THIRD SPACE
LEARNING

Grade 4 End of Year Math Assessment

A tool to assess student progress at the end of grade 4 or prepare for upcoming state assessments

Grade 4

Questions

Name: ....

Class: ....

Date: ....

Score: ....

Circle your answer to each question, like in the example below. You can use any space left below or around a question for your working out, if you need it.

Example Question
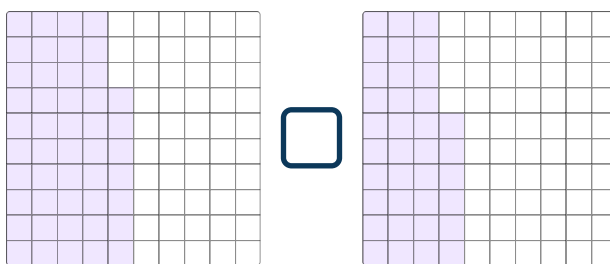
Solve 61,435 + 82,870 using the standard algorithm.

a   143,205

b   144,305

c   69,732

d   145,115

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1   Which of the following statements correctly compares the two hundreds grids below?
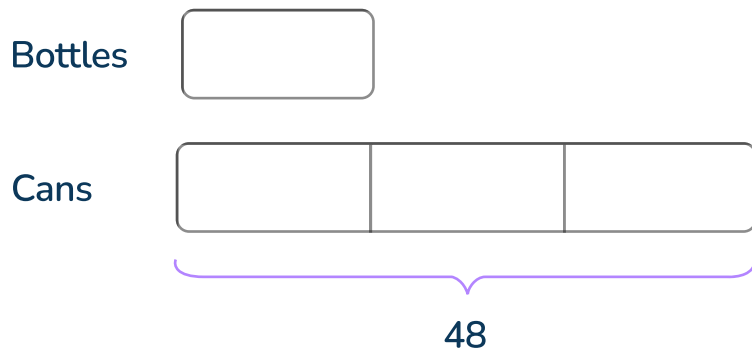

a   0.47 > 0.36

b   0.47 < 0.36

c   0.46 = 0.37

d   0.37 > 0.46

2   Ciara is collecting bottles and cans to raise money for her soccer team. So far, she has collected three times as many cans as bottles. If she has collected 48 cans, how many bottles has she collected? Use the diagram to help you.

Bottles

Cans

48

a   144 bottles

b   16 bottles

c   12 bottles

d   64 bottles

3   Solve 73,290 + 61,854 using the standard algorithm.

a   135,144

b   11,436

c   135,044

d   145,144

4 Katie bought 5 pounds of grass seed for her backyard. She used 55 ounces of the seed on Monday and put the rest in her garage to use the following week. How many ounces of grass seed does Katie have to use next week?

a   35 ounces

b   50 ounces

c   80 ounces

d   25 ounces

5 Which set of numbers are all multiples of 8?

a   8, 16, 23, 31, 40

b   1, 8, 16, 24

c   1, 2, 4, 8

d   8, 16, 24, 32, 40

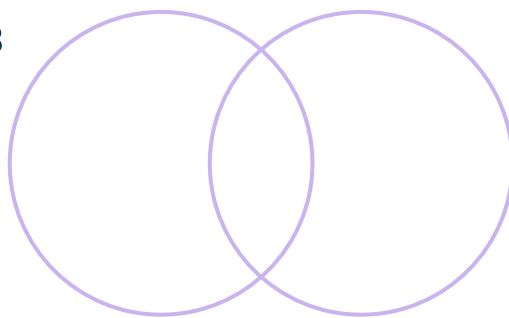**6** Solve 45,231 – 37,751 using the standard algorithm.

a   82,982

b   12,420

c   7,480

d   7,680

7 The ground in a rectangular classroom has a length of 16 feet and a width of 18 inches. What is the area, in square feet, of the classroom?

a   68 square feet

b   288 square feet

c   188 square feet

d   34 square feet

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8 Examine the Venn Diagram.

Factors of 28   Factors of 42

What is the greatest number that belongs in the middle of the Venn Diagram?

a   14

b   2

c   28

d   7

9   A bookstore has 24 bookshelves in its fiction section. Each bookshelf holds 37 books. How many books can the bookshelves hold?

     a   61 books

     b   888 books

     c   788 books

     d   240 books

10   Kaitlin is wrapping the top of her toy box in blue paper for her new baby brother. She drew a picture to help her plan how much blue paper she will need to complete the project.

25 inches

Top of toy Box   21 inches
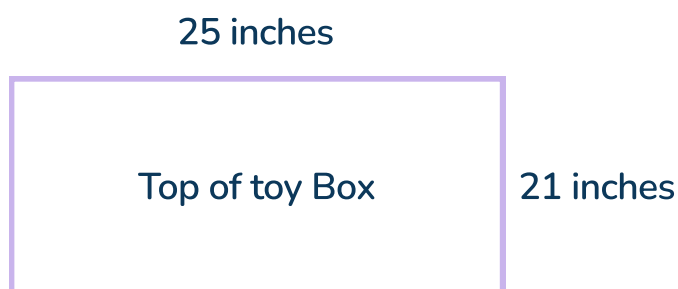
How much blue paper will Kaitlin need to wrap the toy box?

     a   525 square inches

     b   92 square inches

     c   46 square inches

     d   82 square inches

11 Sophia created the table shown below to organize the prime numbers and composite numbers up to 30. What mistake did she make?

