

ICPSR 36095

National Center for Teacher Effectiveness Main Study

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Documentation for Dataset 36095-0003
Student Questionnaire

NCTE YEAR 1 (2010-11)

NCTE Student Survey

Dear Student,

Thank you for participating in this survey. While answering the questions, it is important that you think about your experiences in your math classroom with your math teacher.

Your teacher and your principal will not look at your answers. Later, someone from outside of your school will tell your teacher and your principal how the students in your school responded, but not how you or any one individual student answered. Please answer what you really think and feel. You do not have to answer any question that you do not want to answer.

Year 2 Question

		Totally Untrue	Mostly Untrue	Some- what	Mostly True	Totally True
1	1. When he/she is teaching us math, my teacher asks us whether we understand.	<input type="radio"/>				
2	2. When we are learning math, our class stays busy and doesn't waste time.	<input type="radio"/>				
3	3. I like the way my teacher treats people when they need help with math.	<input type="radio"/>				
5	4. I have pushed myself hard to completely understand my math in this class.	<input type="radio"/>				
7	5. Students behave so badly in this class that it slows down our learning.	<input type="radio"/>				
9	6. My teacher explains difficult math problems clearly.	<input type="radio"/>				
11	7. My teacher really cares how well I do in math.	<input type="radio"/>				
12	8. In math, my teacher doesn't let people give up, even if the work is hard.	<input type="radio"/>				
13	9. If I need help with math, I make sure that someone gives me the help I need.	<input type="radio"/>				
15	10. My teacher has several good ways to explain each topic in math.	<input type="radio"/>				
16	11. My behavior in this class is good.	<input type="radio"/>				
17	12. In this class, math is too easy.	<input type="radio"/>				
18	13. Doing homework problems helps me get better at doing math.	<input type="radio"/>				
19	14. In math, my teacher knows when the class understands, and when we do not.	<input type="radio"/>				
20	15. We spend a lot of time in this class practicing for [the state math test].	<input type="radio"/>				
21	16. My teacher tells us what we are learning and why.	<input type="radio"/>				
22	17. We have interesting homework.	<input type="radio"/>				
23	18. My teacher asks questions to be sure we are following along when he/she is teaching math.	<input type="radio"/>				
24	19. When my teacher marks my math work, he/she writes on my papers to help me understand.	<input type="radio"/>				
25	20. My teacher checks to make sure we understand what he/she is teaching us.	<input type="radio"/>				

Draft



		Totally Untrue	Mostly Untrue	Some- what	Mostly True	Totally True
28	21. In math, our class is like a team--we work together to help everyone do well.	<input type="radio"/>				
29	22. If a math problem is hard to solve, I often give up before I solve it.	<input type="radio"/>				
30	23. In math, my teacher takes time to go back over what we learn each day.	<input type="radio"/>				
31	24. My teacher explains math in very orderly ways.	<input type="radio"/>				
32	25. In math, my teacher wants us to really understand, not just memorize the steps to solve problems.	<input type="radio"/>				
	26. My teacher tells students to explain their answers to math questions.	<input type="radio"/>				
34	27. My teacher pushes us to think hard about math.	<input type="radio"/>				
37	28. The comments my teacher gives me on my math help me to improve.	<input type="radio"/>				
38	29. My behavior in this class sometimes annoys the teacher.	<input type="radio"/>				
39	30. Even when math is hard, I know I can learn it.	<input type="radio"/>				
41	31. In this class, math is too hard.	<input type="radio"/>				
22	32. I can do almost all the math in this class if I don't give up.	<input type="radio"/>				
40	33. I think teaching math makes my teacher very happy.	<input type="radio"/>				
42	34. If I am sad or angry, my teacher helps me feel better.	<input type="radio"/>				
43	35. My behavior is a problem for the teacher in this class.	<input type="radio"/>				
	36. If you are not smart in math, there isn't much you can do about it.	<input type="radio"/>				
45	37. When learning math, my classmates behave the way my teacher wants.	<input type="radio"/>				
46	38. Math lessons are interesting.	<input type="radio"/>				

46	39. I leave my regular classroom to receive math tutoring during school hours. <input type="radio"/> No, Never <input type="radio"/> Less than once a month <input type="radio"/> About once a month <input type="radio"/> About once a week <input type="radio"/> More than once a week
49	40. I attend math tutoring or extra math lessons after school or on the weekend. <input type="radio"/> No, Never <input type="radio"/> Less than once a month <input type="radio"/> About once a month <input type="radio"/> About once a week <input type="radio"/> More than once a week
50	41. I work on mathematics at home with an adult. <input type="radio"/> No, Never <input type="radio"/> Less than once a month <input type="radio"/> About once a month <input type="radio"/> About once a week <input type="radio"/> More than once a week
51	42. Is there a computer at your home? <input type="radio"/> No <input type="radio"/> Yes, there is one <input type="radio"/> Yes, there is more than one
	43. How many adults do you live with? <input type="radio"/> One <input type="radio"/> Two <input type="radio"/> More than two
53	44. How many rooms are there in your home? <input type="radio"/> 3 or fewer <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9 or more
54	45. How many books do you think are in the room where you sleep? <input type="radio"/> None <input type="radio"/> 1-10 <input type="radio"/> 11-24 <input type="radio"/> 25+
55	46. Does your family speak English at home? <input type="radio"/> Mostly <input type="radio"/> Sometimes <input type="radio"/> Almost Never



NCTE YEAR 2 (2011-12)



992992

As you complete this survey, think about your experiences
when you are learning **[Subject]**
with the following teacher: Mr./Ms. **[T_Lname, T_fname]**

Student: [S_Lname, S_Fname]

Teacher: [T_Lname, T_Fname]

Student ID: [nctesid]

NCTE 2012 Student Survey

	Totally Untrue	Mostly Untrue	Some- what	Mostly True	Totally True
1. When he/she is teaching us math, my teacher asks us whether we understand.	<input type="radio"/>				
2. When we are learning math, our class stays busy and doesn't waste time.	<input type="radio"/>				
3. I like the way my teacher treats people when they need help with math.	<input type="radio"/>				
4. The things we have done in math this year are interesting.	<input type="radio"/>				
5. I have pushed myself hard to completely understand my math in this class.	<input type="radio"/>				
6. This math class is a happy place for me to be.	<input type="radio"/>				
7. Students behave so badly in this class that it slows down our learning.	<input type="radio"/>				
8. My teacher explains difficult math problems clearly.	<input type="radio"/>				
9. My teacher really cares how well I do in math.	<input type="radio"/>				
10. I'm certain I can master the math skills taught in this class.	<input type="radio"/>				
11. In math, my teacher doesn't let people give up, even if the work is hard.	<input type="radio"/>				
12. If I need help with math, I make sure that someone gives me the help I need.	<input type="radio"/>				
13. My teacher has several good ways to explain each topic in math.	<input type="radio"/>				
14. Because of this teacher, I am learning to love math.	<input type="radio"/>				
15. My behavior in this class is good.	<input type="radio"/>				
16. In this class, math is too easy.	<input type="radio"/>				
17. Doing homework problems helps me get better at doing math.	<input type="radio"/>				
18. In math, my teacher knows when the class understands, and when we do not.	<input type="radio"/>				
19. We spend a lot of time in this class practicing for the state math test.	<input type="radio"/>				
20. My teacher tells us what we are learning and why.	<input type="radio"/>				
21. Some classmates tease kids who make mistakes in this math class.	<input type="radio"/>				
22. I can do almost all the math in this class if I don't give up.	<input type="radio"/>				
23. We have interesting homework.	<input type="radio"/>				
24. My teacher asks questions to be sure we are following along when he/she is teaching math.	<input type="radio"/>				
25. When my teacher marks my math work, he/she writes on my papers to help me understand.	<input type="radio"/>				
26. My teacher checks to make sure we understand what he/she is teaching us.	<input type="radio"/>				
27. I enjoy math class this year.	<input type="radio"/>				
28. In math, our class is like a team--we work together to help everyone do well.	<input type="radio"/>				
29. If a math problem is hard to solve, I often give up before I solve it.	<input type="radio"/>				
30. In math, my teacher takes time to go back over what we learn each day.	<input type="radio"/>				



	Totally Untrue	Mostly Untrue	Some- what	Mostly True	Totally True
31. My teacher explains math in very orderly ways.	<input type="radio"/>				
32. In math, my teacher wants us to really understand, not just memorize the steps to solve problems.	<input type="radio"/>				
33. My teacher tells students to explain their answers to math questions.	<input type="radio"/>				
34. My teacher pushes us to think hard about math.	<input type="radio"/>				
35. Some classmates tease kids for being smart in this math class.	<input type="radio"/>				
36. Even when math is hard, I know I can learn it.	<input type="radio"/>				
37. The comments my teacher gives me on my math help me to improve.	<input type="radio"/>				
38. My behavior in this class sometimes annoys the teacher.	<input type="radio"/>				
39. In this class, math is too hard.	<input type="radio"/>				
40. I think teaching math makes my teacher very happy.	<input type="radio"/>				
41. When doing schoolwork for this math class, I try to learn as much as I can and I don't worry how long it takes.	<input type="radio"/>				
42. If I am sad or angry, my teacher helps me feel better.	<input type="radio"/>				
43. My behavior is a problem for the teacher in this class.	<input type="radio"/>				
44. Being in this math class makes me feel sad or angry.	<input type="radio"/>				
45. When learning math, my classmates behave the way my teacher wants.	<input type="radio"/>				
46. Math lessons are interesting.	<input type="radio"/>				
47. I have been able to figure out the most difficult work in this math class.	<input type="radio"/>				

48. I leave my regular classroom to receive math tutoring or extra help in math during school hours.

- No, Never Less than once a month About once a month About once a week More than once a week

49. I attend math tutoring or extra math lessons after school or on the weekend.

- No, Never Less than once a month About once a month About once a week More than once a week

50. I work on mathematics at home with an adult.

- No, Never Less than once a month About once a month About once a week More than once a week

51. Is there a computer or a laptop at your home?

- No Yes, there is one Yes, there is more than one

52. What adults do you live with? (mark all that are true for you)

- My Mother My Father My Grandmother My Grandfather
 My Stepmother My Stepfather Other Adult(s)

53. How many rooms are there in your family's home? Count only the rooms your family lives in. Count the kitchen (if separate) but not bathrooms.

- 1 2 3 4 5 6 7 8 9 10 or more

54. How many books do you think are in the room where you sleep?

- None 1-10 11-24 25+

55. Does your family speak English at home?

- Always Mostly Sometimes Almost Never



NCTE YEAR 3 (2012-13)

NCTE 2013 Student Survey

	Totally Untrue	Mostly Untrue	Some- what	Mostly True	Totally True
1. When he/she is teaching us math, my teacher asks us whether we understand.	<input type="radio"/>				
2. When we are learning math, our class stays busy and doesn't waste time.	<input type="radio"/>				
3. I like the way my teacher treats people when they need help with math.	<input type="radio"/>				
4. The things we have done in math this year are interesting.	<input type="radio"/>				
5. I have pushed myself hard to completely understand my math in this class.	<input type="radio"/>				
6. This math class is a happy place for me to be.	<input type="radio"/>				
7. Students behave so badly in this class that it slows down our learning.	<input type="radio"/>				
8. My teacher explains difficult math problems clearly.	<input type="radio"/>				
9. My teacher really cares how well I do in math.	<input type="radio"/>				
10. I'm certain I can master the math skills taught in this class.	<input type="radio"/>				
11. In math, my teacher doesn't let people give up, even if the work is hard.	<input type="radio"/>				
12. If I need help with math, I make sure that someone gives me the help I need.	<input type="radio"/>				
13. My teacher has several good ways to explain each topic in math.	<input type="radio"/>				
14. Because of this teacher, I am learning to love math.	<input type="radio"/>				
15. My behavior in this class is good.	<input type="radio"/>				
16. In this class, math is too easy.	<input type="radio"/>				
17. Doing homework problems helps me get better at doing math.	<input type="radio"/>				
18. In math, my teacher knows when the class understands, and when we do not.	<input type="radio"/>				
19. We spend a lot of time in this class practicing for the state math test.	<input type="radio"/>				
20. My teacher tells us what we are learning and why.	<input type="radio"/>				
21. Some classmates tease kids who make mistakes in this math class.	<input type="radio"/>				
22. I can do almost all the math in this class if I don't give up.	<input type="radio"/>				
23. We have interesting homework.	<input type="radio"/>				
24. My teacher asks questions to be sure we are following along when he/she is teaching math.	<input type="radio"/>				
25. When my teacher marks my math work, he/she writes on my papers to help me understand.	<input type="radio"/>				
26. My teacher checks to make sure we understand what he/she is teaching us.	<input type="radio"/>				
27. I enjoy math class this year.	<input type="radio"/>				
28. In math, our class is like a team--we work together to help everyone do well.	<input type="radio"/>				
29. If a math problem is hard to solve, I often give up before I solve it.	<input type="radio"/>				
30. In math, my teacher takes time to go back over what we learn each day.	<input type="radio"/>				

	Totally Untrue	Mostly Untrue	Some- what	Mostly True	Totally True
31. My teacher explains math in very orderly ways.	<input type="radio"/>				
32. In math, my teacher wants us to really understand, not just memorize the steps to solve problems.	<input type="radio"/>				
33. My teacher tells students to explain their answers to math questions.	<input type="radio"/>				
34. My teacher pushes us to think hard about math.	<input type="radio"/>				
35. Some classmates tease kids for being smart in this math class.	<input type="radio"/>				
36. Even when math is hard, I know I can learn it.	<input type="radio"/>				
37. The comments my teacher gives me on my math help me to improve.	<input type="radio"/>				
38. My behavior in this class sometimes annoys the teacher.	<input type="radio"/>				
39. In this class, math is too hard.	<input type="radio"/>				
40. I think teaching math makes my teacher very happy.	<input type="radio"/>				
41. When doing schoolwork for this math class, I try to learn as much as I can and I don't worry how long it takes.	<input type="radio"/>				
42. If I am sad or angry, my teacher helps me feel better.	<input type="radio"/>				
43. My behavior is a problem for the teacher in this class.	<input type="radio"/>				
44. Being in this math class makes me feel sad or angry.	<input type="radio"/>				
45. When learning math, my classmates behave the way my teacher wants.	<input type="radio"/>				
46. Math lessons are interesting.	<input type="radio"/>				
47. I have been able to figure out the most difficult work in this math class.	<input type="radio"/>				

48. I leave my regular classroom to receive math tutoring or extra help in math during school hours.

No, Never About once a month More than once a week

Less than once a month About once a week

49. I attend math tutoring or extra math lessons after school or on the weekend.

No, Never About once a month More than once a week

Less than once a month About once a week

50. Which adult(s) do you live with? (mark all that are true for you)

My Mother My Father My Grandmother My Grandfather

My Stepmother My Stepfather Other Adult(s)

51. About how many books are there in your home?
- Few (0 – 10) Enough to fill one bookcase (26 – 100)
 Enough to fill one shelf (11 – 25) Enough to fill several bookcases (more than 100)
52. How often do people in your home talk to each other in a language other than English?
- Never Once in a while About half the time All or most of the time
53. How much schooling did your mother complete? Did your mother...
- Go to high school but not graduate Go to college but not graduate I'm not sure
 Graduate from high school but not go to college Graduate from college
54. In the last week, I went to the following place or event (check all that apply):
- Sports practice or game To visit my friends or attend a birthday party
 Music or dance lesson or performance To religious services, school or activities
55. My parents help me with my math homework.
- Never Rarely Some of the time Most of the time All of the time
56. My parents check to see that I've done my math homework
- Never Rarely Some of the time Most of the time All of the time
57. My parents encourage me to work hard at school.
- Never Rarely Some of the time Most of the time All of the time
58. Do you use an electronic device (computer, laptop, smartphone, iPad/tablet, game console, etc.) to practice math or do math games at home?
- No, Never About once a month More than once a week
 Less than once a month About once a week
59. Do you play board games at home with an adult?
- No, Never About once a month More than once a week
 Less than once a month About once a week
60. Do you play card games at home with an adult?
- No, Never About once a month More than once a week
 Less than once a month About once a week

Surveys were adapted from the Tripod surveys with the permission of the Tripod Project. For more information on Tripod, contact Rob@TripodEd.com or visit www.TripodEd.com.

Documentation for Dataset 36095-0006

Teacher Background Questionnaire

NCTE YEAR 1 (2010-11)

Section 3: Your background

1. Counting this year, please indicate the total number of years you have taught mathematics: _____

2. Please indicate the grade(s) to which you presently teach mathematics (Check ALL that apply):

- | | |
|---|------------------------------------|
| <input type="checkbox"/> Grades K-1 | <input type="checkbox"/> Grade 4 |
| <input type="checkbox"/> Grade 2 | <input type="checkbox"/> Grade 5 |
| <input type="checkbox"/> Grade 3 | <input type="checkbox"/> Grade 6-8 |
| <input type="checkbox"/> I do not presently teach mathematics | |

3. About how many undergraduate or graduate level classes have you ever taken at a college or university in the following areas?

	No classes	One or two classes	Three to five classes	Six or more classes
a) Mathematics	1	2	3	4
b) Mathematics content courses for teachers	1	2	3	4
c) Methods for teaching mathematics	1	2	3	4

4. [removed]

5. Please check the statement that best describes your path into teaching. (Mark ONE answer.)

I completed a teacher education program prior to taking my first teaching job; my degree was granted by (name of college or university): [removed]

I participated in a fast-track alternative certification program (e.g., Teach for America, a teaching fellows or residency program) prior to taking my first teaching job; the name of the program was: [removed]

I entered my first teaching job without completing any formal training, no matter how brief the training.

6. Educational attainment (Mark all that apply.):

- An undergraduate major or minor or graduate degree in mathematics
- A bachelor's degree in education
- A certificate in the teaching of elementary mathematics
- A master's degree (any type)
- National Board Certification (NBCT)

7. Are you:

- Hispanic, regardless of race
- Black, not of Hispanic origin
- White, not of Hispanic origin
- Asian or Pacific Islander
- American Indian or Alaskan Native
- Biracial/multiracial
- Other _____

8. Are you:

- Female
- Male

NCTE YEAR 2 (2011-12)



Background questions for new teachers to NCTE study

1. Counting this year, please indicate the total number of years you have taught mathematics: _____

2. Please indicate the grade(s) to which you presently teach mathematics (Check ALL that apply):

- | | |
|-------------------------------------|------------------------------------|
| <input type="checkbox"/> Grades K-1 | <input type="checkbox"/> Grade 4 |
| <input type="checkbox"/> Grade 2 | <input type="checkbox"/> Grade 5 |
| <input type="checkbox"/> Grade 3 | <input type="checkbox"/> Grade 6-8 |

3. About how many undergraduate or graduate level classes have you ever taken at a college or university in the following areas?

	No classes	One or two classes	Three to five classes	Six or more classes
a) Mathematics	1	2	3	4
b) Mathematics content courses for teachers	1	2	3	4
c) Methods for teaching mathematics	1	2	3	4

4. Please check the statement that best describes your path into teaching. (Mark ONE answer.)

- I completed a teacher education program prior to taking my first teaching job;
- I participated in a fast-track alternative certification program (e.g., Teach for America, a teaching fellows or residency program) prior to taking my first teaching job;
- I entered my first teaching job without completing any formal training, no matter how brief the training.

Teacher Name: _____

5. [removed]

6. Educational attainment (Mark all that apply.):

- An undergraduate major or minor or graduate degree in mathematics
- A bachelor's degree in education
- A certificate in the teaching of elementary mathematics
- A master's degree (any type)
- National Board Certification (NBCT)

7. Are you:

- Hispanic, regardless of race
- Black, not of Hispanic origin
- White, not of Hispanic origin
- Asian or Pacific Islander
- American Indian or Alaskan Native
- Biracial/multiracial
- Other _____

8. Are you:

- Female
- Male

Please fax the completed form to [removed]. This will be handled as confidential information.

NCTE YEAR 3 (2012-13)



Background questions for new teachers to NCTE study

1. Counting this year, please indicate the total number of years you have taught mathematics: _____

2. Please indicate the grade(s) to which you presently teach mathematics (Check ALL that apply):

- | | |
|-------------------------------------|------------------------------------|
| <input type="checkbox"/> Grades K-1 | <input type="checkbox"/> Grade 4 |
| <input type="checkbox"/> Grade 2 | <input type="checkbox"/> Grade 5 |
| <input type="checkbox"/> Grade 3 | <input type="checkbox"/> Grade 6-8 |

3. About how many undergraduate or graduate level classes have you ever taken at a college or university in the following areas?

	No classes	One or two classes	Three to five classes	Six or more classes
a) Mathematics	1	2	3	4
b) Mathematics content courses for teachers	1	2	3	4
c) Methods for teaching mathematics	1	2	3	4

4. Please check the statement that best describes your path into teaching. (Mark ONE answer.)

- I completed a teacher education program prior to taking my first teaching job;
- I participated in a fast-track alternative certification program (e.g., Teach for America, a teaching fellows or residency program) prior to taking my first teaching job;
- I entered my first teaching job without completing any formal training, no matter how brief the training.

Teacher Name: _____

5. [removed]

6. Educational attainment (Mark all that apply.):

- An undergraduate major or minor or graduate degree in mathematics
- A bachelor's degree in education
- A certificate in the teaching of elementary mathematics
- A master's degree (any type)
- National Board Certification (NBCT)

7. Are you:

- Hispanic, regardless of race
- Black, not of Hispanic origin
- White, not of Hispanic origin
- Asian or Pacific Islander
- American Indian or Alaskan Native
- Biracial/multiracial
- Other _____

8. Are you:

- Female
- Male

Please fax the completed form to [removed]. This will be handled as confidential information.

Documentation for Dataset 36095-0007
Teacher Fall Questionnaire

Contents

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completed / total (249/263)

Year 2 Fall TQ (pp. 37-73)
completed / total (214/219)

Year 3 Fall TQ (pp. 75-110)
completed / total (178/186)

NCTE YEAR 1 (2010-11)

Developing Measures of Effective Math Teaching Study

Survey of Elementary Teachers

Fall 2010

Form NCTE EL-2010



National Center for
Teacher Effectiveness

Center for Education Policy Research
Harvard Graduate School of Education
50 Church Street, Fourth Floor
Cambridge, MA 02138

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If you would like more information about this questionnaire, please contact
[removed].

INSTRUCTIONS

- The first set of questions asks how you would answer mathematics problems that commonly arise in upper-elementary classrooms. We will use your answers for research purposes only – your responses will **not** be shared with your school or district. We are interested in how different types of teacher knowledge relate to student outcomes. Results will help teacher educators better design professional development and pre-service coursework.
- Please complete all sections independently and do not use a calculator.
- Answer questions by circling your choice, e.g.,

Mrs. Jamieson was looking for a good problem to give her class that would produce many solutions, but not infinitely many solutions. Which of the following would work? (For each item, circle INFINITELY MANY SOLUTIONS, NOT INFINITELY MANY SOLUTIONS, or I'M NOT SURE.)

	Infinitely many solutions	Not infinitely many solutions	I'm not sure
a) Find the number of fractions between 0 and 1.	<input checked="" type="radio"/> 1	2	3
b) I have pennies, nickels, and dimes in my pocket. Suppose I pull out three coins. What amounts of money might I have?	1	<input checked="" type="radio"/> 2	3
c) If Joseph has three times as many cookies as Mary, how many cookies could they have altogether?	<input checked="" type="radio"/> 1	2	3

- In completing this questionnaire, you should not spend more than 2-3 minutes on any question. Imagine you are responding to real classroom situations, and select the answer that most closely matches what you would do, say, or answer at that moment. These questions are designed to be challenging, and you are not expected to know the answers to all of the questions.
- Your responses are voluntary and confidential. If you come to a question you do not wish to answer, simply skip it. We hope that you will answer as many questions as possible.

Section 1: Mathematics

1. Ms. Wilson's class is working in groups to decompose 391 into hundreds, tens, ones, and tenths. As she walks around, she sees groups have arrived at very different answers. Which of the following ways to represent 391 should she accept as correct? (Circle YES, NO, or I'M NOT SURE for each.)

	Yes	No	I'm not sure
a) 3 hundreds + 90 tens + 1 one	1	2	3
b) 2 hundreds + 19 tens + 1 one	1	2	3
c) 3 hundreds + 9 tens + 10 tenths	1	2	3
d) 39 tens + 1 one	1	2	3

2. Ms. Harris was working with her class on divisibility rules. She told her class that a number is divisible by 4 if and only if the number formed by the last two digits is divisible by 4; for example 7,548 is divisible by 4 because 48 is. She asked her students why the rule works, and several possible reasons were proposed.

Which of the following reasons comes closest to explaining the divisibility rule for 4? (Circle ONE answer.)

- a) Four is an even number, and odd numbers are not divisible by even numbers.
- b) Once you subtract the number formed by the last two digits, the number that remains (e.g., 7,500 in the example above) is a multiple of 100, and any multiple of 100 is divisible by 4.
- c) Alternating even numbers are divisible by 4, for example, 24 and 28 but not 26.
- d) It only works when the sum of the last two digits is divisible by 4 ($4 + 8 = 12$, in this example), just like the rule for divisibility by 3.

3. Three children were working together on the following problem:

Geoffrey has 3 dozen pencils. He wants to distribute as many as possible equally among 5 containers. Does he have enough to put 6 pencils in each container?

"That's easy," says Eric. "We just have to multiply 3 times 12, which is 36. Then divide 36 by 5. That's $7\frac{1}{5}$. So, yes, he would have enough."

"You are making too much work, Eric," replies Heather. "You can see right away that he has enough, because the problem is 3 dozen divided by 5, which is $\frac{3}{5}$ of a dozen. Then all we have to do is figure out whether $\frac{3}{5}$ of a dozen is more or less than 6 pencils. And since $\frac{3}{5}$ is more than one half, he has enough, because 6 is half of twelve."

Delena jumps in, "Well $\frac{3}{5}$ of a dozen is obviously less than 6 pencils, because 3 is less than 6, and so is 5."

Which student's response shows the best understanding of the meaning of fractions? (Circle ONE answer.)

- a) Eric
- b) Heather
- c) Delena
- d) They all understand the meaning of fractions equally well.

4. Ms. West's class was working on simplifying fractions. She had taught them to simplify fractions by dividing the numerator and the denominator by a common factor. One of her students asked, "Why doesn't the fraction's value get smaller when we divide the numerator and the denominator by the same number?" Below are responses to the question from other students in this class.

Although none of these is a complete explanation, which of the following provides the best evidence that the student understands why simplifying a fraction produces an equivalent fraction? (Circle ONE answer.)

- a) This works because you divide the top and bottom by the same number, so the new fraction has to be the same amount.
- b) This works because you are really just dividing the fraction by 1, so the new fraction is the same amount.
- c) This works because you are making the numerator and denominator smaller by the same amount.
- d) This works because, for example, $\frac{3}{4}$ is the same amount as $\frac{12}{16}$, only with smaller numbers.

5. Ms. Barber was reviewing her students' division homework and saw that Chad used the following non-standard approach to divide 127 by 7:

127 divided by 7.

$$\begin{array}{r} 10 \\ 7 \overline{)127} \\ - 70 \\ \hline 57 \end{array}$$
$$\begin{array}{r} 8 \text{ R } 1 \\ 7 \overline{)57} \\ - 56 \\ \hline 1 \end{array}$$
$$\begin{array}{r} 10 \\ + 8 \text{ R } 1 \\ \hline 18 \text{ R } 1 \end{array}$$

What is true about Chad's approach? (Circle ONE answer.)

- a) His approach is not mathematically valid; it is a coincidence that his answer is correct.
- b) His approach is not mathematically valid because he subtracted 70 from 127 instead of subtracting 7 from 12.
- c) His approach is mathematically valid, but could be inefficient with large dividends.
- d) His approach is mathematically valid, but only works with single-digit divisors.

6. Imagine that you are working with your class on subtracting large numbers. Among your students' papers, you notice that some have displayed their work in the following ways:

$\begin{array}{r} 932 \\ -356 \\ \hline 576 \end{array}$ <p style="text-align: center;">Method A</p>	$\begin{array}{r} 932 \\ -356 \\ \hline 576 \end{array}$ <p style="text-align: center;">Method B</p>	$\begin{array}{r} 932 \\ -356 \\ \hline 576 \end{array}$ <p style="text-align: center;">Method C</p>
--	--	--

Which of these students is using a method that could be used to subtract any two whole numbers? (Circle ONE answer.)

- a) A only
- b) B only
- c) A and B
- d) B and C
- e) A, B, and C

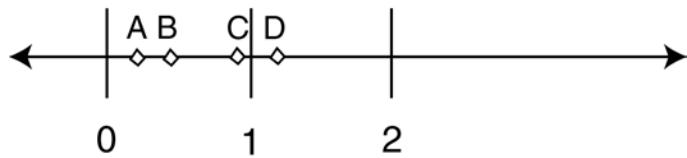
7. Which of the following is the best explanation for why the conventional long division algorithm works, as in the example below? (Circle ONE answer.)

$$\begin{array}{r} 111 \text{ R } 29 \\ 37 \overline{)4136} \\ 37 \\ \hline 43 \\ 37 \\ \hline 66 \\ 37 \\ \hline 29 \end{array}$$

- a) It works because you divide 37 into smaller parts of 4136 (the dividend) to make the problem easier to solve.
- b) It works because you subtract multiples of ten times 37 (the divisor) from 4136 (the dividend) until you have less than 37 left.
- c) It works because if you multiply 111 (the quotient) by 37 (the divisor), and add in 29, you get 4136 (the dividend).
- d) It works because you subtract 37's (the divisor) from 4136 (the dividend) until you have less than 37 left.

8. Mr. Stone is looking through his mathematics materials for problems relating fractions to number lines. He comes across the following problem:

Which point is closest to $\frac{7}{16} \times \frac{1}{2}$?



He has not used a number line for this kind of problem before and he wants to make sure he is using it correctly. Which of the following is the intended answer to this problem? (Circle ONE answer.)

- a) A
- b) B
- c) C
- d) D

9. Ms. Marcos' class was learning that in geometry there are often special cases, so that things may be true sometimes, but false other times. For each of the following statements, indicate whether it is always true, sometimes true, or never true.
(Circle ALWAYS TRUE, SOMETIMES TRUE, NEVER TRUE, or I'M NOT SURE for each.)

	Always true	Sometimes true	Never true	I'm not sure
a) Triangles have three acute angles (acute angles are less than 90 degrees).	1	2	3	4
b) A rectangle is a square.	1	2	3	4
c) The area of a circle divided by the square of its radius is a little more than 3.	1	2	3	4
d) If a polygon has all its vertices on a circle, the area of the polygon is less than the area of the circle.	1	2	3	4
e) All of the angles of a hexagon are equal.	1	2	3	4

10. Ms. Lawrence is making up word problems for her students. She wants to write a word problem for $3 \div \frac{1}{2}$. Which of the following word problem(s) can she include? (Circle YES, NO, or I'M NOT SURE for each.)

	Yes	No	I'm not sure
a) Melissa has 3 pizzas and she wants to give half of them to her friend. How much pizza will her friend get?	1	2	3
b) Dan has 3 cups of chocolate chips. He wants to bake cookies, and each batch requires $\frac{1}{2}$ cup of chocolate chips. How many batches of cookies can Dan make if he uses all of the chocolate chips?	1	2	3
c) Three friends each have half of a cookie. How many cookies would they have if they put them all together?	1	2	3
d) Jacquie has collected three cans of pennies for her fund-raiser. If she is halfway to her goal, how many cans of pennies had she set as the goal?	1	2	3

11. Ms. Tippin wanted to use the number line to help develop her students' understanding of integers. She looked through her textbook and found the following activity:

Suppose m is any whole number greater than 0.

Place the following numbers on a number line:

$$m + m$$

$$m - m$$

$$3m$$

$$m \div 4$$

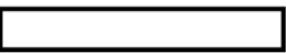
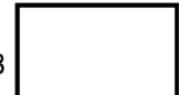
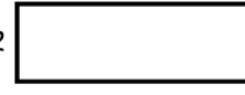
Ms. Tippin wondered, if she changed the problem so that m was a negative integer instead of a positive integer, whether the order of the numbers would be affected. Which of the following statements describes what will happen to the order of the numbers if m is a negative instead of positive integer? (Circle ONE answer.)

- a) The numbers stay in the same order.
- b) The numbers reverse order.
- c) The orders of the biggest and smallest numbers stay the same, but the orders of the middle two positions switch.
- d) The orders of the biggest and smallest numbers switch, but the orders of the middle two stay the same.
- e) You can't tell what order the numbers will be in, because their order depends on which negative integer is selected for m .

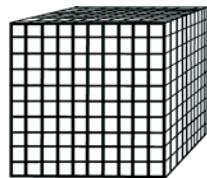
12. The students in Ms. Manchowski's class were engaged in a process of drawing and measuring various rectangles to study the relationship between perimeter and area. One student volunteered the following observation:

When we increase the perimeter of a rectangle, the area increases.
Likewise, if we decrease the perimeter of a rectangle, the area decreases.

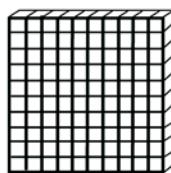
Below are several pairs of rectangles. Which of the following pairs would be best for addressing the student's thinking about the relationship between area and perimeter? (Circle ONE answer.)

1		2	
a)	7 $A = 7$ $P = 16$	6 $A = 12$ $P = 16$	
<hr/>			
2		3	
b)	4 $A = 8$ $P = 12$	6 $A = 18$ $P = 18$	
<hr/>			
3		4	
c)	4 $A = 12$ $P = 14$	5 $A = 20$ $P = 18$	
<hr/>			
d)		6	
	6 $A = 12$ $P = 16$	2 $A = 12$ $P = 16$	
<hr/>			

13. Dr. Kwon, a mathematics education professor at a local university, assigns her math methods students the following problem:



block



flat



rod



cube

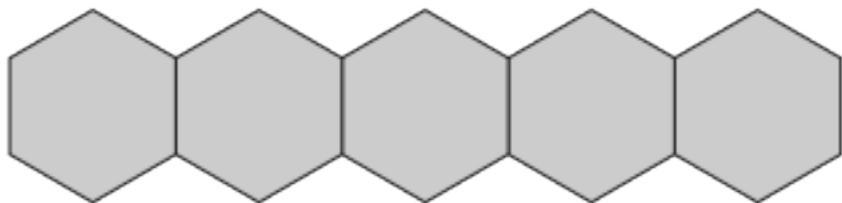
Use the pictured materials to represent the number 12.4.

As her students got out their materials, they began to discuss the ways to represent 12.4. Which of the following representations should the class accept as correct?
(Circle CORRECT, NOT CORRECT, or I'M NOT SURE for each.)

	Correct	Not Correct	I'm not sure
a) 12 blocks, 4 rods	1	2	3
b) 12 cubes, 4 rods	1	2	3
c) 1 flat, 2 rods, 4 cubes	1	2	3
d) 12 flats, 4 rods	1	2	3
e) 1 cube, 2 rods, 4 flats	1	2	3

14. Ms. Jones was preparing to use the following task with her students:

If you lined up 100 hexagons in a row
this way, what would the perimeter be?



She knew how she would do this problem herself, but she wanted to anticipate what some of her students would come up with. Which of the following would work to find the correct answer? (Circle YES, NO, or I'M NOT SURE for each.)

	Yes	No	I'm not sure
a) $4 \times 100 + 2$	1	2	3
b) $(6 \times 100) - 2 \times 99$	1	2	3
c) $4 \times 98 + 2 \times 5$	1	2	3
d) 6×100	1	2	3

15. While planning an introductory lesson on primes and composites, Mr. Rubenstein is considering what numbers to use as initial examples. He is concerned because he knows that choosing poor examples can mislead students about these important ideas. Of the choices below, which set of numbers would be best for introducing primes and composites? (Circle ONE answer.)

- | | <u>Primes</u> | <u>Composites</u> |
|----|--|-------------------|
| a) | 2, 5, 17 | 8, 14, 32 |
| b) | 3, 5, 11 | 6, 30, 44 |
| c) | 3, 7, 11 | 4, 16, 25 |
| d) | 2, 7, 13 | 9, 24, 40 |
| e) | All of these would work equally well to introduce prime and composite numbers. | |

16. Use the expression below to answer the question that follows.

$$\frac{(32,629)(484)}{306,751}$$

Which of the following is the best estimate of the value of the expression above? (Circle ONE answer.)

- a) 40
- b) 50
- c) 400
- d) 500

17. A book distributor is trying to divide an order of textbooks into equally sized groups for shipping in cartons. The textbooks can be divided into groups of 12, groups of 15, or groups of 18, with no books left over. Which of the following inequalities is satisfied if N is the smallest possible total number of textbooks? (Circle ONE answer.)

- a) $100 \leq N < 150$
- b) $150 \leq N < 200$
- c) $200 \leq N < 250$
- d) $250 \leq N < 300$

18. Use the diagram below to answer the question that follows.



Figure 1



Figure 2

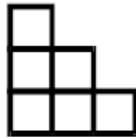


Figure 3

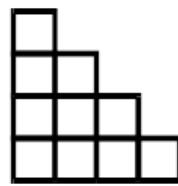


Figure 4

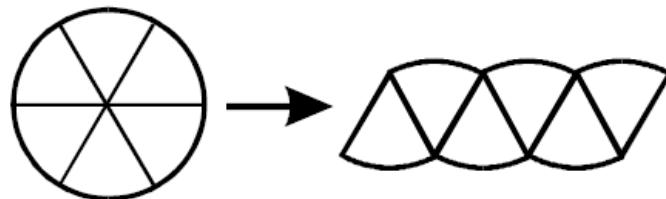
If the pattern continues, how many more small squares are in figure 100 than are in figure 99? (Circle ONE answer.)

- a) 98
- b) 99
- c) 100
- d) 101

19. A store that sells handcrafted items takes \$3.00 per item plus 40% of the sale price for each item sold. The rest of the money from item sales goes to the craftsperson. All items sold cost \$5.00 or more. If p represents the sale price of one item, which of the following expressions represents the amount of money the craftsperson gets for each item sold? (Circle ONE answer.)

- a) $\frac{2}{5}p + 3$
- b) $\frac{2}{5}p - 3$
- c) $\frac{3}{5}p + 3$
- d) $\frac{3}{5}p - 3$

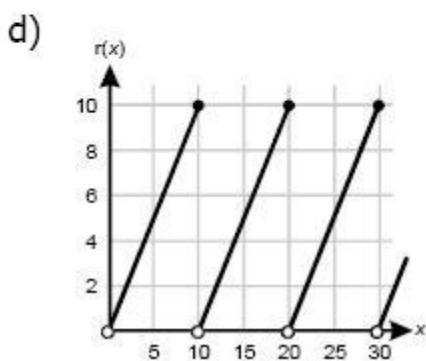
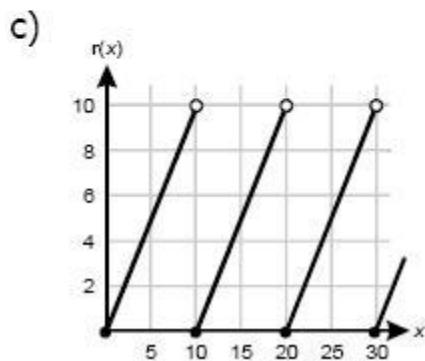
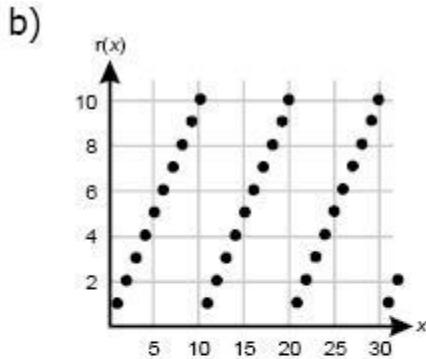
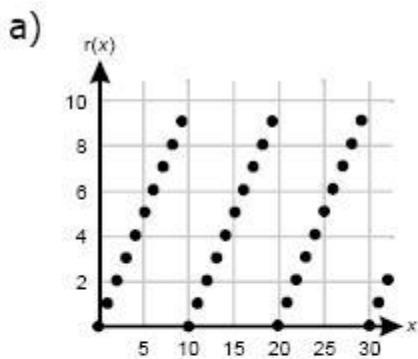
20. Use the diagram below to answer the question that follows.



The diagram above is used to describe the relationship between the circumference c , the radius r , and the area A of a circle. Assuming that the circle is divided into enough sections so that the figure on the right approximates a rectangle, which of the following relationships is demonstrated? (Circle ONE answer.)

- a) $A = \frac{1}{2}cr$
- b) $A = cr$
- c) $A = \frac{3}{2}cr$
- d) $A = 2cr$

21. The function $r(x)$ gives the remainder when a whole number x is divided by 10. Which of the following graphs represents $r(x)$? (Circle ONE answer.)

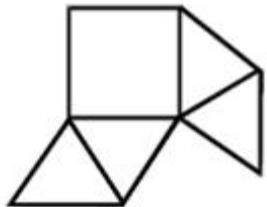


22. The prime factorization of a natural number n can be written as $n = p r^2$ where p and r are distinct prime numbers. How many factors does n have, including 1 and itself? (Circle ONE answer.)

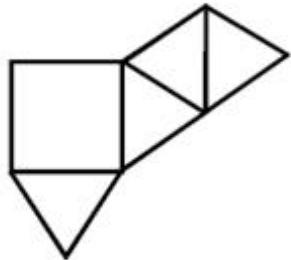
- a) 3
- b) 4
- c) 5
- d) 6

23. Which of the following nets can be folded to form a square pyramid? (Circle ONE answer.)

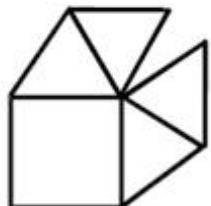
a)



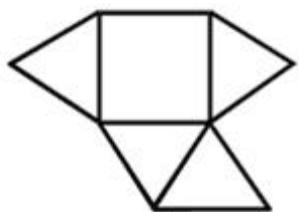
b)



c)



d)



Section 2: Your teaching and professional responsibilities

1. How frequently do you engage in the following activities during lessons on mathematical procedures (for example, whole number multiplication, computation with fractions and decimals, finding equivalent fractions, converting fractions to decimals, calculating area and perimeter)?

	Rarely or never	Sometimes	Often	Usually	Always
a) Outline the steps of a mathematical procedure	1	2	3	4	5
b) Explain why a mathematical procedure works	1	2	3	4	5
c) Illustrate why a mathematical procedure works using concrete materials (e.g., cubes, base ten blocks, fraction strips)	1	2	3	4	5
d) Present mnemonic devices to help students remember procedures	1	2	3	4	5
e) Ask questions that help students understand why a procedure works	1	2	3	4	5
f) Compare different ways of solving problems	1	2	3	4	5
g) Encourage students to use mathematically precise language	1	2	3	4	5
h) Assign problems to help students practice procedures for speed, accuracy, or ease of use	1	2	3	4	5
i) Use flashcards, games, or computer activities to improve recall or skill	1	2	3	4	5

2. How frequently do you engage in the following activities while teaching mathematics?

	Rarely or never	Sometimes	Often	Usually	Always
--	-----------------------	-----------	-------	---------	--------

- a) I assign problems where choosing the right approach is at least as important as the computation.
-

1	2	3	4	5
---	---	---	---	---

- b) Rather than accepting only one solution method, I ask students to volunteer different ways to solve a problem.
-

1	2	3	4	5
---	---	---	---	---

- c) I assign problems without specifying a solution method in advance.
-

1	2	3	4	5
---	---	---	---	---

- d) I assign problems that students have to take a few minutes to think through.
-

1	2	3	4	5
---	---	---	---	---

- e) I ask students to compare or evaluate different ways of solving problems.
-

3. How often do you observe the following situations while teaching mathematics?

	Rarely or never	Sometimes	Often	Usually	Always
a) Students get along well with each other.	1	2	3	4	5
b) I have to reprimand students to control the class.	1	2	3	4	5
c) Students and I show an interest in each other's lives.	1	2	3	4	5
d) I feel disrespected by students.	1	2	3	4	5
e) Students and I have a friendly rapport.	1	2	3	4	5
f) Instructional time is lost because of student misbehavior.	1	2	3	4	5
g) Students and I use respectful language and listen to each other.	1	2	3	4	5
h) Students follow rules and meet behavioral expectations without constant reminders.	1	2	3	4	5
i) Harsh voices and negative language are present in my classroom.	1	2	3	4	5

4. About how often do you or your students take part in the following activities?

	Never	A few times a year	Once or twice a month	Once or twice a week	Daily or almost daily
a) I evaluate student work on mathematics assessments or assignments using a written rubric.	1	2	3	4	5
b) I provide detailed written feedback on student mathematical work in addition to a numeric score.	1	2	3	4	5
c) I differentiate mathematics assignments based on students' individualized learning needs.	1	2	3	4	5
d) I analyze student mathematical work, including assessments or homework, in order to plan future instruction.	1	2	3	4	5
e) I examine student work to understand the process students use to solve mathematics problems.	1	2	3	4	5
f) Students evaluate their own mathematical work on assessments or assignments using a written rubric.	1	2	3	4	5

5. In a typical week, how much time do you devote to the following activities?

	No time	Less than one hour	One or two hours	Two to six hours	More than six hours
a) Grading mathematics assignments	1	2	3	4	5
b) Gathering and organizing mathematics lesson material (e.g., locating and copying supplemental material, preparing manipulatives)	1	2	3	4	5
c) Reviewing the content of specific mathematics lessons (e.g., reading the teacher manual, seeking additional information about the content)	1	2	3	4	5
d) Preparing for a mathematics lesson by trying out explanations, or working through examples or problems	1	2	3	4	5
e) Talking with parents about students' learning or behavior in any subject	1	2	3	4	5
f) Helping students learn any subject after school hours (e.g., homework club, tutoring)	1	2	3	4	5
g) Seeking outside support for struggling students in any subject (e.g., IEPs, tutoring)	1	2	3	4	5
h) Collaboratively planning lessons in any subject with other teachers or coaches	1	2	3	4	5

6. In the past three years, did you participate in any of the following activities?

	Yes	No
a) I served on a district or school mathematics committee.	1	2
b) I reduced my regular teaching duties to serve as a mathematics coach (i.e., part- or full-time coaching).	1	2
c) I acted as a peer mathematics coach or mentor while continuing my regular teaching duties.	1	2
d) I taught an in-service workshop or course related to mathematics content and/or mathematics teaching.	1	2

7. In a typical week of teaching mathematics, how frequently do you engage in the following activities?

	Never or rarely	Once or twice a week	Three or four times a week	Daily
a) Use test items or practice test materials in preparation for the [state test]	1	2	3	4
b) Incorporate formats similar to those on the [state test] (such as styles of graphs or key phrases) into my instruction	1	2	3	4
c) Set aside part of class time to review concepts or skills found on the [state test] (e.g., use a problem of the day)	1	2	3	4
d) Focus on supporting students who are expected to score just below a given performance level on the [state test]	1	2	3	4
e) Teach specific test-taking strategies, like process of elimination or plugging in answers	1	2	3	4

8. To what extent does preparing for the [state test] result in the following changes in your instruction?

	Not at all	To some degree	Very much
a) Spending <u>less</u> time on mathematical topics that are rarely or never tested	1	2	3
b) Spending <u>more</u> time on mathematical topics that carry more weight on the test	1	2	3
c) Giving students less time to discuss mathematical concepts in depth	1	2	3
d) Limiting special projects or hands-on activities related to mathematics	1	2	3
e) Using fewer demanding mathematics problems (e.g., "extension" problems) to challenge advanced students	1	2	3
f) Exploring mathematical concepts in less depth	1	2	3
g) Sequencing mathematical topics so that content usually on the test is covered before the test is administered	1	2	3

9. To what extent do you agree or disagree with the following statements about your mathematics class(es) this year?

	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree
a) In general, students in this year's class(es) have more learning difficulties than students in last year's class(es).	1	2	3	4	5
b) This year's students arrived in class better prepared than last year's students.	1	2	3	4	5
c) This year's class(es) has fewer behavior problems than last year's class(es).	1	2	3	4	5
d) In general, teaching this year's class(es) is easier than teaching last year's class(es).	1	2	3	4	5

10. Is there anything atypical about your students or teaching this year?

Yes No

If yes, please explain:

[removed]

11. To what extent do you agree or disagree with the following statements about your mathematics class?

	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree
a) The amount my students can learn is primarily related to family background and/or student effort.	1	2	3	4	5
b) I can get through to even the most difficult students.	1	2	3	4	5
c) I can craft good questions for my students.	1	2	3	4	5
d) I am limited in what I can achieve because of student home environment and/or effort.	1	2	3	4	5
e) I can provide an alternative explanation or example when students are confused.	1	2	3	4	5
f) I can use a variety of assessment strategies to help students learn.	1	2	3	4	5
g) Students have a certain amount of intelligence, and I can't do much to change it.	1	2	3	4	5
h) I can implement alternative teaching strategies in my classroom.	1	2	3	4	5

12. To what extent do you agree or disagree with the following statements?

	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree
a) This school offers limited resources to support my mathematics teaching.	1	2	3	4	5
b) I am not allowed to use my professional judgment in designing and delivering mathematics instruction.	1	2	3	4	5
c) I enjoy teaching in this school.	1	2	3	4	5
d) My instruction is frequently interrupted (e.g., by announcements, phone calls, or visitors).	1	2	3	4	5
e) I have the materials I need to teach.	1	2	3	4	5
f) I have access to the professional growth opportunities that I need.	1	2	3	4	5
g) It is difficult to get my students the services they need.	1	2	3	4	5
h) School facilities are poorly maintained.	1	2	3	4	5
i) I feel my work is respected and valued by others in the school.	1	2	3	4	5

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE!!!

