5/5$ ).
Multiple operations	ASI 14	Answer: $2/3 + 1/8$ is less than 1 because $1/8$ is less than $1/3$ . $5/3 - 2/3$ is equal to 1 as it equals $3/3$ (whole). $11/6 - 2/3$ is greater than 1 as $2/3$ is equal to $4/6$ . $11/6 - 4/6 = 7/6$ .
Multiple operations	ASI 15	Answer: $5/6 = 1/8$ is less than 1 because you are subtracting from less than 1. $1/8 + 7/8$ is equal to 1 as $8/8$ makes a whole. $6/5 - 1/8$ is greater than 1 as $6/5$ is $1/5$ greater than 1. Since $1/8$ is less than $1/5$ , when you subtract $1/8$ from $6/5$ , the difference is greater than 1.
Multiple operations	ASI 16	$2/3 + 1/8$ is less than 1 because $1/8$ is less than $1/3$ . $9/8 - 1/8$ is equal to 1. $5/5 + 1/8$ is greater than 1 as $5/5$ is a whole.
Subtraction	ASI 17	Answer Part A) greater than. $(6/5 - 2/5)$ will be close to 1. $(3/4 - 2/3)$ will be close to 0. Answer Part B) less than. $3/5$ is greater than $1/2$ . When you subtract a greater amount from the same number, the answer will be less.
Addition	ASI 18	Answer: A) less than. $1/4$ is greater than $1/5$ . Since you are adding to $2/3$ in both equations, the equation with $1/4$ will be a greater sum. B) greater than. Sixths are greater than eighths. So, $5/6$ is greater than $5/8$ . When you add $1/3$ to a greater fraction, the sum of the equation with the greater fraction will be greater.



Addition	ASI 19	Answer: Any answers less than $\frac{1}{3}$ will make this inequality true as $\frac{2}{3} + \frac{1}{3}$ will equal 1.
Addition	ASI 20	Answer: Any answers greater than $\frac{5}{4}$ will make this inequality true as $\frac{5}{4} + \frac{3}{4}$ is equal to 2.
Addition	ASI 22	Answer: Sheila is incorrect. Possible explanation: Fourths are greater than fifths so if you add 3 ( $\frac{1}{4}$ ) the sum will be greater than adding 3 ( $\frac{1}{5}$ ).
Addition	ASI 23	Answer: Ben is incorrect. Possible explanation: $\frac{1}{4}$ is equivalent to $\frac{2}{8}$ so $\frac{1}{4} + \frac{1}{4}$ is equal to $\frac{4}{8}$ . $\frac{4}{8}$ is greater than 3 ( $\frac{1}{8}$ ).
Addition	ASI 24	Answer: Jim is incorrect. Possible explanation: $1 + \frac{1}{6}$ is greater than 1 while 5 ( $\frac{1}{6}$ ) is less than 1.
Addition	ASM 01	Answer: Sam's is B. Christine's is A. Tom's is D.
Addition	ASM 02	Possible Answer: $\frac{5}{8}$ is $\frac{1}{8}$ greater than $\frac{1}{2}$ . $\frac{3}{16}$ is $\frac{1}{8}$ less than $\frac{5}{16}$ . Both equations are equal due to compensation.
Addition	ASM 03	Answer: Mike is correct. Possible explanation: 3 ( $\frac{1}{6}$ ) is $\frac{3}{6}$ or $\frac{1}{2}$ . Another $\frac{1}{6}$ makes 4 ( $\frac{1}{6}$ ).
Addition	ASM 04	Answer: True. Possible explanation: $7 \times (\frac{1}{8}) = \frac{7}{8}$
Addition	ASM 05	Answer: No. The equation is not true. Possible explanation: $\frac{1}{5}$ is greater than $\frac{1}{10}$ . $5 \times (\frac{1}{10}) = \frac{5}{10}$
Addition	ASM 06	Answer: Yes. Possible explanation: $7 \times (\frac{1}{6}) = \frac{7}{6}$
Addition	ASM 07	Answer: No. Possible explanation: The models are different sizes so it is impossible to join. She would need to recognize that $\frac{1}{4} = \frac{2}{8}$ .

Multiplication	MA 01	Answer: Mike gives 6 candies.
Multiplication	MA02	Answer: Yes. $5/8=10/16$ .
Multiplication	MA03	Answer Part A) 16 cookies. Answer Part B) 18 cookies.
