MICHIGAN STATE BOARD OF EDUCATION
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PART 1

DIRECTIONS

This test has three parts. You may NOT use a calculator on the first part. You may use open space in this test booklet for scratch paper. No additional sheets may be used.

There are two types of items on this test: multiple-choice and open-ended.

1. Multiple-choice items will require you to choose the best answer from among the answer choices. For these items, use only a No. 2 pencil to mark your answer in your Answer Document. If you erase an answer, be sure to erase it completely. If you skip an item, be sure to mark the answer to the next item in the correct place in your Answer Document.

2. An open-ended item will be found in your test booklet and require you to write, explain, or show your work. For this item show all of your work neatly and clearly in the space provided in your Answer Document using a No. 2 pencil.

Sample Multiple-Choice Item:

Jackie had 56 trading cards. She gave some of the cards to Wanda. Then Jackie had 23 trading cards left. What was the total number of trading cards Jackie gave to Wanda?

A 23
B 33
C 39
D 79

For this sample item, the correct answer is B. Circle B is filled in on the sample item in your Answer Document.
Sample Open-Ended Item:

The Lopez children went to the movies. They wanted to buy a tub of popcorn that cost $1.35. They counted their money and had the following:

- Maria had 2 quarters.
- Carlos had 40 cents in dimes.
- Luis had the same number of nickels as Carlos had dimes.
- Ana had 2 dimes and 2 nickels.

Did the Lopez children have enough money to buy the popcorn? Explain how you arrived at your answer. Show all of your work.

\[
\begin{align*}
$ .50 & \quad \text{Maria} \\
.40 & \quad \text{Carlos} \\
.20 & \quad \text{Luis} \\
.20 & \quad \text{Ana} \\
+.10 & \quad \text{Ana} \\
\hline
$ 1.40 & \\
\end{align*}
\]

Yes. They had 5 cents more than they needed.

For this sample item you would answer yes and explain that the Lopez children had 5 cents more than they needed. Remember to show your work.

You will have at least 30 minutes to finish Part 1 of this test. You will be given additional time if necessary.

1. Once you have reached the word STOP in your test booklet, do NOT go on to the next page.
2. If you finish early, you may check your work in Part 1 of the test ONLY. Do NOT look at items in other parts of the test.

If you do not understand any of these directions, please raise your hand.
1. Each ◊ in the model below represents 1.

What number is represented by the model shown below?

A. 523
B. 900
C. 5,203
D. 5,230

2. Read and write numbers to 10,000

A. place value error
B. correct
C. place value error
D. place value error
3. What is the correct word form of 2,876?
   A. Twenty-eight, seventy-six
   B. Two hundred, eighty-seven six
   C. Two thousand, eight hundred six
   D. Two thousand, eight hundred seventy-six

4. Identify place value of digit in a number
   A. place value error
   B. place value error
   C. place value error
   D. correct

5. Which is another way to write 6,726?
   A. 6 hundreds, 7 thousands, 2 tens, and 6 ones
   B. 7 hundreds, 6 hundreds, 2 tens, and 6 ones
   C. 6 thousands, 7 hundreds, 2 tens, and 6 ones
   D. 6 thousands, 2 hundreds, 7 tens, and 6 ones
6 Identify place value of digit in a number
   A place value error, used face value
   B place value error
   C correct
   D place value error

7 Subtract
   \[
   \begin{array}{c}
   82 \\
   -47 \\
   \hline
   35 \\
   \end{array}
   \]
   A 25
   B 35
   C 45
   D 55

8 Add and subtract thru 999 w/regrouping, 9,999 w/o
   A subtracted, instead of added
   B subtracted incorrectly, instead of added
   C correct
   D place value error in 100s place
9 Add $26 + 19$

A 35  
B 44  
C 45  
D 47

10 Estimate sum / difference of two 3-digit numbers

A overestimated  
B overestimated  
C correct  
D underestimated

11 Which is closest to the value of $326 + 179$?

A 500  
B 400  
C 300  
D 200
12 Estimate sum / difference of two 3-digit numbers