If you have any comments about these questions,
please write them in the space below.

NCTE YEAR 2 (2011-12)

Developing Measures of Effective Math Teaching Study

Survey of Elementary Teachers

Fall 2011

Form NCTE EL-2011



National Center for
Teacher Effectiveness

Center for Education Policy Research
Harvard Graduate School of Education
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If you would like more information about this questionnaire, please contact
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INSTRUCTIONS

- The first set of questions asks how you would answer mathematics problems that commonly arise in upper-elementary classrooms. We will use your answers for research purposes only – your responses will **not** be shared with your school or district. We are interested in how different types of teacher knowledge relate to student outcomes. Results will help teacher educators better design professional development and pre-service coursework.
- Answer questions by circling your choice, e.g.,

Mrs. Jamieson was looking for a good problem to give her class that would produce many solutions, but not infinitely many solutions. Which of the following would work? (For each item, circle **INFINITELY MANY SOLUTIONS**, **NOT INFINITELY MANY SOLUTIONS**, or **I'M NOT SURE**.)

	Infinitely many solutions	Not infinitely many solutions	I'm not sure
a) Find the number of fractions between 0 and 1.	<input checked="" type="radio"/>	2	3
b) I have pennies, nickels, and dimes in my pocket. Suppose I pull out three coins. What amounts of money might I have?	1	<input checked="" type="radio"/>	3
c) If Joseph has three times as many cookies as Mary, how many cookies could they have altogether?	<input checked="" type="radio"/>	2	3

- In completing this questionnaire, you should not spend more than 2-3 minutes on any question. Imagine you are responding to real classroom situations, and select the answer that most closely matches what you would do, say, or answer at that moment. These questions are designed to be challenging, and you are not expected to know the answers to all of the questions.
- Your responses are voluntary and confidential. If you come to a question you do not wish to answer, simply skip it. We hope that you will answer as many questions as possible.

Section 1: Mathematics

1. Ms. Kelly was going to draw a picture of $\frac{3}{4}$ on the blackboard. She asked how many circles she should draw to start, and to her surprise her students made different proposals.



Asa: I would draw four circles because the denominator tells you what the whole is.



José: I was thinking that fractions mean divide, and three circles is the whole thing. I would start with three circles, then divide them up.



Mina: I would draw one circle. One is the whole, and you break the whole up into four parts.

Ms. Kelly had planned to draw one circle, but now she was unsure. Which of these students is using a correct interpretation of fractions? (Circle ONE answer.)

- a) Only Asa.
- b) Only José.
- c) Only Mina.
- d) Both Asa and Mina, but not José.
- e) Asa, José, and Mina.

2. Ms. Catalano was planning a lesson on the distributive property. She wanted to include an example that would help her class understand that using the distributive property can sometimes make expressions easier to evaluate. Which of the following expressions would be best to use for this purpose? (Circle ONE answer.)

a) $7(5 + 4)$

b) $23(38 + 62)$

c) $\frac{1}{3}(8 + 4)$

d) $12\left(\frac{2}{3} + \frac{3}{4}\right)$

3. Ms. Montgomery gave her students the following problem:

There are 54 animals on a farm. There are twice as many sheep as rabbits on the farm. There are three times as many chickens as rabbits on the farm. How many of each type of animal are on the farm?

Students produced the following responses. Which of these strategies is a valid method for solving this problem? (Circle VALID, NOT VALID, or I'M NOT SURE for each.)

Valid	Not Valid	I'm not sure
-------	-----------	--------------

a) $n + 2n + 3n = 54$
 $54 \div 3 = 18 \rightarrow n + 2n = 18$
 $18 \div 2 = 9 \rightarrow n = 9$
So there are 9 rabbits.

1 2 3

b) $n + 2n + 3n = 6n$
6 times ? = 54
6 times 9 = 54
The number of rabbits is 9.

1 2 3

c) $n : 2n : 3n$
1 : 2 : 3
5 : 10 : 15
10 : 20 : 30
9 : 18 : 27
So there are 9 rabbits.

1 2 3

4. Use the spinner below to answer the question that follows.



The host of a party tells her guests that every time the spinner above lands on the section labeled "Fruit Basket," a guest will win a large basket of fruit. If the 180 guests at the party each spin the spinner once, what is the best estimate of the number of fruit baskets that the host will be giving away? (Circle ONE answer.)

- a) 7
- b) 14
- c) 36
- d) 72

5. In the number 2010, the value represented by the digit 1 is what fraction of the value represented by the digit 2? (Circle ONE answer.)

- a) $\frac{1}{2000}$
- b) $\frac{1}{200}$
- c) $\frac{1}{20}$
- d) $\frac{1}{2}$

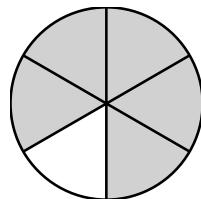
6. Mrs. Markey's students are trying to represent $\frac{1}{2} + \frac{1}{3}$ of the same whole. Which of the following representations could she accept as showing $\frac{1}{2} + \frac{1}{3}$? (Circle YES, NO, or I'M NOT SURE for each.)

Yes

No

I'm not sure

a)

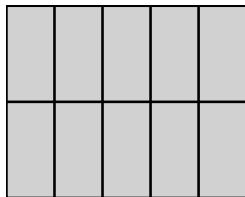


1

2

3

b)

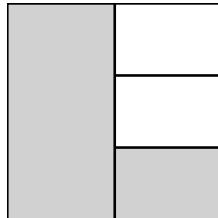


1

2

3

c)

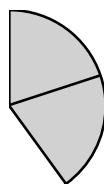


1

2

3

d)



1

2

3

7. Ms. Bristow was working with her class on division with decimals. She gave her students the problem $1.74 \div 0.3$ and, after a few minutes, asked them to share their solutions.

Nadia said, “Because there’s one decimal place in 0.3, I need to move the decimal point in both numbers over one place and then do the division.” Then she wrote the following on the board:

$$\begin{array}{r} 5.8 \\ 0.\cancel{3} \overline{)1.\cancel{7}4} \\ -15 \\ \hline 24 \\ -24 \\ \hline 0 \end{array}$$

After Nadia shared her solution, another student commented, “But it looks like you changed the problem to $17.4 \div 3$. How does that show that 5.8 is the answer to $1.74 \div 0.3$?”

Of the following, which provides the best basis for explaining why this procedure works? (Circle ONE answer.)

- a) It works because multiplying the dividend and the divisor by the same number is really multiplying by 1, so the quotient will remain the same.
- b) It works because you can’t divide by a number with a decimal point, so the divisor must be converted to a whole number.
- c) It works because converting the decimals to fractions and dividing produces the same quotient.
- d) It works because the quotient stays the same as long as you move the decimal point the same number of places in both the divisor and the dividend.
- e) It works because moving the decimal points maintains a constant difference between the divisor and dividend, which leaves the quotient unchanged.

8. Mrs. Reynolds assigned her class practice problems involving adding positive and negative mixed numbers. While her students were working independently, she asked one student, Annika, to describe her method for solving the problem below:

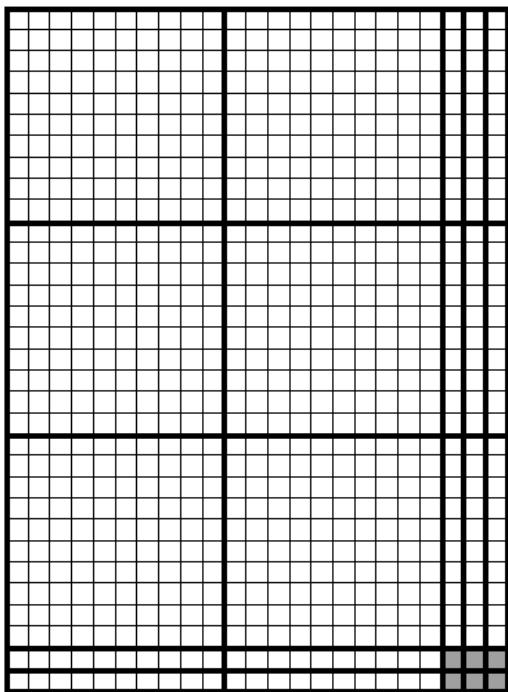
$$\begin{array}{r} -4 \frac{4}{6} \\ + 1 \frac{5}{6} \\ \hline -3 \frac{1}{6} \end{array}$$

Annika explained: "I know that $-4 \frac{4}{6}$ means that both the 4 and the $\frac{4}{6}$ are negative. So first I added $-\frac{4}{6}$ to $\frac{5}{6}$ and got $\frac{1}{6}$. Then I added -4 and 1 to get -3 . So the answer is $-3 \frac{1}{6}$."

Which of the following statements about Annika's method is true? (Circle ONE answer.)

- a) Annika's method works and produced the correct answer.
- b) Annika's method can work, but her answer is wrong because she did not add the $\frac{1}{6}$ to the -3 .
- c) Annika's method does not work in general, but happened to produce the correct answer for this problem.
- d) Annika's method does not work because to add positive and negative numbers you have to ignore the signs, find the difference between the two numbers, and then determine the correct sign.

9. Mrs. Ritchie is teaching her students how to multiply decimals. She wants to make the concept more concrete for her class, so she decides to use base ten materials to set up the problem 3.2×2.3 . However, she is unsure how to map the set-up to the algorithm. Which part of the product is represented by the area shaded in gray? (Circle ONE answer.)



- a) 2×3
- b) 0.2×3
- c) 2×0.3
- d) 0.2×0.3
- e) 0.02×0.03
- f) Base ten materials can only be used to model whole numbers such as hundreds, tens, and ones. It is not appropriate to use them to model decimals.

10. Use the table below to answer the question that follows.

Store	Discount from Manufacturer's Recommended Price
1	\$4 off the price of each game
2	30% discount on each game
3	$\frac{1}{3}$ off the price of two games
4	buy one game and the second at half price

Samantha wants to buy two computer games, each of which has a manufacturer's recommended price of \$20. She checks four different stores and finds the prices of the games discounted as shown in the table above. At which store will Samantha be able to buy the games for the least amount of money? (Circle ONE answer.)

- a) Store 1
- b) Store 2
- c) Store 3
- d) Store 4

11. Use the inequality below to answer the question that follows.

$$3 \div x > 4 \div x$$

Which of the following inequalities describes all possible values of x ? (Circle ONE answer.)

- a) $x < -1$
- b) $x < 0$
- c) $-1 < x < 0$
- d) $0 < x < 1$

12. A pretzel company sells pretzels in a cylindrical container with a radius of 10 cm and a height of 30 cm. The company's packaging designers are considering switching to a new cylindrical container with a radius of 20 cm and a height of 15 cm. How does the volume of the proposed new container compare to the volume of the old container? (Circle ONE answer.)

- a) The volume of the new container is 125 cm^3 less than the volume of the old container.
- b) The volume of the new container is 5 cm^3 less than the volume of the older container.
- c) The volume of the new container is equal to the volume of the old container.
- d) The volume of the new container is twice the volume of the old container.

13. Mr. Nessbaum was teaching division with fractions to his class. “If we purchase 8 big chocolate bars from the school candy sale,” he said, “and we want everyone in the class to have $\frac{2}{5}$ of a chocolate bar, do we have enough for our 25 students?” Mr.

Nessbaum expected his students to write $8 \div \frac{2}{5} = 20$. Instead, the students came up with several different approaches for solving the problem. Which of the students’ approaches is valid? (Circle APPROACH IS VALID, APPROACH IS NOT VALID, or I’M NOT SURE for each.)

	Approach is valid	Approach is not valid	I'm not sure
a) After I cut each bar into five pieces, there are 40 pieces and everybody gets two. 40 divided by 2 equals 20, so we don't have enough.	1	2	3
b) There are 25 students. 25 times $\frac{2}{5}$ is 10 so we don't have enough.	1	2	3
c) You have to add $\frac{2}{5}$ twenty times to equal 8 whole chocolate bars. But that is not 25 times, so there are not enough pieces for everyone in our class.	1	2	3
d) 8 bars divided by 2 is 4 which is less than 5, so each student can't get $\frac{2}{5}$ of a bar each.	1	2	3
e) There aren't enough because if I start with 8 and keep subtracting $\frac{2}{5}$, I get to zero before I have subtracted it 25 times.	1	2	3

14. According to an article in a financial journal, a certain company earned 3.85 million dollars last year. Based on this report of the company's yearly earnings, a person reading the article estimates that the company earned an average of approximately 30 thousand dollars per month. Which of the following statements best describes the reasonableness of this estimate for the company's average monthly earnings? (Circle ONE answer.)

- a) The estimate is too low by a factor of 100.
- b) The estimate is too low by a factor of 10.
- c) The estimate is too high by a factor of 10.
- d) The estimate is too high by a factor of 100.

15. Mrs. Kerr wanted to include some word problems on her decimals quiz. Which of the following problem(s) could she use as a word problem for $0.2 \div 0.6$? (Circle YES, NO, or I'M NOT SURE for each.)

	Yes	No	I'm not sure
a) You have twenty cents, but need 60 cents to buy some candy. What fraction of the total amount do you already have?	1	2	3
b) A pet tarantula eats 0.2 ounces of bugs per day. If you purchase 0.6 oz of bugs at the pet store, how many days will the bugs last?	1	2	3
c) One inchworm races 0.2 meters. Another inchworm only makes it 0.6 the distance the first inchworm raced. How far did the second inchworm go?	1	2	3
d) A snail can crawl 0.6 meters per hour. If the snail needs to move 0.2 meters to find food, how long will it need to crawl to get to the food?	1	2	3

16. Use the samples of a student's work below to answer the question that follows.

$$\frac{9}{16} \div \frac{3}{4} = \frac{9 \div 3}{16 \div 4} = \frac{3}{4}$$

$$\frac{15}{8} \div \frac{5}{4} = \frac{15 \div 5}{8 \div 4} = \frac{3}{2}$$

$$\frac{5}{12} \div \frac{5}{3} = \frac{5 \div 5}{12 \div 3} = \frac{1}{4}$$

Which of the following statements best describes the mathematical validity of the algorithm that the student appears to be using? (Circle ONE answer.)

- a) It is not valid for any rational numbers.
- b) It is valid only when all numerators and denominators are integers.
- c) It is valid only when all numerators and denominators are positive integers.
- d) It is valid for all rational numbers.

17. The expression $(5^{-8} \cdot 7^{-9})$ is equal to which of the following? (Circle ONE answer.)

a) $\frac{1}{5(35)^8}$

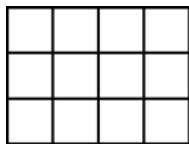
b) $\frac{1}{7(35)^8}$

c) $\frac{5}{(35)^8}$

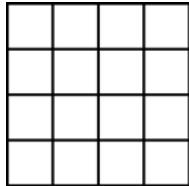
d) $\frac{7}{(35)^8}$

18. Several of Ms. Gomez's students were confusing perimeter with area—giving the perimeter when asked for the area and vice versa. She taught a lesson to clarify the distinction and now wants to give them a problem to check their understanding. Which of the following problems would best suit that purpose? (Circle ONE answer.)

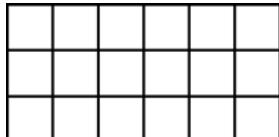
- a) Find the perimeter.



- b) Find the perimeter.



- c) Find the perimeter.



- d) Any of these would work well to determine whether students are clear about what perimeter is.

19. Students were trying to find the area of any trapezoid starting with its two bases (measuring B and b) and its height, h . Here are some of their initial ideas for getting started:

Carrie said, “If I put together two copies of the trapezoid, I get a parallelogram. The trapezoid is half the parallelogram.”

Kip said, “If I cut on a diagonal, I get two triangles. I can add their areas together.”

Lilly said, “I can find the area of two rectangles. One is Bh and the other is bh . I can average them to get the area of the trapezoid.”

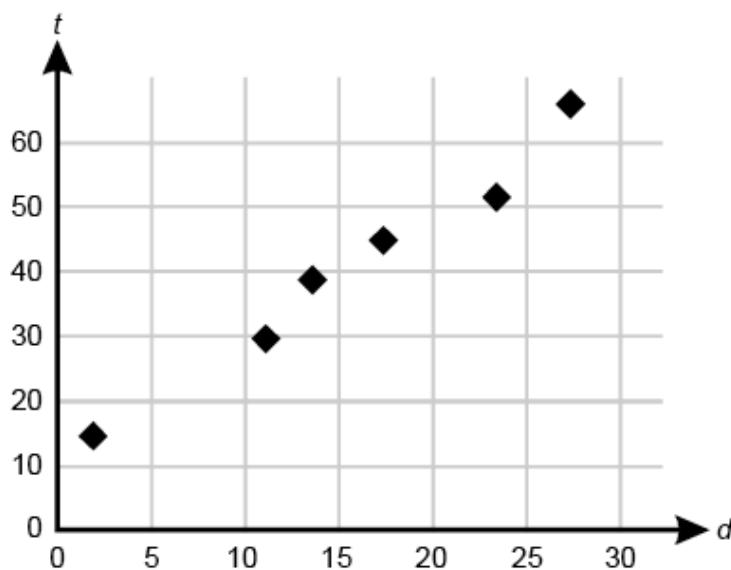
Which of these student ideas provides a mathematically reasonable approach for finding the area of any trapezoid? (Circle ONE answer.)

- a) Only Carrie’s.
- b) Only Kip’s.
- c) Only Carrie’s and Kip’s.
- d) Only Carrie’s and Lilly’s.
- e) All three students’ ideas.

20. After investigating where π comes from, a student says, “Why is it just circles that have this special number, π ? ” Mrs. Bell wants to give her students other shapes that have a constant ratio between “how-far-around” and “how-far-across” (analogous to circumference and diameter). Which of the following shapes would best fit her purpose? (Circle ONE answer.)

- a) Squares
- b) Rectangles
- c) Hexagons
- d) All of these would work equally well.
- e) None of these would work.

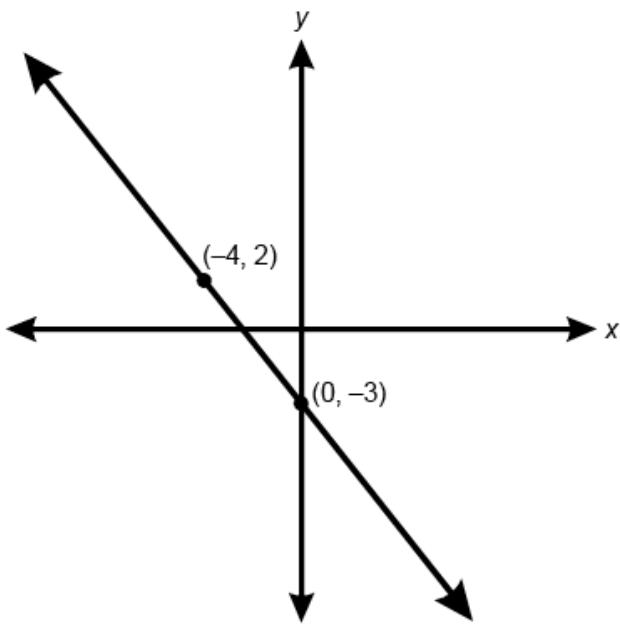
21. Use the graph below to answer the question that follows.



The graph above shows the distance d in miles and the time t in minutes for six bus routes around a city. Which of the following equations best models the relationship between d and t for these bus routes? (Circle ONE answer.)

- a) $t = d$
- b) $t = d + 10$
- c) $t = 2d$
- d) $t = 2d + 10$

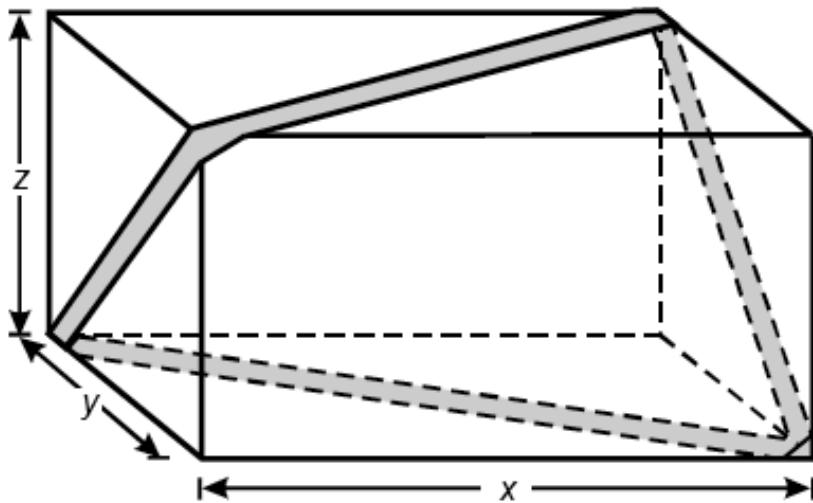
22. Use the graph below to answer the question that follows.



The graph above represents the equation $Wx + 4y = -12$. What is the value of W ? (Circle ONE answer.)

- a) -6
- b) -3
- c) 3
- d) 5

23. Use the diagram below to answer the question that follows.



A gift box has dimensions x by y by z . A decorative ribbon is wrapped across the diagonals of the box as shown above. Which of the following expressions represents the approximate total length of the ribbon?

- a) $2(\sqrt{xy} + \sqrt{yz})$
- b) $2(\sqrt{xy} + \sqrt{yz} + \sqrt{zx})$
- c) $2(\sqrt{x^2 + y^2} + \sqrt{y^2 + z^2})$
- d) $2(\sqrt{x^2 + y^2} + \sqrt{y^2 + z^2} + \sqrt{z^2 + x^2})$

24. The greatest common factor of n and 540 is 36. Which of the following could be the prime factorization of n ? (Circle ONE answer.)

- a) $2 \cdot 3^2$
- b) $2^2 \cdot 3^3$
- c) $2^4 \cdot 3^2 \cdot 7$
- d) $2^4 \cdot 3^5 \cdot 5$

Section 2: Your teaching and professional responsibilities

1. How frequently do you engage in the following activities during lessons on mathematical procedures (for example, whole number multiplication, computation with fractions and decimals, finding equivalent fractions, converting fractions to decimals, calculating area and perimeter)?

	Rarely or never	Sometimes	Often	Usually	Always
j) Introduce procedures through a formal presentation	1	2	3	4	5
k) Explain <u>why</u> a mathematical procedure works	1	2	3	4	5
l) Practice routine computation/algorithms	1	2	3	4	5
m) Illustrate why a mathematical procedure works using concrete materials (e.g., cubes, base ten blocks, fraction strips)	1	2	3	4	5
n) Present mnemonic devices to help students remember procedures	1	2	3	4	5
o) Ask questions that help students understand why a procedure works	1	2	3	4	5
p) Compare different ways of solving problems	1	2	3	4	5
q) Assign problems to help students practice procedures for speed, accuracy, or ease of use	1	2	3	4	5
r) Use flashcards, games, or computer activities to improve recall or skill	1	2	3	4	5
s) Give tests on computational skills	1	2	3	4	5

2. How frequently do you engage in the following activities while teaching mathematics?

	Rarely or never	Sometimes	Often	Usually	Always
f) I ask students to explain why a solution is true.	1	2	3	4	5
g) Rather than accepting only one solution method, I ask students to volunteer different ways to solve a problem.	1	2	3	4	5
h) I assign problems without specifying a solution method in advance.	1	2	3	4	5
i) I assign problems that students have to take a few minutes to think through.	1	2	3	4	5
j) I ask students to compare or evaluate different ways of solving problems.	1	2	3	4	5

3. How often do the following situations occur while you are teaching mathematics?

	Rarely or never				
	Sometimes	Often	Usually	Always	
j) Students get along well with each other.	1	2	3	4	5
k) I have to reprimand students to control the class.	1	2	3	4	5
l) I feel disrespected by students.	1	2	3	4	5
m) Students and I have a friendly rapport.	1	2	3	4	5
n) Instructional time is lost because of student misbehavior.	1	2	3	4	5
o) Students and I use respectful language and listen to each other.	1	2	3	4	5
p) Students follow rules and meet behavioral expectations without constant reminders.	1	2	3	4	5
q) Harsh voices and negative language are present in my classroom.	1	2	3	4	5

4. About how often do the following occur?

	Never	A few times a year	Once or twice a month	Once or twice a week	Daily or almost daily
g) I evaluate student work on mathematics assessments or assignments using a written rubric.	1	2	3	4	5
h) I provide detailed written feedback on student mathematical work in addition to a numeric score.	1	2	3	4	5
i) I differentiate mathematics assignments based on students' individualized learning needs.	1	2	3	4	5
j) I change my lesson plans based on what I learn from analyzing student work.	1	2	3	4	5
k) I examine student work to understand the process students use to solve mathematics problems.	1	2	3	4	5
l) Students evaluate their own mathematical work on assessments or assignments using a written rubric.	1	2	3	4	5
m) I design assignments that reveal student thinking rather than just mastery of learning goals.	1	2	3	4	5
n) I assess students' understanding of a topic before I teach it.	1	2	3	4	5

5. In a typical week, how much time do you devote to the following activities?

	None	Less	One	Two	More
		than one hour	to two hours	to six hours	than six hours
a) Grading mathematics assignments	1	2	3	4	5
b) Gathering and organizing mathematics lesson materials (e.g., locating and copying supplemental material, preparing manipulatives)	1	2	3	4	5
c) Reviewing the content of specific mathematics lessons (e.g., reading the teacher manual, seeking additional information about the content)	1	2	3	4	5
d) Preparing for a mathematics lesson by trying out explanations, or working through examples or problems	1	2	3	4	5
e) Helping students learn mathematics before or after school hours	1	2	3	4	5

6. In the past three years, did you participate in any of the following activities?

	Yes	No
e) I served on a district or school mathematics committee.	1	2
f) I acted as a peer mathematics coach or mentor while continuing my regular teaching duties.	1	2
g) I taught an in-service workshop or course related to mathematics content and/or mathematics teaching.	1	2

7. During the last year, how frequently did the following activities occur while school was in session?

	Never	Once or twice	A few times	Once or twice a month	At least once a week
a) I observed a district math coach teach a lesson.	1	2	3	4	5
b) A district math coach observed a lesson I taught AND offered feedback.	1	2	3	4	5
c) I collaboratively planned mathematics instruction with other teachers.	1	2	3	4	5
d) I studied or analyzed student math assessment results with a math coach or other teachers.	1	2	3	4	5
e) I studied or analyzed student work with a math coach or other teachers.	1	2	3	4	5

8. In the past year, how much time have you spent studying or learning about the topics below? Include participation in workshops, coaching, conferences and university-level coursework.

Topics	None at all	Some	A great deal	
a) How students learn mathematics	1	2	3	4
b) Mathematics instruction and pedagogy	1	2	3	4
c) Mathematics content for the grade level(s) I teach	1	2	3	4
d) Mathematics curriculum materials I am expected to use	1	2	3	4
e) Results of state standardized or district benchmark testing in any subject	1	2	3	4
f) General instruction and pedagogy (e.g., classroom management, individualization)	1	2	3	4
g) Topics in English Language Arts/reading	1	2	3	4
h) Other topics (please specify)	1	2	3	4
	<hr/>			

9. In a typical week of teaching mathematics, how frequently do you engage in the following activities related to your state assessment ([removed])?

	Never or rarely	Once or twice a week	four times a week	Three or Daily
f) Using test items or practice test materials in preparation for the [state test]	1	2	3	4
g) Incorporating formats similar to those on the [state test] (such as styles of graphs or key phrases) into my instruction	1	2	3	4
h) Setting aside part of class time to review concepts or skills found on the [state test] (e.g., using a problem of the day)	1	2	3	4
i) Focusing on supporting students who are expected to score just below a given performance level on the [state test]	1	2	3	4
j) Teaching specific test-taking strategies, like process of elimination or plugging in answers	1	2	3	4

10. To what extent does preparing for the [state test] result in the following changes in your instruction?

	Not at all	To some degree	Very much	
h) Spending <u>less</u> time on mathematical topics that are rarely or never tested	1	2	3	4
i) Spending <u>more</u> time on mathematical topics that carry more weight on the test	1	2	3	4
j) Giving students less time to discuss mathematical concepts in depth	1	2	3	4
k) Limiting special projects or hands-on activities related to mathematics	1	2	3	4
l) Using fewer demanding mathematics problems (e.g., “extension” problems) to challenge advanced students	1	2	3	4
m) Exploring mathematical concepts in less depth	1	2	3	4
n) Sequencing mathematical topics so that content usually on the test is covered before the test is administered	1	2	3	4

11. To what extent do you agree or disagree with the following statements about your mathematics class(es) this year?

	Somewhat		Somewhat		
	Disagree	Disagree	Neutral	Agree	Agree
e) In general, students in this year's class(es) have more learning difficulties than students in last year's class(es).	1	2	3	4	5
f) This year's students arrived in class better prepared than last year's students.	1	2	3	4	5
g) This year's class(es) has fewer behavior problems than last year's class(es).	1	2	3	4	5
h) In general, teaching this year's class(es) is easier than teaching last year's class(es).	1	2	3	4	5

12. Is there anything atypical about your students or teaching this year?

Yes No

If yes, please explain: [removed]

13. Please indicate the name(s) of the primary and supplemental mathematics textbooks or curriculum materials you are using this year.

	Primary materials	Supplemental materials
a) Everyday Mathematics	1	2
b) Harcourt	1	2
c) TERC Investigations	1	2
d) [removed]	1	2
e) [removed]	1	2

14. Please answer these questions based on your current mathematics teaching assignment.

	Not at all	Some degree			A great deal		
a) How much can you do to control disruptive behavior in the classroom?	1	2	3	4	5	6	7
b) How much can you do to motivate students who show low interest in school work?	1	2	3	4	5	6	7
c) How much can you do to calm a student who is disruptive or noisy?	1	2	3	4	5	6	7
d) How much can you do to help your students value learning?	1	2	3	4	5	6	7
e) To what extent can you craft good questions for your students?	1	2	3	4	5	6	7
f) How much can you do to get children to follow classroom rules?	1	2	3	4	5	6	7
g) How much can you do to get students to believe they can do well in school work?	1	2	3	4	5	6	7
h) How well can you establish a classroom management system with each group of students?	1	2	3	4	5	6	7
i) To what extent can you use a variety of assessment strategies?	1	2	3	4	5	6	7

14 (continued). Please answer these questions based on your current mathematics teaching assignment.

	Not at all		Some degree		A great deal	
j) To what extent can you provide an alternative explanation or example when students are confused?	1	2	3	4	5	6 7
k) How much can you assist families in helping their children do well in school?	1	2	3	4	5	6 7
l) How well can you implement alternative teaching strategies in your classroom?	1	2	3	4	5	6 7

15. We are interested in your ideas about intelligence. There are no right or wrong answers. Using the scale below, please indicate the extent to which you agree or disagree with each of the following statements.

	Strongly disagree	Disagree	Mostly disagree	Mostly agree	Agree	Strongly agree
a) Students have a certain amount of intelligence and they can't really do much to change it.	1	2	3	4	5	6
b) Intelligence is something about students that they can't change very much.	1	2	3	4	5	6
c) Students can learn new things, but they can't really change their basic intelligence.	1	2	3	4	5	6
d) To be honest, students can't really change how intelligent they are.	1	2	3	4	5	6

16. To what extent do you agree or disagree with the following statements?

	Disagree	Somewhat		Somewhat	
		Disagree	Neutral	Agree	Agree
j) This school offers limited resources to support my mathematics teaching.	1	2	3	4	5
k) I am not allowed to use my professional judgment in designing and delivering mathematics instruction.	1	2	3	4	5
l) I enjoy teaching in this school.	1	2	3	4	5
m) My instruction is frequently interrupted (e.g., by announcements, phone calls, or visitors).	1	2	3	4	5
n) I have the materials I need to teach.	1	2	3	4	5
o) I have access to the professional growth opportunities I need.	1	2	3	4	5
p) It is difficult to get my students the services they need.	1	2	3	4	5
q) School facilities are poorly maintained.	1	2	3	4	5
r) I feel my work is respected and valued by others in the school.	1	2	3	4	5

THANK YOU FOR COMPLETING THIS SURVEY!

If you have any comments about the questions,
please write them in the space below.

NCTE YEAR 3 (2012-13)

National Center for Teacher Effectiveness

Survey of Elementary Teachers

Fall 2012

Form NCTE EL-2012



National Center for
Teacher Effectiveness

Center for Education Policy Research
Harvard Graduate School of Education
50 Church Street, Fourth Floor
Cambridge, MA 02138

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If you would like more information about this questionnaire, please contact [removed].

INSTRUCTIONS

- The first set of questions asks how you would answer mathematics problems that commonly arise in upper-elementary classrooms. We will use your answers for research purposes only – your responses will **not** be shared with your school or district. We are interested in how different types of teacher knowledge relate to student outcomes. Results will help teacher educators better design professional development and pre-service coursework.
- Answer questions by circling your choice, e.g.,

18. Mrs. Jamieson was looking for a good problem to give her class that could produce many solutions, but not infinitely many solutions. Which of the following would work? (Mark INFINITE, NOT INFINITE, or I'M NOT SURE.)

	Infinitely many solutions	Not infinitely many solutions	I'm not sure
a) Find a fraction between 0 and 1.	1	2	3
b) I have pennies, nickels, and dimes in my pocket. Suppose I pull out three coins. What amounts of money might I have?	1	2	3
c) If Joseph has three times as many cookies as Mary, how many cookies could they have altogether?	1	2	3

- In completing this questionnaire, you should not spend more than 2-3 minutes on any question. Imagine you are responding to real classroom situations, and select the answer that most closely matches what you would do, say, or answer at that moment. These questions are designed to be challenging, and you are not expected to know the answers to all of the questions.
- Your responses are voluntary and confidential. If you come to a question you do not wish to answer, simply skip it. We hope that you will answer as many questions as possible.

Section 1: Mathematics

1. Mr. Jones used the following problem to develop his students' ability to write formulas to describe patterns:

A row of squares can be made from toothpicks as follows:



Write a formula to represent the number of toothpicks for any number of squares. Use t for the number of toothpicks and s for the number of squares.

Which of the following formulas represents the number of toothpicks (t) for a given number of squares (s)? (Circle ONE answer.)

- a) $t = 4s$
- b) $t = 3s + 4$
- c) $t = 4s - (s - 2)$
- d) $t = 2s + (s + 1)$

2. If P is a positive integer, which of the following must also be a positive integer?
(Circle ONE answer.)

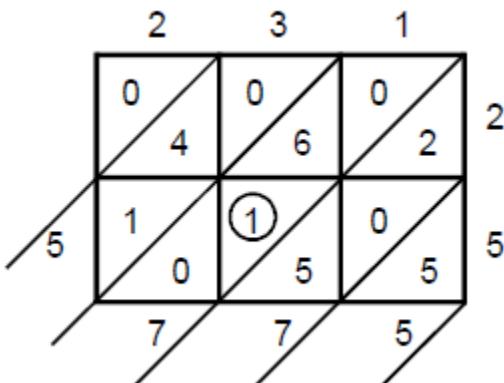
a) $1 - P$

b) $\frac{1}{P}$

c) \sqrt{P}

d) P^2

3. Use the diagram below to answer the question that follows.



The diagram above demonstrates how the lattice multiplication algorithm is used to multiply 231 by 25 to get the product 5775. What value does the circled digit represent? (Circle ONE answer.)

a) 1

b) 10

c) 100

d) 1000

4. Students in Mr. Lamar's class were using wooden blocks to reason about the measures of interior angles of regular polygons. They found that the interior angles of equilateral triangles are 60° and those of a square are 90° .

Which of the statements below provides a mathematically reasonable basis for explaining why the angles of a regular hexagon are 120° ? (Circle MATHEMATICALLY REASONABLE, NOT MATHEMATICALLY REASONABLE, or I'M NOT SURE for each.)

	Mathematically reasonable	mathematically reasonable	Not I'm not sure
a) I used the equilateral triangle to measure the angle, so it's $60 + 60$, which is 120.	1	2	3
b) Three hexagons tessellate, so it's $360 \div 3$, which is 120.	1	2	3
c) The triangle is 60, the square is 90, so the hexagon is 120.	1	2	3

5. The mean distance from the earth to the sun is approximately 93 million miles, or one astronomical unit (AU). The mean distance from Neptune to the sun is approximately 2.794×10^9 miles. What is the approximate mean distance from Neptune to the sun in astronomical units? (Circle ONE answer.)

- a) 30 AU
- b) 300 AU
- c) 3,000 AU
- d) 30,000 AU

6. Use the problem below to answer the question that follows.

Given that 100 milliliters is equal to approximately 0.4 cup,
205 milliliters is equal to approximately how many cups?

Which of the following expressions models the solution to the problem above?
(Circle ONE answer.)

- a) $(100 - 0.4)(205)$
- b) 105% of 0.4
- c) $(205 - 100)(0.4)$
- d) 205% of 0.4

7. A shipping container measures 8 feet by 12 feet by 24 feet. The container is to be filled with identical cube-shaped boxes, each having sides measuring a whole number of feet. Which of the following expressions represents the smallest number of such identical boxes that could be packed into the container with no empty space remaining? (Circle ONE answer.)

- a) $\frac{8}{4} + \frac{12}{4} + \frac{24}{4}$
- b) $\frac{8}{4} \cdot \frac{12}{4} \cdot \frac{24}{4}$
- c) $8 \cdot 12 \cdot 24$
- d) $8 + 12 + 24$

8. Ms. Seidel is introducing the distributive property. To motivate her students, she wants to give them an example that will focus their attention on how the distributive property can be used to make computations easier. Of the following examples, which best illustrates the benefits of the distributive property? (Circle ONE answer.)

- a) $(12 \times 29) + (12 \times 38) = \underline{\hspace{2cm}}$
- b) $(17 \times 37) + (17 \times 63) = \underline{\hspace{2cm}}$
- c) $(13 \times 13) + (15 \times 15) = \underline{\hspace{2cm}}$
- d) $(16 \times 24) + (16 \times 24) = \underline{\hspace{2cm}}$
- e) Any of these examples would work equally well.

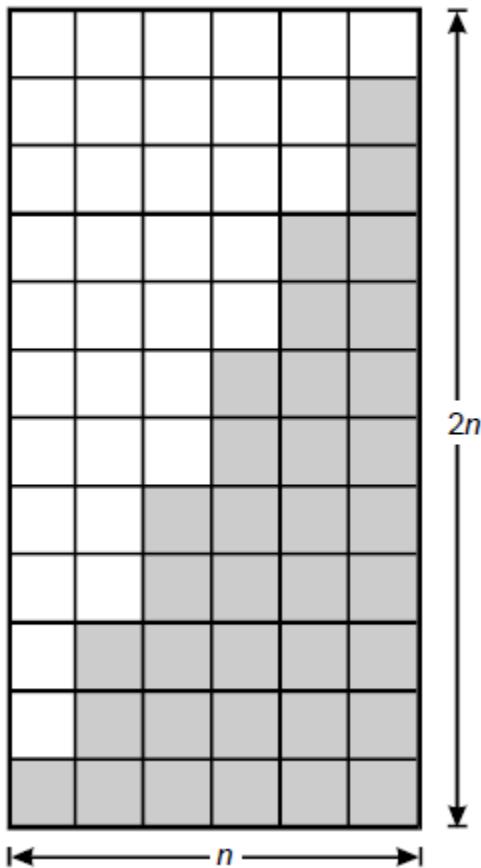
9. Ms. Ward found the following problem in the textbook she was using:

What do you call all quadrilaterals whose two diagonals are both lines of symmetry?

Which of the following is the correct answer for this problem? (Circle ONE answer.)

- a) Squares
- b) Rectangles
- c) Parallelograms
- d) Rhombi
- e) Trapezoids

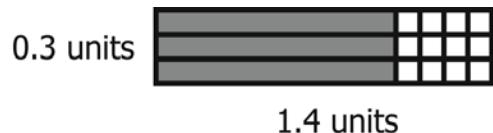
10. Use the diagram below to answer the question that follows.



The diagram above could best be used to derive a formula for which of the following quantities? (Circle ONE answer.)

- a) The sum of the first n consecutive odd integers
- b) The product of the first n consecutive even integers
- c) The sum of the first n consecutive even integers
- d) The product of the first n consecutive odd integers

11. In a lesson on decimal multiplication, Ms. Sawyer's class used an area model to represent $1.4 \times 0.3=0.42$.



Given Ms. Sawyer's use of the model above, which statements are true? (For each item below, circle TRUE, FALSE, or I'M NOT SURE.)

True	False	I'm not sure
------	-------	--------------

- a) The unshaded region represents the first product computed in the standard algorithm:

$$\begin{array}{r} 1.4 \\ \times 0.3 \\ \hline \end{array}$$

1 2 3

-
- b) Each of the 3 bars in the shaded region represents 1 unit of area.

1 2 3

-
- c) The area of the entire figure represents the final answer of the computation.

1 2 3

-
- d) Each of the unshaded squares represents one one-hundredth of a unit of area.

1 2 3

12. Use the solution procedure below to answer the question that follows.

$$-3x + 25 = 4$$

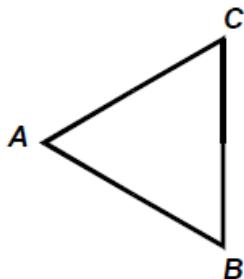
$$-3x + 25 - 25 = 4 - 25 = -21 \div (-3) = 7$$

$$x = 7$$

Which of the following is a major flaw in the procedure shown above? (Circle ONE answer.)

- a) The concept of the opposite of a number is confused with subtraction.
- b) The equal sign is used to connect expressions that are not equal.
- c) The solution contains an error in the arithmetic of signed numbers.
- d) The order of operations between subtraction and division is reversed.

13. Use the figure below to answer the question that follows.



If equilateral triangle ABC above represents one of two congruent halves of a figure that has AB as a line of symmetry, then the entire figure is a: (Circle ONE answer.)

- a) Triangle
- b) Rectangle
- c) Prism
- d) Rhombus

14. Mrs. Wise wants to include some word problems on her fractions quiz. Which of the following problem(s) could she use as a word problem for $\frac{1}{2} - \frac{1}{3}$? (Circle YES, NO, or I'M NOT SURE for each.)

Yes	No	I'm not sure
-----	----	-----------------

- a) I have $\frac{1}{2}$ of a pizza left. My brother comes in and eats $\frac{1}{3}$ of my leftover pizza. How much pizza is left?

1 2 3

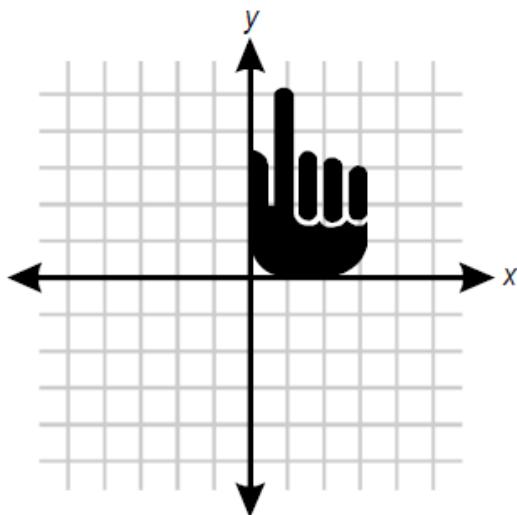
- b) Farmer Brown has plowed $\frac{1}{2}$ of a field. He wants to plant $\frac{1}{3}$ of that half with corn. What fraction of the entire field will be planted with corn?

1 2 3

- c) Mom has $\frac{1}{2}$ of a cup of sugar. She needs to use $\frac{1}{3}$ of a cup of sugar to make some brownies. How much sugar will Mom have left?

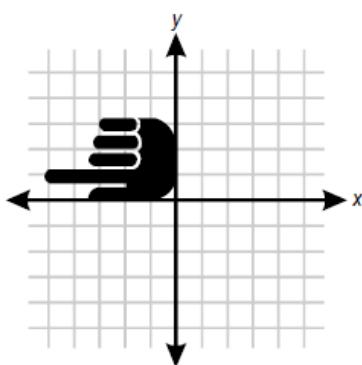
1 2 3

15. Use the graph below to answer the question that follows.

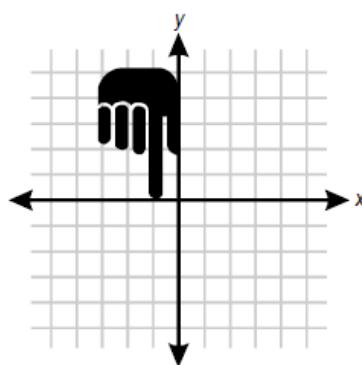


If the image of a pointing hand in the graph above is rotated 180° about the origin and then reflected across the x -axis, which of the following graphs will result? (Circle ONE answer.)

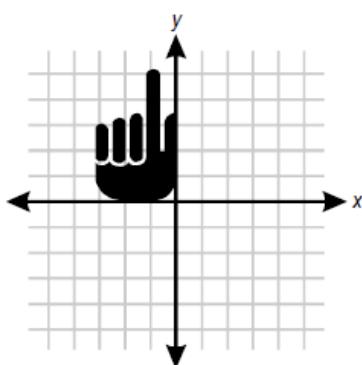
A.