Prime Numbers	Composite Numbers
2, 3, 5, 7, 11, 13, 17, 19, 23, 27, 29	4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21, 22, 24, 25, 26, 28, 30

a   Sophia listed 2 as a prime number, but it is a composite number since it is even.

b   Sophia listed 21 as a composite number, but it is a prime number since it is odd.

c   Sophia listed 5 as a prime number, but it is a composite number since it has many multiples.

d   Sophia listed 27 as a prime number, but it is a composite number since it has more factors than 1 and itself.

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12 323 students are going on a field trip. They can enter the museum in groups of 8. How many full groups of students will there be?

a   331 groups

b   40 groups

c   315 groups

d   41 groups

13 The plot diagram shows the distances that Alex threw his paper airplane during a science experiment.

Distance flown by paper airplane

Distance (feet)
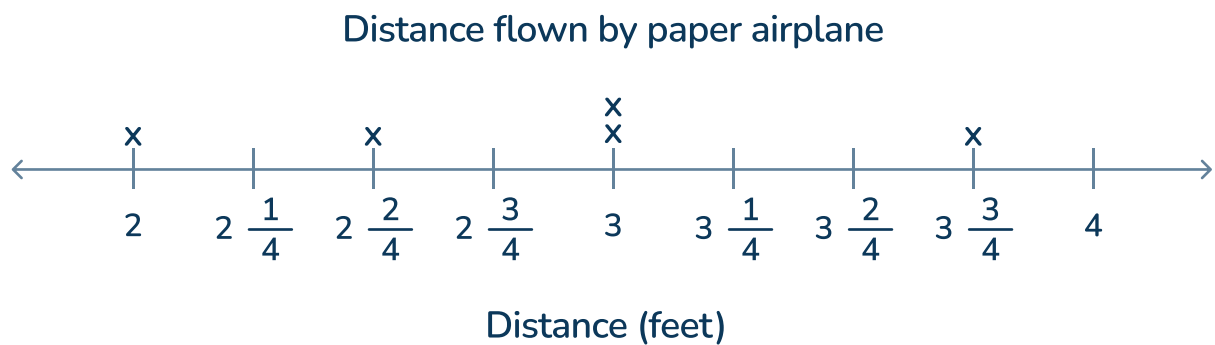
What is the total number of feet Alex threw his paper airplane?

a $14 \frac{1}{4}$ feet

b $5 \frac{0}{4}$ feet

c $13 \frac{1}{4}$ feet

d $11 \frac{1}{4}$ feet

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14 Look at the pattern of figures below. If the pattern continues, how many squares will make up the 6th figure?
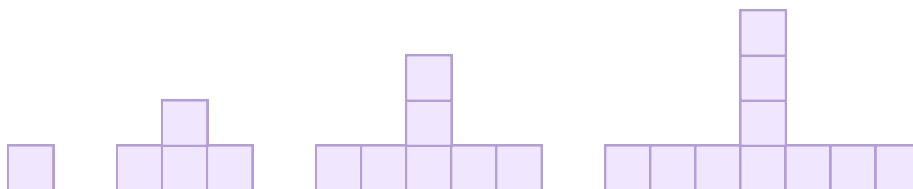
a   13

b   17

c   16

d   11

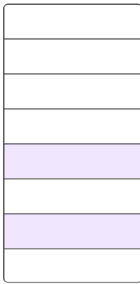**15** Solve 5,791 – 3,428 using the standard algorithm.

    a   2,377

    b   2,363
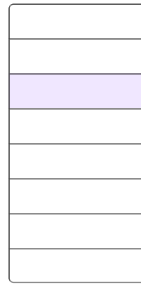
    c   9,219

    d   2,373

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16 The shapes are divided into equal parts. Which shape is $\frac{1}{4}$ shaded?
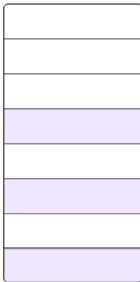
    a   **b**

    c   **d**
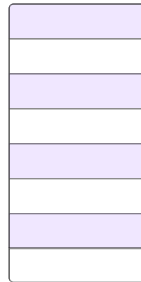
17 The right triangle below is divided into two parts. The measure of angle ABC is 32 degrees. What is the measure of angle CBD?

A

C

32°

?°

B   D
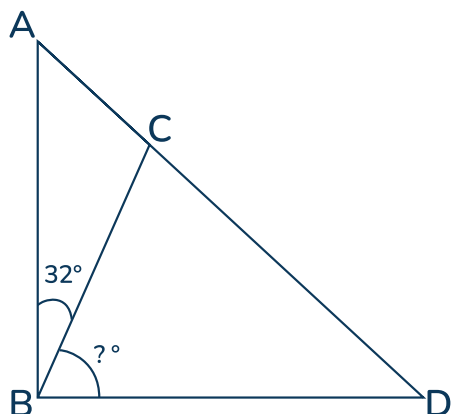
a   68 degrees

b   148 degrees

c   32 degrees

d   58 degrees

18 Which rule describes the following set of numbers?
9, 18, 12, 24, 18, 36, 30...

a   Add 9, subtract 6

b   Multiply by 2, subtract 6

c   Add 12, subtract 6

d   Multiply by 2, divide by 6

19   Angela had a rectangle with 8 equal parts. She shaded 2 of them. Which fractions does Angela's rectangle show are equal?
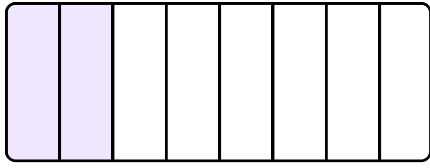
a $\dfrac{1}{8} = \dfrac{1}{4}$