A underestimated
B correct
C added incorrectly instead of subtracted
D added instead of subtracted

13 Which of the following is in the same fact family as $28 \div 7 = 4$?

A $28 + 7 = 35$
B $28 \div 2 = 14$
C $7 \times 4 = 28$
D $7 \times 28 = 196$

14 Use x and ÷ to show the inverse relationship

A addition fact
B multiplication fact from different family
C subtraction fact
D correct
15 Which number can be used to make both of the number sentences below true?

\[ 4 \times \_\_\_ = 12 \quad 12 \div \_\_\_ = 4 \]

A 48
B 16
C 8
D 3

16 Find products to 10 X 10 and related quotients

A greater than product
B correct
C less than product
D less than product

17 Divide \(48 \div 6\)

A 288
B 54
C 42
D 8
18 Find products to 10 X 10 and related quotients

A less than quotient
B less than quotient
C less than quotient
D correct
PART 2

DIRECTIONS

You will now begin Part 2 of this test. You may use a calculator on this part of the test, and you may use open space in this test booklet for scratch paper. No additional sheets may be used.

If you finish early, you may check your work for Part 2 ONLY.

Do NOT look at items in other parts of this test.

You will have at least 50 minutes to finish Part 2 of this test.
19 John has 15 balloons. He will share the balloons equally with 2 friends. Which of the following can be used to determine the number of balloons each of them should receive?

A $15 + 3 = ?$
B $15 ÷ 3 = ?$
C $15 \times 3 = ?$
D $15 - 3 = ?$

20 Recognize multiplication and division situations

A subtraction
B addition
C multiplication
D correct

21 Tina bought 3 boxes of crayons. Each box had 6 crayons. Which of the following can be used to determine the total number of crayons she bought?

A $3 + 6 = ?$
B $3 - 6 = ?$
C $3 ÷ 6 = ?$
D $3 \times 6 = ?$
22 Understand meaning & terminology of fractions

A  correct number of shaded regions, total incorrect
B  incorrect number of shaded regions, total correct
C  correct
D  incorrect number of shaded regions, incorrect total

23 Each section of the circle below is the same size. What fractional part of the circle is shaded?

\[ \frac{3}{5} \]

\[ \frac{5}{8} \]

\[ \frac{8}{3} \]

\[ \frac{3}{8} \]
24 Understand meaning & terminology of fractions

A ratio of shaded to non-shaded

B ratio of non-shaded to shaded

C fractional part that is not shaded

D correct

25 The clocks below show the time Maggie left for school and the time she returned home.

![Clocks showing time](image)

Left for School

Returned Home

Which best represents the amount of time Maggie was away from home that day?

A 9 hours and 5 minutes

B 8 hours and 50 minutes

C 8 hours and 1 minute

D 8 hours and 5 minutes
26 Measure in mixed units within measurement system

A addition error in ones place
B correct
C addition error in tens and ones place
D total instead of difference

27 The clocks below show the times the winter festival parade began and ended.

![Clocks showing the times](image)

Which of the following best represents the amount of time the parade lasted?

A 1 hour 10 minutes
B 1 hour 40 minutes
C 2 hours 4 minutes
D 2 hours 40 minutes

28 Know benchmark temperatures & compare cooler, warmer

A incorrect benchmark, incorrect scale
B incorrect benchmark, correct scale
C correct benchmark, incorrect scale
D correct
29 Which temperature is above the boiling point of water?
   A  220°F
   B  210°F
   C  180°F
   D  150°F

30 Know benchmark temperatures & compare cooler, warmer
   A  correct
   B  less than benchmark temperature
   C  less than benchmark temperature
   D  less than benchmark temperature

31 Subtract $5.25 – $2.35
   A  $7.60
   B  $3.90
   C  $3.10
   D  $2.90
32  Add and subtract money in dollars and cents
    A  addition error in dollars place
    B  correct
    C  addition error in tenths place
    D  addition error in tenths place

33  Subtract  $20.00 − $12.25
    A  $ 7.75
    B  $ 8.25
    C  $ 8.75
    D  $32.25

34  Identify, describe, classify familiar 3-D solids
    A  correct
    B  incorrect 3-D solid
    C  incorrect 3-D solid
    D  incorrect 3-D solid
35 Which of the following objects in John’s classroom is the best example of a rectangular prism?