Multiplication	MA04	Answer: 20 red squares is $5/9$ .
Multiplication	MA05	Answer: Bill's favorite vegetable must be beans.
Multiplication	MA06	Answer: Alice's favorite vegetable must be corn.
Multiplication	MA07	Answer. Yes. Mary is correct.
Multiplication	MA08	Answer: Student must shade in 20 rectangles.
Multiplication	MA09	Answer: Student must shade in 25 rectangles.
Multiplication	MA10	Answer: Student must shade in 12 rectangles.
Multiplication	MA11	Answer: Student must shade in 30 rectangles.
Multiplication	MC 01	Answer: Linda took $5/6$ of an hour.
Multiplication	MC 02	Answer: John ate $1/8$ of a pizza.
Multiplication	MC 03	Answer: Mark needs to buy at least 5 yards of wire.
Multiplication	MC 04	Answer: 3 brownies.
Multiplication	MC 05	Answer: \$900.
Multiplication	MC 06	Answer: 15 pounds of burger.
Multiplication	MC 07	Answer: 125 women take tennis.
Multiplication	MC 08	Answer: Susan used $2 \frac{19}{64}$ yards of fabric to make the dress.
Multiplication	MC 09	Answer: Allie had \$40 leftover.
Multiple operations	MC 10	Answer: Dan took 75 minutes.
Multiplication	MC 11	Answer: The bakery had $18 \frac{3}{4}$ pounds of flour.
Multiplication	MC 12	Answer: Mike's carpet was 221.1 sq ft.
Multiple operations	MC13	Answer: No. She does not have enough flour.
Multiplication	MC14	Answer: Chocolate chips - 2 cups, peanuts - 3.75 cups, raisins - $3/4$ cups.
Multiplication	MC15	Answer: 5 people.
Multiplication	MC16	Answer: 10 girls.
Multiplication	MC17	Answer: Jim has 6 red marbles.
Multiplication	MC18	Answer: Carol has 6 white puppies.
Multiplication	MC19	Answer: 3 cupcakes are chocolate.

Multiple operations	MC20	Answer Part A) Snickers are favorite candy for $\frac{1}{6}$ of the class. Answer Part B) Skittles or peanut butter cups are favorite candy for $\frac{1}{4}$ of the class.
Multiple operations	MC21	Answer Part A) $5\frac{1}{2}$ feet. Answer Part B) 33 tiles.
Multiplication	MC22	Answer: Fred needs to buy at least 49 tiles in order to cover his hallway.
Multiplication	MC23	Answer: Story C matches the problem.
Multiplication	MC24	Answer: Story B and C matches the problem.
Multiplication	MI01	Answer: Less than $\frac{1}{3}$ . Possible explanation: $\frac{4}{5}$ is less than 1 so $\frac{4}{5}$ of $\frac{1}{3}$ will be less than $\frac{1}{3}$ .
Multiplication	MI02	Answer: Greater than 3. Possible explanation: $\frac{5}{4}$ is greater than 1 so $3 \times \frac{5}{4}$ is greater than 3.
Multiplication	MI03	Answer: Less than 16 since $\frac{5}{8}$ is about half. $\frac{1}{2}$ of 16 is 8.
Multiplication	MI04	Answer: Paige is correct. Possible explanation: if you multiply any number by less than 1 it will be less than the original number.
Multiplication	MI05	Answer: Greater than 5. Since $2\frac{1}{2}$ times two equals 5, the answer will be greater than 5 because you are multiplying by a number greater than 2.
Multiplication	MI06	Answer: Closest to 5. Possible explanation: Since $2\frac{5}{6}$ is $\frac{1}{6}$ less than 3 and $3 \times 1\frac{1}{2}$ is a little less than 5, the answer will be close to 5.
Multiplication	MI07	Answer: Closest to 0. Possible explanation: Since $\frac{2}{5}$ is about $\frac{1}{2}$ and $\frac{5}{8}$ is about $\frac{1}{2}$ , AND $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ it will be closest to 0.
Multiplication	MI08	Answer: Closest to 4. Possible explanation: Since $\frac{3}{10}$ is close to $\frac{1}{3}$ you can use equation $\frac{1}{3} \times 12 = 4$ .