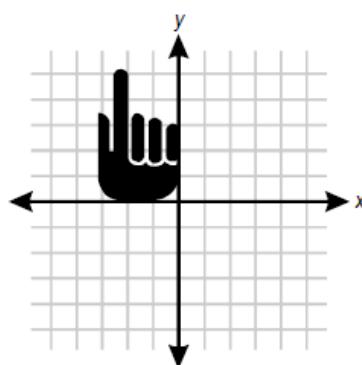
B.



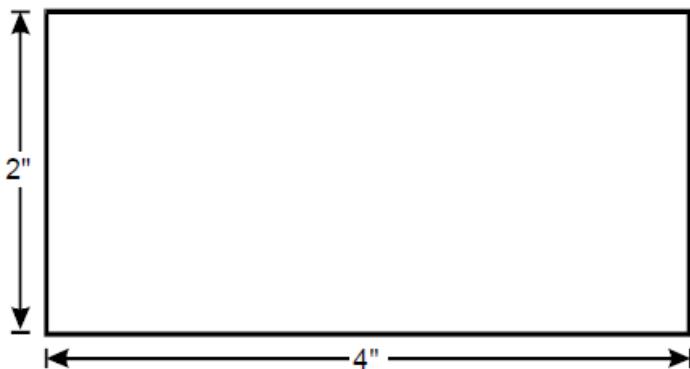
C.



D.



16. Use the diagram below to answer the question that follows.



The measurements in the diagram above are shown rounded to the nearest whole number. Which of the following is a possible value of A , the area of the rectangle? (Circle ONE answer.)

- a) 5.0 square inches
- b) 5.5 square inches
- c) 11.5 square inches
- d) 12.0 square inches

17. A fuel tank was approximately $\frac{1}{8}$ full. After adding \$50 worth of fuel, the tank was $\frac{3}{4}$ full. If the fuel costs p dollars per gallon, approximately how many gallons does the tank hold when full? (Circle ONE answer.)

- a) $\frac{80}{p}$ gallons
- b) $\frac{50}{p}$ gallons
- c) $50p$ gallons
- d) $80p$ gallons

18. Given $pn = 150$ where p is a prime number and n is a natural number, which of the following must be true? (Circle ONE answer.)

- a) p is a factor of either 10 or 15.
- b) 10 is a factor of n .
- c) n is a factor of either 10 or 15.
- d) 15 is a factor of n .

19. Use the problem below to answer the question that follows.

A landscaper bought some decorative cement blocks from a landscaping supplier. The supplier charged 5% sales tax and the total came to \$315. Without the tax, the landscaper could have bought 6 more blocks for the same total cost. How many blocks did the landscaper buy?

If p represents the price of one block, in which of the following equations does x represent the answer to the problem above? (Circle ONE answer.)

- a) $0.95px = p(x + 6)$
- b) $1.05p(x + 6) = 315$
- c) $1.05px = p(x + 6)$
- d) $0.95p(x + 6) = 315$

20. When planning a lesson on division, Ms. Walker encountered the following problem in her textbook:

Kelly has \$38 dollars. If each box of candy costs \$4, how many boxes of candy can Kelly buy?

She wanted to work on this mathematical content with her students, but wanted to change the context of the problem so that it wasn't about buying junk food. Because the class was going on a field trip later that week, she decided to change the problem to the following:

A class of 38 students is going on a field trip. If each car can hold 4 students, what is the fewest number of cars needed to transport all of the students?

Will Ms. Walker's rewording change the mathematical content of the problem? (Circle ONE answer.)

- a) The mathematical content will not change because both problems can be solved by calculating $38 \div 4$.
- b) The mathematical content will not change because both problems use the same interpretation of division.
- c) The mathematical content will change because the problems use different interpretations of division—one uses partitive and one uses measurement.
- d) The mathematical content will change because the contexts require the remainders to be accounted for differently in the answer to the problem.

21. Ms. Starr is preparing to teach a lesson on quadrilaterals. She sees that her textbook uses a different definition of trapezoid from the one that was in her college math methods book.

Her textbook defines a trapezoid as a quadrilateral with exactly one pair of parallel sides. (Definition I)

Her college math methods book defines a trapezoid as a quadrilateral with at least one pair of parallel sides. (Definition II)

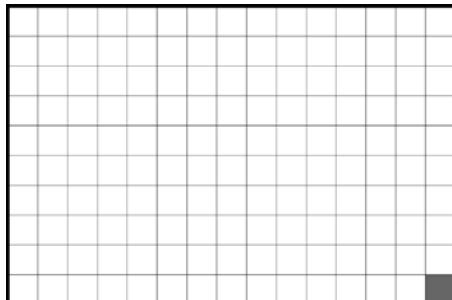
Ms. Starr thinks the choice of definition might affect how one classifies shapes. Which of the following is true? (Circle ONE answer.)

- a) A rectangle is a trapezoid according to Definition II but not according to Definition I.
- b) A rectangle is a trapezoid according to Definition I but not according to Definition II.
- c) A rectangle is a trapezoid by both definitions.
- d) All quadrilaterals are trapezoids according to Definition II.
- e) The definitions are really the same.

22. Ms. Vasquez is concerned that her students think that percents only range from 1% to 100%, so she wants to show them a picture of a rectangle that has less than 1% shaded.

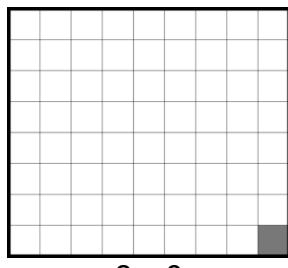
Which of the following rectangles has less than 1% shaded? (Circle ONE answer.)

a)



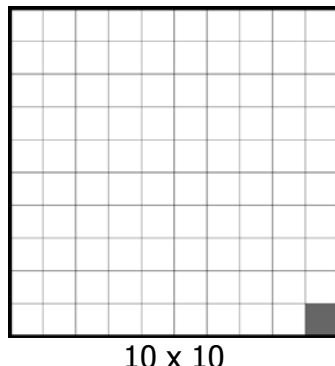
10 x 15

b)



8 x 9

c)



10 x 10

d) None of these rectangles has less than 1% of its area shaded.

Section 2: Your teaching and professional responsibilities

If you are not teaching mathematics this year, please skip to question 12.

1. How frequently do you engage in the following activities during lessons on mathematical procedures (for example, whole number multiplication, computation with fractions and decimals, finding equivalent fractions, converting fractions to decimals, calculating area and perimeter)?

	Rarely or never	Sometimes	Often	Usually	Always
a) Introduce procedures through a formal presentation	1	2	3	4	5
b) Explain <u>why</u> a mathematical procedure works	1	2	3	4	5
c) Practice routine computation/algorithms	1	2	3	4	5
d) Illustrate why a mathematical procedure works using concrete materials (e.g., cubes, base ten blocks, fraction strips)	1	2	3	4	5
e) Ask questions that help students understand why a procedure works	1	2	3	4	5
f) Compare different ways of solving problems	1	2	3	4	5
g) Assign problems to help students practice procedures for speed, accuracy, or ease of use	1	2	3	4	5
h) Use flashcards, games, or computer activities to improve recall or skill	1	2	3	4	5
i) Give tests on computational skills	1	2	3	4	5

2. How frequently do you engage in the following activities while teaching mathematics?

	Rarely or never	Sometimes	Often	Usually	Always
k) I ask students to explain why a solution is true.	1	2	3	4	5
l) Rather than accepting only one solution method, I ask students to volunteer different ways to solve a problem.	1	2	3	4	5
m) I assign problems without specifying a solution method in advance.	1	2	3	4	5
n) I assign problems that students have to take a few minutes to think through.	1	2	3	4	5
o) I ask students to compare or evaluate different ways of solving problems.	1	2	3	4	5

3. How often do the following situations occur while you are teaching mathematics?

	Rarely or never	Sometimes	Often	Usually	Always
r) Students get along well with each other.	1	2	3	4	5
s) I have to reprimand students to control the class.	1	2	3	4	5
t) I feel disrespected by students.	1	2	3	4	5
u) Students and I have a friendly rapport.	1	2	3	4	5
v) Instructional time is lost because of student misbehavior.	1	2	3	4	5
w) Students and I use respectful language and listen to each other.	1	2	3	4	5
x) Students follow rules and meet behavioral expectations without constant reminders.	1	2	3	4	5
y) Harsh voices and negative language are present in my classroom.	1	2	3	4	5

4. About how often do the following occur?

	Never	A few times a year	Once or twice a month	Once or twice a week	Daily or almost daily
o) I form groups based on students' individualized learning needs, then provide different instruction to each group.	1	2	3	4	5
p) I differentiate mathematics homework assignments based on students' individualized learning needs.	1	2	3	4	5
q) I form groups according to common student misunderstandings, then offer targeted remedial instruction to those groups.	1	2	3	4	5
r) I differentiate my whole-class instruction based on students' individualized learning needs (e.g., ask targeted questions of some students, provide students different materials based on need).	1	2	3	4	5

5. During the last year, how frequently did the following activities occur while school was in session?

	Never	Once or twice	A few times	Once or twice a month	At least once a week
f) I observed a district math coach teach a lesson.	1	2	3	4	5
g) A district math coach observed a lesson I taught AND offered feedback.	1	2	3	4	5
h) I collaboratively planned mathematics instruction with other teachers.	1	2	3	4	5
i) I studied or analyzed student math assessment results with a math coach or other teachers.	1	2	3	4	5
j) I studied or analyzed student work with a math coach or other teachers.	1	2	3	4	5
k) I took an online course designed to improve my mathematics teaching.	1	2	3	4	5

6. In the past year, how much time have you spent studying or learning about the topics below? Include participation in workshops, coaching, conferences and university-level coursework.

	None at all	Some	A great deal	
i) How students learn mathematics	1	2	3	4
j) Mathematics instruction and pedagogy	1	2	3	4
k) Mathematics content for the grade level(s) I teach	1	2	3	4
l) Mathematics curriculum materials I am expected to use	1	2	3	4
m) Results of state standardized or district benchmark testing in any subject	1	2	3	4
n) General instruction and pedagogy (e.g., classroom management, individualization)	1	2	3	4
o) Topics in English Language Arts/reading	1	2	3	4
p) Other topics (please specify)	1	2	3	4
	_____	_____	_____	5

7. To what extent did you engage in the following practices throughout the school year in order to prepare your students for the [state test]? Please answer in terms of any mathematics classes you have prepared for the [state test] in the past year.

	Not at all	To some degree	Very much	
o) Use released test items or practice test materials to prepare for the test	1	2	3	4
p) Teach specific test-taking strategies, like process of elimination or plugging in answers	1	2	3	4
q) Focus on supporting students who are expected to score just below a given performance level on the test	1	2	3	4
r) Focus on mathematical topics that carry more weight on the test	1	2	3	4
s) De-emphasize mathematical topics that are rarely or never tested	1	2	3	4
t) Limit the depth of discussion about mathematical concepts	1	2	3	4
u) Limit the use of projects or hands-on activities related to mathematics	1	2	3	4
v) Reduce the use of demanding mathematics problems (e.g., “extension” problems) that challenge advanced students	1	2	3	4
w) Present material to ensure that mathematical topics usually on the test are covered before the test is administered	1	2	3	4
x) Incorporate formats similar to those on the test (such as styles of graphs or key phrases) into my instruction	1	2	3	4
y) Review content primarily to prepare students for items that will appear on the test	1	2	3	4

8. To what extent do you agree or disagree with the following statements about your mathematics class(es) this year?

	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree
i) In general, students in this year's class(es) have more learning difficulties than students in last year's class(es).	1	2	3	4	5
j) This year's students arrived in class better prepared than last year's students.	1	2	3	4	5
k) This year's class(es) has(have) fewer behavior problems than last year's class(es).	1	2	3	4	5
l) In general, teaching this year's class(es) is easier than teaching last year's class(es).	1	2	3	4	5

9. Please indicate the name(s) of the primary and supplemental mathematics textbooks or curriculum materials you are using this year.

	Primary materials	Supplemental materials
f) Everyday Mathematics	1	2
g) Harcourt	1	2
h) TERC Investigations	1	2
i) [removed]	1	2
j) [removed]	1	2

10. On average, to what extent do you draw from:

	Not at all	Some	A great deal	
a) Your primary materials?	1	2	3	4
b) Supplemental materials?	1	2	3	4
c) Materials or lessons created by you?	1	2	3	4

11. To what extent do you agree or disagree with the following statements?

	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree
s) This school offers limited resources to support my mathematics teaching.	1	2	3	4	5
t) I am not allowed to use my professional judgment in designing and delivering mathematics instruction.	1	2	3	4	5
u) I enjoy teaching in this school.	1	2	3	4	5
v) My instruction is frequently interrupted (e.g., by announcements, phone calls, or visitors).	1	2	3	4	5
w) I have the materials I need to teach.	1	2	3	4	5
x) I have access to the professional growth opportunities I need.	1	2	3	4	5
y) It is difficult to get my students the services they need.	1	2	3	4	5
z) School facilities are poorly maintained.	1	2	3	4	5
aa) I feel my work is respected and valued by others in the school.	1	2	3	4	5

12. In the 2011-2012 school year, who observed your teaching in order to formally evaluate you? (Check all that apply.)

- Principal
 Assistant principal
 An instructional coach
 Master teacher/peer evaluator
 Other _____
 I was not observed for formal evaluation last year.

For questions 13 through 17, the term "evaluator(s)" refers to the individual(s) you indicated above.

13. How often last year did the evaluator(s) observe your teaching?

	None	Once	A few times a year	A few times a month	Weekly or more often
a) In an <i>informal</i> capacity (not for the purpose of a formal evaluation)	1	2	3	4	5
b) For the purpose of <i>formal</i> evaluation	1	2	3	4	5

14. How many of your observed lessons were mathematics lessons?

	None	Few	Some	Most	All
a) <i>Informal</i> lessons observed	1	2	3	4	5
b) <i>Formal</i> observations	1	2	3	4	5

If you answered "none" to both question 14a and question 14b, please skip to question 18. Otherwise, please continue to question 15 on the next page.

15. On average, how much feedback about your mathematics instruction did the evaluator(s) offer after a classroom visit? Please answer based on the amount, not quality, of feedback.

	None	Some	A great deal	
a) Amount of feedback after an <i>informal</i> visit to your classroom	1	2	3	4
b) Amount of feedback after a <i>formal</i> observation	1	2	3	4

If you answered "none" to both question 15a and question 15b, please skip to question 18. Otherwise, please continue to question 16 on the next page.

16. When the evaluator(s) provided feedback about your mathematics instruction following either the formal OR informal observations, how much did they discuss the following topics? Please answer based on the amount, not quality, of the feedback.

	Not at all	Some	A great deal
a) Classroom climate, discipline or behavior management issues	1	2	3
b) General pedagogical strategies (e.g., ways to motivate students, differentiating instruction, organizing students into groups, using wait time when asking questions)	1	2	3
c) Mathematics-specific teaching strategies (e.g., encouraging students to use precise mathematical vocabulary, using specific mathematics manipulatives, supporting student mathematical reasoning)	1	2	3
d) Whether you were in the appropriate place in the district pacing/scope and sequence guide	1	2	3
e) Specific students' understanding of the mathematical content of the lesson	1	2	3
f) How you assessed students' understanding of the lesson content	1	2	3
g) The accuracy of the mathematical content covered in the lesson	1	2	3
h) How the activities of the lesson related to the lesson objective and/or whether the lesson objective was fulfilled	1	2	3

17. Please answer these questions about the feedback offered by the evaluator(s) about your mathematics instruction. Please average across both the informal and formal observation(s) done of your classroom last year.

	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree
a) The feedback prompted me to make changes in my instruction.	1	2	3	4	5
b) The feedback helped me understand what I'm doing right.	1	2	3	4	5
c) The feedback was aligned with my district's teaching guidance.	1	2	3	4	5
d) The feedback directed me toward resources to improve my instruction.	1	2	3	4	5
e) The feedback accurately reflected my instruction.	1	2	3	4	5
f) The evaluator(s) followed up to check on my incorporation of feedback from the observation.	1	2	3	4	5

18. Please rate how strongly you agree or disagree with the following statements about teacher leadership in your school.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
a) Teachers* are recognized as educational experts.	1	2	3	4	5
b) Teachers are trusted to make sound professional decisions about instruction.	1	2	3	4	5
c) Teachers are encouraged to participate in school leadership.**	1	2	3	4	5
d) The faculty has an effective process for making group decisions to solve problems.	1	2	3	4	5
e) In this school, we take steps to solve problems.	1	2	3	4	5
f) Teachers are effective leaders in this school.	1	2	3	4	5
g) Teachers are relied upon to make decisions about educational issues.	1	2	3	4	5

*Teachers mean the majority of teachers in your school.

**School leadership may include formal roles such as grade team leader, a member of the School Improvement Team, mentor, coach, or leader of a professional learning community, etc.

19. Please rate how strongly you agree or disagree with the following statements about your school.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
a) Teachers are encouraged to share their ideas.	1	2	3	4	5
b) Teachers trust each other.	1	2	3	4	5
c) Teachers spend considerable time planning together.	1	2	3	4	5
d) Teachers regularly seek ideas from colleagues.	1	2	3	4	5
e) Teachers take time to observe each other teaching.	1	2	3	4	5
f) Teachers value other teachers' ideas.	1	2	3	4	5
g) Teachers work cooperatively in groups.	1	2	3	4	5
h) Teachers work together to develop and/or evaluate programs and projects.	1	2	3	4	5

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE!!!

If you have any comments about these questions,
please write them in the space below.

Documentation for Dataset 36095-0008
Teacher Spring Questionnaire

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NCTE YEAR 1 (2010-11)
Grade 4

National Center for Teacher Effectiveness

Curriculum Alignment Survey

Spring 2011

Form NCTE-SP11

Grade 4



National Center for
Teacher Effectiveness

Center for Education Policy Research
Harvard Graduate School of Education
50 Church Street, Fourth Floor
Cambridge, MA 02138

ABOUT THIS SURVEY

- Section 1 asks you to estimate how your class will answer problems found on the student assessment.
- Most questions also ask you to indicate whether your students are familiar with the mathematical content in the problems.
- Some of the questions on this survey contain items from the student assessment that have a common stem and appear to be the same item, but in fact ask separate questions. Please answer all of the questions.
- Section 2 asks about your teaching and students more generally.
- We will use this data to help us understand how your students perform on the assessment.
- We will use your answers for research purposes only – your responses will **not** be shared with your school or district.

Section 1

Each of the following pages presents a problem that is on the student assessment. Please answer questions A-C for each problem.

1. Consider the following problem from the student assessment:

Look at this set of cards.

4.603	4.8	4.0997	4.59
-------	-----	--------	------

Which ordering of the cards lists the numbers from least to greatest value?

A.

4.603	4.8	4.0997	4.59
-------	-----	--------	------

B.

4.8	4.59	4.603	4.0997
-----	------	-------	--------

C.

4.0997	4.59	4.603	4.8
--------	------	-------	-----

D.

4.603	4.0997	4.8	4.59
-------	--------	-----	------

- A. What percentage of your students being tested today do you think will choose the correct answer (Answer C)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)

Answer A

Answer B

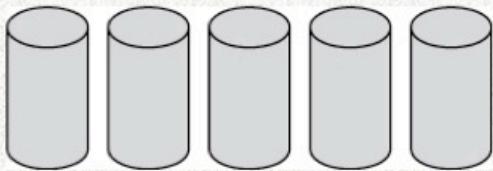
Answer D

- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- a. Never
- b. Once or twice
- c. A few times

d. Often

2. Consider the following problem from the student assessment:

Alex has 5 full cans of paint.



If 2 cans of Alex's paint are red, what fraction of his paint is red?

- A. $\frac{2}{3}$
- B. $\frac{2}{5}$
- C. 2
- D. 3

- A. What percentage of your students being tested today do you think will choose the correct answer (Answer B)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)

Answer A

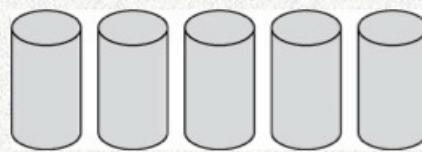
Answer C

Answer D

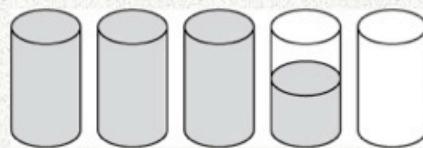
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- a. Never
 - b. Once or twice
 - c. A few times
 - d. Often

3. Consider the following problem from the student assessment:

Alex has 5 full cans of paint.



If Alex uses $1\frac{1}{2}$ cans of his paint on a school project, what fraction of his total amount of paint will be left?



- A. $\frac{4}{10}$
- B. $\frac{3}{5}$
- C. $\frac{7}{10}$
- D. $\frac{4}{5}$

- A. What percentage of your students being tested today do you think will choose the correct answer (Answer C)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)

Answer A

Answer B

Answer D

- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
 - a. Never
 - b. Once or twice
 - c. A few times
 - d. Often

4. Consider the following problem from the student assessment:

What number should go in the \square to make this number sentence true?

$$8 + 4 = \square + 7$$

- A. 19
- B. 12
- C. 5
- D. 4

- A. What percentage of your students being tested today do you think will choose the correct answer (Answer C)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)

Answer A

Answer B

Answer D

- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- a. Never
 - b. Once or twice
 - c. A few times
 - d. Often

5. Consider the following problem from the student assessment:

Farmer Gray has some goats in a pen. Each day he places exactly enough bales of hay in the pen to feed all his goats with no hay left over. He knows that every goat eats $\frac{2}{3}$ bale of hay. What is the total number of goats that Farmer Gray has if he places 24 bales of hay in the pen each day and no hay is left over?

- A. 12 goats
- B. 16 goats
- C. 24 goats
- D. 36 goats

- A. What percentage of your students being tested today do you think will choose the correct answer (Answer D)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)

Answer A

Answer B

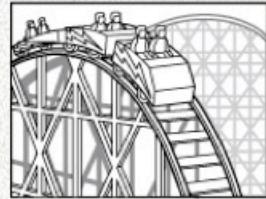
Answer C

- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- a. Never
 - b. Once or twice
 - c. A few times
 - d. Often

6. Consider the following problem from the student assessment:

Lin is going to the county fair tonight. His mother gave him \$24 to spend on ride tickets. Tickets for fast rides cost \$3 each, and tickets for slow rides cost \$2 each.

Lin plans to spend all of the money his mother gave him on fast-ride tickets. What is the total number of fast-ride tickets that Lin can buy?



Which statement could represent the word problem above?

- A. number of fast-ride tickets = 24×3
- B. number of fast-ride tickets = $24 \div 3$
- C. number of fast-ride tickets = 24×2
- D. number of fast-ride tickets = $24 \div 2$

- A. What percentage of your students being tested today do you think will choose the correct answer (Answer B)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)

Answer A

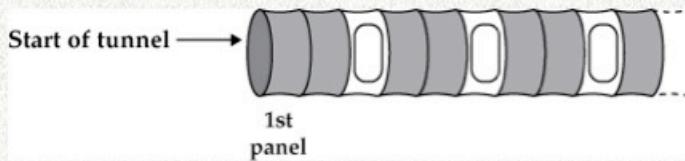
Answer C

Answer D

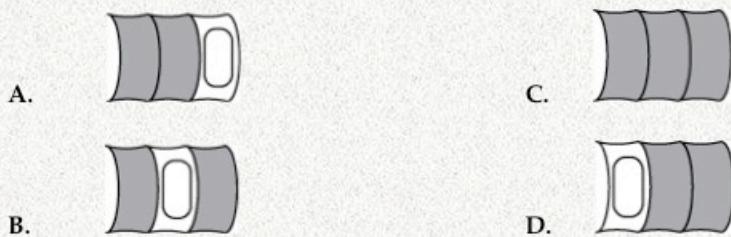
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- a. Never
 - b. Once or twice
 - c. A few times
 - d. Often

7. Consider the following problem from the student assessment:

A play tunnel is made by repeating groups of three panels using solid panels  and window panels  as described in the picture below. The picture shows the first ten panels of the tunnel.



Which section of panels below continues the pattern in this tunnel for the 11th through 13th panels?



- A. What percentage of your students being tested today do you think will choose the correct answer (Answer B)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)
- a. Answer A Answer C Answer D
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- a. Never
b. Once or twice
c. A few times
d. Often

8. Consider the following problem from the student assessment:

Greg worked the problem shown below. If there is a mistake in his work, mark the letter that matches the Step in which he made his first mistake. If Greg made no mistake, mark the letter D.

$$8 \overline{)4024}$$

Step 1

$$\begin{array}{r} 5 \\ 8 \overline{)4024} \\ -40 \\ \hline 24 \end{array}$$

Step 2

$$\begin{array}{r} 53 \\ 8 \overline{)4024} \\ -40 \\ \hline 24 \\ -24 \\ \hline 0 \end{array}$$

Step 3

$$\begin{array}{r} 530 \\ 8 \overline{)4024} \\ -40 \\ \hline 24 \\ -24 \\ \hline 0 \end{array}$$

- A. Step 1
- B. Step 2
- C. Step 3
- D. There is no mistake.

- A. What percentage of your students being tested today do you think will choose the correct answer (Answer B)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)

Answer A

Answer C

Answer D

- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
 - a. Never
 - b. Once or twice
 - c. A few times
 - d. Often

9. Consider the following problem from the student assessment:

 represents $\frac{2}{5}$ of a set of circles. Which of the following could represent the whole set of circles?



- A. What percentage of your students being tested today do you think will choose the correct answer (Answer D)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)

Answer A

Answer B

Answer C

- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- Never
 - Once or twice
 - A few times
 - Often

10. Consider the following problem from the student assessment:

Carly, Brian, and Juan all have some pennies.

- Carly has p pennies.
- Brian has 9 more pennies than Carly.
- Juan has 4 more pennies than Carly.

Which expression represents the number of pennies that Carly, Brian, and Juan have all together?

- A. $13 \times p$
- B. $94 \times p$
- C. $p + 13$
- D. $p + (p + 9) + (p + 4)$

- A. What percentage of your students being tested today do you think will choose the correct answer (Answer D)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)

Answer A

Answer B

Answer C

- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- a. Never
 - b. Once or twice
 - c. A few times
 - d. Often

The following pages present open-response problems on the student assessment. As you look at each problem, please predict how your students will perform. Also, please indicate the most likely *incorrect* answer your students will write.

11. Consider the following problem from the student assessment:

What decimal number should go in the _____ to make this number sentence true?

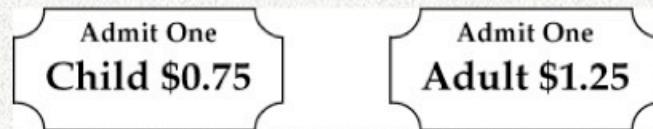
$$1.4 + 3.2 + 4 + \underline{\hspace{2cm}} = 9.7$$

- A. What percentage of your students being tested today do you think will write in the correct answer (1.1)? _____
- B. The MOST common **incorrect** student response will be:
 - a. 4.5
 - b. 4.7
 - c. 5
 - d. 9.7
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
 - a. Never
 - b. Once or twice
 - c. A few times

d. Often

12. Consider the following problem from the student assessment:

Madison is planning to go to the museum. Prices for museum tickets are shown below.



Madison's mother told her she could invite some friends to go with her to the museum as long as the total cost for tickets is not more than \$6.00. Madison's mother is the only adult going with them to the museum.

What is the maximum number of child tickets that Madison's mother can buy after purchasing one adult ticket using her \$6.00?

- A. What percentage of your students being tested today do you think will write in the correct answer (6)? _____
- B. The MOST common **incorrect** student response will be:
 - a. 3
 - b. 4
 - c. 5
 - d. 8
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
 - a. Never
 - b. Once or twice
 - c. A few times

d. Often

13. Consider the following problem from the student assessment:

Carly, Brian, and Juan all have some pennies.

- Carly has p pennies.
- Brian has 9 more pennies than Carly.
- Juan has 4 more pennies than Carly.

If Brian has 20 pennies, what number is represented by p ?

- A. What percentage of your students being tested today do you think will write in the correct answer (11)? _____
- B. The MOST common **incorrect** student response will be:
- 8
 - 12
 - 20
 - 28
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- Never
 - Once or twice
 - A few times

d. Often

14. Consider the following problem from the student assessment:

Carly, Brian, and Juan all have some pennies.

- Carly has p pennies.
- Brian has 9 more pennies than Carly.
- Juan has 4 more pennies than Carly.

If Juan has 25 pennies, how many pennies does Brian have?

- A. What percentage of your students being tested today do you think will write in the correct answer (30)? _____
- B. The MOST common **incorrect** student response will be:
- 20
 - 21
 - 25
 - 34
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- Never
 - Once or twice
 - A few times

d. Often

Section 2: Your teaching and students

1. Please check the box next to the content areas you have covered this year.

- Understanding place value with whole numbers
- Understanding place value with decimals
- Associative, commutative, and/or distributive properties
- Why standard algorithms work (e.g., multi-digit multiplication, long division)
- Non-standard algorithms for basic operations (e.g., partial product method for multi-digit multiplication)
- Multiple representations of decimals (e.g., on a number line, base 10 blocks)
- Comparing or ordering decimals
- Operations with decimals
- Representing fractions graphically (e.g., on a number line, with shaded regions of a figure)
- Meaning of fractions
- Comparing or ordering fractions
- Adding and subtracting fractions with like denominators
- Adding and subtracting fractions with unlike denominators
- Multiplying and dividing fractions
- Converting between decimal form and fraction form
- Comparing the values of decimals and fractions to each other
- The meaning of the equals sign as balancing two quantities
- Using algebraic expressions to represent situations (e.g., in a word problem)
- Recognizing and continuing repeating patterns/sequences, or predicting subsequent terms
- Using algebraic notation to represent patterns
- The use of a symbol (e.g., shape or letter) to stand for an unknown number
- Determining a general rule (function) from a series of input/output pairs (e.g., in a table or function machine)
- Interpreting and solving word problems/situations
- Undoing/inverse operations
- Interpreting graphs

2. In the class now being tested, estimate the percent of students that engaged in the following activities this year. (Circle ONE response for each statement.)

	None	About 25%	About 50%	About 75%	Nearly all or all
a) Regularly attended after-school tutoring or enrichment in mathematics <u>at this school</u>	1	2	3	4	5
b) Regularly attended after-school tutoring or enrichment in mathematics <u>at a learning center</u> (e.g., Kaplan, Kumon)	1	2	3	4	5
c) Received regular pull-out instruction in mathematics from an aide or specialist	1	2	3	4	5
d) Were regularly taught mathematics by another teacher in this school	1	2	3	4	5
e) Regularly worked on mathematics at home with parent(s) or guardian	1	2	3	4	5

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE!!!

If you have any comments about these questions,
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NCTE YEAR 1 (2010-11)
Grade 5

National Center for Teacher Effectiveness

Curriculum Alignment Survey

Spring 2011

Form NCTE-SP11

Grade 5



National Center for
Teacher Effectiveness

Center for Education Policy Research
Harvard Graduate School of Education
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1. Consider the following problem from the student assessment:

Look at this set of cards.

4.603	4.8	4.0997	4.59
-------	-----	--------	------

Which ordering of the cards lists the numbers from least to greatest value?

- A.

4.603	4.8	4.0997	4.59
-------	-----	--------	------
- B.

4.8	4.59	4.603	4.0997
-----	------	-------	--------
- C.

4.0997	4.59	4.603	4.8
--------	------	-------	-----
- D.

4.603	4.0997	4.8	4.59
-------	--------	-----	------

- D. What percentage of your students being tested today do you think will choose the correct answer (Answer C)? _____
- E. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)

Answer A

Answer B

Answer D

- F. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- a. Never
- b. Once or twice
- c. A few times

d. Often

2. Consider the following problem from the student assessment:

What number should go in the \square to make this number sentence true?

$$5 + 4 + 7 = \square + 7$$

- A. 7
- B. 9
- C. 16
- D. 23

- A. What percentage of your students being tested today do you think will choose the correct answer (Answer B)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)

Answer A

Answer C

Answer D

- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
 - a. Never
 - b. Once or twice
 - c. A few times
 - d. Often

3. Consider the following problem from the student assessment:

Greg worked the problem shown below. If there is a mistake in his work, mark the letter that matches the Step in which he made his first mistake. If Greg made no mistake, mark the letter D.

$8 \overline{)4024}$	Step 1	Step 2	Step 3
$\begin{array}{r} 5 \\ 8 \overline{)4024} \\ \underline{-40} \\ \hline 24 \end{array}$	$\begin{array}{r} 53 \\ 8 \overline{)4024} \\ \underline{-40} \\ \hline 24 \\ \underline{24} \\ \hline 0 \end{array}$	$\begin{array}{r} 530 \\ 8 \overline{)4024} \\ \underline{-40} \\ \hline 24 \\ \underline{-24} \\ \hline 0 \end{array}$	

- A. Step 1
- B. Step 2
- C. Step 3
- D. There is no mistake.

- A. What percentage of your students being tested today do you think will choose the correct answer (Answer B)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)

Answer A

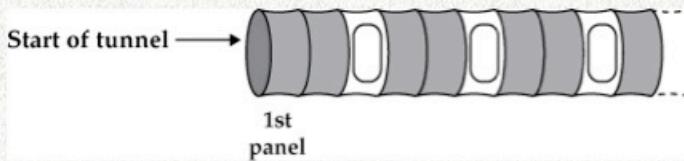
Answer C

Answer D

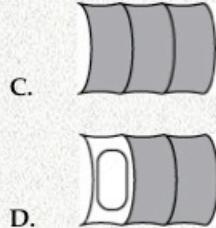
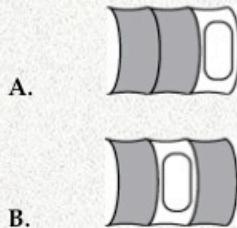
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
 - a. Never
 - b. Once or twice
 - c. A few times
 - d. Often

4. Consider the following problem from the student assessment:

A play tunnel is made by repeating groups of three panels using solid panels  and window panels  as described in the picture below. The picture shows the first ten panels of the tunnel.



Which section of panels below continues the pattern in this tunnel for the 11th through 13th panels?



- A. What percentage of your students being tested today do you think will choose the correct answer (Answer B)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)
- Answer A Answer C Answer D
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- Never
 - Once or twice
 - A few times
 - Often
5. Consider the following problem from the student assessment:

Lin is going to the county fair tonight. His mother gave him \$24 to spend on ride tickets. Tickets for fast rides cost \$3 each, and tickets for slow rides cost \$2 each.

Lin plans to spend all of the money his mother gave him on fast-ride tickets. What is the total number of fast-ride tickets that Lin can buy?

Which statement could represent the word problem above?



- A. number of fast-ride tickets = 24×3
- B. number of fast-ride tickets = $24 \div 3$
- C. number of fast-ride tickets = 24×2
- D. number of fast-ride tickets = $24 \div 2$

- A. What percentage of your students being tested today do you think will choose the correct answer (Answer B)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)

Answer A

Answer C

Answer D

- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
 - a. Never
 - b. Once or twice
 - c. A few times
 - d. Often

6. Consider the following problem from the student assessment:

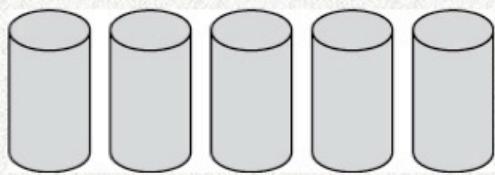
 represents $\frac{2}{5}$ of a set of circles. Which of the following could represent the whole set of circles?



- A. What percentage of your students being tested today do you think will choose the correct answer (Answer D)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)
- Answer A Answer B Answer C
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- Never
 - Once or twice
 - A few times
 - Often

7. Consider the following problem from the student assessment:

Alex has 5 full cans of paint.



If 2 cans of Alex's paint are red, what fraction of his paint is red?

- A. $\frac{2}{3}$
- B. $\frac{2}{5}$
- C. 2
- D. 3

- A. What percentage of your students being tested today do you think will choose the correct answer (Answer B)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)

Answer A

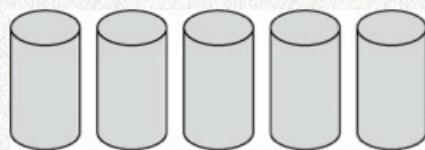
Answer C

Answer D

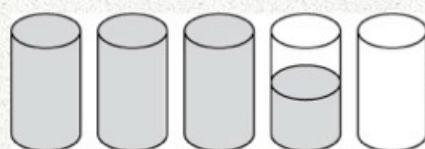
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- a. Never
 - b. Once or twice
 - c. A few times
 - d. Often

8. Consider the following problem from the student assessment:

Alex has 5 full cans of paint.



If Alex uses $1\frac{1}{2}$ cans of his paint on a school project, what fraction of his total amount of paint will be left?



- A. $\frac{4}{10}$
- B. $\frac{3}{5}$
- C. $\frac{7}{10}$
- D. $\frac{4}{5}$

- A. What percentage of your students being tested today do you think will choose the correct answer (Answer C)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)
- Answer A Answer B Answer D
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- a. Never
 - b. Once or twice
 - c. A few times
 - d. Often
9. Consider the following problem from the student assessment:

Farmer Gray has some goats in a pen. Each day he places exactly enough bales of hay in the pen to feed all his goats with no hay left over. He knows that every goat eats $\frac{2}{3}$ bale of hay. What is the total number of goats that Farmer Gray has if he places 24 bales of hay in the pen each day and no hay is left over?

- A. 12 goats
- B. 16 goats
- C. 24 goats
- D. 36 goats

- A. What percentage of your students being tested today do you think will choose the correct answer (Answer D)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)
- Answer A Answer B Answer C
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- a. Never
 - b. Once or twice
 - c. A few times
 - d. Often

10. Consider the following problem from the student assessment:

José applies a rule to all the numbers in column A to get all the numbers in column B. He completes column B by applying this same rule to 10 and 20.

A	B
3	12
4	16
6	24
10	
20	

Which of the following could be the rule that José uses?

- A. Divide the number in column A by 4.
- B. Multiply the number in column A by 4.
- C. Subtract 9 from the number in column A.
- D. Add 9 to the number in column A.

- A. What percentage of your students being tested today do you think will choose the correct answer (Answer B)? _____
- B. Which do you think will be the most common **incorrect** response among your students? (Circle ONE answer.)

Answer A

Answer C

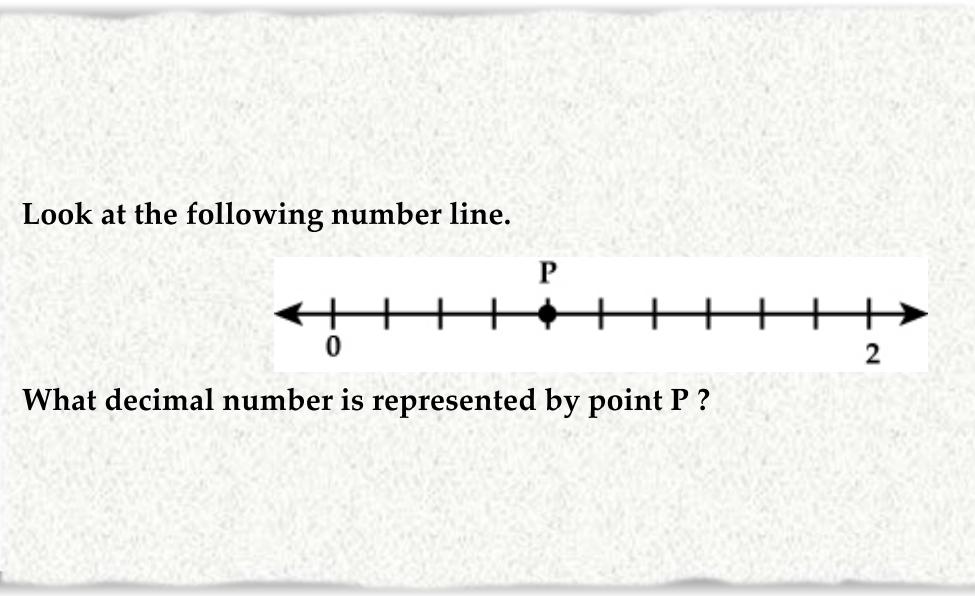
Answer D

- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- a. Never
 - b. Once or twice
 - c. A few times
 - d. Often

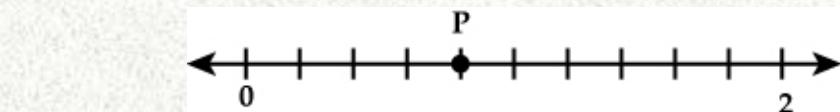
The following pages present open-response problems on the student assessment. As you look at each problem, please predict how

your students will perform. Also, please indicate the most likely *incorrect* answer your students will write.

11. Consider the following problem from the student assessment:



Look at the following number line.



What decimal number is represented by point P ?

- D. What percentage of your students being tested today do you think will write in the correct answer (0.8)? _____
- E. The MOST common **incorrect** student response will be:
- e. 0.4
 - f. 0.5
 - g. 1.2
 - h. 4.1
- F. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- e. Never
 - f. Once or twice
 - g. A few times
 - h. Often

12. Consider the following problem from the student assessment:

Dex plays a number game. You give him a number and he —

- doubles the number
- adds 6 to that answer
- subtracts 3 from that answer.

Dex then reports what he gets as the result of these three actions.

If you give Dex the number 10, what should he report as the result?

A. What percentage of your students being tested today do you think will write in the correct answer (23)? _____

B. The MOST common **incorrect** student response will be:

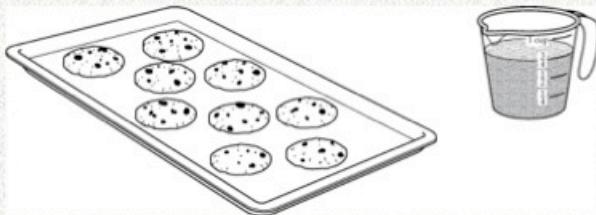
- a. 10
- b. 13
- c. 20
- d. 31

C. How often have students in your class solved problems like this during the 2010 – 2011 school year?

- a. Never
- b. Once or twice
- c. A few times
- d. Often

13. Consider the following problem from the student assessment:

Sarah is making cookies for a bake sale at school. She needs $\frac{3}{4}$ cup of sugar for each batch of cookies.

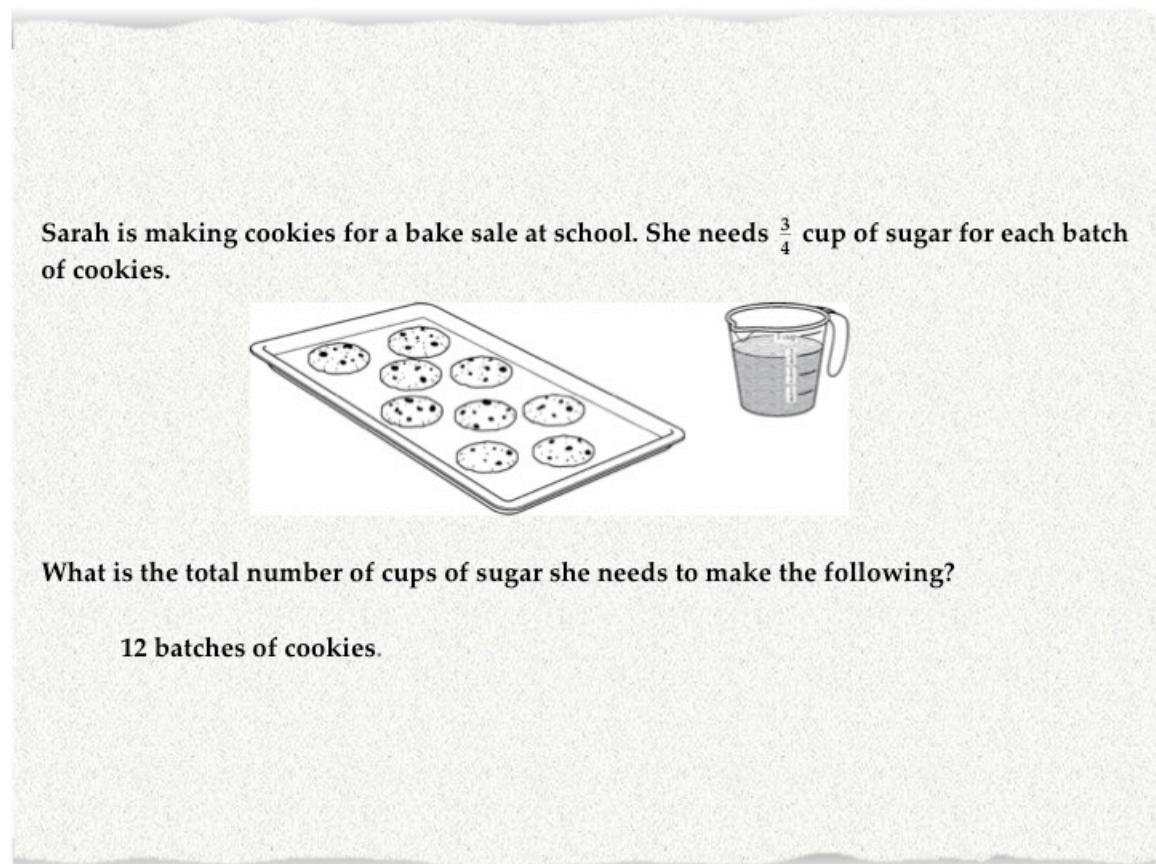


What is the total number of cups of sugar she needs to make the following?

8 batches of cookies.

- A. What percentage of your students being tested today do you think will write in the correct answer (6)? _____
- B. The MOST common **incorrect** student response will be:
 - a. 4
 - b. 8
 - c. 12
 - d. 24
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
 - a. Never
 - b. Once or twice
 - c. A few times
 - d. Often

14. Consider the following problem from the student assessment:



Sarah is making cookies for a bake sale at school. She needs $\frac{3}{4}$ cup of sugar for each batch of cookies.

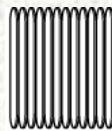
What is the total number of cups of sugar she needs to make the following?

12 batches of cookies.

- A. What percentage of your students being tested today do you think will write in the correct answer (9)? _____
- B. The MOST common **incorrect** student response will be:
 - a. 6
 - b. 8
 - c. 12
 - d. 36
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
 - a. Never
 - b. Once or twice
 - c. A few times
 - d. Often

15. Consider the following problem from the student assessment:

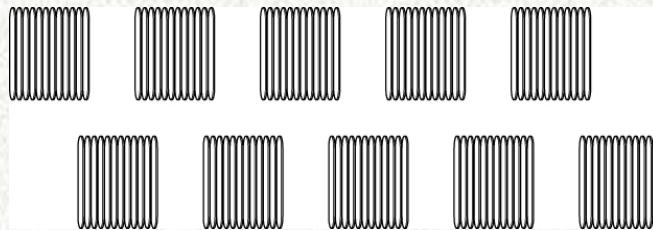
Mrs. Jones has some craft sticks for her students to use for an art project.
The following statements apply to these craft sticks.



1 bundle of
craft sticks

- There are 10 bundles of craft sticks.
- Each bundle has 12 craft sticks in it.
- The sticks must be shared equally among students who want to use them.