b $\dfrac{2}{8} = \dfrac{1}{4}$

c $\dfrac{1}{8} = \dfrac{1}{2}$

d $\dfrac{2}{8} = \dfrac{1}{2}$

20   What is the measure of the angle?
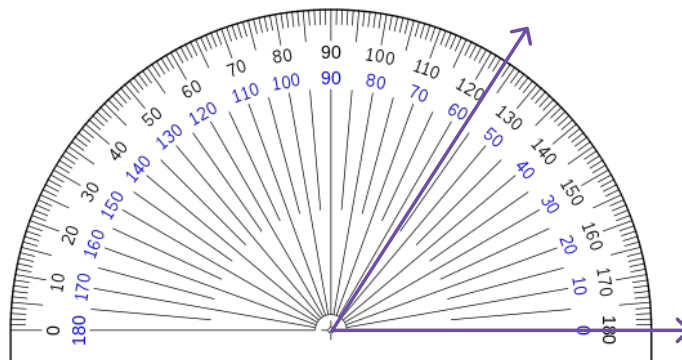
a   123°

b   180°

c   57°

d   63°

21 Which number comparison is true?

   a   One thousand eight hundred seven = $(1 \times 1{,}000) + (8 \times 100) + (7 \times 10)$

   b $(2 \times 10{,}000) + (5 \times 100) + (6 \times 1) <$ twenty five thousand six

   c   Eighteen thousand one hundred ninety $< (1 \times 1{,}000) + (1 \times 800) + (1 \times 100) + (9 \times 10)$

   d $(3 \times 1{,}000) + (8 \times 100) + (4 \times 10) <$ three thousand eight hundred four

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22 Roberto made salsa. He ate $\frac{1}{8}$ of the salsa on Monday, $\frac{3}{8}$ of the salsa on Tuesday, and $\frac{2}{8}$ of the salsa on Wednesday. What fraction of the salsa was left after Wednesday?

   a $\frac{1}{8}$

   b $\frac{2}{8}$

   c $\frac{5}{8}$

   d $\frac{6}{8}$

23 Which figures have both parallel and perpendicular sides?
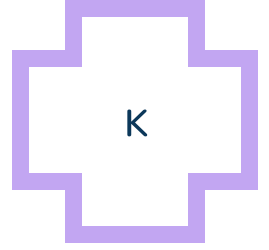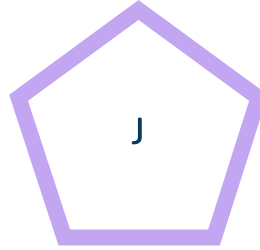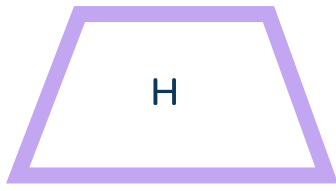
a   Figure H

b   Figure J & K

c   Figure K

d   None of the figures

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24 Which of the following numbers rounds to 800 when rounded to the nearest hundred?

a   745

b   901

c   876

d   785

25 Violet and Claire each ran at a track meet. Violet ran $\frac{3}{4}$ miles. Claire ran 3 times as far as Violet. How many miles did Claire run?

a $2\frac{1}{4}$

b $1\frac{1}{2}$

c $3\frac{3}{4}$

d 4

26 What is the value of 1,487 x 5?

a 775

b 7,435

c 1,492

d 7,750

27 Which process shows a correct way to add the fractions below?

$$\frac{6}{100} + \frac{3}{10} =$$

a $\quad \frac{6}{100} + \frac{3}{10} = \frac{6 + 3}{100 + 10} = \frac{9}{110}$

b $\quad \frac{6}{100} + \frac{3}{10} = \frac{6 + 3}{100} = \frac{9}{100}$

c $\quad \frac{6}{100} + \frac{30}{10} = \frac{6 + 30}{100 + 10} = \frac{36}{110}$