Multiplication	MI09	Answer: $\frac{2}{3} \times \frac{9}{10}$ is less than $\frac{2}{3}$ . $\frac{2}{2} \times \frac{2}{3}$ is equal to $\frac{2}{3}$ , and $\frac{11}{6} \times \frac{2}{3}$ is greater than $\frac{2}{3}$ . Student must explain.
Multiplication	MI10	Answer: $\frac{2}{3} \times 12$ is less than 12. $12 \times \frac{6}{6}$ is equal to 12, and $12 \times \frac{6}{5}$ is greater than 12.
Multiplication	MI11	Answer Part A) Greater than. Possible explanation: Multiplying 476 by 1 will result in a greater answer than multiplying 476 by $\frac{1}{3}$ . Answer Part B) Greater than. Multiplying 476 by a fraction greater than 1 will result in a greater number than multiplying 476 by a fraction smaller than 1.
Multiplication	MI12	Answer Part A) Less than. Multiplying 125 by 1 will be less than multiplying 125 by a fraction greater than 1. Answer Part B) Less than. Multiplying 125 by a fraction less than 1 will result in a smaller answer than multiplying 125 by a number greater than 1.
Multiplication	MI13	Answer Part 1) True. Possible explanation: Multiplying 250 by a fraction less than 1 will result in a number less than 250. Answer Part 2) False. Possible explanation: Multiplying 250 by a fraction greater than 1 will result in a number greater than multiplying 250 by a fraction less than 1.
Multiplication	MI14	Answer Part A) True. Possible explanation: Multiplying 325 by a fraction less than 1 will result in less than 325. Answer Part B) False. Possible explanation: Multiplying 325 by a number less than 1 will result in an answer less than multiplying 325 by a fraction greater than 1.
Multiplication	MI15	Answer: $\frac{3}{4}$ Yes. $\frac{4}{3}$ No. $\frac{3}{3}$ No. Possible explanation: $\frac{3}{4}$ is the only number that works as it is less than 1.
Multiplication	MI16	Answer: $\frac{9}{4}$ No. $\frac{4}{9}$ Yes. $\frac{9}{9}$ No. Possible explanation: $\frac{4}{9}$ is the only fraction that works as it is less than 1.
Multiplication	MI17	Answer: Trees from left to right are Helen, Anna, and Joseph.
Multiplication	MI18	
Multiplication	MI19	Answer: $\frac{2}{3} \times \frac{1}{8}$ is less than $\frac{2}{3}$ . $\frac{2}{3} \times \frac{5}{5}$ is equal to $\frac{5}{5}$ . $\frac{2}{3} \times 2\frac{1}{9}$ is greater

		than $\frac{2}{3}$ .
Multiplication	MI20	Answer: $12 \times \frac{2}{5}$ is less than 12. $12 \times \frac{4}{4}$ is equal to 12. $\frac{11}{6} \times 12$ is greater than 12.
Multiplication	MI21	Answer Part 1: False. Possible explanation: Multiplying 250 x a fraction less than $\frac{1}{2}$ will be less than multiplying 250 by a fraction over a half. Answer Part 2) False. Possible explanation: Multiplying $\frac{1}{5}$ by a greater whole number will result in a greater product.
Multiplication	MI22	Answer Part 1: False. Possible explanation: Multiplying $\frac{3}{4}$ by a larger number will result in a larger answer than multiplying $\frac{3}{4}$ by a smaller number. Answer Part 2: False. Possible explanation: Multiplying $\frac{3}{4}$ by a greater whole number will result in a greater product.

Division	DI01	Answer: D. Possible explanation: there are 16 one-fourths in 4. Therefore 15 is closest to $4 \div \frac{1}{4}$
Division	DI02	Answer: D. Possible explanation: $\frac{1}{4}$ is half of $\frac{1}{2}$ so there are 2 one-fourths in one-half.
Division	DI03	Answer: A. Possible explanation: $\frac{2}{3}$ is composed of $\frac{1}{3} + \frac{1}{3}$ so $\frac{2}{3}$ divided by 2 is $\frac{1}{3}$ which is closer to $\frac{1}{2}$ than 0.
Multiple operations	DI04	Answer Part A) False Possible explanation: $\frac{1}{4}$ is smaller than $\frac{1}{3}$ so more one-fourths will go into 15. Answer Part B) True Possible explanation: 15 divided by $\frac{1}{4}$ is the same as $15 \times 4$ . $15 \times 4$ is much greater than $15 \times \frac{1}{4}$ .