Exactly how many sticks can each student use if only 4 students want to use them?



- A. What percentage of your students being tested today do you think will write in the correct answer (30)? _____
- B. The MOST common **incorrect** student response will be:
- 3
 - 4
 - 12
 - 48
- C. How often have students in your class solved problems like this during the 2010 – 2011 school year?
- Never
 - Once or twice
 - A few times

d. Often

Section 2: Your teaching and students

1. Please check the box next to the content areas you have covered this year.

- Understanding place value with whole numbers
- Understanding place value with decimals
- Associative, commutative, and/or distributive properties
- Why standard algorithms work (e.g., multi-digit multiplication, long division)
- Non-standard algorithms for basic operations (e.g., partial product method for multi-digit multiplication)
- Multiple representations of decimals (e.g., on a number line, base 10 blocks)
- Comparing or ordering decimals
- Operations with decimals
- Representing fractions graphically (e.g., on a number line, with shaded regions of a figure)
- Meaning of fractions
- Comparing or ordering fractions
- Adding and subtracting fractions with like denominators
- Adding and subtracting fractions with unlike denominators
- Multiplying and dividing fractions
- Converting between decimal form and fraction form
- Comparing the values of decimals and fractions to each other
- The meaning of the equals sign as balancing two quantities
- Using algebraic expressions to represent situations (e.g., in a word problem)
- Recognizing and continuing repeating patterns/sequences, or predicting subsequent terms
- Using algebraic notation to represent patterns
- The use of a symbol (e.g., shape or letter) to stand for an unknown number
- Determining a general rule (function) from a series of input/output pairs (e.g., in a table or function machine)
- Interpreting and solving word problems/situations
- Undoing/inverse operations
- Interpreting graphs

2. In the class now being tested, estimate the percent of students that engaged in the following activities this year. (Circle ONE response for each statement.)

	None	About 25%	About 50%	About 75%	Nearly all or all
f) Regularly attended after-school tutoring or enrichment in mathematics <u>at this school</u>	1	2	3	4	5
g) Regularly attended after-school tutoring or enrichment in mathematics <u>at a learning center</u> (e.g., Kaplan, Kumon)	1	2	3	4	5
h) Received regular pull-out instruction in mathematics from an aide or specialist	1	2	3	4	5
i) Were regularly taught mathematics by another teacher in this school	1	2	3	4	5
j) Regularly worked on mathematics at home with parent(s) or guardian	1	2	3	4	5

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE!!!

If you have any comments about these questions,
please write them in the space below.

NCTE YEAR 2 (2011-12)
Grade 4

Developing Measures of Effective Math Teaching Study

Curriculum Alignment Survey

Spring 2012

Form NCTE SPRING 2012

Grade 4



National Center for
Teacher Effectiveness

Center for Education Policy Research
Harvard Graduate School of Education
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Cambridge, MA 02138

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ABOUT THIS SURVEY

- Section 1 asks you to estimate how different groups of students will answer problems found on the student assessment.
- Section 2 asks about your teaching and school more generally.
- We will use this data to help us understand how your students perform on the assessment.
- We will use your answers for research purposes only – your responses will **not** be shared with your school or district.

Section 1

Each of the following pages presents a problem that is on the student assessment. Please answer questions a, b, and c for each problem.

1. Consider the following problem from the student assessment:

Each number shown below is either a composite or prime number.

20

21

22

23

24

25

26

27

28

29

Which of the following correctly identifies all the prime numbers listed above?

- | | |
|-----------------------|-----------------------|
| A. 21, 23, 25, 27, 29 | C. 20, 22, 24, 26, 28 |
| B. 23, 27, 29 | D. 23, 29 |

The correct answer to this problem is D.

a. Approximately what percentage of **your students** being tested today will choose the correct answer? %

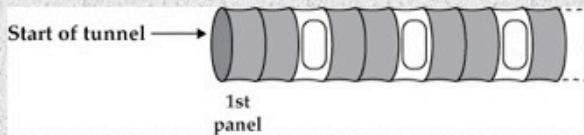
b. Approximately what percentage of fourth grade students in **your district** will choose the correct answer? %

c. Which will be the most common incorrect answer among fourth graders **in general**?
(Please circle **ONE** answer.)

A B C

2. Consider the following problem from the student assessment:

A play tunnel is made by repeating groups of three panels using solid panels  and window panels  as described in the picture below. The picture shows the first ten panels of the tunnel.



Which picture shows the next three panels that would continue the pattern in this tunnel?

- A. 
- B. 
- C. 
- D. 

The correct answer to this problem is B.

a. Approximately what percentage of **your students** being tested today will choose the correct answer? %

b. Approximately what percentage of fourth grade students in **your district** will choose the correct answer? %

c. Which will be the most common incorrect answer among fourth graders **in general**?
(Please circle **ONE** answer.)

A C D

3. Consider the following problem from the student assessment:

What number should go in the \square to make this number sentence true?

$$8 + 4 = \square + 7$$

- A. 19
- B. 12
- C. 5
- D. 4

The correct answer to this problem is C.

a. Approximately what percentage of **your students** being tested today will choose the correct answer? %

b. Approximately what percentage of fourth grade students in **your district** will choose the correct answer? %

c. Which will be the most common incorrect answer among fourth graders **in general**?
(Please circle **ONE** answer.)

A B D

4. Consider the following problem from the student assessment:

Cara simplified the fraction $\frac{12}{15}$ as shown below.

$$\frac{12}{15} \div \frac{3}{3} = \frac{4}{5}$$

If Cara applies the same method to simplify other fractions, which of the following will be true?

- A. The value of the original fraction will decrease.
- B. The value of the original fraction will increase.
- C. The value of the original fraction will stay the same.
- D. The value of the original fraction will sometimes decrease and sometimes increase.

The correct answer to this problem is C.

a. Approximately what percentage of **your students** being tested today will choose the correct answer?

%

b. Approximately what percentage of fourth grade students in **your district** will choose the correct answer?

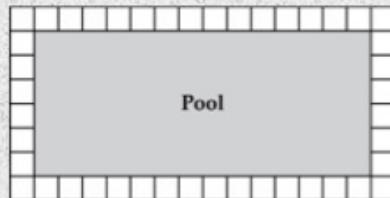
%

c. Which will be the most common incorrect answer among fourth graders **in general**?
(Please circle **ONE** answer.)

A B D

5. Consider the following problem from the student assessment:

Jorge has a rectangular pool in his backyard. The pool is surrounded by 1-foot-square tiles, as shown in the picture below.



What is the perimeter of Jorge's pool, in feet, not including the tiles?

The correct answer to this problem is 40.	%
a. Approximately what percentage of your students being tested today will answer correctly?	%
b. Approximately what percentage of fourth grade students in your district will answer correctly?	%
c. Which will be the most common incorrect answer among fourth graders in general ? (Please circle ONE answer.)	44 45 48

6. Consider the following problem from the student assessment:

A square has a perimeter of 24 inches. What is its area, in square inches?

The correct answer to this problem is 36.	%
a. Approximately what percentage of <u>your students</u> being tested today will answer correctly?	%
b. Approximately what percentage of fourth grade students in <u>your district</u> will answer correctly?	%
c. Which will be the most common incorrect answer among fourth graders <u>in general</u> ? (Please circle <u>ONE</u> answer.)	6 24 96

7. Consider the following problem from the student assessment:

Hannah has 2 large candy bars. She cuts each candy bar into fifths. How many pieces of candy bar does Hannah have now?

A. $\frac{1}{10}$

B. $\frac{2}{5}$

C. 5

D. 10

The correct answer to this problem is D.

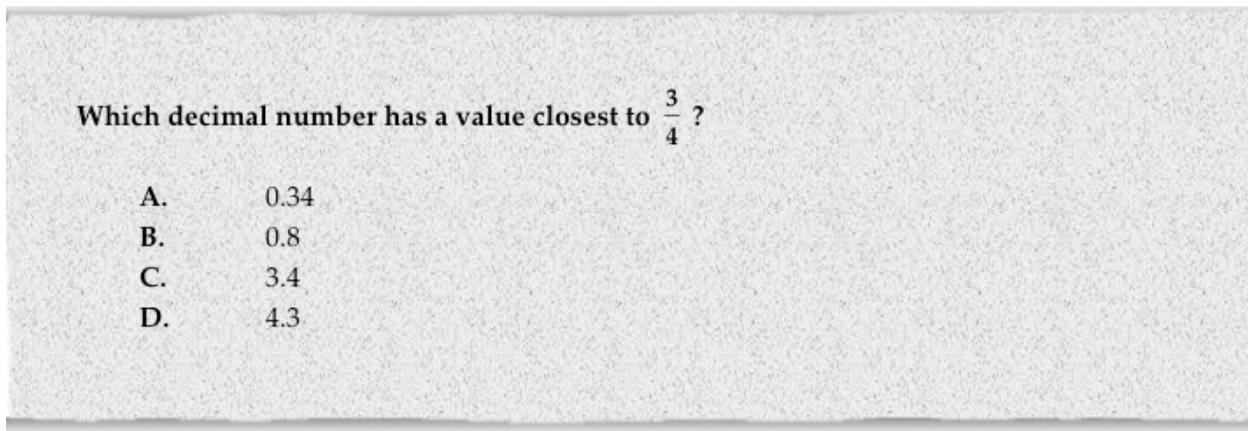
a. Approximately what percentage of **your students** being tested today will choose the correct answer? %

b. Approximately what percentage of fourth grade students in **your district** will choose the correct answer? %

c. Which will be the most common incorrect answer among fourth graders **in general**?
(Please circle **ONE** answer.)

A B C

8. Consider the following problem from the student assessment:



<u>The correct answer to this problem is B.</u>	%
a. Approximately what percentage of your students being tested today will choose the correct answer?	%
b. Approximately what percentage of fourth grade students in your district will choose the correct answer?	%
c. Which will be the most common incorrect answer among fourth graders in general ? (Please circle ONE answer.)	A C D

Section 2: Your teaching

1. We are interested in the amount of time your students spent on specific mathematical topics this school year. Please indicate how much instruction students experienced on each topic by circling the appropriate quantity below.

Number and Operations

	No coverage of this topic	One or two lessons	Three to five lessons	Six to ten lessons	More than ten lessons
a) Understanding place value with decimals	1	2	3	4	5
b) Associative, commutative, and/or distributive properties	1	2	3	4	5
c) Why standard algorithms work (e.g., multi-digit multiplication, long division)	1	2	3	4	5
d) Non-standard algorithms for basic operations (e.g., partial product method for multi-digit multiplication)	1	2	3	4	5
e) Multiple representations of decimals (e.g., on a number line, base 10 blocks)	1	2	3	4	5
f) Comparing or ordering decimals	1	2	3	4	5
g) Operations with decimals	1	2	3	4	5
h) Representing fractions graphically (e.g., on a number line, with shaded regions of a figure)	1	2	3	4	5
i) Meaning of fractions	1	2	3	4	5
j) Comparing or ordering fractions	1	2	3	4	5
k) Adding and subtracting fractions with like denominators	1	2	3	4	5
l) Adding and subtracting fractions with unlike denominators	1	2	3	4	5
m) Multiplying and dividing fractions	1	2	3	4	5
n) Converting between decimal form and fraction form	1	2	3	4	5
o) Comparing the values of decimals and fractions to each other	1	2	3	4	5

1 cont. We are interested in the amount of time your students spent on specific mathematical topics this school year. Please indicate how much instruction students experienced on each topic by circling the appropriate quantity below.

Algebra

	No coverage of this topic	One or two lessons	Three to five lessons	Six to ten lessons	More than ten lessons
a) The meaning of the equal sign as balancing two quantities	1	2	3	4	5
b) The use of a symbol (e.g., shape or letter) to stand for an unknown number	1	2	3	4	5
c) Recognizing and continuing repeating patterns/sequences, or predicting subsequent terms	1	2	3	4	5
d) Using algebraic notation to represent patterns	1	2	3	4	5
e) Using algebraic equations to represent situations (e.g., in a word problem)	1	2	3	4	5
f) Determining a general rule (function) from a series of input/output pairs (e.g., in a table or function machine)	1	2	3	4	5
g) Inverse operations/undoing operations	1	2	3	4	5

1 cont. We are interested in the amount of time your students spent on specific mathematical topics this school year. Please indicate how much instruction students experienced on each topic by circling the appropriate quantity below.

Geometry

	No coverage of this topic	One or two lessons	Three to five lessons	Six to ten lessons	More than ten lessons
a) Measuring angles and finding unknown angles	1	2	3	4	5
b) Recognizing right angles	1	2	3	4	5
c) Finding the area of 2-dimensional figures	1	2	3	4	5
d) Finding the perimeter of 2-dimensional figures	1	2	3	4	5
e) Calculating the area and perimeter of squares and rectangles	1	2	3	4	5
f) Recognizing, constructing, and classifying quadrilaterals	1	2	3	4	5
g) Estimating or finding volume	1	2	3	4	5
h) Identifying regular polygons	1	2	3	4	5

2. Please rate how strongly you agree or disagree with the following statements about teacher leadership in your school.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
k) Teachers* are recognized as educational experts.	1	2	3	4	5
l) Teachers are trusted to make sound professional decisions about instruction.	1	2	3	4	5
m) Teachers are relied upon to make decisions about educational issues.	1	2	3	4	5
n) Teachers are encouraged to participate in school leadership issues.**	1	2	3	4	5
o) The faculty has an effective process for making group decisions to solve problems.	1	2	3	4	5
p) In this school, we take steps to solve problems.	1	2	3	4	5
q) Teachers are effective leaders in this school.	1	2	3	4	5

*Teachers mean a majority of teachers in your school.

**School leadership may include formal roles such as grade team leader, a member of the School Improvement Team, mentor, coach, or leader of a professional learning community, etc.

3. Please rate how strongly you agree or disagree with the following statements about your school.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
a) Teachers are encouraged to share their ideas.	1	2	3	4	5
b) Teachers trust each other.	1	2	3	4	5
c) Teachers spend considerable time planning together.	1	2	3	4	5
d) Teachers regularly seek ideas from colleagues.	1	2	3	4	5
e) Teachers take time to observe each other teaching.	1	2	3	4	5
f) Teachers value other teachers' ideas.	1	2	3	4	5
g) Teachers work cooperatively in groups.	1	2	3	4	5
h) Teachers work together to develop and/or evaluate programs and projects.	1	2	3	4	5

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE!!!

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NCTE YEAR 2 (2011-12)
Grade 5

Developing Measures of Effective Math Teaching Study

Curriculum Alignment Survey

Spring 2012

Form NCTE SPRING 2012

Grade 5



National Center for
Teacher Effectiveness

Center for Education Policy Research
Harvard Graduate School of Education
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Section 1

Each of the following pages presents a problem that is on the student assessment. Please answer questions a, b, and c for each problem.

1. Consider the following problem from the student assessment:

Each number shown below is either a composite or prime number.

20

21

22

23

24

25

26

27

28

29

Which of the following correctly identifies all the prime numbers listed above?

- | | |
|-----------------------|-----------------------|
| A. 21, 23, 25, 27, 29 | C. 20, 22, 24, 26, 28 |
| B. 23, 27, 29 | D. 23, 29 |

The correct answer to this problem is D.

d. Approximately what percentage of **your students** being tested today will choose the correct answer? %

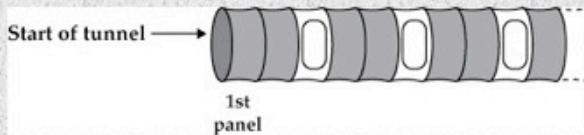
e. Approximately what percentage of fifth grade students in **your district** will choose the correct answer? %

f. Which will be the most common incorrect answer among fifth graders **in general**?
(Please circle **ONE** answer.)

A B C

2. Consider the following problem from the student assessment:

A play tunnel is made by repeating groups of three panels using solid panels  and window panels  as described in the picture below. The picture shows the first ten panels of the tunnel.



Which picture shows the next three panels that would continue the pattern in this tunnel?

- A. 
- B. 
- C. 
- D. 

The correct answer to this problem is B.

d. Approximately what percentage of **your students** being tested today will choose the correct answer? %

e. Approximately what percentage of fifth grade students in **your district** will choose the correct answer? %

f. Which will be the most common incorrect answer among fifth graders **in general**?
(Please circle **ONE** answer.)

A C D

3. Consider the following problem from the student assessment:

Look at this set of cards.

4.603

4.8

4.0997

4.59

Which ordering of the cards lists all the numbers from least to greatest value?

A.

4.603

4.8

4.0997

4.59

B.

4.8

4.59

4.603

4.0997

C.

4.0997

4.59

4.603

4.8

D.

4.603

4.0997

4.8

4.59

The correct answer to this problem is C.

- a. Approximately what percentage of your students being tested today will choose the correct answer?

%

- b. Approximately what percentage of fifth grade students in your district will choose the correct answer?

%

- c. Which will be the most common incorrect answer among fifth graders in general?
(Please circle ONE answer.)

A

B

D

4. Consider the following problem from the student assessment:

What number should go in the \square to make this number sentence true?

$$5 + 4 + 7 = \square + 7$$

- A. 7
- B. 9
- C. 16
- D. 23

The correct answer to this problem is B.

a. Approximately what percentage of **your students** being tested today will choose the correct answer? %

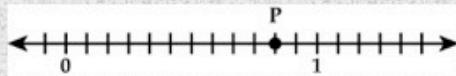
b. Approximately what percentage of fifth grade students in **your district** will choose the correct answer? %

c. Which will be the most common incorrect answer among fifth graders **in general**?
(Please circle **ONE** answer.)

A C D

5. Consider the following problem from the student assessment:

Which fraction is represented by point P on the number line?



- A. $\frac{3}{4}$ C. $\frac{11}{13}$
B. $\frac{5}{6}$ D. $\frac{11}{18}$

The correct answer to this problem is B.

a. Approximately what percentage of **your students** being tested today will choose the correct answer? %

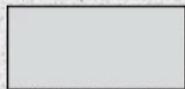
b. Approximately what percentage of fifth grade students in **your district** will choose the correct answer? %

c. Which will be the most common incorrect answer among fifth graders **in general**?
(Please circle **ONE** answer.)

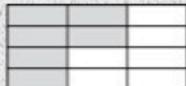
A C D

6. Consider the following problem from the student assessment:

This shaded rectangle represents one whole:



Two fractions are represented by the shaded portions of the rectangles shown below:



When added together, what is the sum of these two fractions?

A. $\frac{7}{18}$

C. $\frac{4}{9}$

B. $\frac{7}{12}$

D. $\frac{2}{3}$

The correct answer to this problem is D.

- a. Approximately what percentage of your students being tested today will choose the correct answer?

%

- b. Approximately what percentage of fifth grade students in your district will choose the correct answer?

%

- c. Which will be the most common incorrect answer among fifth graders in general?
(Please circle ONE answer.)

A B C

7. Consider the following problem from the student assessment:

Which fraction has a value closest to $\frac{3}{4}$?

A. $\frac{1}{5}$

C. $\frac{4}{4}$

B. $\frac{1}{4}$

D. $\frac{5}{8}$

The correct answer to this problem is D.

a. Approximately what percentage of **your students** being tested today will choose the correct answer? %

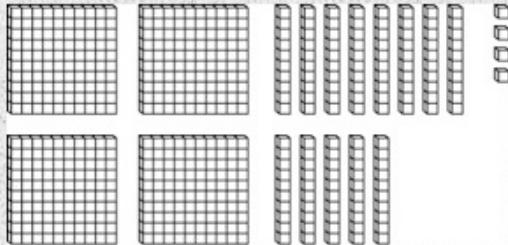
b. Approximately what percentage of fifth grade students in **your district** will choose the correct answer? %

c. Which will be the most common incorrect answer among fifth graders **in general**?
(Please circle **ONE** answer.)

A B C

8. Consider the following problem from the student assessment:

A set of place value blocks is shown below.



What is the value of the whole number represented by all of these blocks?

The correct answer to this problem is 534.

- a. Approximately what percentage of **your students** being tested today will answer correctly? %

- b. Approximately what percentage of fifth grade students in **your district** will answer correctly? %

- c. Which will be the most common incorrect answer among fifth graders **in general**?
(Please circle **ONE** answer.)

5 434 4134

Section 2: Your teaching

1. We are interested in the amount of time your students spent on specific mathematical topics this school year. Please indicate how much instruction students experienced on each topic by circling the appropriate quantity below.

Number and Operations

	No coverage of this topic	One or two lessons	Three to five lessons	Six to ten lessons	More than ten lessons
p) Understanding place value with decimals	1	2	3	4	5
q) Associative, commutative, and/or distributive properties	1	2	3	4	5
r) Why standard algorithms work (e.g., multi-digit multiplication, long division)	1	2	3	4	5
s) Non-standard algorithms for basic operations (e.g., partial product method for multi-digit multiplication)	1	2	3	4	5
t) Multiple representations of decimals (e.g., on a number line, base 10 blocks)	1	2	3	4	5
u) Comparing or ordering decimals	1	2	3	4	5
v) Operations with decimals	1	2	3	4	5
w) Representing fractions graphically (e.g., on a number line, with shaded regions of a figure)	1	2	3	4	5
x) Meaning of fractions	1	2	3	4	5
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aa) Adding and subtracting fractions with unlike denominators	1	2	3	4	5
bb) Multiplying and dividing fractions	1	2	3	4	5
cc) Converting between decimal form and fraction form	1	2	3	4	5
dd) Comparing the values of decimals and fractions to each other	1	2	3	4	5

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Algebra

	No coverage of this topic	One or two lessons	Three to five lessons	Six to ten lessons	More than ten lessons
h) The meaning of the equal sign as balancing two quantities	1	2	3	4	5
i) The use of a symbol (e.g., shape or letter) to stand for an unknown number	1	2	3	4	5
j) Recognizing and continuing repeating patterns/sequences, or predicting subsequent terms	1	2	3	4	5
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m) Determining a general rule (function) from a series of input/output pairs (e.g., in a table or function machine)	1	2	3	4	5
n) Inverse operations/undoing operations	1	2	3	4	5

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Geometry

	No coverage of this topic	One or two lessons	Three to five lessons	Six to ten lessons	More than ten lessons
i) Measuring angles and finding unknown angles	1	2	3	4	5
j) Recognizing right angles	1	2	3	4	5
k) Finding the area of 2-dimensional figures	1	2	3	4	5
l) Finding the perimeter of 2-dimensional figures	1	2	3	4	5
m) Calculating the area and perimeter of squares and rectangles	1	2	3	4	5
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2. Please rate how strongly you agree or disagree with the following statements about teacher leadership in your school.

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x) Teachers are effective leaders in this school.	1	2	3	4	5

*Teachers mean a majority of teachers in your school.

**School leadership may include formal roles such as grade team leader, a member of the School Improvement Team, mentor, coach, or leader of a professional learning community, etc.

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	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
i) Teachers are encouraged to share their ideas.	1	2	3	4	5
j) Teachers trust each other.	1	2	3	4	5
k) Teachers spend considerable time planning together.	1	2	3	4	5
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m) Teachers take time to observe each other teaching.	1	2	3	4	5
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o) Teachers work cooperatively in groups.	1	2	3	4	5
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THANK YOU FOR COMPLETING THIS QUESTIONNAIRE!!!

If you have any comments about these questions,
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NCTE YEAR 3 (2012-13)
Grade 4

Developing Measures of Effective Math Teaching Study

Curriculum Alignment Survey

Spring 2013

Form NCTE SPRING 2013

Grade 4



National Center for
Teacher Effectiveness

Center for Education Policy Research
Harvard Graduate School of Education
50 Church Street, Fourth Floor
Cambridge, MA 02138

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- We will use your answers for research purposes only – your responses will **not** be shared with your school or district.

Section 1

Each of the following pages presents a problem that is on the student assessment. Please answer questions a and b for each problem.

1. Consider the following problem from the student assessment:

If $a + b = 5$, what does $18 + b + a$ equal?

- A. 13
- B. 28
- C. 23
- D. 33

The correct answer to this problem is C.

g. Approximately what percentage of **your students** being tested today will choose the correct answer?

%

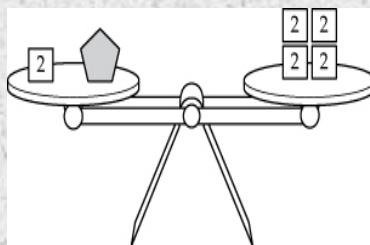
h. Approximately what percentage of fourth grade students in **your district** will choose the correct answer?

%

2. Consider the following problem from the student assessment:

For this question, shapes are assigned a weight. Identical shapes have the same weight. The scale is balanced so that the total weight on each of the sides is the same.

For each statement, determine whether each statement is True or False.



$$2 + 2 + 2 = \text{pentagon}$$

(T) True (F) False

The correct answer to this problem is True.

g. Approximately what percentage of **your students** being tested today will choose the correct answer?

%

h. Approximately what percentage of fourth grade students in **your district** will choose the correct answer?

%

3. Consider the following problem from the student assessment:

The number 3.24 is equal to three and twenty-four --

- A. ones
- B. tenths
- C. hundredths
- D. thousandths

The correct answer to this problem is C.

d. Approximately what percentage of **your students** being tested today will choose the correct answer? %

e. Approximately what percentage of fourth grade students in **your district** will choose the correct answer? %

4. Consider the following problem from the student assessment:

Jenna knows that she could solve the following multiplication problem using several different methods and still get the correct answer.

$$\begin{array}{r} 49 \\ \times 5 \\ \hline \end{array}$$

Will the following method result in a correct answer for this problem?

Multiply 50 and 5, and then subtract 5.

(Y) Yes (N) No

The correct answer to this problem is (Y) Yes.

d. Approximately what percentage of **your students** being tested today will choose the correct answer? %

e. Approximately what percentage of fourth grade students in **your district** will choose the correct answer? %

5. Consider the following problem from the student assessment:

Jackie solved a multiplication problem as shown below. There are errors in her work.

$$\begin{array}{r} 2 \quad \text{Row 1} \\ 35 \\ \times 14 \\ \hline 140 \quad \text{Row 2} \\ + \quad 55 \quad \text{Row 3} \\ \hline 195 \quad \text{Row 4} \end{array}$$

In which row is an error first recorded?

- A. Row 1
- B. Row 2
- C. Row 3
- D. Row 4

The correct answer to this problem is C.

d. Approximately what percentage of your students being tested today will choose the correct answer?

%

e. Approximately what percentage of fourth grade students in your district will choose the correct answer?

%

6. Consider the following problem from the student assessment:

Determine whether the equation is true.

$$1.4 = 1\frac{4}{5}$$

(Y) Yes (N) No

The correct answer to this problem is No.

d. Approximately what percentage of **your students** being tested today will choose the correct answer?

%

e. Approximately what percentage of fourth grade students in **your district** will choose the correct answer?

%

7. Consider the following problem from the student assessment:



Determine whether the equation is true.

The correct answer to this problem is Yes.

- d. Approximately what percentage of **your students** being tested today will choose the correct answer?
0.75 = $\frac{3}{4}$ (Y) Yes (N) No

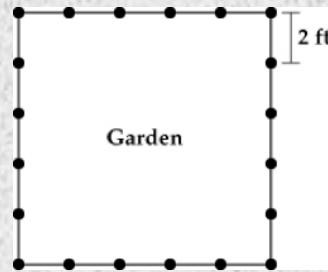
%

- e. Approximately what percentage of fourth grade students in **your district** will choose the correct answer?

%

8. Consider the following problem from the student assessment:

Mr. Reyes built a fence to enclose his square garden. He used 20 fence posts and placed them 2 feet apart, as shown below.



Based on this information, which statement must be true?

- A. The length of the garden is greater than the width of the garden.
- B. The width of the garden is greater than the length of the garden.
- C. The value of the perimeter is greater than the value of the area of the garden.
- D. The value of the area is greater than the value of the perimeter of the garden.

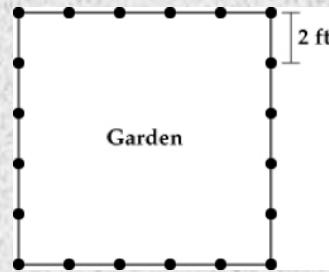
The correct answer to this problem is D.

d. Approximately what percentage of **your students** being tested today will choose the correct answer? %

e. Approximately what percentage of fourth grade students in **your district** will choose the correct answer? %

9. Consider the following problem from the student assessment:

Mr. Reyes built a fence to enclose his square garden. He used 20 fence posts and placed them 2 feet apart, as shown below.



What is the perimeter, in feet, of the garden?

The correct answer to this problem is 40 feet.

- a. Approximately what percentage of **your students** being tested today will choose the correct answer?

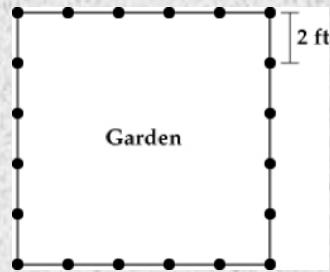
%

- b. Approximately what percentage of fourth grade students in **your district** will choose the correct answer?

%

10. Consider the following problem from the student assessment:

Mr. Reyes built a fence to enclose his square garden. He used 20 fence posts and placed them 2 feet apart, as shown below.



What is the area, in square feet, of the garden?

The correct answer to this problem is 100 square feet.

- a. Approximately what percentage of **your students** being tested today will choose the correct answer?

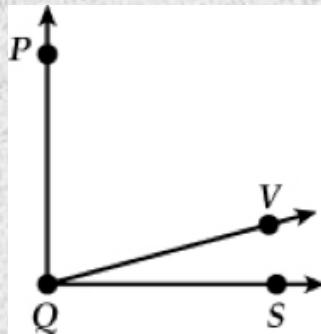
%

- b. Approximately what percentage of fourth grade students in **your district** will choose the correct answer?

%

11. Consider the following problem from the student assessment:

In the diagram below, $\angle PQS$ is a right angle. The measure of $\angle PQV$ is 75 degrees.



Based on this information, what is the measure, in degrees, of $\angle VQS$?

The correct answer to this problem is 15 degrees.

- a. Approximately what percentage of **your students** being tested today will choose the correct answer?

%

- b. Approximately what percentage of fourth grade students in **your district** will choose the correct answer?

%

12. Consider the following problem from the student assessment:

What number is equal to 5 hundreds, 4 tens, and 23 ones?

<p>The correct answer to this problem is 563.</p> <p>a. Approximately what percentage of <u>your students</u> being tested today will choose the correct answer? %</p>	
<p>b. Approximately what percentage of fourth grade students in <u>your district</u> will choose the correct answer? %</p>	

13. Consider the following problem from the student assessment:

Identify whether the following number sentence is True or False.

$$14 + 119 = 119 + 14$$

<u>The correct answer to this problem is True.</u>	
a. Approximately what percentage of <u>your students</u> being tested today will choose the correct answer?	%
b. Approximately what percentage of fourth grade students in <u>your district</u> will choose the correct answer?	%

14. Consider the following problem from the student assessment:

Use the following information to answer the question.



Figure 1



Figure 2



Figure 3

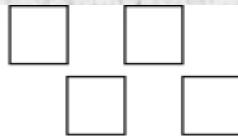


Figure 4



Figure 5

The next figure is made by adding one square to the previous figure, as shown in the first four figures. Complete the table below for the number of corners in Figure 4.

Figure	Total Number of Corners
1	4
2	8
3	12
4	
5	

If the pattern continues this way, determine the total number of corners there will be in Figure 20.

The total number of corners in Figure 20 will be --

The correct answer to this problem is 80.

a. Approximately what percentage of **your students** being tested today will choose the correct answer?

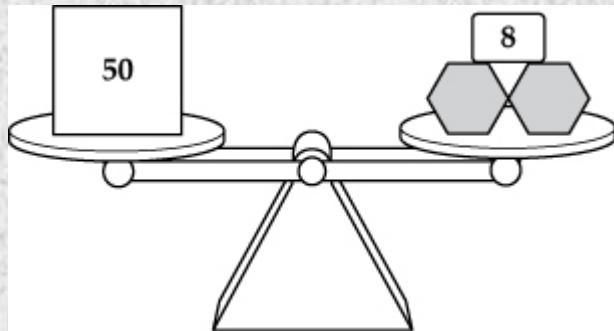
%

b. Approximately what percentage of fourth grade students in **your district** will choose the correct answer?

%

15. Consider the following problem from the student assessment:

For the question below, shapes are assigned a weight. Identical shapes have the same weight. The scale is balanced so that the total weight on each of the sides is the same.



What is the value of the weight for this shape?



The correct answer to this problem is 21.

- a. Approximately what percentage of your students being tested today will choose the correct answer?

%

- b. Approximately what percentage of fourth grade students in your district will choose the correct answer?

%

16. Consider the following problem from the student assessment:

A square has a perimeter of 24 inches. What is its area, in square inches?

The correct answer to this problem is 36 square inches.	%
a. Approximately what percentage of <u>your students</u> being tested today will choose the correct answer?	%
b. Approximately what percentage of fourth grade students in <u>your district</u> will choose the correct answer?	%

Section 2: Your teaching

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Number and Operations

	No coverage of this topic	One or two lessons	Three to five lessons	Six to ten lessons	More than ten lessons
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jj) Comparing or ordering decimals	1	2	3	4	5
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Algebra

	No coverage of this topic	One or two lessons	Three to five lessons	Six to ten lessons	More than ten lessons
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q) Recognizing and continuing repeating patterns/sequences, or predicting subsequent terms	1	2	3	4	5
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Geometry

	No coverage of this topic	One or two lessons	Three to five lessons	Six to ten lessons	More than ten lessons
q) Measuring angles and finding unknown angles	1	2	3	4	5
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	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
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Grade 5

Developing Measures of Effective Math Teaching Study

Curriculum Alignment Survey

Spring 2013

Form NCTE SPRING 2013

Grade 5



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Section 1

Each of the following pages presents a problem that is on the student assessment. Please answer questions a and b for each problem.

1. Consider the following problem from the student assessment:

If $a + b = 5$, what does $18 + b + a$ equal?

- A. 13
- B. 28
- C. 23
- D. 33

The correct answer to this problem is C.

a. Approximately what percentage of **your students** being tested today will choose the correct answer? %

b. Approximately what percentage of fifth grade students in **your** %

district will choose the correct answer?

2. Consider the following problem from the student assessment:

What is the total number of different factors for the number 24?

- A. 8
- B. 6
- C. 4
- D. 2

The correct answer to this problem is A.

i. Approximately what percentage of **your students** being tested today will choose the correct answer?

%

j. Approximately what percentage of fifth grade students in **your district** will choose the correct answer?

%

3. Consider the following problem from the student assessment:

Jana needs \$120 to buy a new bicycle. She can earn money by walking dogs in her neighborhood. She earns \$3 each time she walks a dog. How many times will Jana have to walk a dog in order to earn \$120?



The correct answer to this problem is 40.

f. Approximately what percentage of **your students** being tested today will choose the correct answer?

%

g. Approximately what percentage of fifth grade students in **your district** will choose the correct answer?

%

4. Consider the following problem from the student assessment:

Jenna knows that she could solve the following multiplication problem using several different methods and still get the correct answer.

$$\begin{array}{r} 49 \\ \times 5 \\ \hline \end{array}$$

Will the following method result in a correct answer for this problem?

Multiply 50 and 5, and then subtract 5.

<p><u>The correct answer to this problem is Yes.</u></p>	
f. Approximately what percentage of <u>your students</u> being tested today will choose the correct answer?	%
g. Approximately what percentage of fifth grade students in <u>your district</u> will choose the correct answer?	%

Jenna knows that she could solve the following multiplication problem using several different methods and still get the correct answer.

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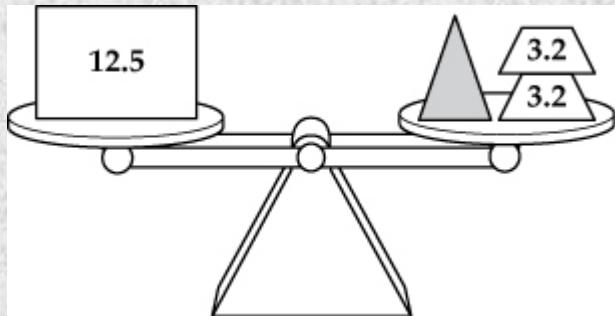
Multiply 9 and 5, then multiply 4 and 5, and then add the two products together.

5. Consider the following problem from the student assessment:

The correct answer to this problem is No.	%
a. Approximately what percentage of <u>your students</u> being tested today will choose the correct answer?	%
b. Approximately what percentage of fifth grade students in <u>your district</u> will choose the correct answer?	%

6. Consider the following problem from the student assessment:

For the question below, shapes are assigned a weight. Identical shapes have the same weight. The scale is balanced so that the total weight on each of the sides is the same.



What is the value of the weight for this shape? 

The correct answer to this problem is 6.1.

f. Approximately what percentage of **your students** being tested today will choose the correct answer?

%

g. Approximately what percentage of fifth grade students in **your district** will choose the correct answer?

%

7. Consider the following problem from the student assessment:

Use the information below to answer the question.

The two fastest times recorded for running a 200-meter race are 19.19 seconds, by Usain Bolt, and 19.32 seconds, by Michael Johnson.



Identify whether the decimal number below is greater than 19.19 and less than 19.32.

19.309

(T) True (F) False

<u>The correct answer to this problem is True.</u>	
f. Approximately what percentage of <u>your students</u> being tested today will choose the correct answer?	%
g. Approximately what percentage of fifth grade students in <u>your district</u> will choose the correct answer?	%

8. Consider the following problem from the student assessment:

Use the information below to answer the question.

The two fastest times recorded for running a 200-meter race are 19.19 seconds, by Usain Bolt, and 19.32 seconds, by Michael Johnson.



Identify whether the decimal number below is greater than 19.19 and less than 19.32.

19.247

(T) True (F) False

The correct answer to this problem is True.

f. Approximately what percentage of **your students** being tested today will choose the correct answer?

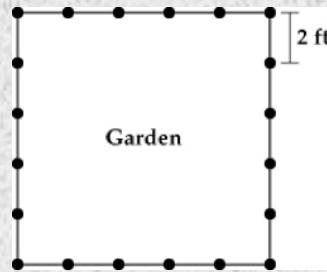
%

g. Approximately what percentage of fifth grade students in **your district** will choose the correct answer?

%

9. Consider the following problem from the student assessment:

Mr. Reyes built a fence to enclose his square garden. He used 20 fence posts and placed them 2 feet apart, as shown below.



Based on this information, which statement must be true?

- E. The length of the garden is greater than the width of the garden.
- F. The width of the garden is greater than the length of the garden.
- G. The value of the perimeter is greater than the value of the area of the garden.
- H. The value of the area is greater than the value of the perimeter of the garden.

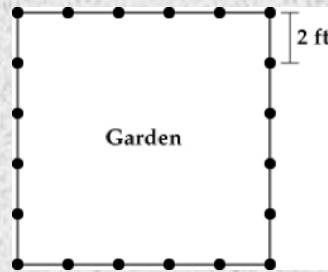
The correct answer to this problem is D.

f. Approximately what percentage of **your students** being tested today will choose the correct answer? %

g. Approximately what percentage of fifth grade students in **your district** will choose the correct answer? %

10. Consider the following problem from the student assessment:

Mr. Reyes built a fence to enclose his square garden. He used 20 fence posts and placed them 2 feet apart, as shown below.



What is the perimeter, in feet, of the garden?

The correct answer to this problem is 40 feet.

- c. Approximately what percentage of **your students** being tested today will choose the correct answer?

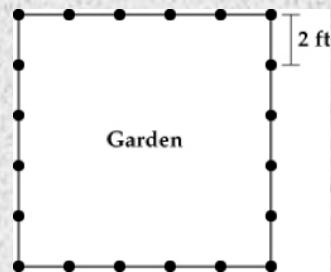
%

- d. Approximately what percentage of fifth grade students in **your district** will choose the correct answer?

%

11. Consider the following problem from the student assessment:

Mr. Reyes built a fence to enclose his square garden. He used 20 fence posts and placed them 2 feet apart, as shown below.



What is the area, in square feet, of the garden?

The correct answer to this problem is 100 square feet.	%
c. Approximately what percentage of your students being tested today will choose the correct answer?	
d. Approximately what percentage of fifth grade students in your district will choose the correct answer?	%

12. Consider the following problem from the student assessment:

Harry has a box of 24 crayons. He shares his crayons with 3 friends so that he and his friends each have 6 crayons. Based on this situation, determine whether the following statement must be true.

Each child now has less than 0.50 of the original number of crayons.

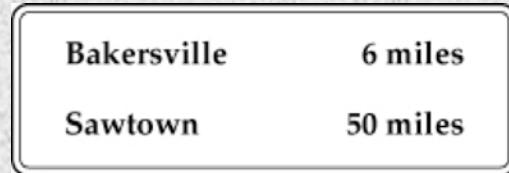
(Y) Yes (N) No

The correct answer to this problem is Yes.	%
c. Approximately what percentage of <u>your students</u> being tested today will choose the correct answer?	%
d. Approximately what percentage of fifth grade students in <u>your district</u> will choose the correct answer?	%

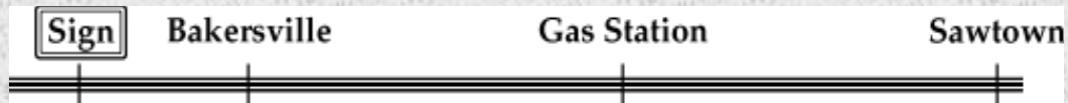
13. Consider the following problem from the student assessment:

Use the following information to answer the question.

Kyle is traveling along a road toward Sawtown and sees the following sign.



A gas station is located halfway between Bakersville and Sawtown as shown on this diagram.



How many miles is it from Bakersville to Sawtown?

The correct answer to this problem is 44 miles.

c. Approximately what percentage of **your students** being tested today will choose the correct answer?

%

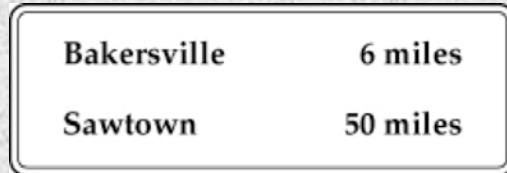
d. Approximately what percentage of fifth grade students in **your district** will choose the correct answer?

%

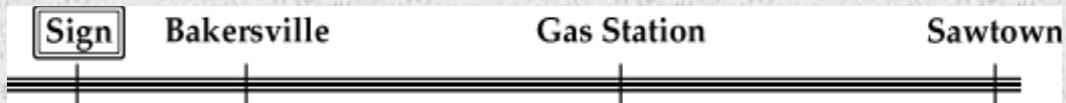
14. Consider the following problem from the student assessment:

Use the following information to answer the question.

Kyle is traveling along a road toward Sawtown and sees the following sign.



A gas station is located halfway between Bakersville and Sawtown as shown on this diagram.



How many miles is it from the sign to the gas station?

The correct answer to this problem is 28 miles.

c. Approximately what percentage of **your students** being tested today will choose the correct answer?

%

d. Approximately what percentage of fifth grade students in **your district** will choose the correct answer?

%

15. Consider the following problem from the student assessment:

For the following question, determine whether the equation is true.

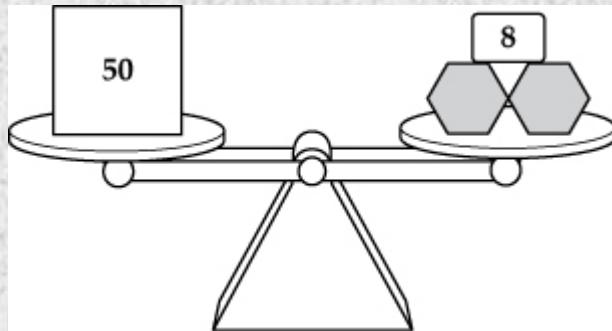
$$1.75 = \frac{7}{4}$$

(Y) Yes (N) No

<u>The correct answer to this problem is Yes.</u>	
c. Approximately what percentage of <u>your students</u> being tested today will choose the correct answer?	%
d. Approximately what percentage of fifth grade students in <u>your district</u> will choose the correct answer?	%

16. Consider the following problem from the student assessment:

For the question below, shapes are assigned a weight. Identical shapes have the same weight. The scale is balanced so that the total weight on each of the sides is the same.



What is the value of the weight for this shape?



The correct answer to this problem is 21.

c. Approximately what percentage of your students being tested today will choose the correct answer?

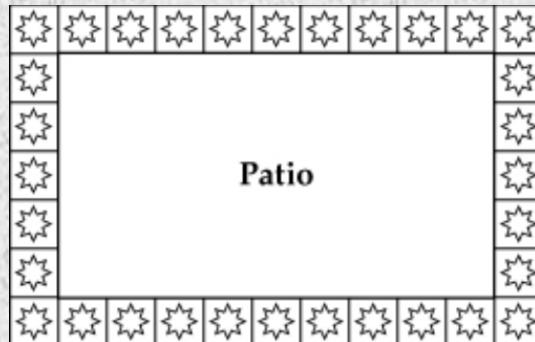
%

d. Approximately what percentage of fifth grade students in your district will choose the correct answer?

%

17. Consider the following problem from the student assessment:

Chloe has a rectangular patio in her backyard. The patio is surrounded by 1-foot-square decorative tiles, as shown in the picture below.



What is the perimeter of Chloe's patio, in feet, not including the decorative tiles?

The correct answer to this problem is 28 feet.

- a. Approximately what percentage of **your students** being tested today will choose the correct answer? %

- b. Approximately what percentage of fifth grade students in **your district** will choose the correct answer? %

Section 2: Your teaching

1. We are interested in the amount of time your students spent on specific mathematical topics this school year. Please indicate how much instruction students experienced on each topic by circling the appropriate quantity below.

Number and Operations

	No coverage of this topic	One or two lessons	Three to five lessons	Six to ten lessons	More than ten lessons
tt) Understanding place value with decimals	1	2	3	4	5
uu) Associative, commutative, and/or distributive properties	1	2	3	4	5
vv) Why standard algorithms work (e.g., multi-digit multiplication, long division)	1	2	3	4	5
ww) Non-standard algorithms for basic operations (e.g., partial product method for multi-digit multiplication)	1	2	3	4	5
xx) Multiple representations of decimals (e.g., on a number line, base 10 blocks)	1	2	3	4	5
yy) Comparing or ordering decimals	1	2	3	4	5
zz) Operations with decimals	1	2	3	4	5
aaa) Representing fractions graphically (e.g., on a number line, with shaded regions of a figure)	1	2	3	4	5
bbb) Meaning of fractions	1	2	3	4	5
ccc) Comparing or ordering fractions	1	2	3	4	5
ddd) Adding and subtracting fractions with like denominators	1	2	3	4	5
eee) Adding and subtracting fractions with unlike denominators	1	2	3	4	5
fff) Multiplying and dividing fractions	1	2	3	4	5
ggg) Converting between decimal form and fraction form	1	2	3	4	5
hhh) Comparing the values of decimals and fractions to each other	1	2	3	4	5

1 cont. We are interested in the amount of time your students spent on specific mathematical topics this school year. Please indicate how much instruction students experienced on each topic by circling the appropriate quantity below.