A  a piece of chalk
B  a tissue box
C  a paper clip
D  a glue stick

36 Identify, describe, classify familiar 3-D solids

A  incorrect 3-D solid
B  correct
C  incorrect 3-D solid
D  incorrect 3-D solid
37 The graph below shows the number of pet fish owned by five friends.

What was the minimum number of fish owned by one friend?

A 12
B 10
C 4
D 2

38 Read scales on axes. Identify the max, min, range.

A not maximum
B minimum
C correct
D next whole number above maximum
39 The graph below shows the number of books five friends read over the last summer.

What was the minimum number of books read by one friend?

A  15
B  13
C  8
D  6
PART 3

DIRECTIONS

You will now begin Part 3 of this test. You may use a calculator on this part of the test, and you may use open space in this test booklet for scratch paper. No additional sheets may be used.

If you finish early, you may check your work for Part 3 ONLY.

Do NOT look at items in other parts of this test.

You will have at least 50 minutes to finish Part 3 of this test.
40 Identify operation for problem and solve

A subtraction error
B correct
C subtracted smaller face values from greater face values
D added instead of subtracted

41 Which expression best represents the model below?

\[
\begin{align*}
\text{A} & \quad 3 + 4 \\
\text{B} & \quad 3 + 3 \\
\text{C} & \quad 3 \times 3 \\
\text{D} & \quad 3 \times 4
\end{align*}
\]

42 Identify operation for problem and solve

A added instead of multiplied
B added incorrectly
C correct
D incorrect multiplication
43 Ron, Nita, Donna, and David shared $1.00 equally. What was the exact amount each one received?

A $0.25  
B $0.30  
C $0.50  
D $0.75

44 Understand meaning of 0.50 & 0.25 related to money

A place value error  
B converted one of addends to decimal form  
C correct  
D place value error

45 Which of the following represents half of one dollar?

A $0.25  
B $0.30  
C $0.50  
D $0.75
46 Use common measures of length, weight, time

A  correct

B  unit of volume not height

C  unit of mass

D  temperature scale

47 Roger left his house at 12:30 p.m. He returned to the house after walking for exactly 45 minutes. At what time did he return to the house?

A  12:45 p.m.

B  1:15 p.m.

C  1:30 p.m.

D  1:45 p.m.

48 Use common measures of length, weight, time

A  unit of length not weight

B  unit of time

C  unit of length

D  correct
49 Which of the following is the shortest measurement?  
A  6 feet  
B  6 inches  
C  6 yards  
D  6 miles  

50 Use relationships between sizes of standard units  
A  incorrect unit of measure  
B  incorrect unit of measure  
C  incorrect unit of measure  
D  correct  

51 Which of the following represents the greatest length?  
A  10 inches  
B  $1 \frac{1}{2}$ inches  
C  $1 \frac{1}{2}$ feet  
D  1 foot
52 Calculate area and perimeter of square & rectangle

A added one length and one width
B added two lengths
C measure for area, not perimeter
D correct

53 What is the perimeter of the shape pictured below?

A 17 ft
B 19 ft
C 30 ft
D 34 ft

54 Calculate area and perimeter of square & rectangle

A measure for area, not perimeter
B correct
C added one length to one width
D one length
55 Which figure can be formed from the two triangles below?

A

B

C

D
56  Compose and decompose triangles and rectangles

A  incorrect shape
B  correct
C  incorrect shape
D  incorrect shape

57  A triangle and a rectangle are shown on the grid below.

![Grid with a triangle and a rectangle](image)

What is the total number of these triangles needed to make the rectangle shown on the grid?