d $\quad \frac{6}{100} + \frac{30}{100} = \frac{6 + 30}{100} = \frac{36}{100}$

28 How many lines of symmetry does the figure below have?
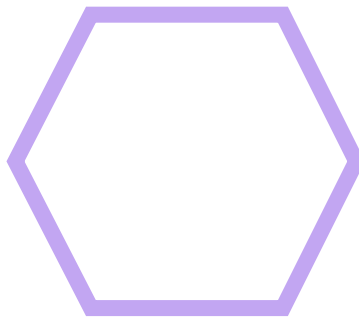
a $\quad$ 2

b $\quad$ 4

c $\quad$ 6

d $\quad$ 5

29 What is the value of point X on the number line below?
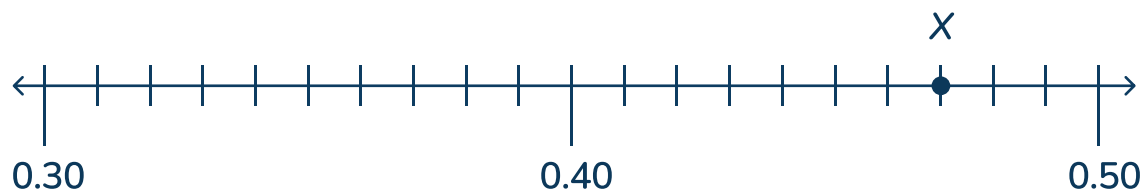
a   0.40

b   0.47

c   0.50

d   0.53

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30 Gregory sorted figures into groups. The figures were sorted into the same group.
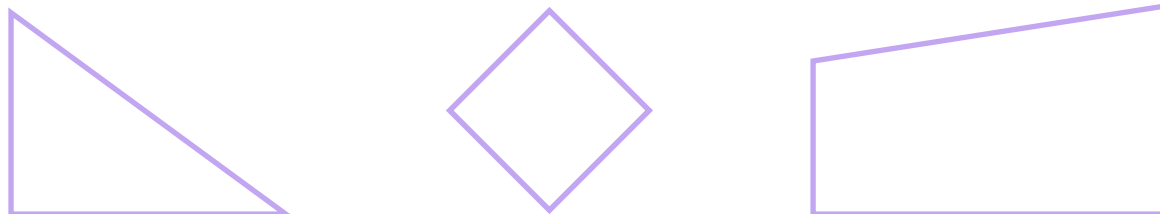
Which statement best describes the figures in this group?

a   Each figure has at least one pair of perpendicular sides.

b   Each figure has at least one acute angle.

c   Each figure has only one pair of parallel sides.

d   Each figure has only one obtuse angle.

31 Carlos drew the area model shown below to multiply 76 x 48, but he made a mistake.

	70	6
40	280	240
8	56	48

- Explain the mistake Carlos made and what he should do to fix it.
- Show how to correctly solve 76 x 48 using an area model.

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32 Over winter break, Jonah read 48 pages of a book. Oscar read 3 times as many pages of the same book. Julia read twice as many pages as Oscar.

Write an expression to represent the number of pages Oscar read and an expression to represent the number of pages Julia read. Then, find the value of each expression.

Oscar	Julia

33 A bakery is preparing a large order of mini-cupcakes for a wedding. The table shows how many batches of each flavor of cupcakes were ordered.

a) Fill out the table to complete the work order to help the baker determine how many of each flavor mini-cupcake she needs for the order. The table shows how many cupcakes are made from one batch, and then how many batches of each flavor she needs to make. Find the grand total of all cupcake flavors.

Mini-Cupcake Flavor	Mini-Cupcakes in One Batch	Batches Ordered	Total Number of Mini-Cupcakes
Chocolate	36	9	....
Peanut Butter Fudge	28	7	....
Lemon Blueberry	25	6	....
Vanilla	42	8	....

Grand Total of Mini-Cupcakes Ordered = ...

b) The baker needs to transport all of the cupcakes to the wedding venue. She can fit 24 mini-cupcakes in one box. How many boxes will she need to transport all of the mini-cupcakes in boxes? *Explain your answer.*

Show your work

Answers

Question	Answers
1) Which of the following statements correctly compares the two hundreds grids below? Standard: 4.NF.7, DOK 2	a) Correct: To determine which of the statements is true, the student likely labeled each hundred grid correctly and identified that 0.47 is larger than 0.36. b) Incorrect: The student does not have an understanding of the meaning of the comparison symbols, and incorrectly compared the two decimals. c) Incorrect: The student does not have an understanding of the meaning of the comparison symbols, and incorrectly compared the two decimals. d) Incorrect: The student likely did not connect the visual models with the decimal in numeral form. The student needs to focus on understanding how to interpret models used to represent tenths and hundredths.
2) Ciara is collecting bottles and cans to raise money for her soccer team. So far, she has collected three times as many cans as bottles. If she has collected 48 cans, how many bottles has she collected? Use the diagram to help you. Standard: 4.OA.1, 4.OA.2*, DOK 2	a) Incorrect: Students may see the numbers provided in the question, 48 and 3, and assume they need to multiply these numbers together, which would give them 144. b) Correct: 48 divided by 3 is 16. If Ciara collected 16 bottles, then 48 would be 3 times as many, so this is correct. c) Incorrect: Students may misinterpret the diagram and divide 48 by 4, since there are 4 boxes, instead of dividing 48 by 3. d) Incorrect: Students may misinterpret the diagram and, while they correctly divide 48 by 3, which is 16, they may think since there's a 4th box that there are 4 16s, which would be equal to 64.
3) Solve 73,290 + 61,854 using the standard algorithm. Standard: 4.OA.3, 4.NBT.4*, DOK 1	a) Correct: To determine the solution, the student has an understanding of adding with regrouping. b) Incorrect: The student likely subtracted instead of adding the two given numbers. The student needs to focus on the meaning of math symbols. c) Incorrect: The student likely used the standard algorithm, but did not add the regrouped hundred to the addition problem. d) Incorrect: The student likely used the standard algorithm to add correctly, but when adding the digits in the ten thousands place, the student made a careless error and added 6 + 7 = 14