Algebra

	No coverage of this topic	One or two lessons	Three to five lessons	Six to ten lessons	More than ten lessons
v) The meaning of the equal sign as balancing two quantities	1	2	3	4	5
w) The use of a symbol (e.g., shape or letter) to stand for an unknown number	1	2	3	4	5
x) Recognizing and continuing repeating patterns/sequences, or predicting subsequent terms	1	2	3	4	5
y) Using algebraic notation to represent patterns	1	2	3	4	5
z) Using algebraic equations to represent situations (e.g., in a word problem)	1	2	3	4	5
aa) Determining a general rule (function) from a series of input/output pairs (e.g., in a table or function machine)	1	2	3	4	5
bb) Inverse operations/undoing operations	1	2	3	4	5

1 cont. We are interested in the amount of time your students spent on specific mathematical topics this school year. Please indicate how much instruction students experienced on each topic by circling the appropriate quantity below.

Geometry

	No coverage of this topic	One or two lessons	Three to five lessons	Six to ten lessons	More than ten lessons
y) Measuring angles and finding unknown angles	1	2	3	4	5
z) Recognizing right angles	1	2	3	4	5
aa) Finding the area of 2-dimensional figures	1	2	3	4	5
bb) Finding the perimeter of 2-dimensional figures	1	2	3	4	5
cc) Calculating the area and perimeter of squares and rectangles	1	2	3	4	5
dd) Recognizing, constructing, and classifying quadrilaterals	1	2	3	4	5
ee) Estimating or finding volume	1	2	3	4	5
ff) Identifying regular polygons	1	2	3	4	5

2. Please rate how strongly you agree or disagree with the following statements about teacher leadership in your school.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
ff) Teachers* are recognized as educational experts.	1	2	3	4	5
gg) Teachers are trusted to make sound professional decisions about instruction.	1	2	3	4	5
hh) Teachers are relied upon to make decisions about educational issues.	1	2	3	4	5
ii) Teachers are encouraged to participate in school leadership issues.**	1	2	3	4	5
jj) The faculty has an effective process for making group decisions to solve problems.	1	2	3	4	5
kk) In this school, we take steps to solve problems.	1	2	3	4	5
ll) Teachers are effective leaders in this school.	1	2	3	4	5

*Teachers means a majority of teachers in your school.

**School leadership may include formal roles such as grade team leader, a member of the School Improvement Team, mentor, coach, or leader of a professional learning community, etc.

3. Please rate how strongly you agree or disagree with the following statements about your school.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
y) Teachers are encouraged to share their ideas.	1	2	3	4	5
z) Teachers trust each other.	1	2	3	4	5
aa) Teachers spend considerable time planning together.	1	2	3	4	5
bb) Teachers regularly seek ideas from colleagues.	1	2	3	4	5
cc) Teachers take time to observe each other teaching.	1	2	3	4	5
dd) Teachers value other teachers' ideas.	1	2	3	4	5
ee) Teachers work cooperatively in groups.	1	2	3	4	5
ff) Teachers work together to develop and/or evaluate programs and projects.	1	2	3	4	5

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE!!!

If you have any comments about these questions,
please write them in the space below.

Documentation for Dataset 36095-0009
Student Alternative Math Assessment

NCTE Alternative Math Assessment

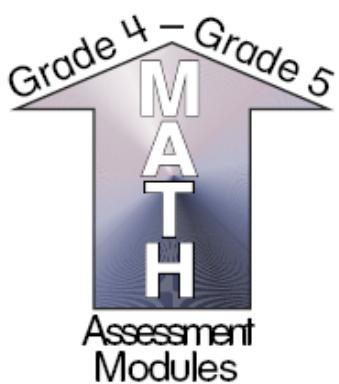
Contents

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5th Grade Assessments

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Grade 4 Form A

Student Name

Teacher Name

Sample 1: What is $37 - 19$?

- A. 18
- B. 22
- C. 46
- D. 56

Sample 2: Identify whether each number sentence is True or False.

- a* $3 \times 4 = 12$ (T) True (F) False
- b* $18 \div 3 = 6$ (T) True (F) False
- c* $4 \times 5 = 9$ (T) True (F) False

Sample 3: What is $10 + 14$?

Sample 4: What decimal number is represented by the phrase "four and five tenths"?

This symbol appears next to questions that require you to fill in your answers on a grid on the Answer Sheet. Directions for completing the Response Grid:

1. Work the problem and find an answer.
2. Write your answer in the answer boxes at the top of the grid.

For whole-number grids:

- Print your answer with the first digit in the answer box all the way to the left, OR with the last digit in the answer box all the way to the right.
- Print only one digit in each answer box. Do NOT leave a blank answer box in the middle of an answer.

For decimal grids:

- Use the decimal point to decide where to start printing your answer.

3. Fill in a bubble under each answer box that you used to write your answer.
 - Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
 - Fill in each bubble by making a solid black mark that completely fills the circle.
 - You MUST fill in the bubbles accurately to receive credit for your answer.



Use the blank space in this Test Booklet to do your work. Then mark your Answer Sheet for the answer you have chosen.

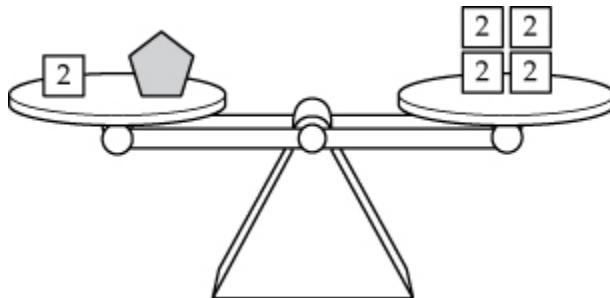
1. What number should go in the \square to make this number sentence true?

$$8 + 4 = \square + 7$$

- A. 19
- B. 12
- C. 5
- D. 4

For questions 2–4, shapes are assigned a weight. Identical shapes have the same weight.

This scale is balanced so that the total weight on each of the sides is the same.



For each statement, determine whether the statement is True or False.

2. $2 + \text{pentagon} = 8$ (T) True (F) False

3. $\text{pentagon} - 2 = 8$ (T) True (F) False

4. $2 + 2 + 2 = \text{pentagon}$ (T) True (F) False

5. The number 3.24 is equal to three and twenty-four —

- A. 1s
- B. 0.1s
- C. 0.01s
- D. 0.001s

Go On ➔

Use the following information to answer questions 6–8.

Karl claims that for each large rectangle, $\frac{1}{4}$ of its total area is shaded. For each of the following rectangles, identify whether Karl's claim is True or False.

6.  (T) True (F) False

7.  (T) True (F) False

8.  (T) True (F) False

9. Look at this set of cards.

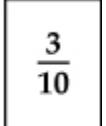
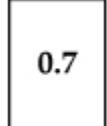
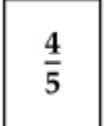
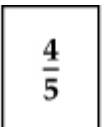
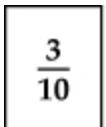
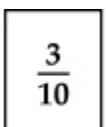
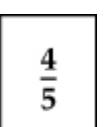
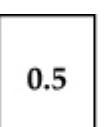
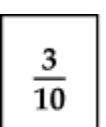
0.5

$\frac{4}{5}$

0.7

$\frac{3}{10}$

Which ordering of the cards lists the numbers from least to greatest value?

- A. 
- B. 
- C. 
- D. 

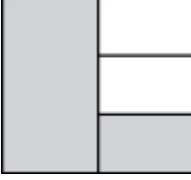
10. What number should go in the \square to make this number sentence true?

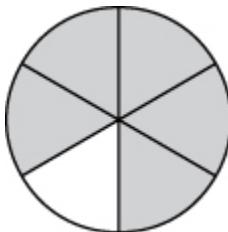
$$174 + (526 + 218) = (174 + 526) + \square$$

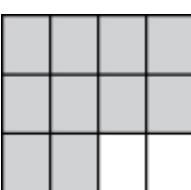
- A. 218
- B. 744
- C. 800
- D. 974

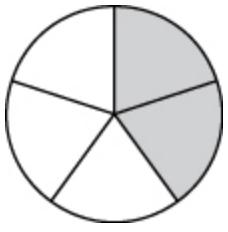
Use the following information to answer questions 11–14.

The shaded regions of each figure below can be represented as a fraction of the whole figure. Decide whether the shading can be represented by $\frac{1}{2} + \frac{1}{3}$ of the whole figure.

11.  (Y) Yes (N) No

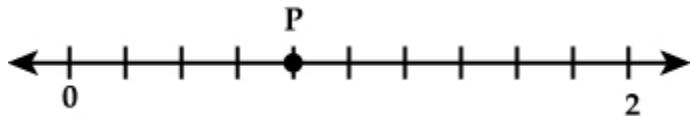
12.  (Y) Yes (N) No

13.  (Y) Yes (N) No

14.  (Y) Yes (N) No



15. Look at the following number line.



What decimal number is represented by point P?



16. What decimal number should go in the _____ to make this number sentence true?

$$1.25 + 6.1 + 3.25 + \underline{\hspace{1cm}} = 12.75$$

Use the following information to answer questions 17–18.

Lin is going to the county fair tonight. His mother gave him \$24 to spend on ride tickets. Tickets for fast rides cost \$3 each, and tickets for slow rides cost \$2 each.



17. Lin plans to spend all of the money his mother gave him on fast-ride tickets. What is the total number of fast-ride tickets that Lin can buy?



18. Which statement could represent the word problem above?

- A. number of fast-ride tickets = 24×3
- B. number of fast-ride tickets = $24 \div 3$
- C. number of fast-ride tickets = 24×2
- D. number of fast-ride tickets = $24 \div 2$

19. represents $\frac{3}{4}$ of a set of circles. Which of the following could represent the whole set of circles?

- A. C.
- B. D.

20. Tom's math assignment was to show his work for the following problem.

What is $\frac{1}{2}$ of 210 ?

The steps he took to solve the problem are shown below. If there is a mistake in his work, mark the letter that matches the Step in which he made his first mistake.
If Tom made no mistake, mark the letter D.

Step 1: $\frac{1}{2}$ of 210 is the same as $\frac{1}{2}$ of 200 + $\frac{1}{2}$ of 10

Step 2: which is $(\frac{1}{2} \times 200) + (\frac{1}{2} \times 10)$

Step 3: Since $(\frac{1}{2} \times 200) = 100$ and $(\frac{1}{2} \times 10) = 5$,
the answer is 100 + 5, or 105

- A. Step 1
B. Step 2
C. Step 3
D. There is no mistake.

21. If $a + b = 5$, what does $18 + b + a$ equal?

- A. 13
B. 23
C. 28
D. 33

Go On ➔

For questions 22–24, identify whether each number sentence is True or False.

22. $4 + 6 = 5 \times 2$ (T) True (F) False
23. $314 + 287 = 314,287$ (T) True (F) False
24. $14 + 119 = 119 + 14$ (T) True (F) False

Use the following information to answer questions 25–27.

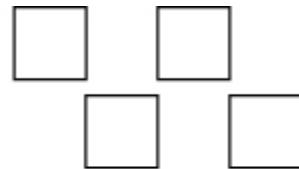
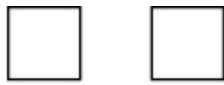


Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

The next figure is made by adding one square to the previous figure, as shown in the first four figures. Complete the table below for the number of corners in Figure 4.

Figure	Total Number of Corners
1	4
2	8
3	12
4	

If the pattern continues this way, determine the total number of corners there will be in Figure 5 and in Figure 20.

25. The total number of corners in Figure 5 will be —

26. The total number of corners in Figure 20 will be —

27. What is the total number of corners in a figure with n squares?

- A. $n + 4$
- B. $n + 20$
- C. $n \times 4$
- D. $n \times 20$

Go On ➔

28. Greg worked the problem shown below. If there is a mistake in his work, mark the letter that matches the Step in which he made his first mistake. If Greg made no mistake, mark the letter D.

	Step 1	Step 2	Step 3
	$\begin{array}{r} 4024 \\ \hline 8 \end{array}$	$\begin{array}{r} 5 \\ 8 \overline{)4024} \\ \underline{-40} \\ \hline 24 \end{array}$	$\begin{array}{r} 53 \\ 8 \overline{)4024} \\ \underline{-40} \\ \hline 24 \\ -24 \\ \hline 0 \end{array}$

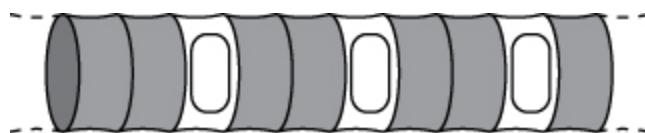
- A. Step 1
B. Step 2
C. Step 3
D. There is no mistake.
29. Kari is playing a number game. Given any number, she uses the following rule to determine her answer.

Multiply the number by itself, and then add 3 times the number.

Which rule below will always produce the same answer as Kari's rule when the same number is used?

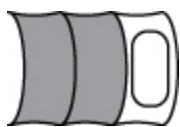
- A. Multiply the number by 3, then add the number, and then add the number again.
B. Multiply the number by 2, and then add the number 3 more times.
C. Add 3 times the number to the number multiplied by itself.
D. Add the number to itself, and then multiply the sum by 3.

The play tunnel shown is made of solid panels  and window panels  that make a pattern. Ten panels of the tunnel are shown.

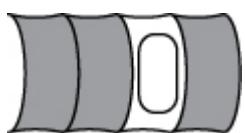


For questions 30–33, determine whether the set of panels shown could represent the repeating pattern of the play tunnel above.

30.  (Y) Yes (N) No

31.  (Y) Yes (N) No

32.  (Y) Yes (N) No

33.  (Y) Yes (N) No

Sections of panels are shown in questions 34–36. Determine whether each section shows the same pattern as the pattern in the play tunnel above.

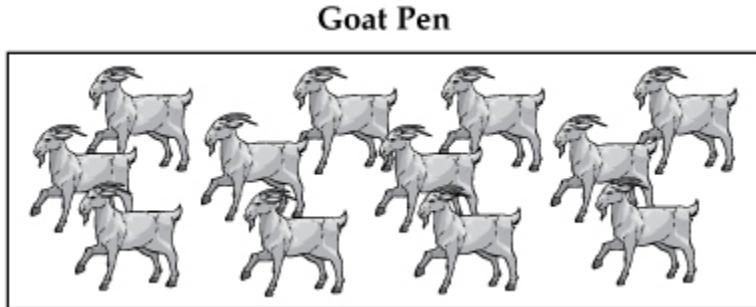
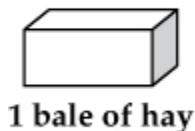
34. ...  ... (Y) Yes (N) No

35. ...  ... (Y) Yes (N) No

36. ...  ... (Y) Yes (N) No

Use the following information to answer questions 37–39.

Farmer Brown has 12 goats in a pen. Each day he places exactly enough bales of hay in the pen to feed all 12 goats with no hay left over.



How many bales of hay should Farmer Brown place in the pen each day to feed his goats if each goat eats the amount shown below in one day? (Answer each question separately.)

37.



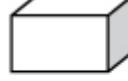
$\frac{1}{2}$ bale of hay

38.



$\frac{1}{4}$ bale of hay

39.



$\frac{3}{4}$ bale of hay

40. Farmer Gray has some goats in a pen. Each day he places exactly enough bales of hay in the pen to feed all his goats with no hay left over. He knows that every goat eats $\frac{2}{3}$ bale of hay. What is the total number of goats that Farmer Gray has if he places 24 bales of hay in the pen each day and no hay is left over?

- A. 12 goats
- B. 16 goats
- C. 24 goats
- D. 36 goats

Determine whether the numbers in each pair are equal.

41. $0.75 = \frac{3}{4}$ (Y) Yes (N) No

42. $1.4 = 1\frac{4}{5}$ (Y) Yes (N) No

Use the following information to answer questions 43–46.

Jenna knows that she could solve the following multiplication problem using several different methods and still get the correct answer.

$$\begin{array}{r} 49 \\ \times 5 \\ \hline \end{array}$$

Which of the following methods would result in a correct answer for this problem?

43. Multiply 50 and 5, and then subtract 5. (Y) Yes (N) No

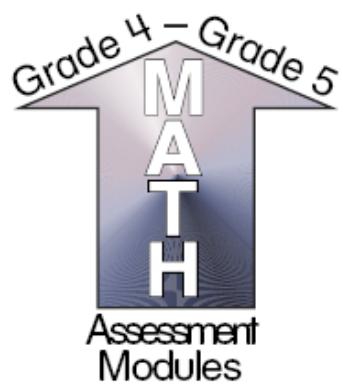
44. Multiply 50 and 5, and then subtract 49. (Y) Yes (N) No

45. Multiply 9 and 5, then multiply 4 and 5, and then add the two products together. (Y) Yes (N) No

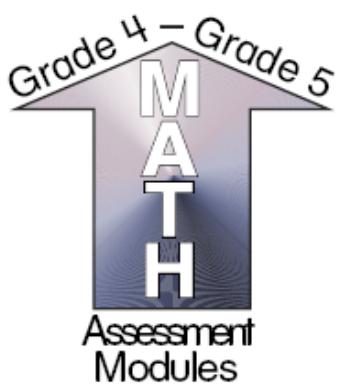
46. Multiply 40 and 5, then multiply 9 and 5, and then add the two products together. (Y) Yes (N) No



Form A



Thank you for participating in this test!



Grade 4 Form B

Student Name

Teacher Name

Sample 1: What is $37 - 19$?

- A. 18
- B. 22
- C. 46
- D. 56

Sample 2: Identify whether each number sentence is True or False.

- a* $3 \times 4 = 12$ (T) True (F) False
- b* $18 \div 3 = 6$ (T) True (F) False
- c* $4 \times 5 = 9$ (T) True (F) False

Sample 3: What is $10 + 14$?

Sample 4: What decimal number is represented by the phrase "four and five tenths"?

This symbol appears next to questions that require you to fill in your answers on a grid on the Answer Sheet. Directions for completing the Response Grid:

1. Work the problem and find an answer.
2. Write your answer in the answer boxes at the top of the grid.

For whole-number grids:

- Print your answer with the first digit in the answer box all the way to the left, OR with the last digit in the answer box all the way to the right.
- Print only one digit in each answer box. Do NOT leave a blank answer box in the middle of an answer.

For decimal grids:

- Use the decimal point to decide where to start printing your answer.

3. Fill in a bubble under each answer box that you used to write your answer.
 - Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
 - Fill in each bubble by making a solid black mark that completely fills the circle.
 - You MUST fill in the bubbles accurately to receive credit for your answer.



Use the blank space in this Test Booklet to do your work. Then mark your Answer Sheet for the answer you have chosen.

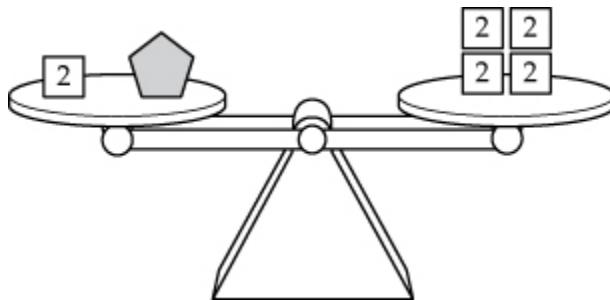
1. What number should go in the \square to make this number sentence true?

$$174 + (526 + 218) = (174 + 526) + \square$$

- A. 218
- B. 744
- C. 800
- D. 974

For questions 2–4, shapes are assigned a weight. Identical shapes have the same weight.

This scale is balanced so that the total weight on each of the sides is the same.



For each statement, determine whether the statement is True or False.

2. $2 + \text{pentagon} = 8$ (T) True (F) False

3. $\text{pentagon} - 2 = 8$ (T) True (F) False

4. $2 + 2 + 2 = \text{pentagon}$ (T) True (F) False

5. The number 3.24 is equal to three and twenty-four —

- A. 1s
- B. 0.1s
- C. 0.01s
- D. 0.001s

Go On ➔

For questions 6–8, the shapes  and  represent different numbers. Without calculating the values, determine whether each statement is True or False.

6. If $235 + 104 = \blacksquare$, then $\blacksquare = 235 + 104$ (T) True (F) False
7. If $340 + 815 = \triangle$, then $815 = 340 + \triangle$ (T) True (F) False
8. If $\blacksquare + 182 = 475$, then $\blacksquare + 475 = 182$ (T) True (F) False
9. Look at this set of cards.

4.603	4.8	4.0997	4.59
-------	-----	--------	------

Which ordering of the cards lists the numbers from least to greatest value?

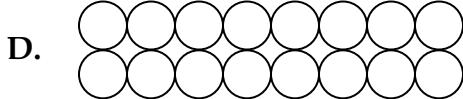
- A.

4.603	4.8	4.0997	4.59
-------	-----	--------	------
- B.

4.8	4.59	4.603	4.0997
-----	------	-------	--------
- C.

4.0997	4.59	4.603	4.8
--------	------	-------	-----
- D.

4.603	4.0997	4.8	4.59
-------	--------	-----	------
10.  represents $\frac{1}{4}$ of a set of circles. Which of the following could represent the whole set of circles?

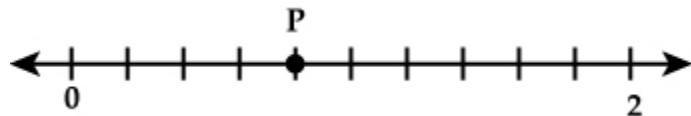


Sometimes it is helpful to name a number in different ways. For example, the number 35 might be renamed as 3 tens + 5 ones. For questions 11–14, identify whether each way to rename the number 492 is correct.

11. 4 hundreds + 92 ones (Y) Yes (N) No
12. 3 hundreds + 19 tens + 20 ones (Y) Yes (N) No
13. 4 hundreds + 9 tens + 20 tenths (Y) Yes (N) No
14. 49 tens + 2 ones (Y) Yes (N) No



15. Look at the following number line.



What decimal number is represented by point P?



16. What decimal number should go in the _____ to make this number sentence true?

$$1.4 + 3.2 + 4 + \underline{\quad} = 9.7$$

Go On ➔

Use the following information to answer questions 17–18.

Lin is going to the county fair tonight. His mother gave him \$24 to spend on ride tickets. Tickets for fast rides cost \$3 each, and tickets for slow rides cost \$2 each.

17. Lin plans to spend all of the money his mother gave him on fast-ride tickets. What is the total number of fast-ride tickets that Lin can buy?

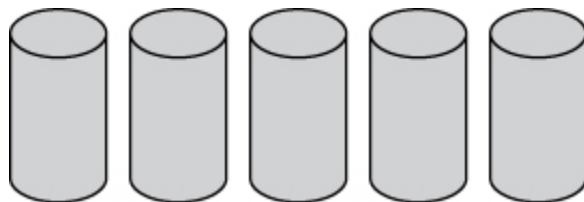


18. Which statement could represent the word problem above?

- A. number of fast-ride tickets = 24×3
- B. number of fast-ride tickets = $24 \div 3$
- C. number of fast-ride tickets = 24×2
- D. number of fast-ride tickets = $24 \div 2$

Use the following information to answer questions 19–21.

Alex has 5 full cans of paint.



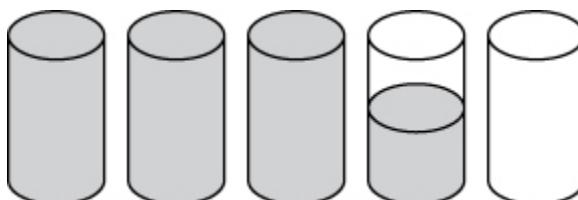
19. If 2 cans of Alex's paint are red, what fraction of his paint is red?

- A. $\frac{2}{3}$
- B. $\frac{2}{5}$
- C. 2
- D. 3

20. If Alex uses $\frac{1}{5}$ of his paint, what fraction of his paint will be left?

- A. 5
- B. 4
- C. $\frac{4}{5}$
- D. $\frac{1}{5}$

21. If Alex uses $1\frac{1}{2}$ cans of his paint on a school project, what fraction of his total amount of paint will be left?

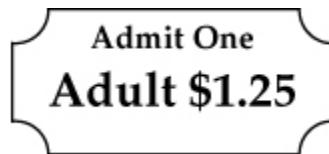
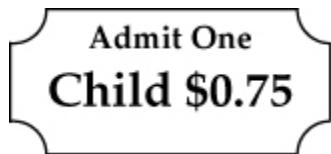


- A. $\frac{4}{10}$
- B. $\frac{3}{5}$
- C. $\frac{7}{10}$
- D. $\frac{4}{5}$

Go On ➔

Use the following information to answer questions 22–25.

Madison is planning to go to the museum. Prices for museum tickets are shown below.



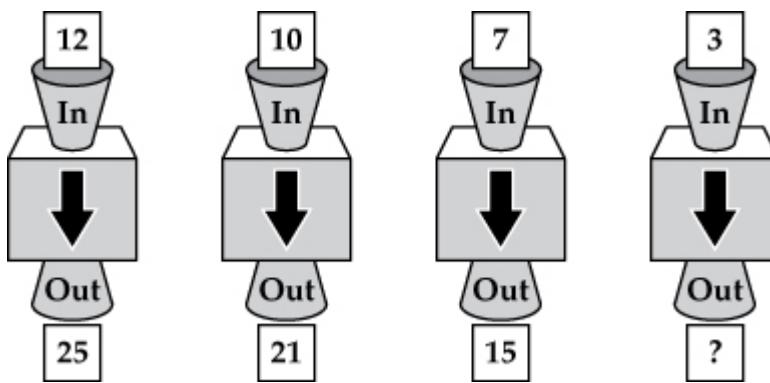
Madison claims that each combination of tickets listed below can be purchased with \$5.00 or less. For each combination, determine whether her claim is True or False.

22. 6 child and 4 adult (T) True (F) False
23. 3 child and 2 adult (T) True (F) False
24. 2 child and 3 adult (T) True (F) False

Madison's mother told her she could invite some friends to go with her to the museum as long as the total cost for tickets is not more than \$6.00. Madison's mother is the only adult going with them to the museum.

25. What is the maximum number of child tickets that Madison's mother can buy after purchasing one adult ticket using her \$6.00?

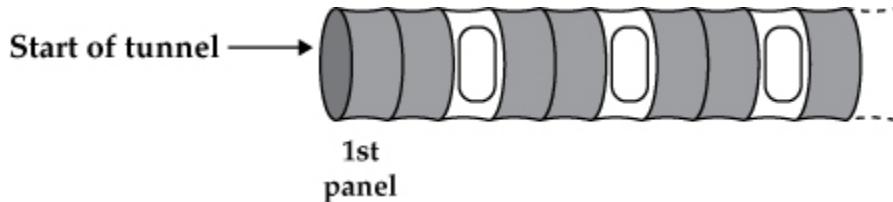
26. A number machine applies the same rule to all numbers that are put into it. The picture below shows the numbers that came out of this number machine after three different numbers were put into it and the rule was applied.



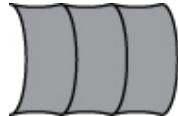
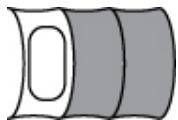
What number should come out of this machine when 3 is put in?

Go On ➔

A play tunnel is made by repeating groups of three panels using solid panels  and window panels  as described in the picture below. The picture shows the first ten panels of the tunnel.



27. Which picture shows the next three panels that would continue the pattern in this tunnel?

- A. 
- B. 
- C. 
- D. 

28. Greg worked the problem shown below. If there is a mistake in his work, mark the letter that matches the Step in which he made his first mistake. If Greg made no mistake, mark the letter D.

$$8 \overline{)4024}$$

Step 1

$$\begin{array}{r} 5 \\ 8 \overline{)4024} \\ \underline{-40} \\ \hline 24 \end{array}$$

Step 2

$$\begin{array}{r} 53 \\ 8 \overline{)4024} \\ \underline{-40} \\ \hline 24 \\ \underline{24} \\ \hline 0 \end{array}$$

Step 3

$$\begin{array}{r} 530 \\ 8 \overline{)4024} \\ \underline{-40} \\ \hline 24 \\ \underline{-24} \\ \hline 0 \end{array}$$

- A. Step 1
B. Step 2
C. Step 3
D. There is no mistake.
29. Kari is playing a number game. Given any number, she uses the following rule to determine her answer.

Multiply the number by itself, and then add 3 times the number.

Which rule below will always produce the same answer as Kari's rule when the same number is used?

- A. Multiply the number by 3, then add the number, and then add the number again.
B. Multiply the number by 2, and then add the number 3 more times.
C. Add 3 times the number to the number multiplied by itself.
D. Add the number to itself, and then multiply the sum by 3.

For questions 30–32, identify whether each statement is true for all numbers, b .

30. $20 \times (5 \times b) = (20 \times 5) \times b$ (Y) Yes (N) No
31. $20 + (5 \times b) = (20 + 5) \times b$ (Y) Yes (N) No
32. $20 + (5 + b) = (20 + 5) + b$ (Y) Yes (N) No

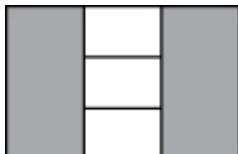
For questions 33–36, state whether or not each figure has $\frac{2}{5}$ of its whole shaded.

33.



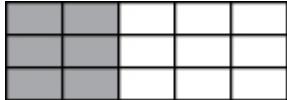
(Y) Yes (N) No

34.



(Y) Yes (N) No

35.



(Y) Yes (N) No

36.



(Y) Yes (N) No

Use the following information to answer questions 37–40.

Carly, Brian, and Juan all have some pennies.

- Carly has p pennies.
- Brian has 9 more pennies than Carly.
- Juan has 4 more pennies than Carly.

37.

If $p = 8$, how many pennies does Brian have?

38.

If Brian has 20 pennies, what number is represented by p ?

39.

If Juan has 25 pennies, how many pennies does Brian have?

40. Which expression represents the number of pennies that Carly, Brian, and Juan have all together?

- A. $13 \times p$
- B. $94 \times p$
- C. $p + 13$
- D. $p + (p + 9) + (p + 4)$

Determine whether the numbers in each pair are equal.

41. $0.56 = \frac{5}{6}$ (Y) Yes (N) No

42. $1.6 = 1\frac{3}{5}$ (Y) Yes (N) No

Use the following information to answer questions 43–46.

Jenna knows that she could solve the following multiplication problem using several different methods and still get the correct answer.

$$\begin{array}{r} 49 \\ \times 5 \\ \hline \end{array}$$

Which of the following methods would result in a correct answer for this problem?

43. Multiply 50 and 5, and then subtract 5. (Y) Yes (N) No

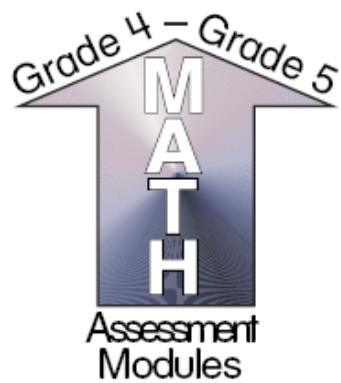
44. Multiply 50 and 5, and then subtract 49. (Y) Yes (N) No

45. Multiply 9 and 5, then multiply 4 and 5, and then add the two products together. (Y) Yes (N) No

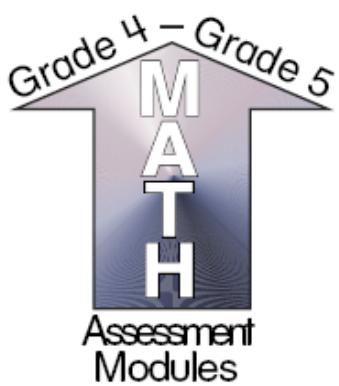
46. Multiply 40 and 5, then multiply 9 and 5, and then add the two products together. (Y) Yes (N) No



Form B



Thank you for participating in this test!



Grade 5 Form C

Student Name _____

Teacher Name _____

Sample 1: What is $37 - 19$?

- A. 18
- B. 22
- C. 46
- D. 56

Sample 2: Identify whether each number sentence is True or False.

- a* $3 \times 4 = 12$ (T) True (F) False
- b* $18 \div 3 = 6$ (T) True (F) False
- c* $4 \times 5 = 9$ (T) True (F) False

Sample 3: What is $10 + 14$?

Sample 4: What decimal number is represented by the phrase "four and five tenths"?

This symbol appears next to questions that require you to fill in your answers on a grid on the Answer Sheet. Directions for completing the Response Grid:

1. Work the problem and find an answer.
2. Write your answer in the answer boxes at the top of the grid.

For whole-number grids:

- Print your answer with the first digit in the answer box all the way to the left, OR with the last digit in the answer box all the way to the right.
- Print only one digit in each answer box. Do NOT leave a blank answer box in the middle of an answer.

For decimal grids:

- Use the decimal point to decide where to start printing your answer.

3. Fill in a bubble under each answer box that you used to write your answer.
 - Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
 - Fill in each bubble by making a solid black mark that completely fills the circle.
 - You MUST fill in the bubbles accurately to receive credit for your answer.



Use the blank space in this Test Booklet to do your work. Then mark your Answer Sheet for the answer you have chosen.

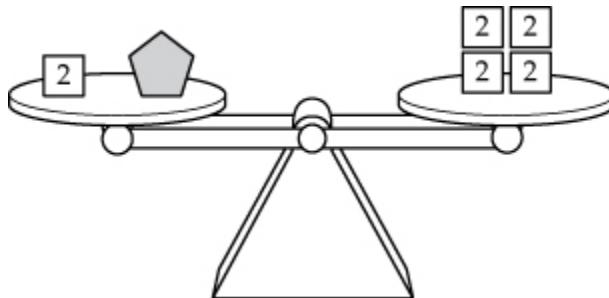
1. What number should go in the \square to make this number sentence true?

$$5 + 4 + 7 = \square + 7$$

- A. 7
- B. 9
- C. 16
- D. 23

For questions 2–4, shapes are assigned a weight. Identical shapes have the same weight.

This scale is balanced so that the total weight on each of the sides is the same.



For each statement, determine whether the statement is True or False.

2. $2 + \text{pentagon} = 8$ (T) True (F) False

3. $\text{pentagon} - 2 = 8$ (T) True (F) False

4. $2 + 2 + 2 = \text{pentagon}$ (T) True (F) False

5. The number 3.24 is equal to three and twenty-four —

- A. 1s
- B. 0.1s
- C. 0.01s
- D. 0.001s

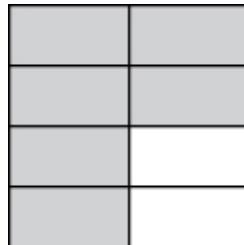
Go On ➔

Sometimes it is helpful to name a number in different ways. For example, the number 35 might be renamed as 3 tens + 5 ones. For questions 6–9, identify whether each way to rename the number 6,184 is correct.

- | | | | |
|----|---|---------|--------|
| 6. | 61 hundreds + 84 ones | (Y) Yes | (N) No |
| 7. | 6 thousands + 8 tens + 4 ones | (Y) Yes | (N) No |
| 8. | 61 hundreds + 8 tens + 40 tenths | (Y) Yes | (N) No |
| 9. | 6 thousands + 1 hundred + 8 tens + 4 ones | (Y) Yes | (N) No |

Use the following information to answer questions 10–12.

The shaded rectangles represent a fraction of the whole model shown below.



Tory claims that all of the following expressions equal the fraction modeled above. For each expression, identify whether Tory's claim is True or False.

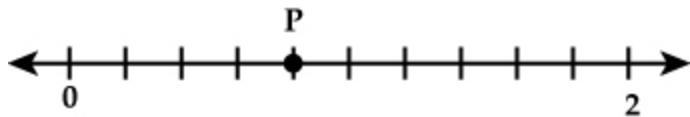
- | | | | |
|-----|-----------------------------|----------|-----------|
| 10. | $\frac{1}{2} + \frac{2}{4}$ | (T) True | (F) False |
| 11. | $\frac{5}{8} + \frac{1}{8}$ | (T) True | (F) False |
| 12. | $\frac{1}{2} + \frac{1}{4}$ | (T) True | (F) False |

- 13.** Which situation below can be represented by $30 - n = 6$?
- A. Carter had 30 crayons. He gave some crayons to his sister, leaving him only 6 crayons. How many crayons did Carter give his sister?
 - B. Carter had 30 crayons. This amount was 6 times as many crayons as his friend had. How many crayons did his friend have?
 - C. Carter had 30 crayons. He received 6 more crayons from his brother. How many crayons did Carter have then?
 - D. Carter had 30 crayons. He shared them equally among 6 friends. How many crayons did each friend get?

- 14.**  represents $\frac{2}{5}$ of a set of circles. Which of the following could represent the whole set of circles?



-  **15.** Look at the following number line.



What decimal number is represented by point P?

-  **16.** What decimal number should go in the _____ to make this number sentence true?

$$0.080 + 0.114 + 0.306 + \underline{\quad} = 3.8$$

Go On ➔

Use the following information to answer questions 17–18.

Lin is going to the county fair tonight. His mother gave him \$24 to spend on ride tickets. Tickets for fast rides cost \$3 each, and tickets for slow rides cost \$2 each.

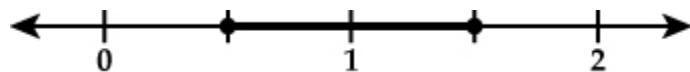
17. Lin plans to spend all of the money his mother gave him on fast-ride tickets. What is the total number of fast-ride tickets that Lin can buy?



18. Which statement could represent the word problem above?

- A. number of fast-ride tickets = 24×3
- B. number of fast-ride tickets = $24 \div 3$
- C. number of fast-ride tickets = 24×2
- D. number of fast-ride tickets = $24 \div 2$

19. Look at the range of numbers graphed on this number line.



When plotted on the number line, which value would not lie within the range of numbers graphed on this number line?

- A. $\frac{7}{6}$
- B. 0.12
- C. $\frac{4}{5}$
- D. 1.35

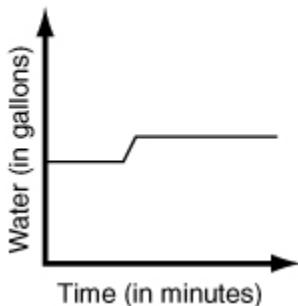
For questions 20–23, think about gallons of water in a bathtub. Tim can turn the faucet on to add water to the tub, and he can open the drain to let water out.



The graphs below show the amount of water in the bathtub over time. Each graph has a description that best matches the graph. Match each description with its graph by marking the correct letter (A, B, C, D) on your Answer Sheet for each graph (20, 21, 22, 23).

Water in a Bathtub

20.

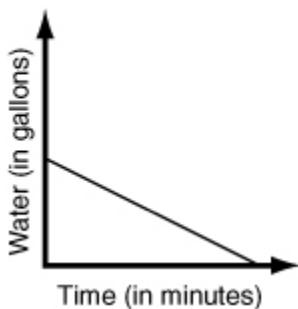


A.

- Tim turned the faucet on to add water to the bathtub at a constant rate.

Water in a Bathtub

21.

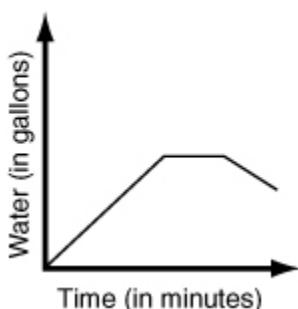


B.

- Tim filled the bathtub with water and turned off the faucet. After a couple minutes, he decided the tub was too full. He opened the drain to let some water out of the tub.

Water in a Bathtub

22.

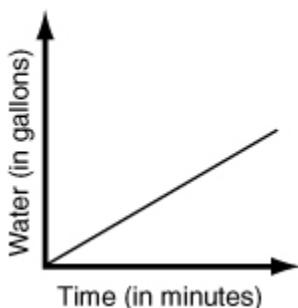


C.

- Tim's mother had already put water into the bathtub for Tim's bath. Once Tim stepped in the tub, he decided the water was too cool. He then turned on the faucet for one minute to add more hot water.

Water in a Bathtub

23.



D.

- Tim opened the drain to empty all the water from the bathtub at a constant rate.

Go On ➔

Use the following information to answer questions 24–25.

Dex plays a number game. You give him a number and he —

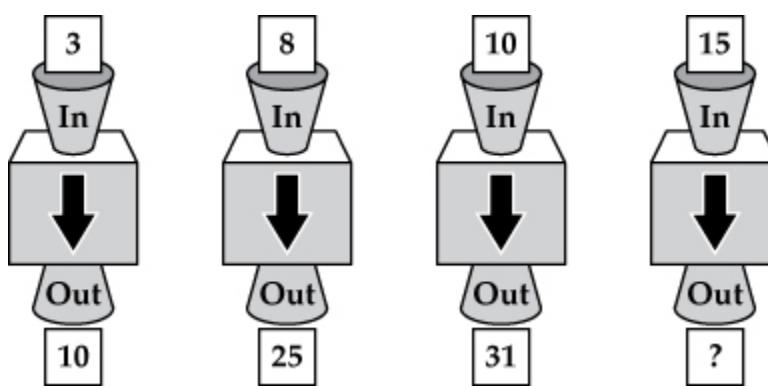
- doubles the number
- adds 6 to that answer
- subtracts 3 from that answer.

Dex then reports what he gets as the result of these three actions.

 24. If you give Dex the number 10, what should he report as the result?

 25. What number should you give Dex so that he reports 35 as the result?

 26. A number machine applies the same rule to all numbers that are put into it. The picture below shows the numbers that came out of this number machine after three different numbers were put into it and the rule was applied.



What number should come out of this machine when 15 is put in?

Go On ➔

27. Greg worked the problem shown below. If there is a mistake in his work, mark the letter that matches the Step in which he made his first mistake. If Greg made no mistake, mark the letter D.

Step 1	Step 2	Step 3
$\begin{array}{r} 4024 \\ \hline 8 \end{array}$	$\begin{array}{r} 5 \\ 8 \end{array} \begin{array}{r} 4024 \\ -40 \\ \hline 24 \end{array}$	$\begin{array}{r} 53 \\ 8 \end{array} \begin{array}{r} 4024 \\ -40 \\ \hline 24 \\ -24 \\ \hline 0 \end{array}$

- A. Step 1
B. Step 2
C. Step 3
D. There is no mistake.
28. Kari is playing a number game. Given any number, she uses the following rule to determine her answer.

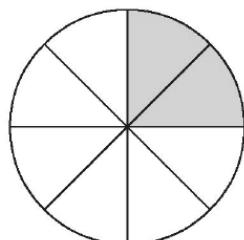
Multiply the number by itself, and then add 3 times the number.

Which rule below will always produce the same answer as Kari's rule when the same number is used?

- A. Multiply the number by 3, then add the number, and then add the number again.
B. Multiply the number by 2, and then add the number 3 more times.
C. Add 3 times the number to the number multiplied by itself.
D. Add the number to itself, and then multiply the sum by 3.

Use the following information to answer questions 29–33.

This circle is shaded to represent a fraction of the whole circle.



Determine whether each fraction or decimal below could represent the shaded portion of the circle.

29. $\frac{2}{6}$ (Y) Yes (N) No

30. $\frac{2}{8}$ (Y) Yes (N) No

31. $\frac{1}{4}$ (Y) Yes (N) No

32. 0.20 (Y) Yes (N) No

33. 0.25 (Y) Yes (N) No

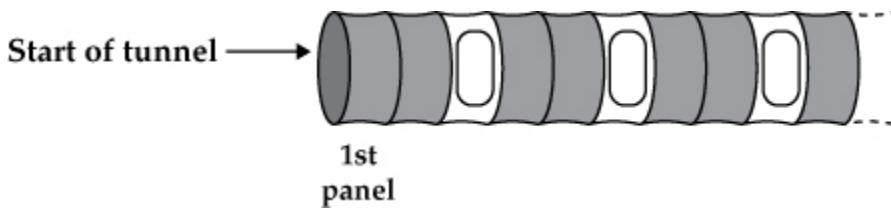
Determine whether the numbers in each pair are equal.

34. $3.25 = \frac{3}{25}$ (Y) Yes (N) No

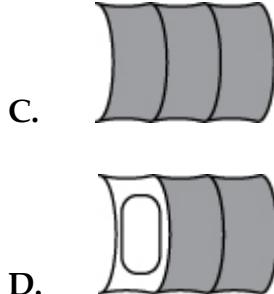
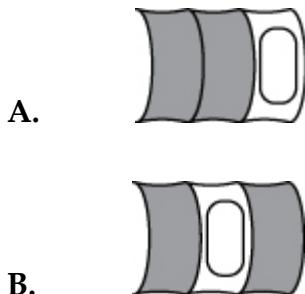
35. $1.75 = \frac{7}{4}$ (Y) Yes (N) No

Use the following information to answer questions 36–39.

A play tunnel is made by repeating groups of three panels using solid panels  and window panels  as described in the picture below. The picture shows the first ten panels of the tunnel.



36. Which section of panels below continues the pattern in this tunnel for the 11th through 13th panels?



For each of the following patterns, determine whether it shows the same pattern as the play tunnel above.

37. G G R G G R G G R G . . . (Y) Yes (N) No

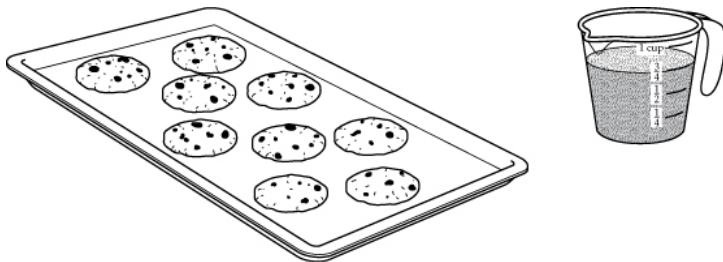
38. ○ ● ● ○ ● ● ○ ● ● . . . (Y) Yes (N) No

39. □ □ ○ □ □ □ ○ □ □ □ ○ . . . (Y) Yes (N) No

Go On ➔

Use the following information to answer questions 40–42.

Sarah is making cookies for a bake sale at school. She needs $\frac{3}{4}$ cup of sugar for each batch of cookies.



What is the total number of cups of sugar she needs to make the following?

40. 8 batches of cookies

41. 12 batches of cookies

42. Sarah used exactly $2\frac{1}{4}$ cups of sugar to make cookies. What is the total number of batches of cookies that she made?

Use the following information to answer questions 43–46.

Jenna knows that she could solve the following multiplication problem using several different methods and still get the correct answer.

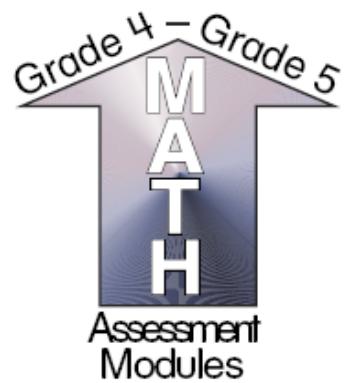
$$\begin{array}{r} 49 \\ \times 5 \\ \hline \end{array}$$

Which of the following methods would result in a correct answer for this problem?

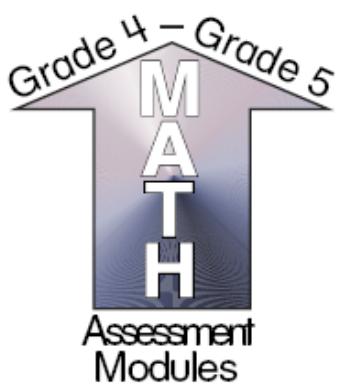
43. Multiply 50 and 5, and then subtract 5. (Y) Yes (N) No
44. Multiply 50 and 5, and then subtract 49. (Y) Yes (N) No
45. Multiply 9 and 5, then multiply 4 and 5, and then add the two products together. (Y) Yes (N) No
46. Multiply 40 and 5, then multiply 9 and 5, and then add the two products together. (Y) Yes (N) No



Form C



Thank you for participating in this test!