Multiple operations	DI05	Answer Part A) True. Possible explanation: $\frac{3}{4}$ will go into 250 ten times more than it will go into 25. Answer Part B) True. Possible explanation: 25 divided by $\frac{3}{4}$ is the same as $25 \times \frac{4}{3}$ . Multiplying by a number greater than 1 will result in a larger number than multiplying by less than 1.
Division	DI06	Answer: $\frac{1}{3}$ divided by 8 is less than $\frac{1}{3}$ . $\frac{1}{3}$ divided by $\frac{9}{9}$ is equal to $\frac{1}{3}$ and 7 divided by $\frac{1}{3}$ is greater than $\frac{1}{3}$ .
Division	DI07	Answer: $\frac{2}{5}$ divided by 2 $\frac{1}{9}$ is less than $\frac{2}{5}$ , $\frac{2}{5}$ divided by $\frac{7}{7}$ is equal to $\frac{2}{5}$ and $\frac{2}{5}$ divided by $\frac{1}{8}$ is greater than $\frac{2}{5}$ .
Multiple operations	DI08	Answer: Problem B
Multiple operations	DI09	Answer: Problem A
Multiple operations	DI10	Answer: Problem C
Division	DI11	Answer Part A) False. Possible explanation: $\frac{3}{4}$ will go into 25 more than 25 times. Answer Problem B) True. Possible explanation: $\frac{1}{5}$ is less than $\frac{7}{8}$ so $\frac{1}{5}$ will go into 25 more than $\frac{7}{8}$ will go into 25.
Division	DI12	Answer: $\frac{1}{3}$ divided by $\frac{3}{3}$ is equal to $\frac{1}{3}$ . $\frac{3}{3}$ divided by $\frac{1}{3}$ and 8 divided by $\frac{1}{3}$ are both greater than $\frac{1}{3}$ .
Division	DP01	Answer: $\frac{3}{16}$ a ball of yard
Division	DP02	Answer Part A) Each friend gets $\frac{7}{10}$ of a pizza. Answer Part B) Each friend gets $\frac{1}{5}$ of the pizzas.
Division	DP03	Answer Part A) Each friend gets $\frac{25}{4}$ or 6 and $\frac{1}{4}$ pieces of gum. Answer Part B) Each friend gets $\frac{1}{4}$ of the gum.
Division	DP04	Answer: $\frac{11}{16}$ of a gallon of juice is in each pitcher.
Division	DP05	Answer: Max spent $\frac{7}{12}$ of an hour or 35 minutes mowing each lawn.
Division	DP06	Answer: Each person will get 4 and $\frac{4}{5}$ cookies.
Division	DP07	Answer: Curtis rides at 18 mph.
Division	DP08	Answer: The cherries cost \$5.25 per pound.
Division	DP09	Answer: They were travelling 1 and $\frac{2}{3}$ mph
Division	DP10	Answer: Each person will get $\frac{1}{4}$ of a cookie.
Division	DP11	Answer: Each friends will get $\frac{1}{3}$ of a batch of brownies
Division	DP12	Answer: $\frac{1}{8}$ pound of candy per bag.
Division	DP13	Answer: Bob was correct because $\frac{1}{5}$ is greater than $\frac{1}{7}$ .
Division	DP14	Answer: Each person will get $\frac{1}{8}$ bag of skittles.
Division	DP15	Answer: Each friend will get $\frac{3}{4}$ of a cookie.

Division	DQ01	Answer: 8 bags of candy.
Division	DQ02	Answer: Janet is correct. She can make 8 bows and have $\frac{2}{3}$ yd of ribbon left over
Division	DQ03	Answer: Jim can make 5 decorations.
Division	DQ04	Answer: Mrs. Clifford has 8 pieces of string.
Division	DQ05	Answer: Matt has 20 pieces of tape.
Division	DQ06	Answer: Mr. Grove has 18 pieces of wood.
Division	DQ07	Answer Part A) 15 treats. Answer Part B) 6 and $\frac{1}{3}$ miles
Division	DQ08	Answer Part A) 4 times. Answer Part B) 18 times
Division	DQ09	Answer Part A) 8 times. Answer Part B) Hawaiian Punch since $15 \text{ cups} = 15 (\frac{1}{3} \text{ cups})$
Division	DQ10	Answer Part A) 9 bunches of balloons. Answer Part B) No. There are not balloons at 8 and $\frac{1}{3}$ miles. There would be balloons at the 8 mile mark.