Question	Answers
4) Katie bought 5 pounds of grass seed for her backyard. She used 55 ounces of the seed on Monday and put the rest in her garage to use the following week. How many ounces of grass seed does Katie have to use next week? Standard: 4.MD.2, DOK 1	a) Incorrect: The student correctly converted the 5 pounds into 80 ounces. They then subtracted incorrectly, not regrouping when subtracting in the ones place. b) Incorrect: The student subtracted 55 ounces - 5 pounds, not converting the numbers into similar units. c) Incorrect: The student correctly converted the 5 pounds into 80 ounces, but did not complete the second step to solve the amount of ounces remaining. d) Correct: The student correctly converted the 5 pounds into 80 ounces. They then subtracted 80 ounces - 55 ounces to find the answer, 25 ounces.
5) Which set of numbers are all multiples of 8? Standard: 4.OA.4, DOK 1	a) Incorrect: Students may choose a) if they are unfamiliar with the term "multiple" - they may see the 8 and the 16, which may be the 2 multiples of 8 they are most familiar with, and choose this answer. b) Incorrect: 8, 16, and 24, are all multiples of 8, so students may choose this one but not realize that 1 is not a multiple, but a factor. c) Incorrect: Students may choose this answer if they mix up the terms "factor" and "multiple" as these are the factors of 8. d) Correct: 8, 16, 24, 32, and 40 are all multiples of 8
6) Solve 45,231 - 37,751 using the standard algorithm. Standard: 4.OA.3, 4.NBT.4*, DOK 1	a) Incorrect: The student likely added the two numbers instead of subtracting. The student needs to focus on the meaning of math symbols. b) Incorrect: The student likely does not have a firm understanding of what subtraction is and when to regroup numbers. The student likely subtracted the smaller number from the larger number, regardless of its location within the equation. c) Correct: To determine the solution, the student has an understanding of subtracting with regrouping. d) Incorrect: The student lined up the two numbers correctly and subtracted correctly through the hundreds place. The student did not note the second regrouping and subtracted 7 from 12 instead of 11.

Question	Answers
7) The ground in a rectangular classroom has a length of 16 feet and a width of 18 inches. What is the area, in square feet, of the classroom? Standard: 4.MD.3 , DOK 1	a) Incorrect: The student most likely calculated the perimeter of the classroom, by adding the length and width twice, and not calculating the area. b) Correct: The student correctly multiplied the length, 16 feet, times the width, 18 feet, to find the area of the classroom c) Incorrect: The student likely correctly identified the operation as multiplication, but forgot to add in the regrouped hundred when adding the partial products. d) Incorrect: The student was unsure how to solve the problem, and defaulted to using addition instead of multiplication.
8) What is the greatest number that belongs in the middle of the Venn Diagram? Standard: 4.OA.4, DOK 2	a) Correct: The factors of 28 are: 1, 2, 4, 7, 14 and 28. The factors of 42 are: 1, 2, 3, 6, 7, 14, 21, and 42. Although these two numbers have several factors in common, the greatest common factor is 14. b) Incorrect: 2 is a factor of each number, but it is not the greatest common factor. c) Incorrect: 28 is the greatest factor of the number 28, but it is not a factor of 42. d) Incorrect: 7 is a factor of each number, but it is not the greatest common factor.
9) A bookstore has 24 bookshelves in its fiction section. Each bookshelf holds 37 books. How many books can the bookshelves hold? Standard: 4.NBT.5, 4.OA.3*, DOK 2	a) Incorrect: The student likely had difficulty determining what operation to use and defaulted to using addition. b) Correct: To determine the amount of books the bookshelves could hold, the student had an understanding of multiplying using strategies. c) Incorrect: The student likely used an appropriate multiplication strategy, but made a mistake and added the digits in the hundreds place incorrectly. d) Incorrect: The student likely used an appropriate multiplication strategy, but when multiplying 30 x 4, wrote 12, instead of 120.

Question	Answers
10) How much blue paper will Kaitlin need to wrap the toy box? Standard: 4.MD.3, DOK 1	a) Correct: To determine the amount of blue paper needed the student recognised that they needed to calculate the area of the top of the box, 25 x 21 = 525 b) Incorrect: The student likely misunderstood and used the perimeter formula. c) Incorrect: The student likely determined the need to use the perimeter formula, but only added the length and width once. d) Incorrect: The student likely determined the need to use the perimeter formula, but made an error when adding up the four sides.
11) Sophia created the table shown below to organize the prime numbers and composite numbers up to 30. What mistake did she make? Standard: 4.OA.4, DOK 2	a) Incorrect: Students may look at the list of numbers and realize that 2 is the only even number listed under prime numbers and assume it must belong under "composite numbers." b) Incorrect: Students may look at the list of numbers and realize that most of the composite numbers are even and assume that 21 should be prime since it is odd. c) Incorrect: Students may confuse factors and multiples and think that because 5 can be divided into so many numbers (instead of divided by) then it must be composite. d) Correct: Sophia listed 27 as a prime number, but it is a composite number since it is divisible by 3 and 9.
12) 323 students are going on a field trip. They can enter the museum in groups of 8. How many full groups of students will there be? Standard: 4.NBT.6, 4.OA.3*, DOK 3	a) Incorrect: The student likely had difficulty determining what operation to use and defaulted to using addition. b) Incorrect: The student likely used appropriate division strategies, but was unsure how to interpret the remainder and thought only 40 groups were needed. c) Incorrect: The student likely thought that to find the number of groups needed, the number of students in each group should be subtracted from the total number of students (323 − 8 = 315.) d) Correct: The student used appropriate division strategies to find that there will be 41 groups of students entering the museum.