Grade 5 Form D

Student Name _____

Teacher Name _____

Sample 1: What is $37 - 19$?

- A. 18
- B. 22
- C. 46
- D. 56

Sample 2: Identify whether each number sentence is True or False.

- a* $3 \times 4 = 12$ (T) True (F) False
- b* $18 \div 3 = 6$ (T) True (F) False
- c* $4 \times 5 = 9$ (T) True (F) False

 **Sample 3:** What is $10 + 14$?

 **Sample 4:** What decimal number is represented by the phrase "four and five tenths"?

 This symbol appears next to questions that require you to fill in your answers on a grid on the Answer Sheet. Directions for completing the Response Grid:

1. Work the problem and find an answer.
2. Write your answer in the answer boxes at the top of the grid.

For whole-number grids:

- Print your answer with the first digit in the answer box all the way to the left, OR with the last digit in the answer box all the way to the right.
- Print only one digit in each answer box. Do NOT leave a blank answer box in the middle of an answer.

For decimal grids:

- Use the decimal point to decide where to start printing your answer.

3. Fill in a bubble under each answer box that you used to write your answer.
 - Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
 - Fill in each bubble by making a solid black mark that completely fills the circle.
 - You MUST fill in the bubbles accurately to receive credit for your answer.



Use the blank space in this Test Booklet to do your work. Then mark your Answer Sheet for the answer you have chosen.

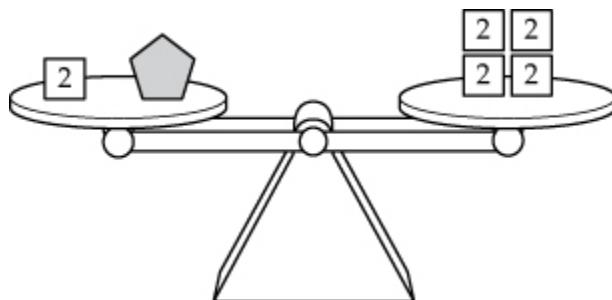
1. What number should fill in the _____ to make this number sentence true?

$$6 + 3 + 7 = \underline{\hspace{1cm}} + 7$$

- A. 3
- B. 9
- C. 16
- D. 23

For questions 2–4, shapes are assigned a weight. Identical shapes have the same weight.

This scale is balanced so that the total weight on each of the sides is the same.



For each statement, determine whether the statement is True or False.

2. $2 + \text{pentagon} = 8$ (T) True (F) False

3. $\text{pentagon} - 2 = 8$ (T) True (F) False

4. $2 + 2 + 2 = \text{pentagon}$ (T) True (F) False

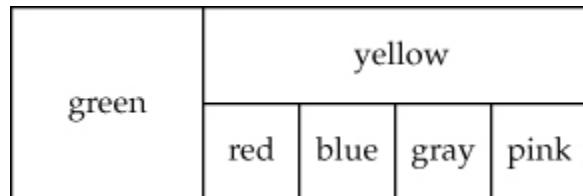
5. The number 3.24 is equal to three and twenty-four —

- A. 1s
- B. 0.1s
- C. 0.01s
- D. 0.001s

Go On ➔

Use the following information to answer questions 6–9.

Roberto drew a rectangle and divided it into 6 smaller rectangles, as shown below.



Based on this diagram, determine whether each statement appears to be true.

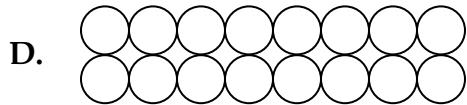
6. The red section plus the blue section is the same size as the green section. (Y) Yes (N) No
7. The yellow section is the same size as the green section. (Y) Yes (N) No
8. The pink section is $\frac{1}{6}$ of Roberto's original rectangle. (Y) Yes (N) No
9. The green section is $\frac{1}{3}$ of Roberto's original rectangle. (Y) Yes (N) No

For questions 10–12, identify whether each statement is True or False for all numbers, b .

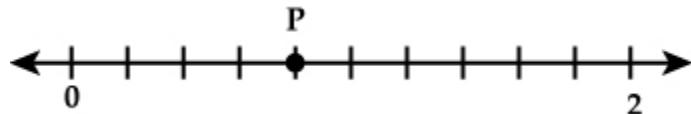
10. If $10 + (6 + b) = 30$, then $(10 + 6) + b = 30$ (T) True (F) False
11. If $10 \times (6 - b) = 30$, then $(10 \times 6) - b = 30$ (T) True (F) False
12. If $10 \cdot (6 \cdot b) = 30$, then $(10 \cdot 6) \cdot b = 30$ (T) True (F) False
13. Kylie makes necklaces. The number of beads she needs for each necklace is represented by b . Which expression represents the number of beads she needs to make 5 necklaces?

- A. $5 \times b$
- B. $5 + b$
- C. $b \div 5$
- D. $b - 5$

14. represents $\frac{1}{4}$ of a set of circles. Which of the following could represent the whole set of circles?



15. Look at the following number line.



What decimal number is represented by point P?

16. What decimal number should go in the _____ to make this number sentence true?

$$1.2 + 3.98 + 0.02 + \underline{\hspace{1cm}} = 7.4$$

Use the following information to answer questions 17–18.

Lin is going to the county fair tonight. His mother gave him \$24 to spend on ride tickets. Tickets for fast rides cost \$3 each, and tickets for slow rides cost \$2 each.

17. Lin plans to spend all of the money his mother gave him on fast-ride tickets. What is the total number of fast-ride tickets that Lin can buy?



18. Which statement could represent the word problem above?

- A. number of fast-ride tickets = 24×3
- B. number of fast-ride tickets = $24 \div 3$
- C. number of fast-ride tickets = 24×2
- D. number of fast-ride tickets = $24 \div 2$

19. Jackie solved a multiplication problem as shown below. There are errors in her work.

2	Row 1
35	
x 14	
140	Row 2
+ 55	Row 3
195	Row 4

In which row is an error first recorded?

- A. Row 1
- B. Row 2
- C. Row 3
- D. Row 4

20. If $a + b = 5$, what does $18 + b + a$ equal?

- A. 13
- B. 23
- C. 28
- D. 33

Go On ➔

21. Gabe's math assignment was to show his work for the following problem.

What is $\frac{1}{4}$ of 244?

The steps he took to solve the problem are shown below. If there is a mistake in his work, mark the letter that matches the Step in which he made his first mistake.

If Gabe made no mistake, mark the letter D.

Step 1: $\frac{1}{4}$ of 244 is the same as $\frac{1}{4}$ of 200 + $\frac{1}{4}$ of 44

Step 2: which is $(\frac{1}{4} \times 200) + (\frac{1}{4} \times 44)$

Step 3: Since $(\frac{1}{4} \times 200) = 50$ and $(\frac{1}{4} \times 44) = 11$,
the answer is 50 + 11, or 61

- A. Step 1
- B. Step 2
- C. Step 3
- D. There is no mistake.

22. At the red table, 7 children will share 3 bottles of paint equally. At the blue table, 3 children will share 1 bottle of paint equally. Who has more paint to use and why?

A child at the —

- A. red table because $\frac{3}{7} > \frac{1}{3}$
- B. red table because $\frac{3}{7} < \frac{1}{3}$
- C. blue table because $\frac{3}{7} > \frac{1}{3}$
- D. blue table because $\frac{3}{7} < \frac{1}{3}$

Go On ➔

23. Look at this set of cards.

4.603	4.8	4.0997	4.59
-------	-----	--------	------

Which ordering of the cards lists the numbers from least to greatest value?

- A.

4.603	4.8	4.0997	4.59
-------	-----	--------	------
- B.

4.8	4.59	4.603	4.0997
-----	------	-------	--------
- C.

4.0997	4.59	4.603	4.8
--------	------	-------	-----
- D.

4.603	4.0997	4.8	4.59
-------	--------	-----	------

Use the following information to answer questions 24–25.

Dex plays a number game. You give him a number and he —

- doubles the number
- adds 6 to that answer
- subtracts 3 from that answer.

Dex then reports what he gets as the result of these three actions.

-  24. If you give Dex the number 10, what should he report as the result?

-  25. What number should you give Dex so that he reports 35 as the result?



26. Jana needs \$120 to buy a new bicycle. She can earn money by walking dogs in her neighborhood. She earns \$3 each time she walks a dog.

How many times will Jana have to walk a dog in order to earn \$120?



27. Greg worked the problem shown below. If there is a mistake in his work, mark the letter that matches the Step in which he made his first mistake. If Greg made no mistake, mark the letter D.

$$8 \overline{)4024}$$

Step 1

$$\begin{array}{r} 5 \\ 8 \overline{)4024} \\ \underline{-40} \\ \hline 24 \end{array}$$

Step 2

$$\begin{array}{r} 53 \\ 8 \overline{)4024} \\ \underline{-40} \\ \hline 24 \\ \underline{24} \\ \hline 0 \end{array}$$

Step 3

$$\begin{array}{r} 530 \\ 8 \overline{)4024} \\ \underline{-40} \\ \hline 24 \\ \underline{-24} \\ \hline 0 \end{array}$$

- A. Step 1
- B. Step 2
- C. Step 3
- D. There is no mistake.

28. Kari is playing a number game. Given any number, she uses the following rule to determine her answer.

Multiply the number by itself, and then add 3 times the number.

Which rule below will always produce the same answer as Kari's rule when the same number is used?

- A. Multiply the number by 3, then add the number, and then add the number again.
- B. Multiply the number by 2, and then add the number 3 more times.
- C. Add 3 times the number to the number multiplied by itself.
- D. Add the number to itself, and then multiply the sum by 3.

Use the following information to answer questions 29–33.

Harry has a box of 24 crayons. He shares his crayons with 3 friends so that he and his friends each have 6 crayons. Based on this situation, determine whether each of the following statements must be true.

29. Each child now has more than $\frac{1}{2}$ of the original number of crayons.

(Y) Yes (N) No

30. Each child now has exactly $\frac{1}{6}$ of the original number of crayons.

(Y) Yes (N) No

31. Each child now has more than 0.75 of the original number of crayons.

(Y) Yes (N) No

32. Each child now has less than 0.50 of the original number of crayons.

(Y) Yes (N) No

33. Each child now has exactly $\frac{1}{4}$ of the original number of crayons.

(Y) Yes (N) No

Determine whether the numbers in each pair are equal.

34. $0.56 = \frac{5}{6}$ (Y) Yes (N) No

35. $1.6 = 1\frac{3}{5}$ (Y) Yes (N) No

36. José applies a rule to all the numbers in column A to get all the numbers in column B. He completes column B by applying this same rule to 10 and 20.

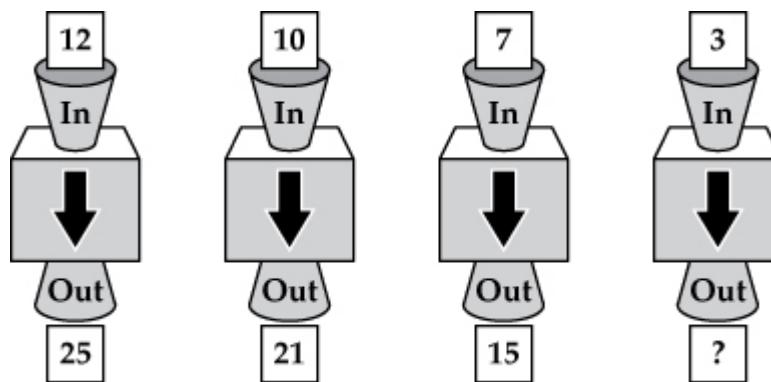
<i>A</i>	<i>B</i>
3	12
4	16
6	24
10	
20	

Which of the following could be the rule that José uses?

- A. Divide the number in column A by 4.
 - B. Multiply the number in column A by 4.
 - C. Subtract 9 from the number in column A.
 - D. Add 9 to the number in column A.

In the expression $4n + 3$, determine whether the n can stand for —

-  40. A number machine applies the same rule to all numbers that are put into it. The picture below shows the numbers that came out of this number machine after three different numbers were put into it and the rule was applied.



What number should come out of this machine when 3 is put in?

Use the following information to answer questions 41–42.

Mrs. Jones has some craft sticks for her students to use for an art project.
The following statements apply to these craft sticks.



1 bundle of
craft sticks

- There are 10 bundles of craft sticks.
- Each bundle has 12 craft sticks in it.
- The sticks must be shared equally among students who want to use them.

41. Exactly how many sticks can each student use if only 4 students want to use them?

42. What is the greatest number of students that can use these craft sticks if each student receives $\frac{3}{4}$ of a bundle of craft sticks?



Use the following information to answer questions 43–46.

Jenna knows that she could solve the following multiplication problem using several different methods and still get the correct answer.

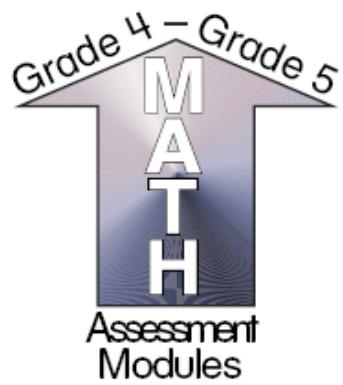
$$\begin{array}{r} 49 \\ \times 5 \\ \hline \end{array}$$

Which of the following methods would result in a correct answer for this problem?

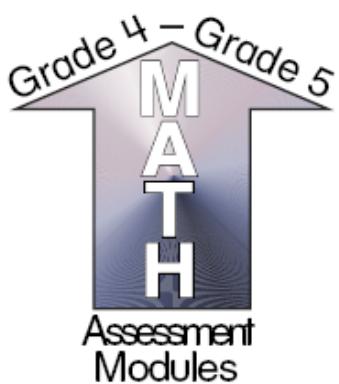
43. Multiply 50 and 5, and then subtract 5. (Y) Yes (N) No
44. Multiply 50 and 5, and then subtract 49. (Y) Yes (N) No
45. Multiply 9 and 5, then multiply 4 and 5, and then add the two products together. (Y) Yes (N) No
46. Multiply 40 and 5, then multiply 9 and 5, and then add the two products together. (Y) Yes (N) No



Form D



Thank you for participating in this test!



Grade 4 Form F

Student Name

Teacher Name

Sample 1: Exactly how many sides does a triangle have?

- A. 2
- B. 3
- C. 4
- D. 5

Sample 2: Identify whether each number sentence is True or False.

- a* $3 \times 4 = 12$ (T) True (F) False
- b* $18 \div 3 = 6$ (T) True (F) False
- c* $4 \times 5 = 9$ (T) True (F) False

Sample 3: What is $10 + 14$?

Sample 4: What number is represented by the phrase “four hundred twenty-five”?

This symbol appears next to questions that require you to fill in your answers on a grid on the Answer Sheet. Directions for completing the Response Grid:

1. Work the problem and find an answer.
2. Write your answer in the answer boxes at the top of the grid.
 - Print your answer with the first digit in the answer box all the way to the left, OR with the last digit in the answer box all the way to the right.
 - Print only one digit in each answer box. Do NOT leave a blank answer box in the middle of an answer.
3. Fill in a bubble under each answer box that you used to write your answer.
 - Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
 - Fill in each bubble by making a solid black mark that completely fills the circle.
 - You MUST fill in the bubbles accurately to receive credit for your answer.

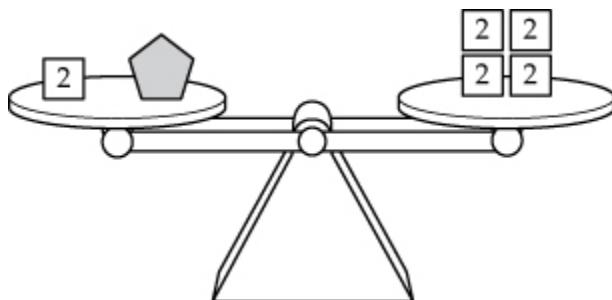
Use the blank space in this Test Booklet to do your work. Then mark your Answer Sheet for the answer you have chosen.

1. What number should go in the \square to make this number sentence true?

$$8 + 4 = \square + 7$$

- A. 19
- B. 12
- C. 5
- D. 4

For numbers 2–4, shapes are assigned a weight. Identical shapes have the same weight. This scale is balanced so that the total weight on each of the sides is the same.



For each statement, determine whether the statement is True or False.

2. $2 + \text{pentagon} = 8$ (T) True (F) False
3. $\text{pentagon} - 2 = 8$ (T) True (F) False
4. $2 + 2 + 2 = \text{pentagon}$ (T) True (F) False

5. The number 3.24 is equal to three and twenty-four —

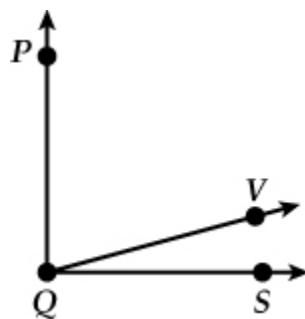
- A. ones
- B. tenths
- C. hundredths
- D. thousandths

For numbers **6–8**, identify whether each number sentence is True or False.

- | | | | |
|-----------|-----------------------|----------|-----------|
| 6. | $4 + 6 = 5 \times 2$ | (T) True | (F) False |
| 7. | $314 + 287 = 314,287$ | (T) True | (F) False |
| 8. | $14 + 119 = 119 + 14$ | (T) True | (F) False |

 9.

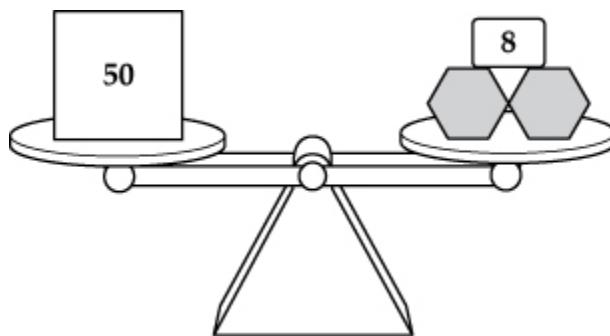
In the diagram below, $\angle PQS$ is a right angle. The measure of $\angle PQV$ is 75 degrees.



Based on this information, what is the measure, in degrees, of $\angle VQS$?

 10.

For the question below, shapes are assigned a weight. Identical shapes have the same weight. This scale is balanced so that the total weight on each of the sides is the same.



What is the value of the weight for this shape?



Go On ➔

Use the following information to answer numbers 11–12.

Lin is going to the county fair tonight. His mother gave him \$24 to spend on ride tickets. Tickets for fast rides cost \$3 each, and tickets for slow rides cost \$2 each.



11. Lin plans to spend all of the money his mother gave him on fast-ride tickets. What is the total number of fast-ride tickets that Lin can buy?



12. Which statement could represent the word problem above?

- A. number of fast-ride tickets = 24×3
- B. number of fast-ride tickets = $24 \div 3$
- C. number of fast-ride tickets = 24×2
- D. number of fast-ride tickets = $24 \div 2$

13. What is the total number of different factors for the number 24 ?

- A. 8
- B. 6
- C. 4
- D. 2

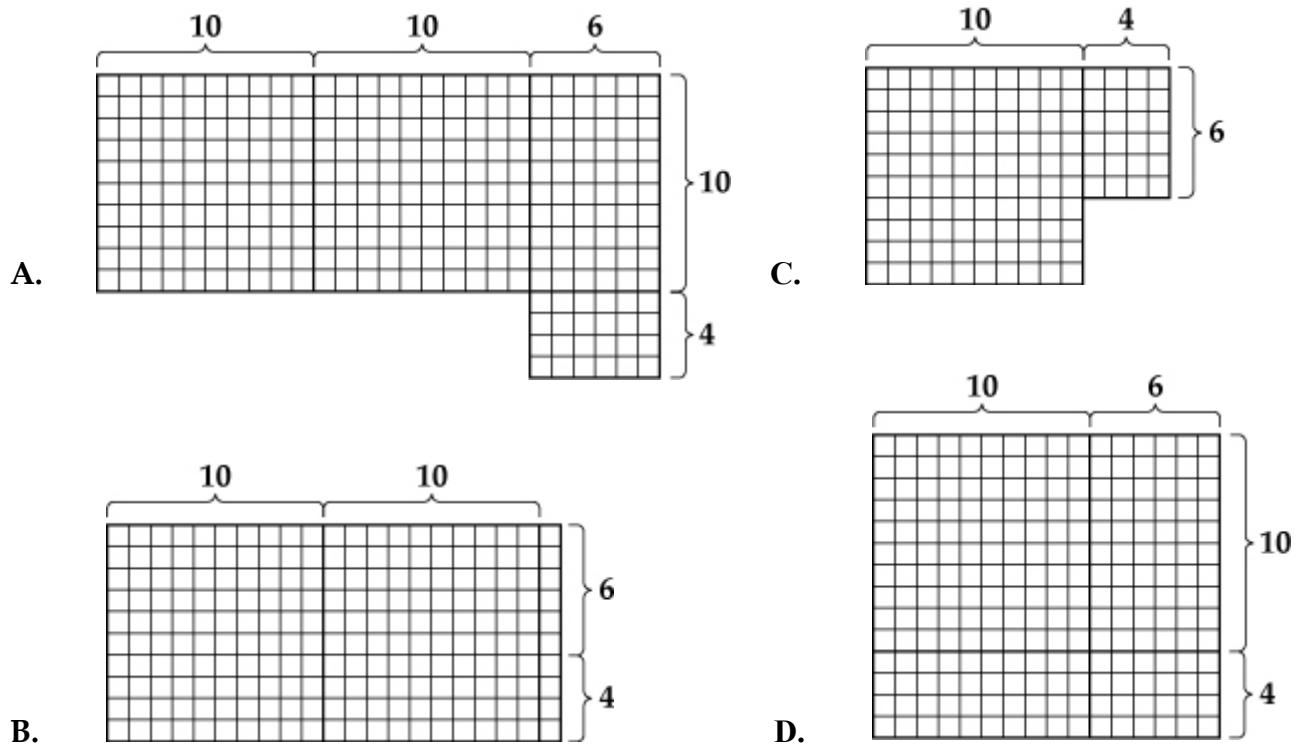
Go On ➔

14. By how much will the value of the number 4,253 increase if the “2” is replaced with a “9”?

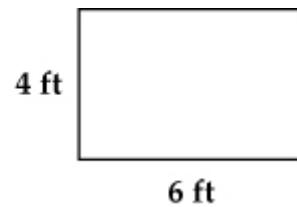
- A. 7
- B. 70
- C. 700
- D. 7,000

15. Which model shows a correct way to find the answer to the multiplication problem shown below?

$$\begin{array}{r} 14 \\ \times 16 \\ \hline \end{array}$$



16. Dericka correctly found the areas of the two rectangles below.



She then computed the difference between the two areas and reported the answer to be 3 square feet. Which expression below supports Dericka's correct computation of the difference of the areas?

- A. $9 - 6$
B. $23 - 20$
C. $(3 \times 9) - (4 \times 6)$
D. $(9 - 3) \div (6 - 4)$
17. Hannah has 2 large candy bars. She cuts each candy bar into fifths. How many pieces of candy bar does Hannah have now?
- A. $\frac{1}{10}$
B. $\frac{2}{5}$
C. 5
D. 10

Use the following information to answer numbers 18–21.

Jenna knows that she could solve the following multiplication problem using several different methods and still get the correct answer.

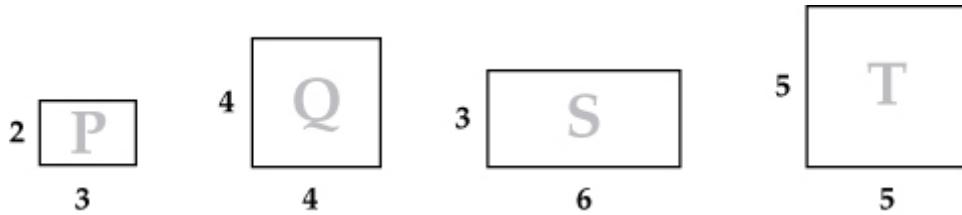
$$\begin{array}{r} 49 \\ \times 5 \\ \hline \end{array}$$

Which of the following methods would result in a correct answer for this problem?

- | | | | |
|-----|---|---------|--------|
| 18. | Multiply 50 and 5, and then subtract 5. | (Y) Yes | (N) No |
| 19. | Multiply 50 and 5, and then subtract 49. | (Y) Yes | (N) No |
| 20. | Multiply 9 and 5, then multiply 4 and 5, and then add the two products together. | (Y) Yes | (N) No |
| 21. | Multiply 40 and 5, then multiply 9 and 5, and then add the two products together. | (Y) Yes | (N) No |

Go On ➔

Use the rectangles below to answer numbers 22–25.

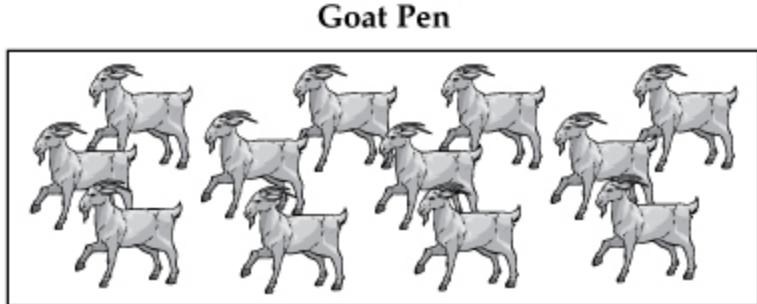
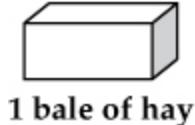


Answer (Y) Yes for each rectangle in which the value of its perimeter is equal to the value of its area. Otherwise, answer (N) No.

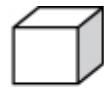
- | | |
|--------------------|------------------|
| 22. Rectangle P | (Y) Yes (N) No |
| 23. Rectangle Q | (Y) Yes (N) No |
| 24. Rectangle S | (Y) Yes (N) No |
| 25. Rectangle T | (Y) Yes (N) No |

Use the following information to answer numbers 26–28.

Farmer Brown has 12 goats in a pen. Each day he places exactly enough bales of hay in the pen to feed all 12 goats with no hay left over.



26. How many bales of hay should Farmer Brown place in the pen each day to feed his goats if each goat eats $\frac{1}{2}$ bale of hay?



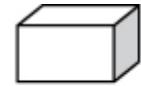
$\frac{1}{2}$ bale of hay

27. How many bales of hay should Farmer Brown place in the pen each day to feed his goats if each goat eats $\frac{1}{4}$ bale of hay?



$\frac{1}{4}$ bale of hay

28. How many bales of hay should Farmer Brown place in the pen each day to feed his goats if each goat eats $\frac{3}{4}$ bale of hay?



$\frac{3}{4}$ bale of hay

29. Farmer Gray has some goats in a pen. Each day he places exactly enough bales of hay in the pen to feed all his goats with no hay left over. He knows that every goat eats $\frac{2}{3}$ bale of hay. What is the total number of goats that Farmer Gray has if he places 24 bales of hay in the pen each day and no hay is left over?

- A. 12 goats
- B. 16 goats
- C. 24 goats
- D. 36 goats

Go On ➔

30. If $a + b = 5$, what does $18 + b + a$ equal?

- A. 13
- B. 23
- C. 28
- D. 33

31. represents $\frac{1}{4}$ of a set of circles. Which of the following could represent the whole set of circles?

- A.
- B.
- C.
- D.

Bailey has ten U.S. coins in her purse. She knows that the total value of these ten coins is between \$1.00 and \$1.25. Identify whether each combination of coins shown in numbers 32–35 could be the coins in Bailey’s purse.

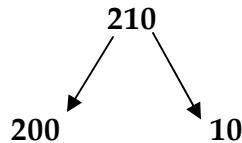
32. 4 quarters, 6 nickels (Y) Yes (N) No
33. 1 quarter, 9 dimes (Y) Yes (N) No
34. 2 quarters, 5 dimes, 3 nickels (Y) Yes (N) No
35. 3 quarters, 4 dimes, 3 nickels (Y) Yes (N) No

36. Tom’s math assignment was to show his work for the following problem.

What is $\frac{1}{2}$ of 210?

The steps he took to solve the problem are shown below. If there is a mistake in his work, mark the letter that matches the Step in which he made his first mistake. If Tom made no mistake, mark the letter D.

Step 1: I separated 210 into two parts as shown below.



Step 2: I know that half of 200 is 100 and half of 10 is 5.

Step 3: Therefore, half of 210 is equal to 100 + 5, which is 105.

- A. Step 1
- B. Step 2
- C. Step 3
- D. There is no mistake.

Go On ➔

37. Jackie solved a multiplication problem as shown below. There are errors in her work.

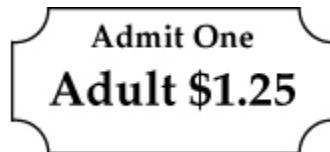
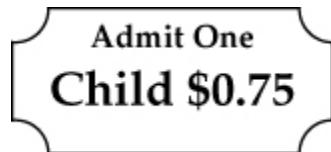
$$\begin{array}{r}
 2 \quad \text{Row 1} \\
 35 \\
 \times 14 \\
 \hline
 140 \quad \text{Row 2} \\
 + 55 \quad \text{Row 3} \\
 \hline
 195 \quad \text{Row 4}
 \end{array}$$

In which row is an error first recorded?

- A. Row 1
 - B. Row 2
 - C. Row 3
 - D. Row 4

Use the following information to answer numbers 38–40.

Madison is planning to go to the museum. Prices for museum tickets are shown below.



Madison claims that each combination of tickets listed below can be purchased with \$5.00 or less. For each combination, determine whether her claim is True or False.

41. Which situation below can be represented by $30 - n = 6$?

- A. Carter had 30 crayons. He gave some crayons to his sister, leaving him only 6 crayons. How many crayons did Carter give his sister?
- B. Carter had 30 crayons. This amount was 6 times as many crayons as his friend had. How many crayons did his friend have?
- C. Carter had 30 crayons. He received 6 more crayons from his brother. How many crayons did Carter have then?
- D. Carter had 30 crayons. He shared them equally among 6 friends. How many crayons did each friend get?

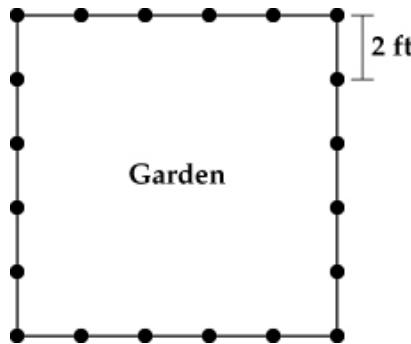
For numbers 42–43, determine whether each equation is true.

42. $0.75 = \frac{3}{4}$ (Y) Yes (N) No

43. $1.4 = 1\frac{4}{5}$ (Y) Yes (N) No

Use the information below to answer numbers 44–46.

Mr. Reyes built a fence to enclose his square garden. He used 20 fence posts and placed them 2 feet apart, as shown below.

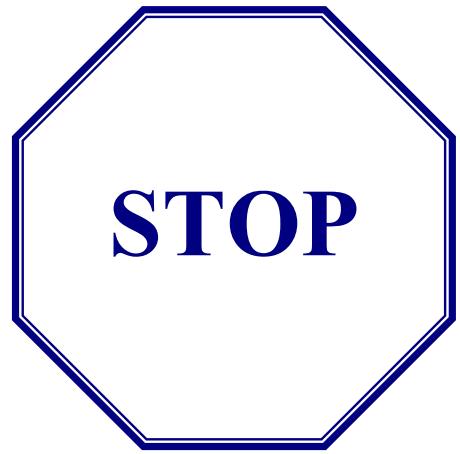


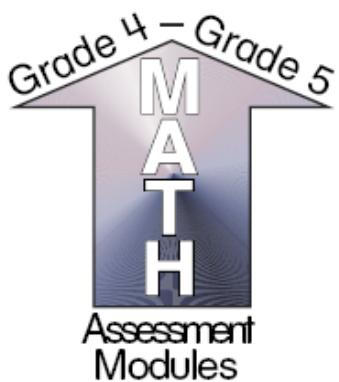
44. Based on this information, which statement must be true?

- A. The length of the garden is greater than the width of the garden.
- B. The width of the garden is greater than the length of the garden.
- C. The value of the perimeter is greater than the value of the area of the garden.
- D. The value of the area is greater than the value of the perimeter of the garden.

45. What is the perimeter, in feet, of the garden?

46. What is the area, in square feet, of the garden?





Grade 4 Form G

Student Name

Teacher Name

Sample 1: Exactly how many sides does a triangle have?

- A. 2
- B. 3
- C. 4
- D. 5

Sample 2: Identify whether each number sentence is True or False.

- a* $3 \times 4 = 12$ (T) True (F) False
- b* $18 \div 3 = 6$ (T) True (F) False
- c* $4 \times 5 = 9$ (T) True (F) False

Sample 3: What is $10 + 14$?

Sample 4: What number is represented by the phrase "four hundred twenty-five"?

This symbol appears next to questions that require you to fill in your answers on a grid on the Answer Sheet. Directions for completing the Response Grid:

1. Work the problem and find an answer.
2. Write your answer in the answer boxes at the top of the grid.
 - Print your answer with the first digit in the answer box all the way to the left, OR with the last digit in the answer box all the way to the right.
 - Print only one digit in each answer box. Do NOT leave a blank answer box in the middle of an answer.
3. Fill in a bubble under each answer box that you used to write your answer.
 - Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
 - Fill in each bubble by making a solid black mark that completely fills the circle.
 - You MUST fill in the bubbles accurately to receive credit for your answer.

Use the blank space in this Test Booklet to do your work. Then mark your Answer Sheet for the answer you have chosen.

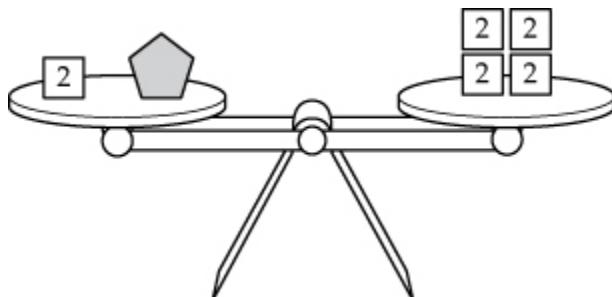
1. What number should go in the \square to make this number sentence true?

$$174 + (526 + 218) = (174 + 526) + \square$$

- A. 218
- B. 744
- C. 800
- D. 974

For numbers 2–4, shapes are assigned a weight. Identical shapes have the same weight.

This scale is balanced so that the total weight on each of the sides is the same.



For each statement, determine whether the statement is True or False.

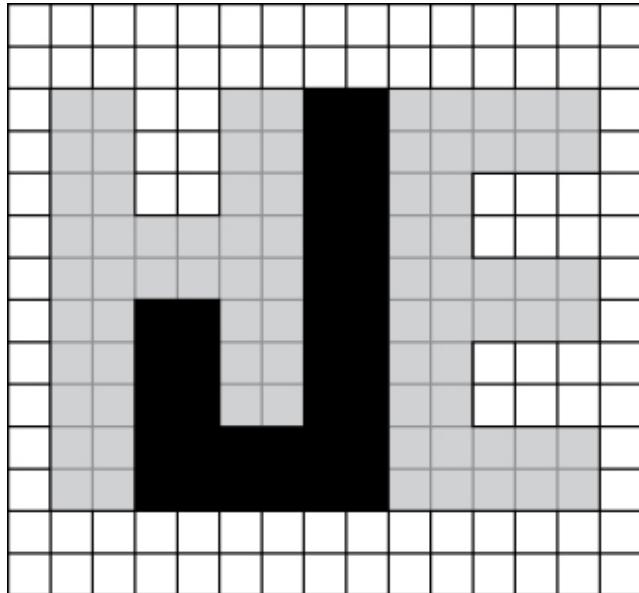
2. $2 + \text{pentagon} = 8$ (T) True (F) False
3. $\text{pentagon} - 2 = 8$ (T) True (F) False
4. $2 + 2 + 2 = \text{pentagon}$ (T) True (F) False

Go On ➔

5. The number 3.24 is equal to three and twenty-four —

- A. ones
- B. tenths
- C. hundredths
- D. thousandths

Dana's father made a metal sign of three letters (H, J, and E) to hang at the front of her school, Howard Jackson Elementary. Use the diagram of the sign below to answer numbers 6–9.



is 1 square foot

6. The area of the "H" is greater than the area of the "E". (T) True (F) False
7. The area of the "H" is less than the area of the "J". (T) True (F) False
8. The area of the "J" is equal to the area of the "E". (T) True (F) False
9. What is the total area, in square feet, of all three letters combined?



-  10. What number is equal to 2 hundreds, 11 tens, and 8 ones?

Use the following information to answer numbers 11–12.

Lin is going to the county fair tonight. His mother gave him \$24 to spend on ride tickets. Tickets for fast rides cost \$3 each, and tickets for slow rides cost \$2 each.

-  11. Lin plans to spend all of the money his mother gave him on fast-ride tickets. What is the total number of fast-ride tickets that Lin can buy?

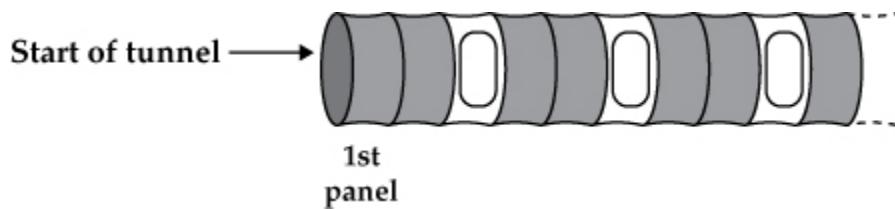


12. Which statement could represent the word problem above?
- A. number of fast-ride tickets = 24×3
 - B. number of fast-ride tickets = $24 \div 3$
 - C. number of fast-ride tickets = 24×2
 - D. number of fast-ride tickets = $24 \div 2$

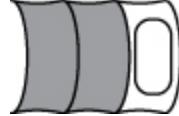
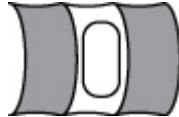
13. What is the total number of different factors for the number 24 ?

- A. 8
- B. 6
- C. 4
- D. 2

A play tunnel is made by repeating groups of three panels using solid panels  and window panels  as described in the picture below. The picture shows the first ten panels of the tunnel.



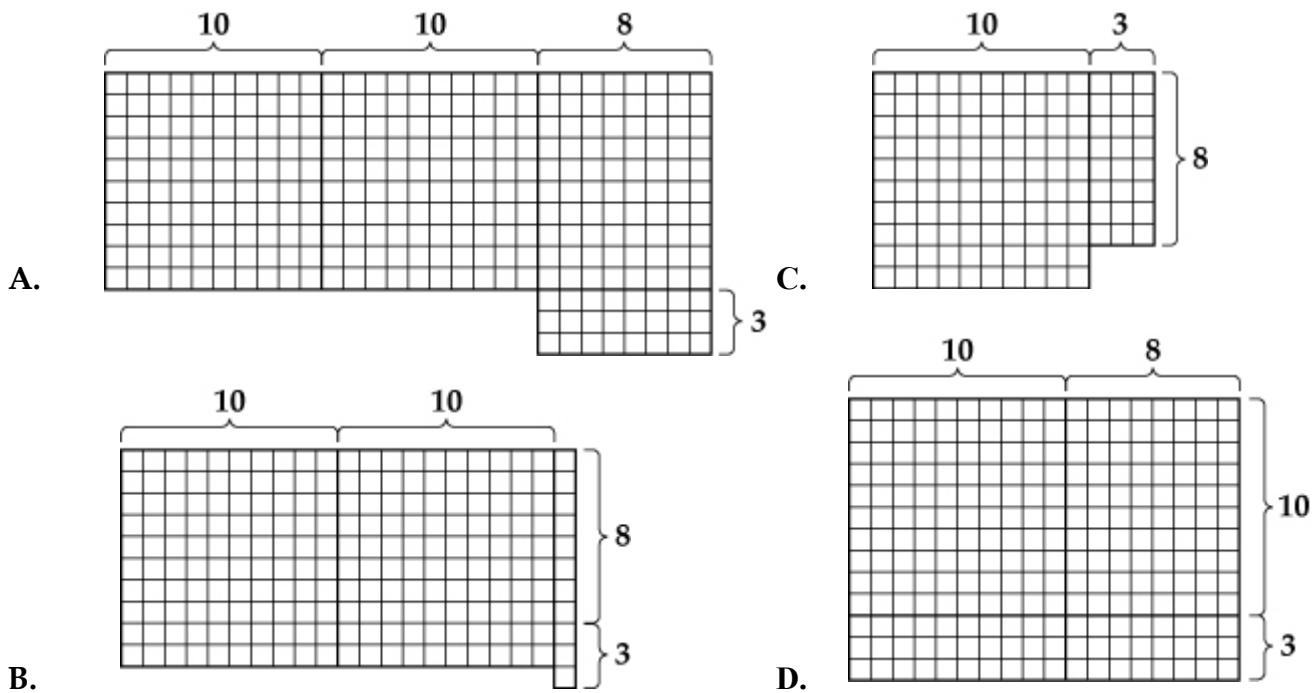
14. Which picture shows the next three panels that would continue the pattern in this tunnel?

- A. 
- B. 
- C. 
- D. 

Go On ➔

15. Which model shows a correct way to find the answer to the multiplication problem shown below?

$$\begin{array}{r} 13 \\ \times 18 \\ \hline \end{array}$$



16. Cara simplified the fraction $\frac{12}{15}$ as shown below.

$$\frac{12}{15} \div \frac{3}{3} = \frac{4}{5}$$

If Cara applies the same method to simplify other fractions, which of the following will be true?

- A. The value of the original fraction will decrease.
- B. The value of the original fraction will increase.
- C. The value of the original fraction will stay the same.
- D. The value of the original fraction will sometimes decrease and sometimes increase.

- 17.** Hannah has 2 large candy bars. She cuts each candy bar into fifths. How many pieces of candy bar does Hannah have now?
- A. $\frac{1}{10}$
- B. $\frac{2}{5}$
- C. 5
- D. 10

Use the following information to answer numbers 18–21.

Jenna knows that she could solve the following multiplication problem using several different methods and still get the correct answer.

$$\begin{array}{r} 49 \\ \times 5 \\ \hline \end{array}$$

Which of the following methods would result in a correct answer for this problem?

- 18.** Multiply 50 and 5, and then subtract 5. (Y) Yes (N) No
- 19.** Multiply 50 and 5, and then subtract 49. (Y) Yes (N) No
- 20.** Multiply 9 and 5, then multiply 4 and 5, and then add the two products together. (Y) Yes (N) No
- 21.** Multiply 40 and 5, then multiply 9 and 5, and then add the two products together. (Y) Yes (N) No

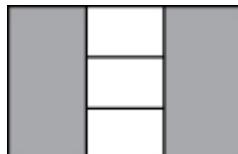
For numbers 22–25, state whether or not each figure has $\frac{2}{5}$ of its whole shaded.

22.



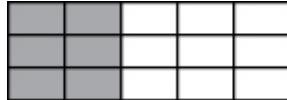
(Y) Yes (N) No

23.



(Y) Yes (N) No

24.



(Y) Yes (N) No

25.



(Y) Yes (N) No

Use the following information to answer numbers 26–29.

Carly, Brian, and Juan all have some pennies.

- Carly has p pennies.
- Brian has 9 more pennies than Carly.
- Juan has 4 more pennies than Carly.



26. If $p = 8$, how many pennies does Brian have?



27. If Brian has 20 pennies, what number is represented by p ?



28. If Juan has 25 pennies, how many pennies does Brian have?

29. Which expression represents the number of pennies that Carly, Brian, and Juan have all together?

- A. $13 \times p$
- B. $94 \times p$
- C. $p + 13$
- D. $p + (p + 9) + (p + 4)$

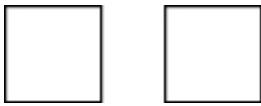
30. If $a + b = 5$, what does $18 + b + a$ equal?

- A. 13
- B. 23
- C. 28
- D. 33

31. represents $\frac{1}{4}$ of a set of circles. Which of the following could represent the whole set of circles?

- A.
- B.
- C.
- D.

Identify whether each pair of congruent shapes shown in numbers 32–35 could be used to make a rectangle by joining them together without any overlapping.

32.  (Y) Yes (N) No
33.  (Y) Yes (N) No
34.  (Y) Yes (N) No
35.  (Y) Yes (N) No

36. Each number shown below is either a composite or prime number.

20	21	22	23	24	25	26	27	28	29
----	----	----	----	----	----	----	----	----	----

Which of the following correctly identifies all the prime numbers listed above?

- A. 21, 23, 25, 27, 29 C. 20, 22, 24, 26, 28
B. 23, 27, 29 D. 23, 29

37. Jackie solved a multiplication problem as shown below. There are errors in her work.

$$\begin{array}{r} 2 & \text{Row 1} \\ 35 \\ \times 14 \\ \hline 140 & \text{Row 2} \\ + 55 & \text{Row 3} \\ \hline 195 & \text{Row 4} \end{array}$$

In which row is an error first recorded?

- A. Row 1
- B. Row 2
- C. Row 3
- D. Row 4

Use the following information to answer numbers 38–40.

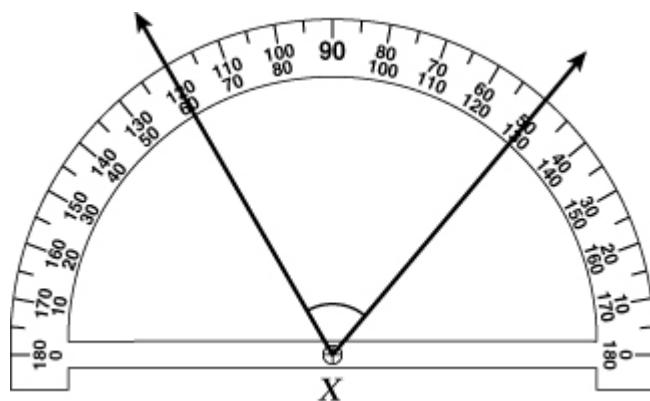
Madison is planning to go to the museum. Prices for museum tickets are shown below.



Madison claims that each combination of tickets listed below can be purchased with \$5.00 or less. For each combination, determine whether her claim is True or False.

- | | | |
|-----|---------------------|-------------------------|
| 38. | 6 child and 4 adult | (T) True (F) False |
| 39. | 3 child and 2 adult | (T) True (F) False |
| 40. | 2 child and 3 adult | (T) True (F) False |

41. Angle X is shown in the picture below.



What is the measure of angle X to the nearest degree?

- A. 50°
- B. 60°
- C. 70°
- D. 120°

For numbers 42–43, determine whether each equation is true.

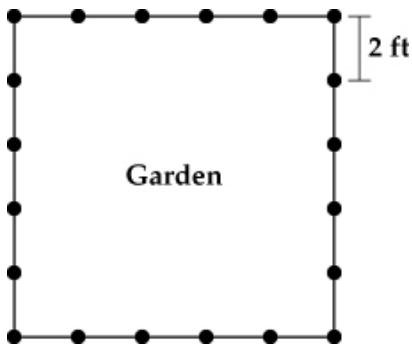
42. $0.75 = \frac{3}{4}$ (Y) Yes (N) No

43. $1.4 = 1\frac{4}{5}$ (Y) Yes (N) No

Go On ➔

Use the information below to answer numbers 44–46.