A  3
B  4
C  5
D  6
58 Solve problems using bar graphs, compare graphs

A  incorrect comparison
B  incorrect comparison
C  incorrect comparison
D  correct

59 John and Jasmine each recorded the color of the candies in their bag. The results are graphed below.

Based on the data in the graphs, which is true?
A  Jasmine had more red candies than John.
B  Jasmine and John had the same number of blue candies.
C  John had more brown candies than Jasmine.
D  John and Jasmine had the same number of brown candies.
60 Solve problems using bar graphs, compare graphs

A  added values from first two bars
B  less than total
C  correct
D  greater than total

61 The bar graph shows the number of apples three students ate in September.

How many more apples did Patrick eat than Sam?
A  5
B  6
C  12
D  19
62 Identify points, line segments, lines and distance

A  incorrect element
B  correct
C  incorrect element
D  incorrect element

63 Which two faces of this cereal box appear to be parallel?

A  top and right side
B  front and bottom
C  front and back
D  bottom and left side
64 Identify, describe, compare, classify 2-D shapes

A incorrect 2-D shape
B correct
C incorrect 2-D shape
D incorrect 2-D shape

65 The solid figure below was made of centimeter cubes.

Which of the following is the top view of the figure above?

A

C

D
66  Solve problems involving money, length and time

   A  subtracted too much total time
   B  correct
   C  subtracted one of times not two
   D  added times instead of subtracted

67  Jill planted flowers in the square garden pictured below.

   5 feet

What is the area of the garden?
(Area = length × width)

   A  10 square feet
   B  20 square feet
   C  25 square feet
   D  55 square feet
68  Find area of region by covering & counting sq. units

A  area of non-shaded region
B  correct
C  greater than correct area
D  total area of grid

69  Which of the following could be the area of a kitchen floor?

A  20 meters
B  20 square meters
C  20 kilometers
D  20 centimeters

70  Compare relative sizes of square inch & square cm

A  object considerably larger than 1 square inch
B  object considerably larger than 1 square inch
C  object reasonably larger than 1 square inch
D  correct
71 Which number goes in the blank to make the statement below true?

\[ 6 < \underline{\text{___}} < 12 \]

A 6  
B 10  
C 14  
D 18

72 Know that even numbers end in 0, 2, 4, 6 or 8

A odd number  
B correct  
C odd number  
D odd number
73 Which model appears to be exactly $\frac{3}{4}$ shaded?

A

B

C

D

74 Understand fraction as sum of unit fractions

A reciprocal

B omitted one of the addends

C correct

D omitted one of addends, took reciprocal
75 Which number sentence is best represented by the model below?

\[ \frac{1}{4} + \frac{2}{4} = \frac{3}{4} \]  

\[ \frac{3}{4} - \frac{1}{4} = \frac{3}{4} \]  

\[ \frac{3}{4} - \frac{1}{4} = \frac{2}{4} \]  

\[ \frac{3}{4} + \frac{2}{4} = \frac{3}{4} \]

76 Identify perpendicular lines and parallel lines

A  perpendicular lines

B  neither parallel nor perpendicular

C  neither parallel nor perpendicular

D  correct
77 Jane started walking at 4:20 p.m. She walked for exactly 1 hour and 20 minutes without stopping. What time did she finish walking?

A 3:00 p.m.
B 4:40 p.m.
C 5:20 p.m.
D 5:40 p.m.

78 Estimate perimeter & area of square & rectangle

A area of shaded region
B area of one-third of total
C area of two-thirds of total
D correct

79 Which group of fractions is in order from least to greatest?

A \[ \frac{2}{2'}, \frac{3}{8'}, \frac{3}{4} \]

B \[ \frac{2}{2'}, \frac{3}{4'}, \frac{3}{8} \]

C \[ \frac{3}{4'}, \frac{3}{8'}, \frac{2}{2} \]

D \[ \frac{3}{8'}, \frac{3}{4'}, \frac{2}{2} \]
80  Find solutions to open sentences that use $x$ and $\div$

   A  divisor too small
   B  divisor too small
   C  divisor too small
   D  correct