Division	DQ11	Answer Part A) $\frac{2}{3}$ divided by $\frac{1}{4}$ is the correct division problem. Answer Part B) Student must draw an accurate picture to represent the situation.
Division	DQ12	Answer Part A) $\frac{2}{3}$ divided by $\frac{1}{8}$ is the correct division problem. Answer Part B) Student must draw an accurate picture to represent the situation.
Division	DQ13	Answer: Liz can wrap 9 gifts with $\frac{1}{2}$ ft ribbon leftover.
Division	DQ14	Answer: Sheila will be able to feed her cat for 10 full days.
Division	DQ15	Answer: Pat can fill 17 and $\frac{1}{2}$ decorative cans.
Division	DQ16	Answer: Richard can do 5 ski runs in 3 hours.
Division	DQ17	Answer: Josh can ski 7 and $\frac{1}{2}$ ski runs in 3 hours.

Multiple operations	MS01	Answer: 74 inches. Possible equation: $((5 \frac{1}{2} \times 2)(3 \frac{3}{4} \times 2)) \times 4$
Multiple operations	MS02	Answer: 14 cups of goodies. Possible equation: $(\frac{1}{2} + \frac{2}{3}) \times 12$
Multiple operations	MS03	Answer: 1 and $\frac{1}{6}$ cups more trail mix. Possible equation: $14 \times (\frac{3}{4} - \frac{2}{3})$
Multiple operations	MS04	Answer: Bob ran $1 \frac{1}{5}$ more miles than Traci. Possible equation: $(4 \times \frac{15}{4}) - (3 \times \frac{23}{5})$
Multiple operations	MS05	Answer: Gabriella's rabbit will eat 3 and $\frac{7}{60}$ cups of food each day. Possible equation: $(5 \frac{1}{4} + 3 \frac{2}{3} + 6 \frac{2}{3})$ divided by 5.
Multiple operations	MS06	Answer: Kiki puts $\frac{5}{12}$ pounds of trail mix into each bag. Possible equation: $(\frac{3}{4} + \frac{2}{3} + 1 \frac{1}{4} + \frac{2}{3})$ divided by 8.
Multiple operations	MS07	Answer: If they bag the candies Andy's way there will be $4 \frac{1}{2}$ more bags filled. Possible equation: $(\frac{27}{4} \text{ divided by } \frac{1}{2}) - (\frac{27}{4} \text{ divided by } \frac{3}{4})$ .
Multiple operations	MS08	Answer: Popcorn Box B has $\frac{1}{24}$ quart more popcorn. Possible equation: $(\frac{21}{8} \text{ divided by } 3) - (1 \frac{2}{3} \text{ divided by } 2)$ .

Number Line	N01	Answer: Tim's number line because he placed $\frac{1}{2}$ half way between 0 and 1.
Number Line	N02	Answer: Student must accurately label number line.
Number Line	N03	Answer: Student must accurately label number line.
Number Line	N04	Answer: Student must accurately label number line.
Number Line	N05	Answer: Student must accurately label number line.
Number Line	N06	Answer: Student must accurately label number line.
Number Line	N07	Answer: Student must accurately label number line.
Number Line	N08	Answer: Student must accurately label number line.
Number Line	N09	Answer: $\frac{8}{8}$ .
Number Line	N10	Answer: Student must accurately label number line.
Number Line	N11	Answer: Student must accurately label number line.
Number Line	N12	Answer: Student must accurately label number line.
Number Line	N13	Answer: Student must accurately label number line.
Number Line	N14	Answer: Student must accurately label number line.
Number Line	N15	Answer: Student must accurately label number line.
Number Line	N16	Answer: The pencil is $4 \frac{7}{8}$ inches long.
Number Line	N17	Answer: The rectangle is $\frac{1}{4}$ inches long.
Number Line	N18	Answer Part A) $\frac{1}{2}$ . Answer Part B) $\frac{1}{4}$ .
Number Line	N19	Answer: Student must accurately label number line.
Number Line	N20	Answer: Student must accurately label number line.
Number Line	N21	Answer: Student must accurately label number line.
Number Line	N22	Answer: Student must accurately label number line.
Number Line	N23	Answer: Student must accurately label number line.
Number Line	N24	Answer: Student must accurately label number line.
Number Line	N25	Answer: Student must accurately label number line.