Mr. Reyes built a fence to enclose his square garden. He used 20 fence posts and placed them 2 feet apart, as shown below.

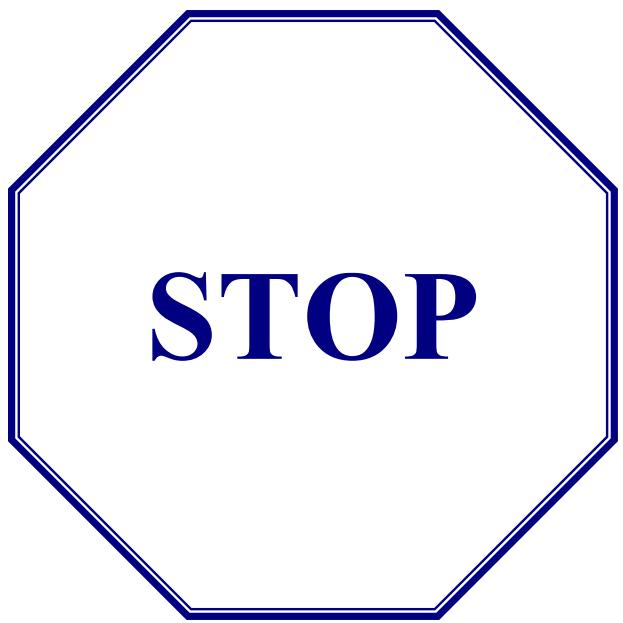


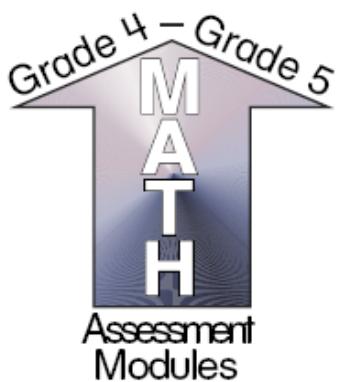
44. Based on this information, which statement must be true?

- A. The length of the garden is greater than the width of the garden.
- B. The width of the garden is greater than the length of the garden.
- C. The value of the perimeter is greater than the value of the area of the garden.
- D. The value of the area is greater than the value of the perimeter of the garden.

45. What is the perimeter, in feet, of the garden?

46. What is the area, in square feet, of the garden?





Grade 4 Form H

Student Name

Teacher Name

Sample 1: Exactly how many sides does a triangle have?

- A. 2
- B. 3
- C. 4
- D. 5

Sample 2: Identify whether each number sentence is True or False.

- a* $3 \times 4 = 12$ (T) True (F) False
- b* $18 \div 3 = 6$ (T) True (F) False
- c* $4 \times 5 = 9$ (T) True (F) False

Sample 3: What is $10 + 14$?

Sample 4: What number is represented by the phrase "four hundred twenty-five"?

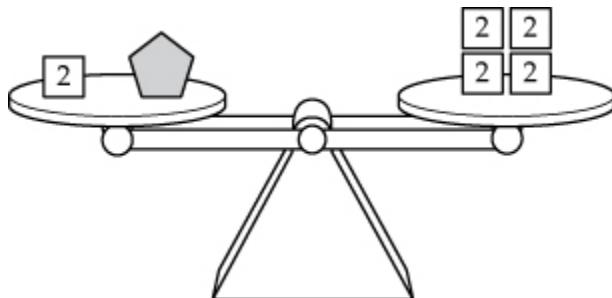
This symbol appears next to questions that require you to fill in your answers on a grid on the Answer Sheet. Directions for completing the Response Grid:

1. Work the problem and find an answer.
2. Write your answer in the answer boxes at the top of the grid.
 - Print your answer with the first digit in the answer box all the way to the left, OR with the last digit in the answer box all the way to the right.
 - Print only one digit in each answer box. Do NOT leave a blank answer box in the middle of an answer.
3. Fill in a bubble under each answer box that you used to write your answer.
 - Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
 - Fill in each bubble by making a solid black mark that completely fills the circle.
 - You MUST fill in the bubbles accurately to receive credit for your answer.

Use the blank space in this Test Booklet to do your work. Then mark your Answer Sheet for the answer you have chosen.

1. Maya has 3 boxes of candy. There are 12 gumdrops and 15 chocolates in each box. Which expression represents the total number of chocolates that Maya has?
- A. 3×12
B. 3×15
C. $3(12 + 15)$
D. $3 + 12 + 15$

For numbers 2–4, shapes are assigned a weight. Identical shapes have the same weight. This scale is balanced so that the total weight on each of the sides is the same.



For each statement, determine whether the statement is True or False.

2. $2 + \text{pentagon} = 8$ (T) True (F) False
3. $\text{pentagon} - 2 = 8$ (T) True (F) False
4. $2 + 2 + 2 = \text{pentagon}$ (T) True (F) False

Go On ➔

5. The number 3.24 is equal to three and twenty-four —

- A. ones
- B. tenths
- C. hundredths
- D. thousandths

For numbers 6–8, the shapes \blacksquare and \triangle represent different numbers. Without calculating the values, determine whether each statement is True or False.

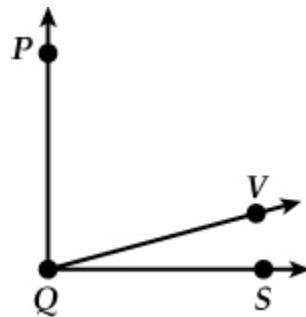
6. If $235 + 104 = \blacksquare$, then $\blacksquare = 235 + 104$. (T) True (F) False

7. If $340 + 815 = \triangle$, then $815 = 340 + \triangle$. (T) True (F) False

8. If $\blacksquare + 182 = 475$, then $\blacksquare + 475 = 182$. (T) True (F) False

 9.

In the diagram below, $\angle PQS$ is a right angle. The measure of $\angle PQV$ is 75 degrees.



Based on this information, what is the measure, in degrees, of $\angle VQS$?

 10.

What number is equal to 5 hundreds, 4 tens, and 23 ones?

Use the following information to answer numbers 11–12.

Lin is going to the county fair tonight. His mother gave him \$24 to spend on ride tickets. Tickets for fast rides cost \$3 each, and tickets for slow rides cost \$2 each.



11. Lin plans to spend all of the money his mother gave him on fast-ride tickets. What is the total number of fast-ride tickets that Lin can buy?



12. Which statement could represent the word problem above?

- A. number of fast-ride tickets = 24×3
- B. number of fast-ride tickets = $24 \div 3$
- C. number of fast-ride tickets = 24×2
- D. number of fast-ride tickets = $24 \div 2$

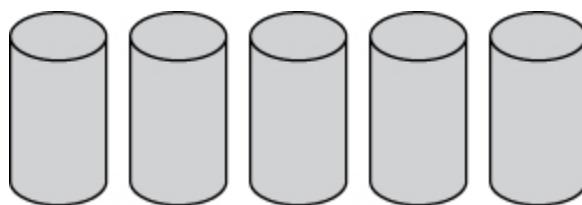
13. What is the total number of different factors for the number 24?

- A. 8
- B. 6
- C. 4
- D. 2

Go On ➔

Use the following information to answer numbers 14–16.

Alex has 5 full cans of paint.



14. If only 2 cans of Alex's paint are red, what fraction of his paint is red?

A. $\frac{2}{3}$

B. $\frac{2}{5}$

C. 2

D. 3

15. If Alex uses $\frac{1}{5}$ of his paint, what fraction of his paint will be left?

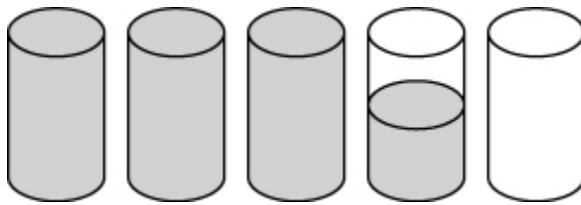
A. 5

B. 4

C. $\frac{4}{5}$

D. $\frac{1}{5}$

16. If Alex uses $1\frac{1}{2}$ cans of his paint on a school project, what fraction of his total amount of paint will be left?



A. $\frac{4}{10}$

B. $\frac{3}{5}$

C. $\frac{7}{10}$

D. $\frac{4}{5}$

Go On ➔

17. Maria moved the square units with a  in Figure 1 to form Figure 2.

Figure 1

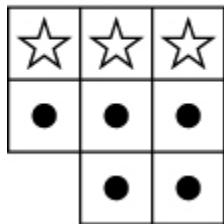
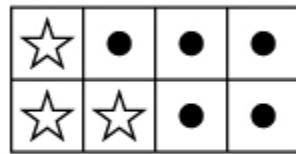


Figure 2



Which statement below must be true?

- A. The area of Figure 1 cannot be determined because it is not complete.
- B. The area of Figure 2 is greater than the area of Figure 1.
- C. The area of Figure 2 is less than the area of Figure 1.
- D. The area of Figure 1 is equal to the area of Figure 2.

Use the following information to answer numbers 18–21.

Jenna knows that she could solve the following multiplication problem using several different methods and still get the correct answer.

$$\begin{array}{r} 49 \\ \times 5 \\ \hline \end{array}$$

Which of the following methods would result in a correct answer for this problem?

- 18. Multiply 50 and 5, and then subtract 5. (Y) Yes (N) No
- 19. Multiply 50 and 5, and then subtract 49. (Y) Yes (N) No
- 20. Multiply 9 and 5, then multiply 4 and 5, and then add the two products together. (Y) Yes (N) No
- 21. Multiply 40 and 5, then multiply 9 and 5, and then add the two products together. (Y) Yes (N) No

Use the information below to answer numbers 22–25.

Gil is serving punch out of a bowl using a 1-cup ladle and a $\frac{1}{4}$ -cup ladle. Before he begins serving, the bowl is filled with $7\frac{1}{4}$ cups of punch.



$7\frac{1}{4}$ cups of punch



1-cup ladle



$\frac{1}{4}$ -cup ladle

Identify the combinations of servings that would completely empty the punch bowl.

22. $1 \text{ cup} + 1 \text{ cup} + \frac{1}{4} \text{ cup}$
(Y) Yes (N) No

23. $1 \text{ cup} + 1 \text{ cup} + \frac{1}{4} \text{ cup} + \frac{1}{4} \text{ cup} + \frac{1}{4} \text{ cup} + \frac{1}{4} \text{ cup}$
(Y) Yes (N) No

24. $1 \text{ cup} + 1 \text{ cup} + \frac{1}{4} \text{ cup} + \frac{1}{4} \text{ cup}$
(Y) Yes (N) No

25. $1 \text{ cup} + 1 \text{ cup} + \frac{1}{4} \text{ cup}$
(Y) Yes (N) No

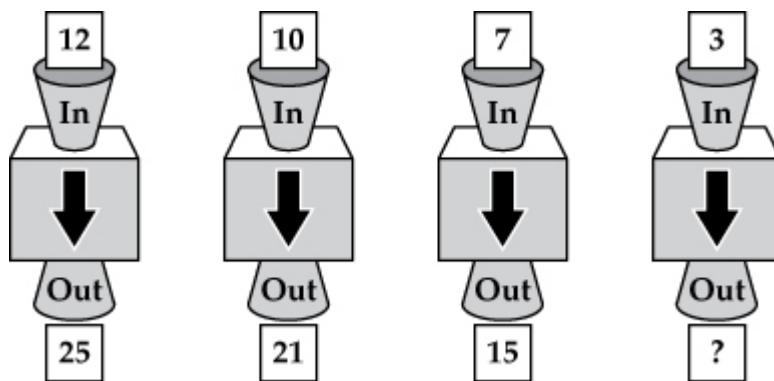


26. A square has a perimeter of 24 inches. What is its area, in square inches?

Go On ➔



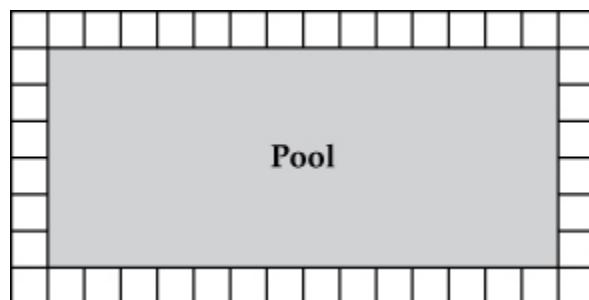
27. A number machine applies the same rule to all numbers that are put into it. The picture below shows the numbers that came out of this number machine after three different numbers were put into it and the rule was applied.



What number should come out of this machine when 3 is put in?



28. Jorge has a rectangular pool in his backyard. The pool is surrounded by 1-foot-square tiles, as shown in the picture below.



What is the perimeter of Jorge's pool, in feet, not including the tiles?

Go On ➔

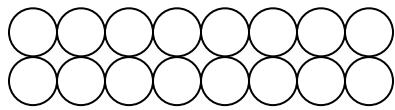
29. Which decimal number has a value closest to $\frac{3}{4}$?

- A. 0.34
- B. 0.8
- C. 3.4
- D. 4.3

30. If $a + b = 5$, what does $18 + b + a$ equal?

- A. 13
- B. 23
- C. 28
- D. 33

31.  represents $\frac{1}{4}$ of a set of circles. Which of the following could represent the whole set of circles?

- A. 
- B. 
- C. 
- D. 

Sometimes it is helpful to name a number in different ways. For example, the number 35 might be renamed as 3 tens + 5 ones. For numbers 32–35, identify whether each way to rename the number 492 is correct.

- | | | | |
|-----|---------------------------------|---------|--------|
| 32. | 4 hundreds + 92 ones | (Y) Yes | (N) No |
| 33. | 3 hundreds + 19 tens + 20 ones | (Y) Yes | (N) No |
| 34. | 4 hundreds + 9 tens + 20 tenths | (Y) Yes | (N) No |
| 35. | 49 tens + 2 ones | (Y) Yes | (N) No |

36. Which fraction has a value closest to 0.5?

- A. $\frac{1}{3}$
- B. $\frac{2}{5}$
- C. $\frac{3}{4}$
- D. $\frac{4}{5}$

37. Jackie solved a multiplication problem as shown below. There are errors in her work.

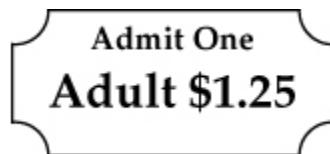
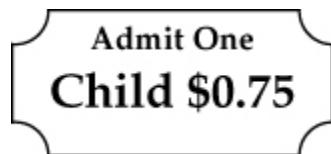
$$\begin{array}{r} 2 & \text{Row 1} \\ 35 \\ \times 14 \\ \hline 140 & \text{Row 2} \\ + 55 & \text{Row 3} \\ \hline 195 & \text{Row 4} \end{array}$$

In which row is an error first recorded?

- A. Row 1
- B. Row 2
- C. Row 3
- D. Row 4

Use the following information to answer numbers 38–40.

Madison is planning to go to the museum. Prices for museum tickets are shown below.



Madison claims that each combination of tickets listed below can be purchased with \$5.00 or less. For each combination, determine whether her claim is True or False.

38. 6 child and 4 adult (T) True (F) False
39. 3 child and 2 adult (T) True (F) False
40. 2 child and 3 adult (T) True (F) False

- 41.** Which situation below can be represented by $30 - n = 6$?
- A. Carter had 30 crayons. He gave some crayons to his sister, leaving him only 6 crayons. How many crayons did Carter give his sister?
 - B. Carter had 30 crayons. This amount was 6 times as many crayons as his friend had. How many crayons did his friend have?
 - C. Carter had 30 crayons. He received 6 more crayons from his brother. How many crayons did Carter have then?
 - D. Carter had 30 crayons. He shared them equally among 6 friends. How many crayons did each friend get?

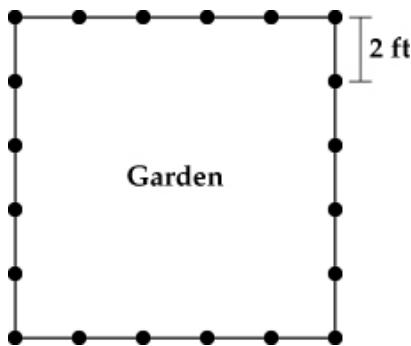
For numbers 42–43, determine whether each equation is true.

42. $0.75 = \frac{3}{4}$ (Y) Yes (N) No

43. $1.4 = 1\frac{4}{5}$ (Y) Yes (N) No

Use the information below to answer numbers 44–46.

Mr. Reyes built a fence to enclose his square garden. He used 20 fence posts and placed them 2 feet apart, as shown below.

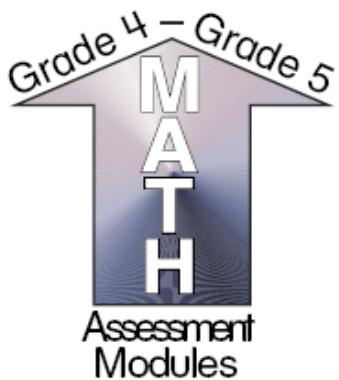


44. Based on this information, which statement must be true?

- A. The length of the garden is greater than the width of the garden.
- B. The width of the garden is greater than the length of the garden.
- C. The value of the perimeter is greater than the value of the area of the garden.
- D. The value of the area is greater than the value of the perimeter of the garden.

45. What is the perimeter, in feet, of the garden?

46. What is the area, in square feet, of the garden?



Grade 4 Form J

Student Name

Teacher Name

Sample 1: Exactly how many sides does a triangle have?

- A. 2
- B. 3
- C. 4
- D. 5

Sample 2: Identify whether each number sentence is True or False.

- a* $3 \times 4 = 12$ (T) True (F) False
- b* $18 \div 3 = 6$ (T) True (F) False
- c* $4 \times 5 = 9$ (T) True (F) False

Sample 3: What is $10 + 14$?

Sample 4: What number is represented by the phrase "four hundred twenty-five"?

This symbol appears next to questions that require you to fill in your answers on a grid on the Answer Sheet. Directions for completing the Response Grid:

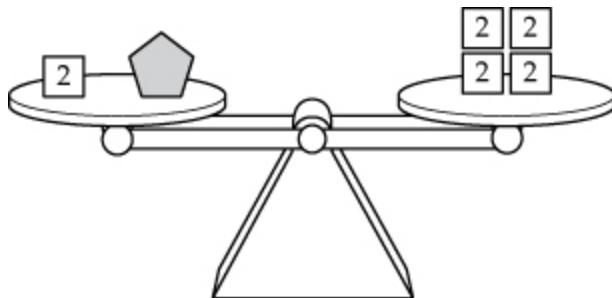
1. Work the problem and find an answer.
2. Write your answer in the answer boxes at the top of the grid.
 - Print your answer with the first digit in the answer box all the way to the left, OR with the last digit in the answer box all the way to the right.
 - Print only one digit in each answer box. Do NOT leave a blank answer box in the middle of an answer.
3. Fill in a bubble under each answer box that you used to write your answer.
 - Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
 - Fill in each bubble by making a solid black mark that completely fills the circle.
 - You MUST fill in the bubbles accurately to receive credit for your answer.

Use the blank space in this Test Booklet to do your work. Then mark your Answer Sheet for the answer you have chosen.

1. Mia has 10 identical plants that weigh a total of 50 pounds. Which computation would give Mia the weight of one plant?
- A. Add 10 and 50
 - B. Subtract 10 from 50
 - C. Multiply 50 by 10
 - D. Divide 50 by 10

For numbers 2–4, shapes are assigned a weight. Identical shapes have the same weight.

This scale is balanced so that the total weight on each of the sides is the same.



For each statement, determine whether the statement is True or False.

2. $2 + \text{pentagon} = 8$ (T) True (F) False
3. $\text{pentagon} - 2 = 8$ (T) True (F) False
4. $2 + 2 + 2 = \text{pentagon}$ (T) True (F) False

Go On ➔

5. The number 3.24 is equal to three and twenty-four —

- A. ones
- B. tenths
- C. hundredths
- D. thousandths

Use the following information to answer numbers 6–8.

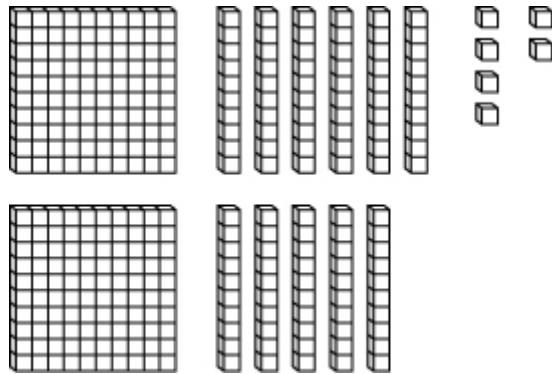
Karl claims that for each large rectangle, $\frac{1}{4}$ of its total area is shaded. For each of the following rectangles, identify whether Karl's claim is True or False.

6.  (T) True (F) False

7.  (T) True (F) False

8.  (T) True (F) False

-  9. A set of place value blocks are shown below.



What is the value of the whole number represented by all of these blocks?

-  10. What number should go in the \square to make this number sentence true?

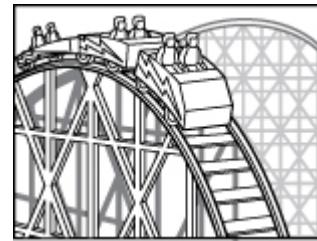
$$\square - 8 = 31$$

Use the following information to answer numbers 11–12.

Lin is going to the county fair tonight. His mother gave him \$24 to spend on ride tickets. Tickets for fast rides cost \$3 each, and tickets for slow rides cost \$2 each.



11. Lin plans to spend all of the money his mother gave him on fast-ride tickets. What is the total number of fast-ride tickets that Lin can buy?



12. Which statement could represent the word problem above?

- A. number of fast-ride tickets = 24×3
- B. number of fast-ride tickets = $24 \div 3$
- C. number of fast-ride tickets = 24×2
- D. number of fast-ride tickets = $24 \div 2$

13. What is the total number of different factors for the number 24?

- A. 8
- B. 6
- C. 4
- D. 2

For numbers 14–17, think about the properties of quadrilaterals.

Each quadrilateral shown on the left can be matched to a single description on the right. On your Answer Sheet, mark the letter of the description that best matches each numbered quadrilateral shown below.

14.



- A. My opposite sides are parallel and congruent. All of my angles are congruent to each other, but not all of my sides are congruent to each other.

15.



- B. My opposite sides are parallel. All of my sides and angles are congruent to each other.

16.



- C. My opposite sides are parallel. All of my sides are congruent to each other, but not all of my angles are congruent to each other.

17.



- D. Only one pair of opposite sides is parallel, and only one pair of sides is congruent to each other.

Go On ➔

Use the following information to answer numbers 18–21.

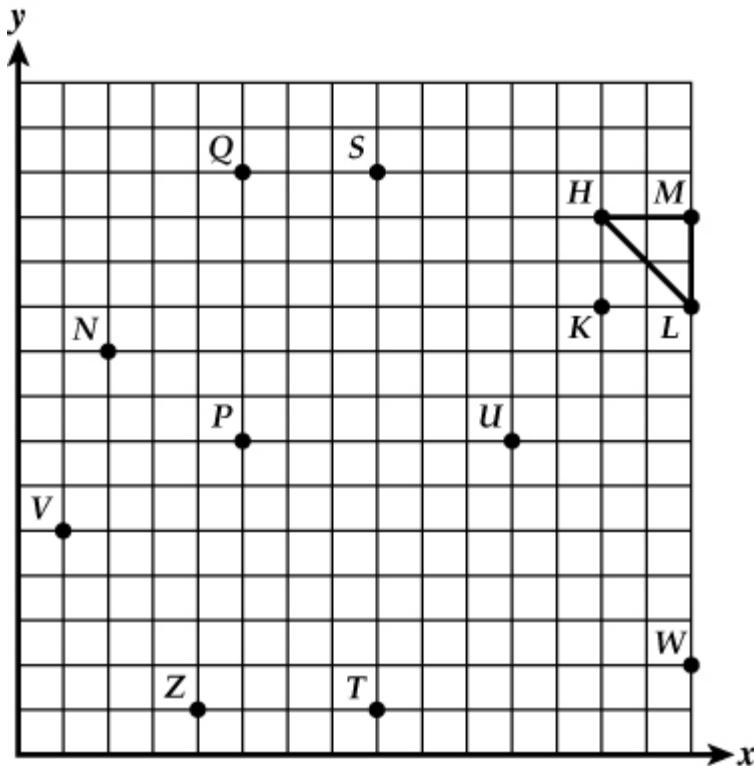
Jenna knows that she could solve the following multiplication problem using several different methods and still get the correct answer.

$$\begin{array}{r} 49 \\ \times 5 \\ \hline \end{array}$$

Which of the following methods would result in a correct answer for this problem?

18. Multiply 50 and 5, and then subtract 5. (Y) Yes (N) No
19. Multiply 50 and 5, and then subtract 49. (Y) Yes (N) No
20. Multiply 9 and 5, then multiply 4 and 5, and then add the two products together. (Y) Yes (N) No
21. Multiply 40 and 5, then multiply 9 and 5, and then add the two products together. (Y) Yes (N) No

Tina's math assignment is to use only the labeled points shown on the graph below to form certain shapes. For example, a triangle was formed by connecting the points labeled H , M , and L with line segments, as shown below.



Determine whether Tina correctly completed each part of her assignment listed in numbers 22–25.

To construct a –

22. right triangle, she connected points S , P , and U . (Y) Yes (N) No
23. parallelogram, she connected points U , P , T , and W . (Y) Yes (N) No
24. trapezoid, she connected points K , L , W , and U . (Y) Yes (N) No
25. pentagon, she connected points N , P , T , Z , and V . (Y) Yes (N) No

26. A square has a perimeter of 24 inches. What is its area, in square inches?

Use the following information to answer numbers 27–29.



Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

The next figure is made by adding one square to the previous figure, as shown in the first four figures. Complete the table below for the number of corners in Figure 4.

Figure	Total Number of Corners
1	4
2	8
3	12
4	
5	

If the pattern continues this way, determine the total number of corners there will be in Figure 5 and in Figure 20.



27. The total number of corners in Figure 5 will be —



28. The total number of corners in Figure 20 will be —

29. What is the total number of corners in a figure with n squares?

- A. $n + 4$
- B. $n + 20$
- C. $n \times 4$
- D. $n \times 20$

Go On ➔

30. If $a + b = 5$, what does $18 + b + a$ equal?

- A. 13
- B. 23
- C. 28
- D. 33

31. represents $\frac{1}{4}$ of a set of circles. Which of the following could represent the whole set of circles?

- A.
- B.
- C.
- D.

Sometimes it is helpful to name a number in different ways. For example, the number 35 might be renamed as 3 tens + 5 ones. For numbers 32–35, identify whether each way to rename the number 492 is correct.

32. 4 hundreds + 92 ones (Y) Yes (N) No
33. 3 hundreds + 19 tens + 20 ones (Y) Yes (N) No
34. 4 hundreds + 9 tens + 20 tenths (Y) Yes (N) No
35. 49 tens + 2 ones (Y) Yes (N) No

36. Which fraction has a value closest to 0.5 ?

- A. $\frac{1}{3}$
- B. $\frac{2}{5}$
- C. $\frac{3}{4}$
- D. $\frac{4}{5}$

37. Jackie solved a multiplication problem as shown below. There are errors in her work.

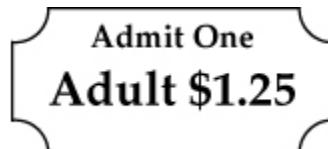
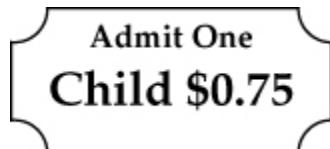
$$\begin{array}{r}
 2 \quad \text{Row 1} \\
 35 \\
 \times 14 \\
 \hline
 140 \quad \text{Row 2} \\
 + 55 \quad \text{Row 3} \\
 \hline
 195 \quad \text{Row 4}
 \end{array}$$

In which row is an error first recorded?

- A. Row 1
 - B. Row 2
 - C. Row 3
 - D. Row 4

Use the following information to answer numbers 38–40.

Madison is planning to go to the museum. Prices for museum tickets are shown below.



Madison claims that each combination of tickets listed below can be purchased with \$5.00 or less. For each combination, determine whether her claim is True or False.

Go On ↗

41. Which situation below can be represented by $30 - n = 6$?

- A. Carter had 30 crayons. He gave some crayons to his sister, leaving him only 6 crayons. How many crayons did Carter give his sister?
- B. Carter had 30 crayons. This amount was 6 times as many crayons as his friend had. How many crayons did his friend have?
- C. Carter had 30 crayons. He received 6 more crayons from his brother. How many crayons did Carter have then?
- D. Carter had 30 crayons. He shared them equally among 6 friends. How many crayons did each friend get?

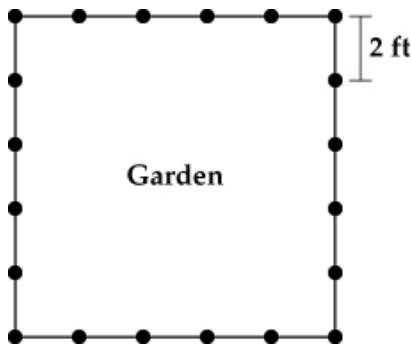
For numbers 42–43, determine whether each equation is true.

42. $0.75 = \frac{3}{4}$ (Y) Yes (N) No

43. $1.4 = 1\frac{4}{5}$ (Y) Yes (N) No

Use the information below to answer numbers 44–46.

Mr. Reyes built a fence to enclose his square garden. He used 20 fence posts and placed them 2 feet apart, as shown below.

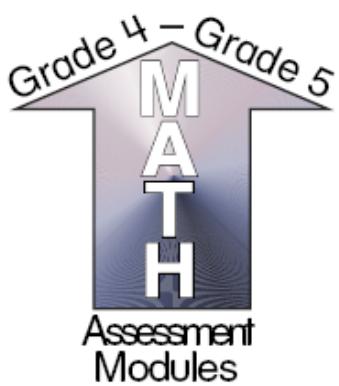


44. Based on this information, which statement must be true?

- A. The length of the garden is greater than the width of the garden.
- B. The width of the garden is greater than the length of the garden.
- C. The value of the perimeter is greater than the value of the area of the garden.
- D. The value of the area is greater than the value of the perimeter of the garden.

45. What is the perimeter, in feet, of the garden?

46. What is the area, in square feet, of the garden?



Grade 5 Form K

Student Name

Teacher Name

Sample 1: Exactly how many sides does a triangle have?

- A. 2
- B. 3
- C. 4
- D. 5

Sample 2: Identify whether each number sentence is True or False.

- a* $3 \times 4 = 12$ (T) True (F) False
- b* $18 \div 3 = 6$ (T) True (F) False
- c* $4 \times 5 = 9$ (T) True (F) False

Sample 3: What is $10 + 14$?

Sample 4: What decimal number is represented by the phrase "four and five tenths"?

This symbol appears next to questions that require you to fill in your answers on a grid on the Answer Sheet. Directions for completing the Response Grid:

1. Work the problem and find an answer.
2. Write your answer in the answer boxes at the top of the grid.

For whole-number grids:

- Print your answer with the first digit in the answer box all the way to the left, OR with the last digit in the answer box all the way to the right.
- Print only one digit in each answer box. Do NOT leave a blank answer box in the middle of an answer.

For decimal grids:

- Use the decimal point to decide where to start printing your answer.

3. Fill in a bubble under each answer box that you used to write your answer.
 - Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
 - Fill in each bubble by making a solid black mark that completely fills the circle.
 - You MUST fill in the bubbles accurately to receive credit for your answer.



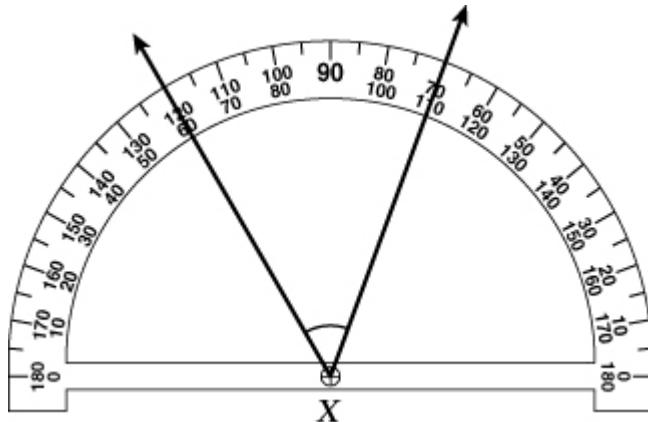
Use the blank space in this Test Booklet to do your work. Then mark your Answer Sheet for the answer you have chosen.

1. What number should go in the \square to make this number sentence true?

$$5 + 4 + 7 = \square + 7$$

- A. 7
- B. 9
- C. 16
- D. 23

2. Angle X is shown in the picture below.



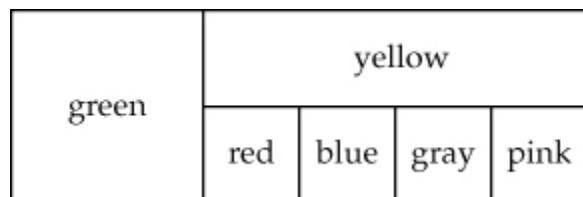
What is the measure of angle X to the nearest degree?

- A. 50°
- B. 60°
- C. 110°
- D. 120°

Go On ➔

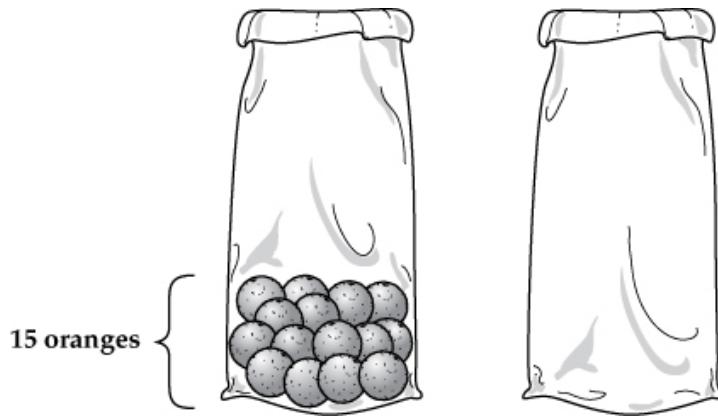
Use the following information to answer numbers 3–6.

Roberto drew a rectangle and divided it into 6 smaller rectangles, as shown below.



Based on this diagram, determine whether each statement appears to be true.

3. The red section plus the blue section is the same size as the green section. (Y) Yes (N) No
 4. The yellow section is the same size as the green section. (Y) Yes (N) No
 5. The pink section is $\frac{1}{6}$ of Roberto's original rectangle. (Y) Yes (N) No
 6. The green section is $\frac{1}{3}$ of Roberto's original rectangle. (Y) Yes (N) No
7. In the first bag, there are 15 oranges.



Miguel must fill both bags to the top. Which is closest to the total number of oranges it takes to fill both bags?

- A. 30 oranges
- B. 42 oranges
- C. 84 oranges
- D. 110 oranges

Go On ➔

8. Each number shown below is either a composite number or prime number.

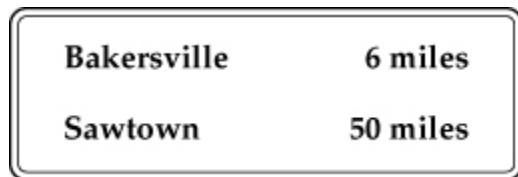
30	31	32	33	34	35	36	37
----	----	----	----	----	----	----	----

Which of the following correctly identifies all the prime numbers shown above?

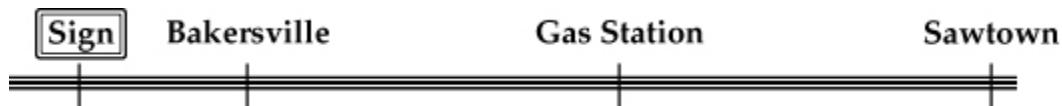
- A. 31, 33, 35, 37 C. 30, 32, 34, 36
B. 31, 33, 37 D. 31, 37

Use the information below to answer numbers 9–10.

Kyle is traveling along a road toward Sawtown and sees the following sign.



A gas station is located halfway between Bakersville and Sawtown as shown on this diagram.



9. How many miles is it from Bakersville to Sawtown?

10. How many miles is it from the sign to the gas station?

Go On ➔

Use the following information to answer numbers 11–12.

Lin is going to the county fair tonight. His mother gave him \$24 to spend on ride tickets. Tickets for fast rides cost \$3 each, and tickets for slow rides cost \$2 each.



11. Lin plans to spend all of the money his mother gave him on fast-ride tickets. What is the total number of fast-ride tickets that Lin can buy?



12. Which statement could represent the word problem above?

- A. number of fast-ride tickets = 24×3
- B. number of fast-ride tickets = $24 \div 3$
- C. number of fast-ride tickets = 24×2
- D. number of fast-ride tickets = $24 \div 2$

13. What is the total number of different factors for the number 24?

- A. 8
- B. 6
- C. 4
- D. 2

Go On ➔

14. There will be 27 people at a party, and each person will get 2 slices of pizza. Each pizza has 8 slices. How many pizzas need to be ordered for the party?

- A. 6
- B. 7
- C. 16
- D. 54

15. Hilary is serving punch out of a bowl using a 1-cup ladle and a $\frac{1}{4}$ -cup ladle. Before she begins serving, the bowl is filled with $7\frac{1}{4}$ cups of punch.



$7\frac{1}{4}$ cups of punch



1-cup ladle



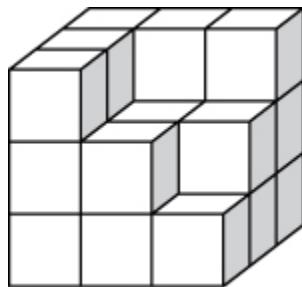
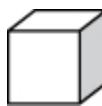
$\frac{1}{4}$ -cup ladle

Which combination of servings would completely empty the punch bowl?

- A. two(2) 1-cup servings and twelve(12) $\frac{1}{4}$ -cup servings
- B. two(2) 1-cup servings and five(5) $\frac{1}{4}$ -cup servings
- C. six(6) 1-cup servings and five(5) $\frac{1}{4}$ -cup servings
- D. six(6) 1-cup servings and one(1) $\frac{1}{4}$ -cup serving

Go On ➔

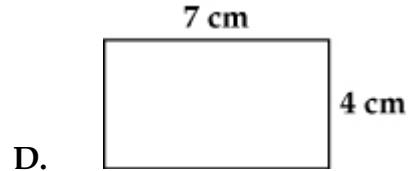
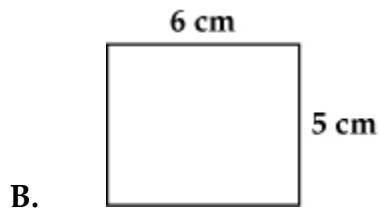
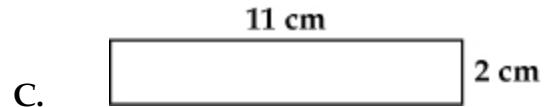
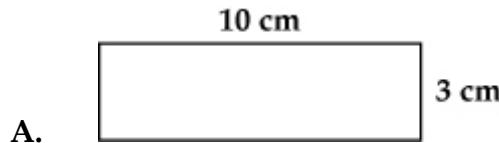
16. Malik built the solid figure below by stacking together some unit cubes.



What is the total number of unit cubes in Malik's solid figure?

- A. 9
- B. 14
- C. 22
- D. 27

17. Which of these rectangles has an area of 30 square centimeters and a perimeter of 22 centimeters?



Use the following information to answer numbers 18–21.

Jenna knows that she could solve the following multiplication problem using several different methods and still get the correct answer.

$$\begin{array}{r} 49 \\ \times 5 \\ \hline \end{array}$$

Which of the following methods would result in a correct answer for this problem?

18. Multiply 50 and 5, and then subtract 5. (Y) Yes (N) No
19. Multiply 50 and 5, and then subtract 49. (Y) Yes (N) No
20. Multiply 9 and 5, then multiply 4 and 5, and then add the two products together. (Y) Yes (N) No
21. Multiply 40 and 5, then multiply 9 and 5, and then add the two products together. (Y) Yes (N) No

***Go On* ➔**

Use the following information to answer numbers 22–26.

Harry has a box of 24 crayons. He shares his crayons with 3 friends so that he and his friends each have 6 crayons. Based on this situation, determine whether each of the following statements must be true.

22. Each child now has more than $\frac{1}{2}$ of the original number of crayons.

(Y) Yes (N) No

23. Each child now has exactly $\frac{1}{6}$ of the original number of crayons.

(Y) Yes (N) No

24. Each child now has more than 0.75 of the original number of crayons.

(Y) Yes (N) No

25. Each child now has less than 0.50 of the original number of crayons.

(Y) Yes (N) No

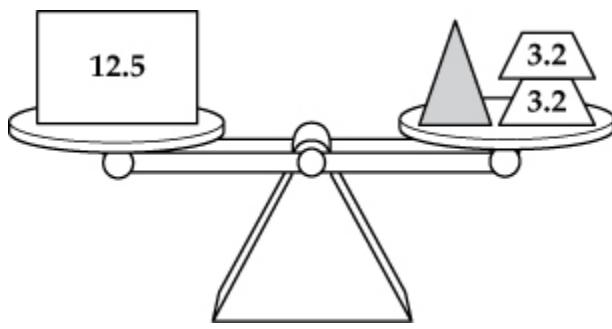
26. Each child now has exactly $\frac{1}{4}$ of the original number of crayons.

(Y) Yes (N) No

Go On ➔



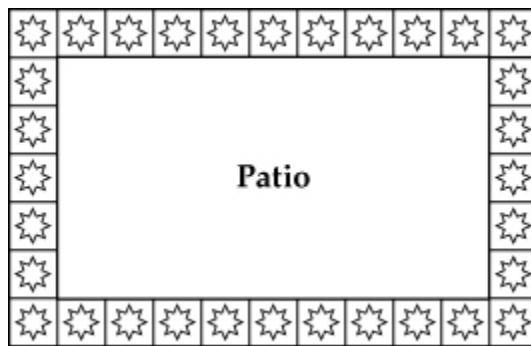
27. For the question below, shapes are assigned a weight. Identical shapes have the same weight. This scale is balanced so that the total weight on each of the sides is the same.



What is the value of the weight for this shape? ▲



28. Chloe has a rectangular patio in her backyard. The patio is surrounded by 1-foot-square decorative tiles, as shown in the picture below.



What is the perimeter of Chloe's patio, in feet, not including the decorative tiles?

Go On ➔



29. What is the least common multiple (LCM) of 8 and 12?

30. If $a + b = 5$, what does $18 + b + a$ equal?

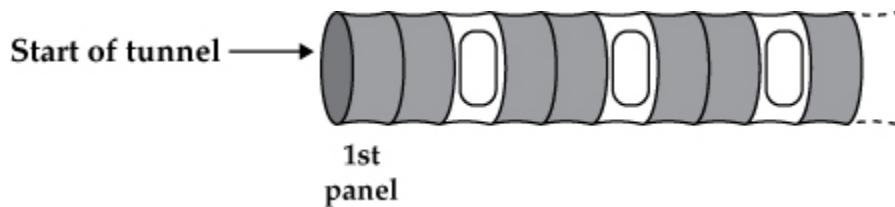
- A. 13
- B. 23
- C. 28
- D. 33

31. represents $\frac{1}{4}$ of a set of circles. Which of the following could represent the whole set of circles?

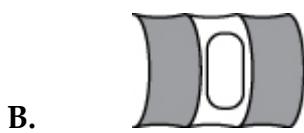
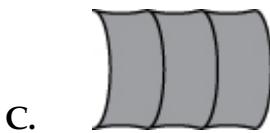
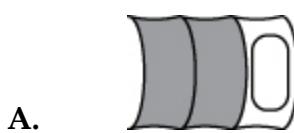
- A.
- B.
- C.
- D.

Use the following information to answer numbers 32–35.

A play tunnel is made by repeating groups of three panels using solid panels  and window panels  as described in the picture below. The picture shows the first ten panels of the tunnel.



32. Which section of panels below continues the pattern in this tunnel for the 11th through 13th panels?



For each of the following patterns, determine whether it shows the same pattern as the play tunnel above.

33. . . . G G R G G R G G R G . . . (Y) Yes (N) No

34. . . . ○ ● ● ○ ○ ● ● ○ ○ ● ● . . . (Y) Yes (N) No

35. . . . □ □ ○ □ □ □ ○ □ □ □ ○ . . . (Y) Yes (N) No

Go On ➔

Use the information below to answer numbers 36–39.

The two fastest times recorded for running a 200-meter race are 19.19 seconds, by Usain Bolt, and 19.32 seconds, by Michael Johnson.



Identify whether each decimal number below is between 19.19 and 19.32.

36. 19.309 (T) True (F) False

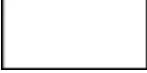
37. 19.8 (T) True (F) False

38. 19.247 (T) True (F) False

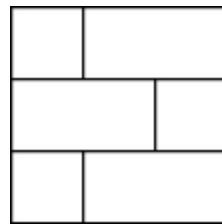
39. 19.031 (T) True (F) False

Go On ↗

40. The areas of two shapes are shown.

- The area of  is 18 square units.
- The area of  is 9 square units.

What is the area of the figure shown below?



- A. 6 square units
- B. 54 square units
- C. 81 square units
- D. 162 square units

For numbers **41–42**, determine whether each equation is true.

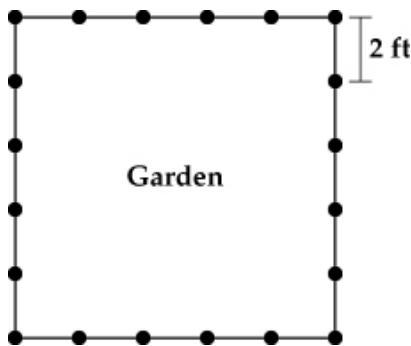
41. $0.56 = \frac{5}{6}$ (Y) Yes (N) No

42. $1.6 = 1\frac{3}{5}$ (Y) Yes (N) No

Go On ➔

Use the information below to answer numbers 43–45.

Mr. Reyes built a fence to enclose his square garden. He used 20 fence posts and placed them 2 feet apart, as shown below.



43. Based on this information, which statement must be true?

- A. The length of the garden is greater than the width of the garden.
- B. The width of the garden is greater than the length of the garden.
- C. The value of the perimeter is greater than the value of the area of the garden.
- D. The value of the area is greater than the value of the perimeter of the garden.

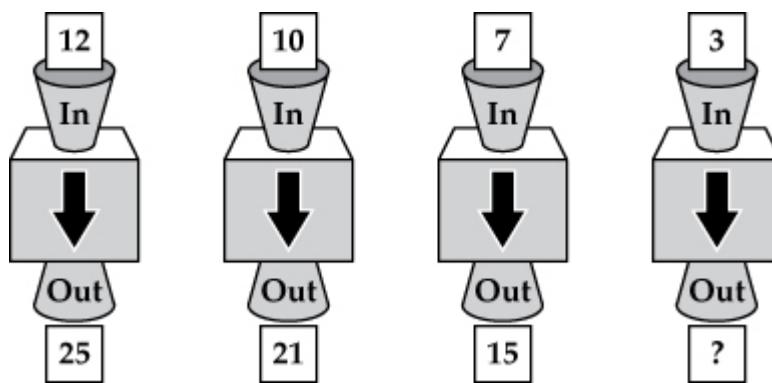
44. What is the perimeter, in feet, of the garden?