81  John had exactly 32 pennies. He sorted the pennies into stacks of 5 pennies each. How many pennies were left over?

   A  37
   B  27
   C  2
   D  0
### Scoring Key: Part 1

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Correct Answer</th>
<th>GLCE</th>
<th>Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>C</td>
<td>N.ME.03.01</td>
<td>Core-NC</td>
<td>Read and write numbers to 10,000</td>
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<td>Read and write numbers to 10,000</td>
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<td>Read and write numbers to 10,000</td>
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<td>Identify place value of digit in a number</td>
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<td>Identify place value of digit in a number</td>
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<td>Identify place value of digit in a number</td>
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<td>Add and subtract thru 999 w/regrouping, 9,999 w/o</td>
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<td>Estimate sum / difference of two 3-digit numbers</td>
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<td>Find products to 10 X 10 and related quotients</td>
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<td>Find products to 10 X 10 and related quotients</td>
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NC=Non Calculator
## Scoring Key: Part 2

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<td>Recognize multiplication and division situations</td>
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<td>Core</td>
<td>Recognize multiplication and division situations</td>
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<td>Recognize multiplication and division situations</td>
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<td>Understand meaning &amp; terminology of fractions</td>
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<td>Understand meaning &amp; terminology of fractions</td>
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<td>Measure in mixed units within measurement system</td>
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<td>Measure in mixed units within measurement system</td>
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<td>Core</td>
<td>Measure in mixed units within measurement system</td>
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<td>28</td>
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<td>Core</td>
<td>Know benchmark temperatures &amp; compare cooler, warmer</td>
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<td>29</td>
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<td>Core</td>
<td>Know benchmark temperatures &amp; compare cooler, warmer</td>
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<td>Core</td>
<td>Add and subtract money in dollars and cents</td>
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<td>B</td>
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<td>Core</td>
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<td>Identify, describe, classify familiar 3-D solids</td>
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<td>Identify, describe, classify familiar 3-D solids</td>
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<tr>
<td>37</td>
<td>C</td>
<td>D.RE.03.02</td>
<td>Core</td>
<td>Read scales on axes. Identify the max, min, range</td>
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<td>38</td>
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<td>Core</td>
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### Scoring Key: Part 3

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<th>Item No.</th>
<th>Correct Answer</th>
<th>GLCE</th>
<th>Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>40</td>
<td>B</td>
<td>N.MR.03.15</td>
<td>Core</td>
<td>Identify operation for problem and solve</td>
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<td>41</td>
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<td>Core</td>
<td>Identify operation for problem and solve</td>
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<tr>
<td>42</td>
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<td>Core</td>
<td>Identify operation for problem and solve</td>
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<td>43</td>
<td>A</td>
<td>N.ME.03.21</td>
<td>Core</td>
<td>Understand meaning of 0.50 &amp; 0.25 related to money</td>
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<tr>
<td>44</td>
<td>C</td>
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<td>Core</td>
<td>Understand meaning of 0.50 &amp; 0.25 related to money</td>
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<tr>
<td>45</td>
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<td>Core</td>
<td>Understand meaning of 0.50 &amp; 0.25 related to money</td>
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<tr>
<td>46</td>
<td>A</td>
<td>M.UN.03.01</td>
<td>Core</td>
<td>Use common measures of length, weight, time</td>
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<tr>
<td>47</td>
<td>B</td>
<td>M.UN.03.01</td>
<td>Core</td>
<td>Use common measures of length, weight, time</td>
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<tr>
<td>48</td>
<td>D</td>
<td>M.UN.03.01</td>
<td>Core</td>
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<tr>
<td>49</td>
<td>B</td>
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<td>Core</td>
<td>Use relationships between sizes of standard units</td>
</tr>
<tr>
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<td>Core</td>
<td>Use relationships between sizes of standard units</td>
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<tr>
<td>51</td>
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<td>Core</td>
<td>Use relationships between sizes of standard units</td>
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<tr>
<td>52</td>
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<td>Core</td>
<td>Calculate area and perimeter of square &amp; rectangle</td>
</tr>
<tr>
<td>53</td>
<td>D</td>
<td>M.UN.03.05</td>
<td>Core</td>
<td>Calculate area and perimeter of square &amp; rectangle</td>
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<tr>
<td>54</td>
<td>B</td>
<td>M.UN.03.05</td>
<td>Core</td>
<td>Calculate area and perimeter of square &amp; rectangle</td>
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<tr>
<td>55</td>
<td>C</td>
<td>G.SR.03.05</td>
<td>Core</td>
<td>Compose and decompose triangles and rectangles</td>
</tr>
<tr>
<td>56</td>
<td>B</td>
<td>G.SR.03.05</td>
<td>Core</td>
<td>Compose and decompose triangles and rectangles</td>
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<tr>
<td>57</td>
<td>B</td>
<td>G.SR.03.05</td>
<td>Core</td>
<td>Compose and decompose triangles and rectangles</td>
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<tr>
<td>58</td>
<td>D</td>
<td>D.RE.03.03</td>
<td>Core</td>
<td>Solve problems using bar graphs, compare graphs</td>
</tr>
<tr>
<td>59</td>
<td>D</td>
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<td>Core</td>
<td>Solve problems using bar graphs, compare graphs</td>
</tr>
<tr>
<td>60</td>
<td>C</td>
<td>D.RE.03.03</td>
<td>Core</td>
<td>Solve problems using bar graphs, compare graphs</td>
</tr>
<tr>
<td>61</td>
<td>A</td>
<td>D.RE.03.01</td>
<td>Ext. Core</td>
<td>Read &amp; interpret horizontal and vertical bar graphs</td>
</tr>
</tbody>
</table>
### Scoring Key: Part 3 (continued)