Question	Answers
13) What is the total number of feet Alex threw his paper airplane? Standard: 4.MD.4, DOK 2	a) Correct: The student used appropriate adding strategies to add up 2 + 3 + 3 + 2 ¾ + 3 ¾. b) Incorrect: The student most likely counted how many times Alex flew his airplane versus finding the total distance. c) Incorrect: The student most likely made an error when adding 2 ¾ + 3 ¾, forgetting that ¼ = 1 whole.*le* d) Incorrect: The student mis-added the fractions, forgetting one of the 3 feet measurements.
14) Look at the pattern of figures below. If the pattern continues, how many squares will make up the 6th figure? Standard: 4.OA.5, DOK 2	a) Incorrect: Students may choose this answer if they mistakenly determine what the next figure (5th in the pattern) will be instead of the 6th figure b) Incorrect: Students may misinterpret each figure and count the bottom row, then the middle column - counting the middle square twice. This would give them 17 for the 6th figure if they count the middle square twice. c) Correct: The 6th figure will be made up of 16 squares. Students should notice the pattern that one square is added to the left, one to the right, and one to the top of the figure, which means 3 squares are added each time. d) Incorrect: Students may immediately notice that the bottom row of each figure gets bigger each time by 2 - they may continue this pattern as 1, 3, 5, 7, 9 and then 11.
15) Solve 5,791 - 3,428 using the standard algorithm. Standard: 4.NBT.4, DOK 1	a) Incorrect: The student likely lined the numbers up correctly, however, instead of regrouping a ten to the ones place, the student subtracted 8 - 1, then continued subtracting. b) Correct: To determine the difference, the student should have aligned the numbers, then subtracted 3,428 from 5,791. c) Incorrect: The student likely adds the two numbers instead of subtracting. d) Incorrect: The student likely lined up the numbers correctly and regrouped a ten into ones. They likely didn't note that there were only 8 tens left, and subtracted 9-2.

Question	Answers
16) The shapes are divided into equal parts. Which shape is ¼ shaded? Standard: 4.NF.1, DOK 2	a) Correct: To determine the answer to this question, students need to realize that the whole is broken up into 8 pieces, and then need to figure out how many are in each group if they split it into 4 equal groups. Two eighths are equal to one fourth. b) Incorrect: Students may choose this answer if they mistakenly assume that only one piece needs to be shaded out of the total number of pieces, without realizing that there are 8 pieces instead of 4. c) Incorrect: Students may choose this answer if they mistakenly equate 3 eighths to one fourth. d) Incorrect: Students may choose this answer if they think four pieces need to be shaded, going by the denominator instead of the numerator.
17) The right triangle below is divided into two parts. The measure of angle ABC is 32 degrees. What is the measure of angle CBD? Standard: 4.MD.7, DOK 1	a) Incorrect: The student made an error while subtracting 32 degrees from 100 degrees, not understanding that a right angle equals 90 degrees. b) Incorrect: The student subtracted 32 degrees from 180, the measurement of a straight angle, not a right angle. c) Incorrect: The student was unsure about how to solve this problem and picked the angle that was identified in the picture. d) Correct: The student correctly found the missing angle measurement by subtracting 32 degrees from 90 degrees, the measure of the angle in the right triangle.
18) Which rule describes the following set of numbers? 9, 18, 12, 24, 18, 36, 30… Standard: 4.OA.5, DOK 2	a) Incorrect: Students may choose this answer if they only look at the first several numbers in the set instead of looking at the entire set of numbers. b) Correct: You have to multiply by 2, then subtract 6 throughout the set of numbers. c) Incorrect: Students may know not to make the mistake of only looking at the first few numbers, so if they look at "12, 24, 18" they may think the rule is add 12, then subtract 6. d) Incorrect: Students may determine that the first part of the rule is to multiply by 2. Then, they may notice that the numbers decrease by 6 for the second part, but they may choose division instead of subtraction since multiplication and division typically go together.

Question	Answers
19) Angela had a rectangle with 8 equal parts. She shaded 2 of them. Which fractions does Angela's rectangle show are equal? Standard: 4.NF.2, DOK 1	a) Incorrect: Students may choose this answer if they assume equivalence based on the same numerators. b) Correct: To determine this answer, students need to recognize that 2 eighths are shaded in the rectangle, and that is the same as 1 fourth because there are 4 groups of 2 eighths in the whole, and one of those groups is shaded. c) Incorrect: Students may choose this answer if they assume equivalence based on the same numerators. d) Incorrect: Students may choose this answer if they assume equivalence based on the fact that there is a 2 in each fraction.
20) What is the measure of the angle? Standard: 4.MD.6, DOK 1	a) Incorrect: Students reading the protractor incorrectly may read the angle as 123°, but it is not an obtuse angle. b) Incorrect: Students may see the bottom line pointing to the 180° and incorrectly choose that as the angle's measurement. c) Correct: Students reading the protractor correctly will see that it is an acute angle and will use the horizontal line pointing to the zero as the starting point, then use the protractor to measure between the two lines of the angle, in which they will get 57°. d) Incorrect: Students may realize they need to use the blue numbers to measure this angle, but may incorrectly read the measurement as 3° greater than 60° rather than 3° less than 60°.
21) Which number comparison is true? Standard: 4.NBT.1, 4.NBT.2*, DOK 2	a) Incorrect: Students may choose this answer if they mistakenly read the expanded form as 7 ones instead of 7 tens. b) Correct: The number on the left represents 20,506, which is less than the number on the left, 25,006. c) Incorrect: This answer is incorrect as the number on the left, 18,190, is greater than the number on the right, 1,990. Students may not notice that hundreds are shown twice in the number on the right. d) Incorrect: Students may not realize that the expanded form shows 4 tens while the written form shows four ones - so the number on the left, 3,840 is greater than the number on the right, 3,804.