45. What is the area, in square feet, of the garden?

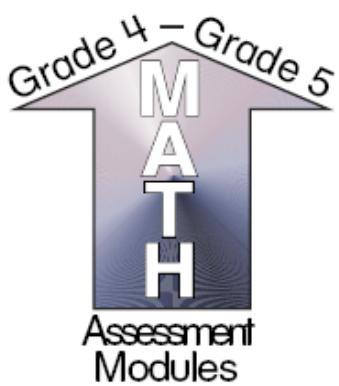
Go On ➔

 46.

A number machine applies the same rule to all numbers that are put into it. The picture below shows the numbers that came out of this number machine after three different numbers were put into it and the rule was applied.



What number should come out of this machine when 3 is put in?



Grade 5 Form L

Student Name

Teacher Name

Sample 1: Exactly how many sides does a triangle have?

- A. 2
- B. 3
- C. 4
- D. 5

Sample 2: Identify whether each number sentence is True or False.

- a* $3 \times 4 = 12$ (T) True (F) False
- b* $18 \div 3 = 6$ (T) True (F) False
- c* $4 \times 5 = 9$ (T) True (F) False

Sample 3: What is $10 + 14$?

Sample 4: What decimal number is represented by the phrase "four and five tenths"?

This symbol appears next to questions that require you to fill in your answers on a grid on the Answer Sheet. Directions for completing the Response Grid:

1. Work the problem and find an answer.
2. Write your answer in the answer boxes at the top of the grid.

For whole-number grids:

- Print your answer with the first digit in the answer box all the way to the left, OR with the last digit in the answer box all the way to the right.
- Print only one digit in each answer box. Do NOT leave a blank answer box in the middle of an answer.

For decimal grids:

- Use the decimal point to decide where to start printing your answer.

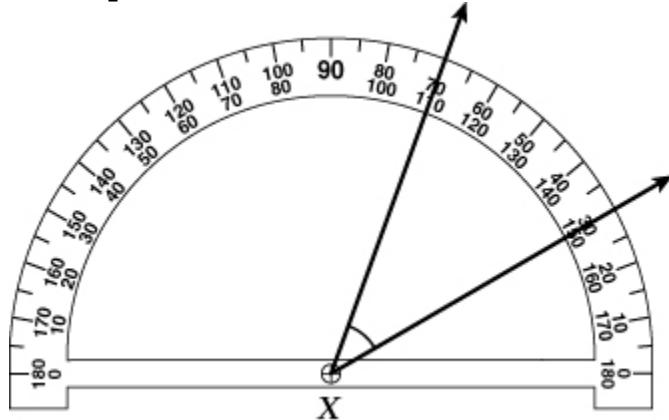
3. Fill in a bubble under each answer box that you used to write your answer.
 - Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
 - Fill in each bubble by making a solid black mark that completely fills the circle.
 - You MUST fill in the bubbles accurately to receive credit for your answer.



Use the blank space in this Test Booklet to do your work. Then mark your Answer Sheet for the answer you have chosen.

1. Kylie makes necklaces. The number of beads she needs for each necklace is represented by b . Which expression represents the number of beads she needs to make 5 necklaces?
- A. $5 \times b$
B. $5 + b$
C. $b \div 5$
D. $b - 5$

2. Angle X is shown in the picture below.



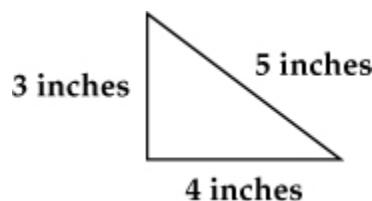
What is the measure of angle X to the nearest degree?

- A. 30°
B. 40°
C. 70°
D. 110°

Go On ➔

Use the following information to answer numbers 3–6.

Calvin will use pins and toothpicks to measure the perimeter of the triangle shown below. The length of each pin is 1 inch, and the length of each toothpick is 3 inches. He lays them end-to-end while measuring.



Determine which measurements would be equal to the perimeter of the triangle.

7. Look at this set of cards.

4.603	4.8	4.0997	4.59
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Which ordering of the cards lists the numbers from least to greatest value?

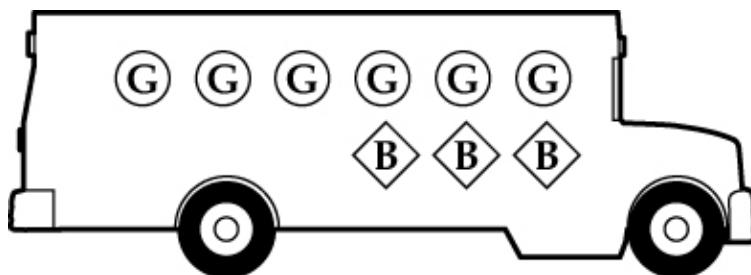
- A. 4.603 4.8 4.0997 4.59

B. 4.8 4.59 4.603 4.0997

C. 4.0997 4.59 4.603 4.8

D. 4.603 4.0997 4.8 4.59

8. This picture shows the number of students on Mr. Harvey's bus.



Key	
(G)	= Girl
(B)	= Boy

Based on the picture, which statement is true?

- A. $\frac{6}{9} - \frac{3}{3}$ equals the fraction of students on the bus who are girls.
- B. $\frac{6}{9} - \frac{3}{9}$ equals the fraction of students on the bus who are girls.
- C. $\frac{6}{6} - \frac{3}{3}$ equals the fraction of students on the bus who are boys.
- D. $\frac{9}{9} - \frac{6}{9}$ equals the fraction of students on the bus who are boys.

Use the following information to answer questions 9–10.

Dex plays a number game. You give him a number and he —

- doubles the number
- adds 6 to that answer
- subtracts 3 from that answer.

Dex then reports what he gets as the result of these three actions.

9. If you give Dex the number 10, what should he report as the result?

10. What number should you give Dex so that he reports 35 as the result?

Use the following information to answer questions 11–12.

Lin is going to the county fair tonight. His mother gave him \$24 to spend on ride tickets. Tickets for fast rides cost \$3 each, and tickets for slow rides cost \$2 each.



11. Lin plans to spend all of the money his mother gave him on fast-ride tickets. What is the total number of fast-ride tickets that Lin can buy?



12. Which statement could represent the word problem above?

- A. number of fast-ride tickets = 24×3
- B. number of fast-ride tickets = $24 \div 3$
- C. number of fast-ride tickets = 24×2
- D. number of fast-ride tickets = $24 \div 2$

13. What is the total number of different factors for the number 24?

- A. 8
- B. 6
- C. 4
- D. 2

Go On ➔

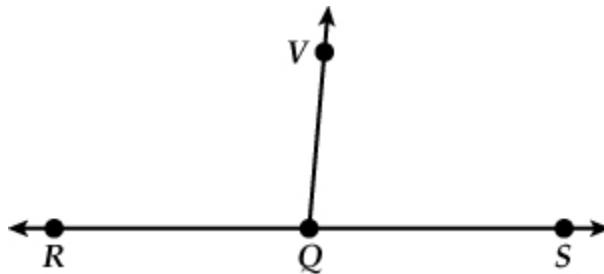
14. Which polygon named below has more than 5 sides and fewer than 10 sides?

- A. Decagon
- B. Octagon
- C. Pentagon
- D. Rhombus

15. Which of the following numbers is greater than 0.23 but less than 0.57 ?

- A. 0.046
- B. 0.615
- C. 0.358
- D. 0.224

16. In the diagram below, the measure of $\angle RQS$ is 180 degrees and the measure of $\angle VQS$ is 85 degrees.

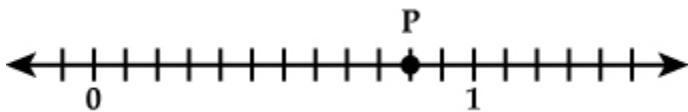


What is the measure of $\angle RQV$?

- A. 95 degrees
- B. 90 degrees
- C. 85 degrees
- D. 80 degrees

Go On ➔

17. Which fraction is represented by point P on the number line?



- A. $\frac{3}{4}$
- B. $\frac{5}{6}$
- C. $\frac{11}{13}$
- D. $\frac{11}{18}$

Use the following information to answer questions 18–21.

Jenna knows that she could solve the following multiplication problem using several different methods and still get the correct answer.

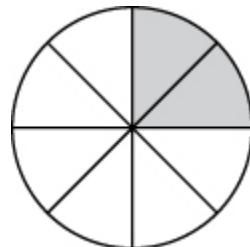
$$\begin{array}{r} 49 \\ \times 5 \\ \hline \end{array}$$

Which of the following methods would result in a correct answer for this problem?

- 18. Multiply 50 and 5, and then subtract 5. (Y) Yes (N) No
- 19. Multiply 50 and 5, and then subtract 49. (Y) Yes (N) No
- 20. Multiply 9 and 5, then multiply 4 and 5, and then add the two products together. (Y) Yes (N) No
- 21. Multiply 40 and 5, then multiply 9 and 5, and then add the two products together. (Y) Yes (N) No

Use the following information to answer numbers 22–26.

This circle is shaded to represent a fraction of the whole circle.



Determine whether each fraction or decimal below could represent the shaded portion of the circle.

22. $\frac{2}{6}$ (Y) Yes (N) No

23. $\frac{2}{8}$ (Y) Yes (N) No

24. $\frac{1}{4}$ (Y) Yes (N) No

25. 0.20 (Y) Yes (N) No

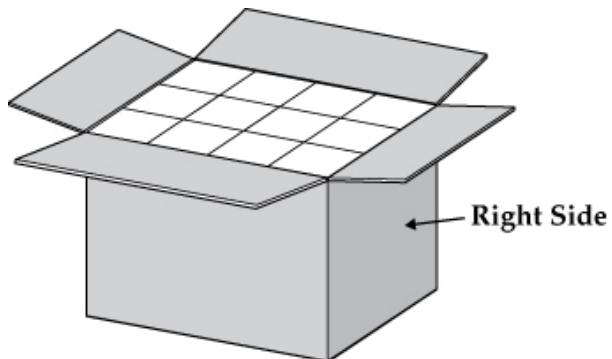
26. 0.25 (Y) Yes (N) No

27. What decimal number should go in the _____ to make this number sentence true?

$$1.2 + 3.98 + 0.02 + \underline{\hspace{1cm}} = 7.4$$

Go On ➔

-  28. A rectangular box is filled with 36 same-sized cubes. Connor opened the top of the box and could see 12 cubes.



If Connor closes the top and then opens the right side of the box, how many cubes should he see?

-  29. Jana needs \$120 to buy a new bicycle. She can earn money by walking dogs in her neighborhood. She earns \$3 each time she walks a dog.

How many times will Jana have to walk a dog in order to earn \$120 ?

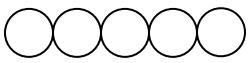


Go On ➔

30. If $a + b = 5$, what does $18 + b + a$ equal?

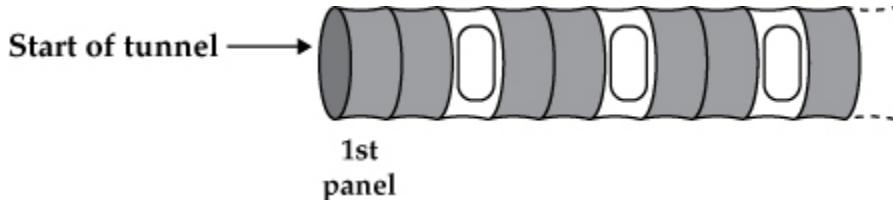
- A. 13
- B. 23
- C. 28
- D. 33

31.  represents $\frac{1}{4}$ of a set of circles. Which of the following could represent the whole set of circles?

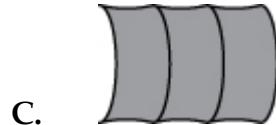
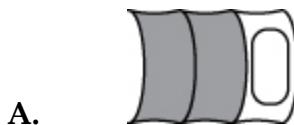
- A. 
- B. 
- C. 
- D. 

Use the following information to answer questions 32–35.

A play tunnel is made by repeating groups of three panels using solid panels  and window panels  as described in the picture below. The picture shows the first ten panels of the tunnel.



32. Which section of panels below continues the pattern in this tunnel for the 11th through 13th panels?



For each of the following patterns, determine whether it shows the same pattern as the play tunnel above.

33. . . . G G R G G R G G R G . . . (Y) Yes (N) No

34. . . . ○ ● ● ○ ● ● ○ ● ● . . . (Y) Yes (N) No

35. . . . □ □ ○ □ □ □ ○ □ □ □ ○ . . . (Y) Yes (N) No

Use the information below to answer numbers 36–39.

The two fastest times recorded for running a 200-meter race are 19.19 seconds, by Usain Bolt, and 19.32 seconds, by Michael Johnson.



Identify whether each decimal number below is between 19.19 and 19.32.

- 36.** 19.309 (T) True (F) False

37. 19.8 (T) True (F) False

38. 19.247 (T) True (F) False

39. 19.031 (T) True (F) False

- 40.** Each number shown below is either a composite number or prime number.

20

21

22

23

24

25

26

27

28

29

Which of the following correctly identifies all the prime numbers listed above?

A. 21, 23, 25, 27, 29

C. 20, 22, 24, 26, 28

B. 23, 27, 29

D. 23, 29

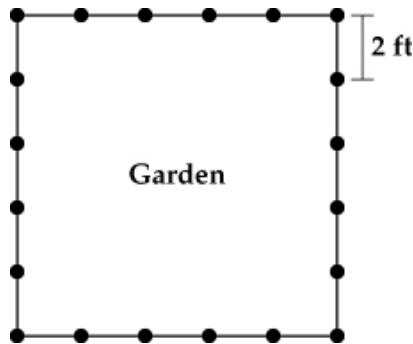
- For numbers 41–42, determine whether each equation is true.

41. $3.25 = \frac{3}{25}$ (Y) Yes (N) No

42. $1.75 = \frac{7}{4}$ (Y) Yes (N) No

Use the information below to answer numbers 43–45.

Mr. Reyes built a fence to enclose his square garden. He used 20 fence posts and placed them 2 feet apart, as shown below.



43. Based on this information, which statement must be true?

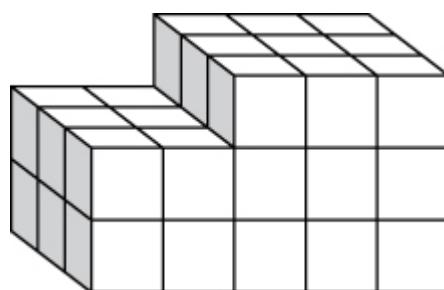
- A. The length of the garden is greater than the width of the garden.
- B. The width of the garden is greater than the length of the garden.
- C. The value of the perimeter is greater than the value of the area of the garden.
- D. The value of the area is greater than the value of the perimeter of the garden.

44. What is the perimeter, in feet, of the garden?

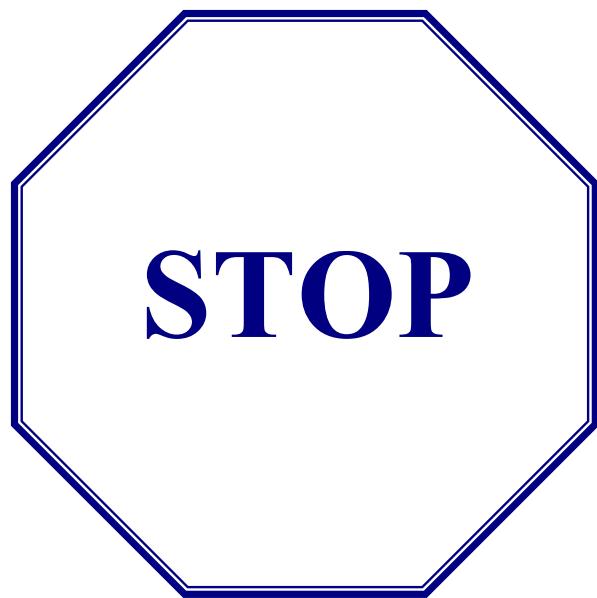
45. What is the area, in square feet, of the garden?

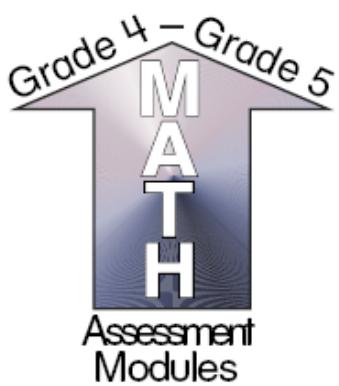
 46.

Avery made the figure shown below by stacking together some centimeter cubes.



What is the volume, in cubic centimeters, of Avery's stack of cubes?





Grade 5 Form M

Student Name

Teacher Name

Sample 1: Exactly how many sides does a triangle have?

- A. 2
- B. 3
- C. 4
- D. 5

Sample 2: Identify whether each number sentence is True or False.

- a* $3 \times 4 = 12$ (T) True (F) False
- b* $18 \div 3 = 6$ (T) True (F) False
- c* $4 \times 5 = 9$ (T) True (F) False

Sample 3: What is $10 + 14$?

Sample 4: What decimal number is represented by the phrase "four and five tenths"?

This symbol appears next to questions that require you to fill in your answers on a grid on the Answer Sheet. Directions for completing the Response Grid:

1. Work the problem and find an answer.
2. Write your answer in the answer boxes at the top of the grid.

For whole-number grids:

- Print your answer with the first digit in the answer box all the way to the left, OR with the last digit in the answer box all the way to the right.
- Print only one digit in each answer box. Do NOT leave a blank answer box in the middle of an answer.

For decimal grids:

- Use the decimal point to decide where to start printing your answer.

3. Fill in a bubble under each answer box that you used to write your answer.
 - Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
 - Fill in each bubble by making a solid black mark that completely fills the circle.
 - You MUST fill in the bubbles accurately to receive credit for your answer.



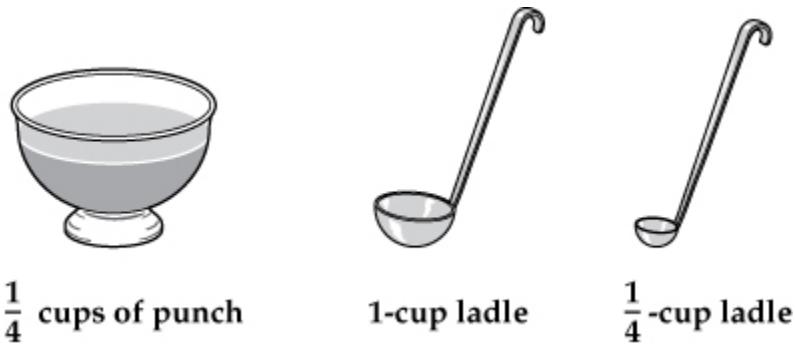
Use the blank space in this Test Booklet to do your work. Then mark your Answer Sheet for the answer you have chosen.

1. What number should fill in the _____ to make this number sentence true?

$$6 + 3 + 7 = \underline{\hspace{1cm}} + 7$$

- A. 3
- B. 9
- C. 16
- D. 23

2. Hilary is serving punch out of a bowl using a 1-cup ladle and a $\frac{1}{4}$ -cup ladle. Before she begins serving, the bowl is filled with $7\frac{1}{4}$ cups of punch.



Which combination of servings would completely empty the punch bowl?

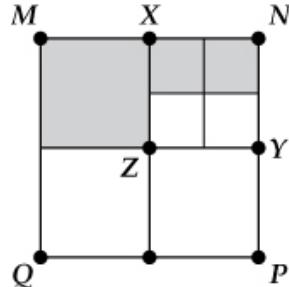
- A. two(2) 1-cup servings and twelve(12) $\frac{1}{4}$ -cup servings
- B. two(2) 1-cup servings and five(5) $\frac{1}{4}$ -cup servings
- C. six(6) 1-cup servings and five(5) $\frac{1}{4}$ -cup servings
- D. six(6) 1-cup servings and one(1) $\frac{1}{4}$ -cup serving

Go On ➔

Sometimes it is helpful to name a number in different ways. For example, the number 35 might be renamed as 3 tens + 5 ones. For numbers 3–6, identify whether each way to rename the number 6,184 is correct.

3. 61 hundreds + 84 ones (Y) Yes (N) No
4. 6 thousands + 8 tens + 4 ones (Y) Yes (N) No
5. 61 hundreds + 8 tens + 40 tenths (Y) Yes (N) No
6. 6 thousands + 1 hundred + 8 tens + 4 ones (Y) Yes (N) No

7. Square $MNPQ$ is divided equally into four squares, and square $XXYZ$ is divided equally into four smaller squares, as shown below.



What fraction of square $MNPQ$ is shaded?

- A. $\frac{1}{2}$
- B. $\frac{1}{4}$
- C. $\frac{3}{8}$
- D. $\frac{3}{4}$

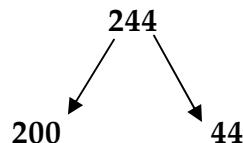
Go On ➔

8. Gabe's math assignment was to show his work for the following problem.

What is $\frac{1}{4}$ of 244?

The steps he took to solve the problem are shown below. If there is a mistake in his work, mark the letter that matches the Step in which he made his first mistake. If Gabe made no mistake, mark the letter D.

Step 1: I separated 244 into two parts as shown below.



Step 2: I know that $\frac{1}{4}$ of 200 is 50 and $\frac{1}{4}$ of 44 is 11.

Step 3: Therefore, $\frac{1}{4}$ of 244 is equal to 50 + 11, which is 61.

- A. Step 1
- B. Step 2
- C. Step 3
- D. There is no mistake.

Use the information below to answer numbers 9–10.

Dex plays a number game. You give him a number and he —

- doubles the number
- adds 6 to that answer
- subtracts 3 from that answer.

Dex then reports what he gets as the result of these three actions.



9. If you give Dex the number 10, what should he report as the result?



10. What number should you give Dex so that he reports 35 as the result?

Use the following information to answer numbers 11–12.

Lin is going to the county fair tonight. His mother gave him \$24 to spend on ride tickets. Tickets for fast rides cost \$3 each, and tickets for slow rides cost \$2 each.

11.

- Lin plans to spend all of the money his mother gave him on fast-ride tickets. What is the total number of fast-ride tickets that Lin can buy?



12. Which statement could represent the word problem above?

- A. number of fast-ride tickets = 24×3
- B. number of fast-ride tickets = $24 \div 3$
- C. number of fast-ride tickets = 24×2
- D. number of fast-ride tickets = $24 \div 2$

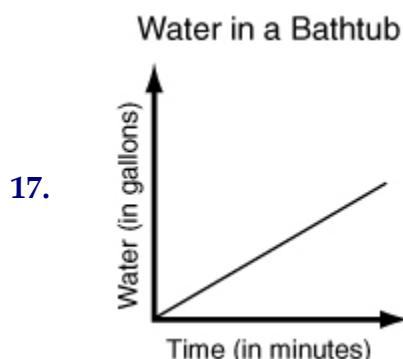
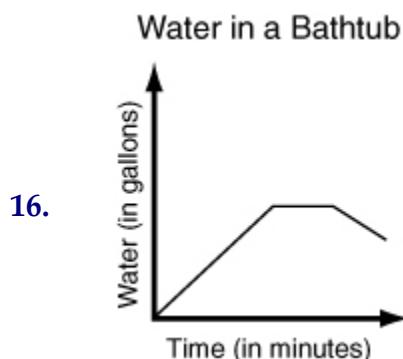
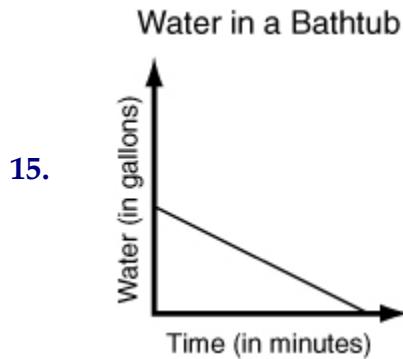
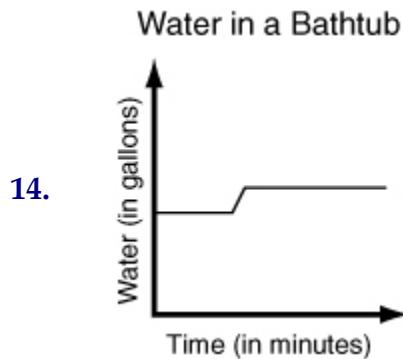
13. What is the total number of different factors for the number 24?

- A. 8
- B. 6
- C. 4
- D. 2

For numbers 14–17, think about gallons of water in a bathtub. Tim can turn the faucet on to add water to the tub, and he can open the drain to let water out.



The graphs below show the amount of water in the bathtub over time. Each graph has a description that best matches the graph. Match each description with its graph by marking the correct letter (A, B, C, D) on your Answer Sheet for each graph (14, 15, 16, 17).



- A. Tim turned the faucet on to add water to the bathtub at a constant rate.
- B. Tim filled the bathtub with water and turned off the faucet. After a couple minutes, he decided the tub was too full. He opened the drain to let some water out of the tub.
- C. Tim's mother had already put water into the bathtub for Tim's bath. Once Tim stepped in the tub, he decided the water was too cool. He then turned on the faucet for one minute to add more hot water.
- D. Tim opened the drain to empty all the water from the bathtub at a constant rate.

Use the following information to answer numbers 18–21.

Jenna knows that she could solve the following multiplication problem using several different methods and still get the correct answer.

$$\begin{array}{r} 49 \\ \times 5 \\ \hline \end{array}$$

Which of the following methods would result in a correct answer for this problem?

18. Multiply 50 and 5, and then subtract 5. (Y) Yes (N) No
19. Multiply 50 and 5, and then subtract 49. (Y) Yes (N) No
20. Multiply 9 and 5, then multiply 4 and 5, and then add the two products together. (Y) Yes (N) No
21. Multiply 40 and 5, then multiply 9 and 5, and then add the two products together. (Y) Yes (N) No

Go On ➔

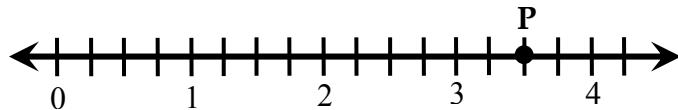
Use the following information to answer numbers 22–26.

Harry has a box of 24 crayons. He shares his crayons with 3 friends so that he and his friends each have 6 crayons. Based on this situation, determine whether each of the following statements must be true.

22. Each child now has more than $\frac{1}{2}$ of the original number of crayons.
(Y) Yes (N) No
23. Each child now has exactly $\frac{1}{6}$ of the original number of crayons.
(Y) Yes (N) No
24. Each child now has more than 0.75 of the original number of crayons.
(Y) Yes (N) No
25. Each child now has less than 0.50 of the original number of crayons.
(Y) Yes (N) No
26. Each child now has exactly $\frac{1}{4}$ of the original number of crayons.
(Y) Yes (N) No



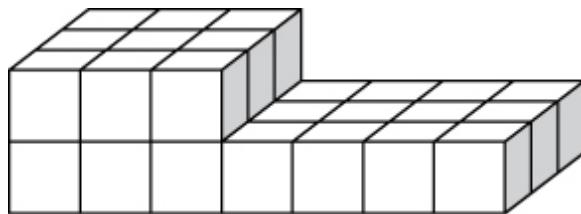
27. Look at the following number line.



What decimal number is represented by point P?



28. Izzy made the figure shown below by stacking together some centimeter cubes.



What is the volume, in cubic centimeters, of Izzy's stack of cubes?



29. A rectangle has a perimeter of 40 inches. The width of the rectangle is 8 inches. What is the length of this rectangle?

30. If $a + b = 5$, what does $18 + b + a$ equal?

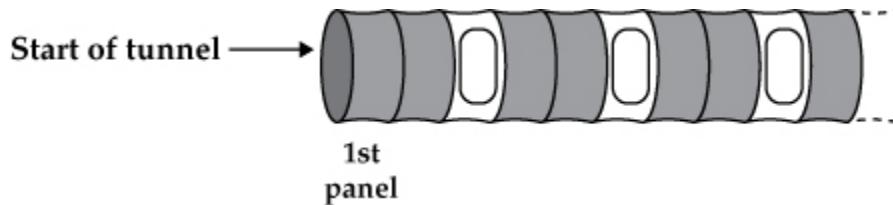
- A. 13
- B. 23
- C. 28
- D. 33

31. represents $\frac{1}{4}$ of a set of circles. Which of the following could represent the whole set of circles?

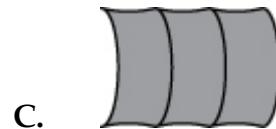
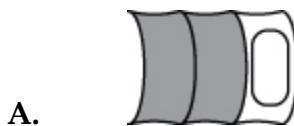
- A.
- B.
- C.
- D.

Use the following information to answer numbers 32–35.

A play tunnel is made by repeating groups of three panels using solid panels  and window panels  as described in the picture below. The picture shows the first ten panels of the tunnel.



32. Which section of panels below continues the pattern in this tunnel for the 11th through 13th panels?



For each of the following patterns, determine whether it shows the same pattern as the play tunnel above.

33. . . . G G R G G R G G R G . . . (Y) Yes (N) No

34. . . . ○ ● ● ○ ○ ● ● ○ ○ ● ● . . . (Y) Yes (N) No

35. . . . □ □ ○ □ □ □ ○ □ □ □ ○ . . . (Y) Yes (N) No

Use the information below to answer numbers 36–39.

Dana drew two rectangles. The length of the larger rectangle is 2 times the length of the smaller rectangle. The width of the larger rectangle is 2 times the width of the smaller rectangle.



Identify whether each statement about these rectangles is True or False.

36. The area of the larger rectangle is 2 times the area of the smaller rectangle.
(T) True (F) False
37. The area of the larger rectangle is 4 times the area of the smaller rectangle.
(T) True (F) False
38. The perimeter of the larger rectangle is 2 times the perimeter of the smaller rectangle.
(T) True (F) False
39. The perimeter of the larger rectangle is 4 times the perimeter of the smaller rectangle.
(T) True (F) False
40. By how much will the value of the number 4,253 increase if the “2” is replaced with a “9”?
- A. 7
B. 70
C. 700
D. 7,000

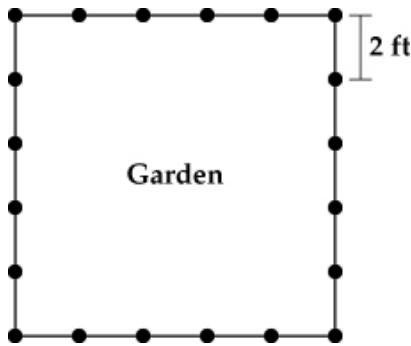
For numbers 41–42, determine whether each equation is true.

41. $0.56 = \frac{5}{6}$ (Y) Yes (N) No

42. $1.6 = 1\frac{3}{5}$ (Y) Yes (N) No

Use the information below to answer numbers 43–45.

Mr. Reyes built a fence to enclose his square garden. He used 20 fence posts and placed them 2 feet apart, as shown below.



43. Based on this information, which statement must be true?

- A. The length of the garden is greater than the width of the garden.
- B. The width of the garden is greater than the length of the garden.
- C. The value of the perimeter is greater than the value of the area of the garden.
- D. The value of the area is greater than the value of the perimeter of the garden.

44. What is the perimeter, in feet, of the garden?

45. What is the area, in square feet, of the garden?

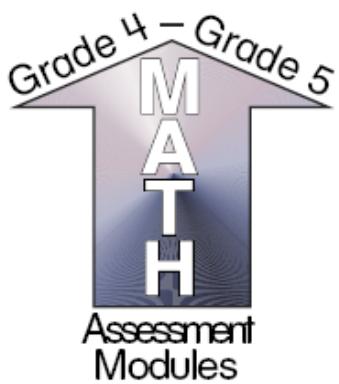
-  46. Madison is planning to go to the museum. Prices for museum tickets are shown below.

Admit One
Child \$0.75

Admit One
Adult \$1.25

Madison's mother told her she could invite some friends to go with her to the museum as long as the total cost for tickets is not more than \$6.00. Madison's mother is the only adult going with them to the museum.

What is the maximum number of child tickets that Madison's mother can buy after purchasing one adult ticket using her \$6.00?



Grade 5 Form N

Student Name

Teacher Name

Sample 1: Exactly how many sides does a triangle have?

- A. 2
- B. 3
- C. 4
- D. 5

Sample 2: Identify whether each number sentence is True or False.

- a* $3 \times 4 = 12$ (T) True (F) False
- b* $18 \div 3 = 6$ (T) True (F) False
- c* $4 \times 5 = 9$ (T) True (F) False

Sample 3: What is $10 + 14$?

Sample 4: What decimal number is represented by the phrase "four and five tenths"?

This symbol appears next to questions that require you to fill in your answers on a grid on the Answer Sheet. Directions for completing the Response Grid:

1. Work the problem and find an answer.
2. Write your answer in the answer boxes at the top of the grid.

For whole-number grids:

- Print your answer with the first digit in the answer box all the way to the left, OR with the last digit in the answer box all the way to the right.
- Print only one digit in each answer box. Do NOT leave a blank answer box in the middle of an answer.

For decimal grids:

- Use the decimal point to decide where to start printing your answer.

3. Fill in a bubble under each answer box that you used to write your answer.
 - Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
 - Fill in each bubble by making a solid black mark that completely fills the circle.
 - You MUST fill in the bubbles accurately to receive credit for your answer.



Use the blank space in this Test Booklet to do your work. Then mark your Answer Sheet for the answer you have chosen.

1. José applies a rule to all the numbers in column A to get all the numbers in column B. He completes column B by applying this same rule to 10 and 20.

A	B
3	12
4	16
6	24
10	
20	

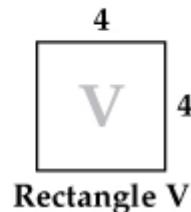
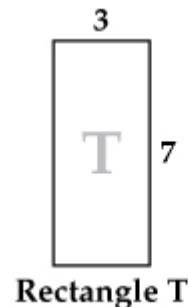
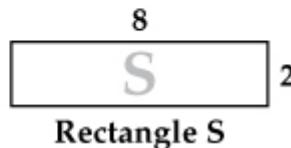
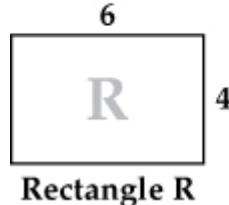
Which of the following could be the rule that José uses?

- A. Divide the number in column A by 4.
B. Multiply the number in column A by 4.
C. Subtract 9 from the number in column A.
D. Add 9 to the number in column A.
2. What is the least common multiple (LCM) of 4 and 6 ?
- A. 4
B. 6
C. 12
D. 24

Go On ➔

Use the information below to answer numbers 3–6.

Four rectangles are shown below.



Answer (Y) Yes for each rectangle in which the value of its perimeter is greater than the value of its area. Otherwise, answer (N) No.

3. Rectangle R

(Y) Yes (N) No

4. Rectangle S

(Y) Yes (N) No

5. Rectangle T

(Y) Yes (N) No

6. Rectangle V

(Y) Yes (N) No

7. Which polygon named below has more than 4 sides and fewer than 8 sides?

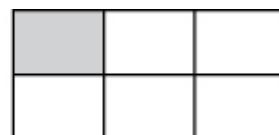
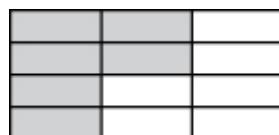
- A. Decagon
- B. Hexagon
- C. Octagon
- D. Rhombus

Go On ➔

8. This shaded rectangle represents one whole:



Two fractions are represented by the shaded portions of the rectangles shown below.

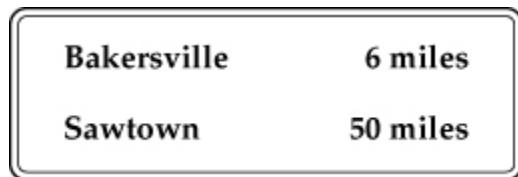


When added together, what is the sum of these two fractions?

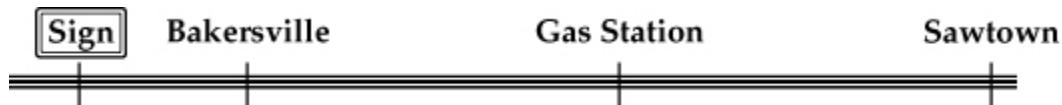
- A. $\frac{7}{18}$
- B. $\frac{7}{12}$
- C. $\frac{4}{9}$
- D. $\frac{2}{3}$

Use the information below to answer numbers 9–10.

Kyle is traveling along a road toward Sawtown and sees the following sign.



A gas station is located halfway between Bakersville and Sawtown as shown on this diagram.



 9. How many miles is it from Bakersville to Sawtown?

 10. How many miles is it from the sign to the gas station?

Go On ➔

Use the following information to answer numbers 11–12.

Lin is going to the county fair tonight. His mother gave him \$24 to spend on ride tickets. Tickets for fast rides cost \$3 each, and tickets for slow rides cost \$2 each.

11.

- Lin plans to spend all of the money his mother gave him on fast-ride tickets. What is the total number of fast-ride tickets that Lin can buy?



12. Which statement could represent the word problem above?

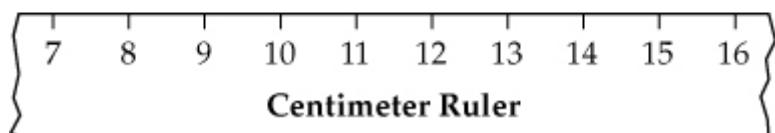
- A. number of fast-ride tickets = 24×3
- B. number of fast-ride tickets = $24 \div 3$
- C. number of fast-ride tickets = 24×2
- D. number of fast-ride tickets = $24 \div 2$

13. What is the total number of different factors for the number 24?

- A. 8
- B. 6
- C. 4
- D. 2

Go On ➔

14. Use the broken centimeter ruler shown below the rectangle as a tool to measure the perimeter of this rectangle.



What is the perimeter of the rectangle, to the nearest whole centimeter?

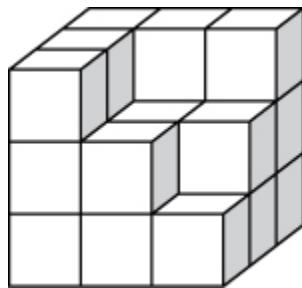
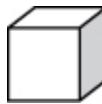
- A. 15
- B. 20
- C. 30
- D. 50

15. Which fraction has a value closest to $\frac{3}{4}$?

- A. $\frac{1}{5}$
- B. $\frac{1}{4}$
- C. $\frac{4}{4}$
- D. $\frac{5}{8}$

Go On ➔

16. Malik built the solid figure below by stacking together some unit cubes.



What is the total number of unit cubes in Malik's solid figure?

- A. 9
- B. 14
- C. 22
- D. 27

17. Look at the range of numbers graphed on this number line, as represented by the shaded section.



When plotted on the number line, which value would not lie within the shaded section?

- A. $\frac{7}{6}$
- B. 0.12
- C. $\frac{4}{5}$
- D. 1.35

Go On ➔

Use the following information to answer questions 18–21.

Jenna knows that she could solve the following multiplication problem using several different methods and still get the correct answer.

$$\begin{array}{r} 49 \\ \times 5 \\ \hline \end{array}$$

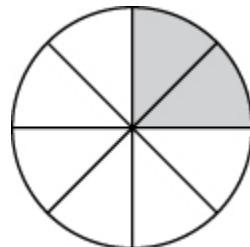
Which of the following methods would result in a correct answer for this problem?

18. Multiply 50 and 5, and then subtract 5. (Y) Yes (N) No
19. Multiply 50 and 5, and then subtract 49. (Y) Yes (N) No
20. Multiply 9 and 5, then multiply 4 and 5, and then add the two products together. (Y) Yes (N) No
21. Multiply 40 and 5, then multiply 9 and 5, and then add the two products together. (Y) Yes (N) No

Go On ➔

Use the following information to answer numbers 22–26.

This circle is shaded to represent a fraction of the whole circle.



Determine whether each fraction or decimal below could represent the shaded portion of the circle.

22. $\frac{2}{6}$ (Y) Yes (N) No

23. $\frac{2}{8}$ (Y) Yes (N) No

24. $\frac{1}{4}$ (Y) Yes (N) No

25. 0.20 (Y) Yes (N) No

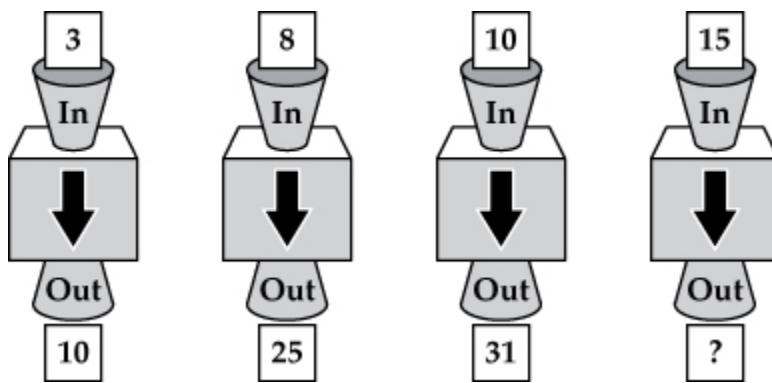
26. 0.25 (Y) Yes (N) No

27. What decimal number should go in the _____ to make this number sentence true?

$$0.080 + 0.114 + 0.306 + \underline{\hspace{1cm}} = 3.8$$

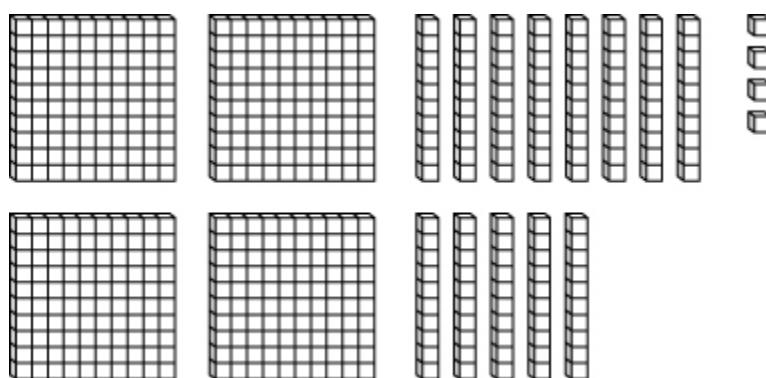
Go On ➔

-  28. A number machine applies the same rule to all numbers that are put into it. The picture below shows the numbers that came out of this number machine after three different numbers were put into it and the rule was applied.



What number should come out of this machine when 15 is put in?

-  29. A set of place value blocks is shown below.



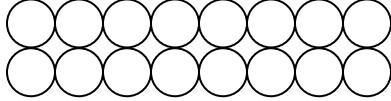
What is the value of the whole number represented by all of these blocks?

Go On ➔

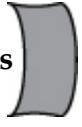
30. If $a + b = 5$, what does $18 + b + a$ equal?

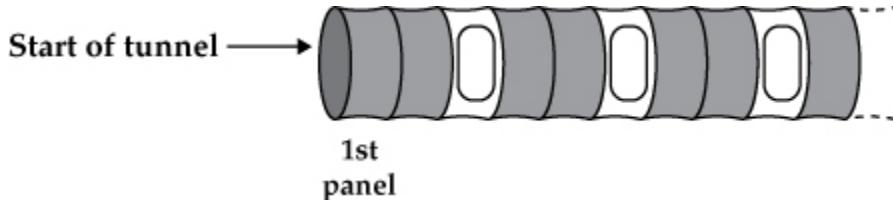
- A. 13
- B. 23
- C. 28
- D. 33

31.  represents $\frac{1}{4}$ of a set of circles. Which of the following could represent the whole set of circles?

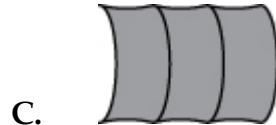
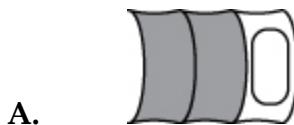
- A. 
- B. 
- C. 
- D. 

Use the following information to answer questions 32–35.

A play tunnel is made by repeating groups of three panels using solid panels  and window panels  as described in the picture below. The picture shows the first ten panels of the tunnel.



32. Which section of panels below continues the pattern in this tunnel for the 11th through 13th panels?



For each of the following patterns, determine whether it shows the same pattern as the play tunnel above.

33. . . . G G R G G R G G R G . . . (Y) Yes (N) No

34. . . . ○ ● ● ○ ● ● ○ ● ● . . . (Y) Yes (N) No

35. . . . □ □ ○ □ □ □ ○ □ □ □ ○ . . . (Y) Yes (N) No

Go On ➔

Use the information below to answer numbers 36–39.

The two fastest times recorded for running a 200-meter race are 19.19 seconds, by Usain Bolt, and 19.32 seconds, by Michael Johnson.



Identify whether each decimal number below is between 19.19 and 19.32.

36. 19.309 (T) True (F) False

37. 19.8 (T) True (F) False

38. 19.247 (T) True (F) False

39. 19.031 (T) True (F) False

40. There will be 27 people at a party, and each person will get 2 slices of pizza. Each pizza has 8 slices. How many pizzas need to be ordered for the party?

- A. 6
- B. 7
- C. 16
- D. 54

Go On ➔

For numbers 41–42, determine whether each equation is true.

41. $0.56 = \frac{5}{6}$

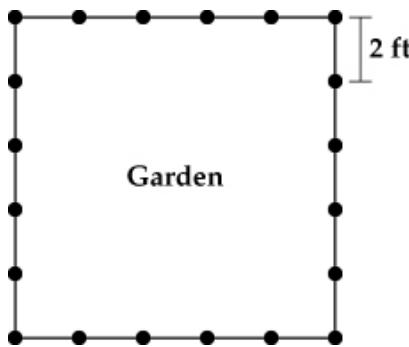
(Y) Yes (N) No

42. $1.6 = 1\frac{3}{5}$

(Y) Yes (N) No

Use the information below to answer numbers 43–45.

Mr. Reyes built a fence to enclose his square garden. He used 20 fence posts and placed them 2 feet apart, as shown below.



43. Based on this information, which statement must be true?

- A. The length of the garden is greater than the width of the garden.
- B. The width of the garden is greater than the length of the garden.
- C. The value of the perimeter is greater than the value of the area of the garden.
- D. The value of the area is greater than the value of the perimeter of the garden.

44. What is the perimeter, in feet, of the garden?

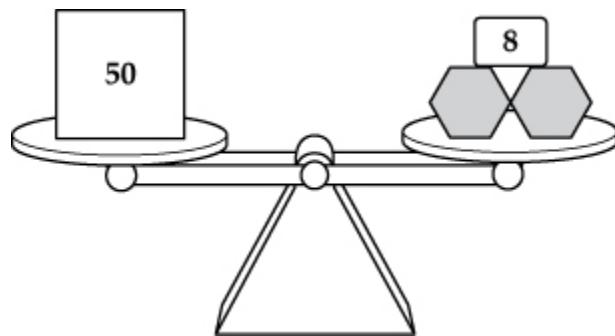
45. What is the area, in square feet, of the garden?

Go On ➔



46.

For the question below, shapes are assigned a weight. Identical shapes have the same weight. This scale is balanced so that the total weight on each of the sides is the same.



What is the value of the weight for this shape?



STOP