Question	Answers
22) Roberto made salsa. He ate ⅛ of the salsa on Monday, ⅜ of the salsa on Tuesday, and ⅖ of the salsa on Wednesday. What fraction of the salsa was left after Wednesday? Standard: 4.NF.3.a, 4.NF.3.b, 4.NF.3.c, 4.NF.3.d*, DOK 2	a) Incorrect: Students may choose this answer if they add all the parts and accidentally get 7 eighths, leaving ⅛ remaining rather than 2 eighths b) Correct: To determine this answer, students must add all the fractions in the problem (⅛ + ⅜ + ⅖ = ⁶⁄₈) and subtract this from one whole, leaving them with 2 eighths. c) Incorrect: Students may choose this answer if they add ⅜ + ⅖ and stop. d) Incorrect: Students may choose this answer if they add all the fractions in the problem, not realizing that the question is asking for how much is left rather than the total amount eaten.
23) Which figures have both parallel and perpendicular sides? Standard: 4.G.2, DOK 2	a) Incorrect: The student likely looked at figure H and determined that the top and bottom line were parallel, however, figure H does not have a pair of perpendicular lines. b) Incorrect: The student determined that figure K has both parallel and perpendicular lines, but incorrectly identified figure J as having both. J does not have a pair of parallel or perpendicular lines. c) Correct: To determine which of the figures have both parallel and perpendicular lines, the student should have recognized that each figure has at least one pair of perpendicular sides and one pair of parallel lines. d) Incorrect: The student needs to focus on understanding how to compare the attributes of two-dimensional figures, as figure K makes the statement true.
24) Which of the following numbers rounds to 800 when rounded to the nearest hundred? Standard: 4.NBT.3, DOK 1	a) Incorrect: 745 rounded to the nearest hundred is 700. Student has likely looked at the ones column when rounding, not the tens. b) Incorrect: 901 rounded to the nearest hundred is 900. Student has identified the number has been rounded down but has misunderstood how to round down (identifying 800 and 1,000 as the next and previous multiples of one hundred) c) Incorrect: 876 rounded to the nearest is 900. Student has likely assumed that this rounds to 800 as the hundreds digit is 8. d) Correct: 785 rounded to the nearest hundred is 800.

Question	Answers
25) Violet and Claire each ran at a track meet. Violet ran ¾ miles. Claire ran 3 times as far as Violet. How many miles did Claire run? Standard: 4.NF.4.a, 4.NF.4.b 4.NF.4.c*, DOK 2	a) Correct: To determine this answer, students need to solve 3 x ¾ which can be done by using an algorithm and getting 9⁄4 as the answer and then converting to a mixed number, or students could add three groups of ¾ by getting to 1 ½ first and then 2 ¼. b) Incorrect: Students may choose this answer if they only solve 2 x ¾ rather than 3 x ¾ which may happen if they add groups of ¾ rather than multiply. c) Incorrect: Students may choose this answer if they add 3 and ¾ instead of multiply. d) Incorrect: Students may choose this answer if they divide 3 by ¾ instead of multiply.
26) What is the value of 1,487 x 5? Standard: 4.NBT.5, DOK 1	a) Incorrect: The student likely used an appropriate multiplication strategy, but when multiplying with numbers ending in zero, the student incorrectly multiplied (5 x 1,000 = 500) (400 x 5 = 200) (80 x 5 - 40) b) Correct: To determine the value of the given multiplication equation, the student had an understanding of multiplying using strategies. c) Incorrect: The student likely had difficulty determining what operation to use and defaulted to using addition. The student needs to focus on the meaning of math symbols. d) Incorrect: The student likely used an appropriate multiplication strategy, but lined up the numbers incorrectly when adding the partial products.
27) Which process shows a correct way to add the fractions below? Standard: 4.NF.5, DOK 2	a) Incorrect: Students may choose this answer if they think that the answer is solved by adding the numerators together and the denominators together. b) Incorrect: Students may choose this answer if they think that $\frac{3}{10}$ is equal to $\frac{3}{100}$ or by thinking that they need to add the numerators and keep the larger denominator. c) Incorrect: Students may choose this answer if they think that $\frac{3}{10}$ is equal to $\frac{30}{10}$ d) Correct: To determine this answer, students need to create an equivalent fraction for $\frac{3}{10}$ with denominator 100 and then add the numerators.

Question	Answers
28) How many lines of symmetry does the figure below have? Standard: 4.G.3, DOK 1	a) Incorrect: The student was unable to identify all lines of symmetry, or did not understand how to find lines of symmetry. b) Incorrect: The student was unable to identify all lines of symmetry, or did not understand how to find lines of symmetry. c) Correct: The student was able to correctly identify 6 lines of symmetry, or understood that all regular polygons have the same number of sides and lines of symmetry. d) Incorrect: The student was unable to identify all lines of symmetry, or did not understand how to find lines of symmetry.
29) What is the value of point X on the number line below? Standard: 4.NF.6, DOK 2	a) Incorrect: Students may choose this answer if they think that because the X isn't quite 0.50, it would be the closest labeled mark on the number line below it. b) Correct: To determine the answer, the student would need to realize that each tick mark represents 0.01 and it is 0.07 greater than 0.40 and 0.03 less than 0.50. c) Incorrect: Students may choose this answer because the X is closest to 0.50 and they may think they need to round up. d) Incorrect: Students may choose this answer if they realize that X is 0.03 away from 0.50, but is 0.03 less than 0.50, not greater.
30) Which statement best describes the figures in this group? Standard: 4.G.2, DOK 2	a) Correct: The student should have recognized that each figure has at least one pair of perpendicular sides. b) Incorrect: The student likely looked at the first two figures and determined that the angle in the bottom and on the right is an acute angle. c) Incorrect: The student likely looked at the third figure and determined that it had only one pair of parallel sides. d) Incorrect: The student likely looked at the third figure and determined that the angle in the top left is an obtuse angle.

Question	Answers
31) Explain the mistake Carlos made and what he should do to fix it. Show how to correctly solve 76 x 48 using an area model. Standard: 4.NBT.5, DOK 3	2 points: Student correctly explains the mistake Carlos made and how he can fix it (70 x 40 = 2,800 not 280; 70 x 8 = 560 not 56) Student correctly multiplies 76 x 48 using an area model. 1 point: Student correctly explains the mistake OR correctly solves the equation using an area model. 0 points: Student does not correctly explain the mistake and does not correctly solve the equation using an area model.
32) Write an expression to represent the number of pages Oscar read and an expression to represent the number of pages Julia read. Then, find the value of each expression. Standard: 4.OA.2, 4.OA.3, DOK 3	2 points: To receive 2 points, students need to write a correct expression for both Oscar and Julia, and they need to find the correct value of each one. Oscar: 48 × 3 = 144 pages Julia: 144 × 2 = 288 pages 1 point: Students will receive 1 point if they only write one correct expression or if they only evaluate one expression correctly. 0 points: Students will receive 0 points if they leave the response blank, or if they do not write a correct expression or solve correctly.

Question	Answers
33 a) Fill out the table to complete the work order to help the baker determine how many of each flavor mini-cupcake she needs for the order. The table shows how many cupcakes are made from one batch, and then how many batches of each flavor she needs to make. Find the grand total of all cupcake flavors. 33 b)The baker needs to transport all of the cupcakes to the wedding venue. She can fit 24 mini-cupcakes in one box. How many boxes will she need to transport all of the mini-cupcakes in boxes? Explain your answer. Standard: 4.OA.3, 4.NBT.5, 4.NBT.6, DOK 4	4 points: In order to receive 4 points, students need to correctly answer all parts of Part A and Part B. Part B should include a thorough explanation of their answer. **Part A**: To complete the table, students need to first, multiply the "mini-cupcakes in one batch" number by the "batches ordered" number for each flavor. Then, they will need to add up the total of all the flavors to get a grand total. Chocolate = 324 Peanut Butter Fudge = 196 Lemon Blueberry = 150 Vanilla = 336 Total = 1,006 **Part B:** Students need to divide the total number of mini-cupcakes (1,006) by the number of cupcakes that can fit in 1 box (24). Students should get an answer of 41 remainder 22. This means the baker will need **42 boxes.** Students must include an explanation for why the baker will need 42 boxes. Students will need to interpret the remainder and should explain that the baker will need an extra box to carry the 22 leftover mini-cupcakes. 3 points: In order to receive 3 points, students may answer all parts of Part A and Part B, but they may not have a thorough explanation of why the baker needs 42 boxes. 2 points: In order to receive 2 points, students may • make a mistake on Part A, which then causes them to make a math mistake on Part B, as well. • only answer one part correctly. OR • fail to realize that the baker will need an extra box, but the math calculations for the rest of the problem are correct. 1 point: To receive 1 point, students may get one or two calculations correct, but overall most of the math and understanding of the word problem are incorrect or missing. 0 points: To receive 0 points, the student must leave the answer blank or get no parts of the problem correct.

Answer Key - Multiple Choice

Item Number	Correct Answer	Standard(s)	DOK
1	A	**4.NF.7**	DOK 2
2	B	4.OA.1, **4.OA.2**	DOK 2
3	A	4.OA.3, **4.NBT.4***	DOK 1
4	D	**4.MD.2**	DOK 1
5	D	**4.OA.4**	DOK 1
6	C	4.OA.3, **4.NBT.4***	DOK 1
7	B	**4.MD.3**	DOK 1
8	A	**4.OA.4**	DOK 2
9	B	4.NBT.5, **4.OA.3***	DOK 2
10	B	**4.MD.3**	DOK 1
11	D	**4.OA.4**	DOK 2
12	D	4.NBT.6, **4.OA.3***	DOK 3
13	A	**4.MD.4**	DOK 2
14	C	**4.OA.5**	DOK 2
15	B	**4.NBT.4**	DOK 1
16	A	**4.NF.1**	DOK 2
17	D	**4.MD.7**	DOK 1

Item Number	Correct Answer	Standard(s)	DOK
18	B	**4.OA.5**	DOK 2
19	B	**4.NF.2**	DOK 1
20	C	**4.MD.6**	DOK 1
21	B	4.NBT.1, **4.NBT.2***	DOK 2
22	B	4.NF.3.a, 4.NF.3.b, 4.NF.3.c, **4.NF.3.d***	DOK 2
23	C	**4.G.2**	DOK 2
24	D	**4.NBT.3**	DOK 1
25	A	4.NF.4.a, 4.NF.4.b **4.NF.4.c***	DOK 2
26	B	**4.NBT.5**	DOK 1
27	D	**4.NF.5**	DOK 2
28	C	**4.G.3**	DOK 1
29	B	**4.NF.6**	DOK 2
30	A	**4.G.2**	DOK 2

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