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Correct Answer</th>
<th>GLCE</th>
<th>Type</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>62</td>
<td>B</td>
<td>G.GS.03.01</td>
<td>Ext. Core</td>
<td>Identify points, line segments, lines and distance</td>
</tr>
<tr>
<td>63</td>
<td>C</td>
<td>G.GS.03.03</td>
<td>Ext. Core</td>
<td>Identify parallel faces of rectangular prisms</td>
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<tr>
<td>64</td>
<td>B</td>
<td>G.GS.03.04</td>
<td>Ext. Core</td>
<td>Identify, describe, compare, classify 2-D shapes</td>
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<tr>
<td>65</td>
<td>A</td>
<td>G.SR.03.07</td>
<td>Ext. Core</td>
<td>Show front/top/side views of solids built w/ cubes</td>
</tr>
<tr>
<td>66</td>
<td>B</td>
<td>M.PS.03.12</td>
<td>Ext. Core</td>
<td>Solve problems involving money, length and time</td>
</tr>
<tr>
<td>67</td>
<td>C</td>
<td>M.PS.03.13</td>
<td>Ext. Core</td>
<td>Solve problems about perimeter/area of rectangles</td>
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<tr>
<td>68</td>
<td>B</td>
<td>M.UN.03.06</td>
<td>Ext. Core</td>
<td>Find area of region by covering &amp; counting sq. units</td>
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<tr>
<td>69</td>
<td>B</td>
<td>M.UN.03.07</td>
<td>Ext. Core</td>
<td>Distinguish between units of length and area in cont</td>
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<tr>
<td>70</td>
<td>D</td>
<td>M.UN.03.08</td>
<td>Ext. Core</td>
<td>Compare relative sizes of square inch &amp; square cm</td>
</tr>
<tr>
<td>71</td>
<td>B</td>
<td>N.ME.03.03</td>
<td>Ext. Core-NC</td>
<td>Compare and order numbers up to 10,000</td>
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<tr>
<td>72</td>
<td>B</td>
<td>N.ME.03.05</td>
<td>Ext. Core-NC</td>
<td>Know that even numbers end in 0, 2, 4, 6 or 8</td>
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<tr>
<td>73</td>
<td>B</td>
<td>N.ME.03.17</td>
<td>Ext. Core</td>
<td>Recognize, name and use equivalent fractions</td>
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<tr>
<td>74</td>
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<td>N.ME.03.19</td>
<td>Ext. Core</td>
<td>Understand fraction as sum of unit fractions</td>
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<tr>
<td>75</td>
<td>C</td>
<td>N.MR.03.20</td>
<td>Ext. Core</td>
<td>Model +, - of fractions on number line</td>
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<tr>
<td>76</td>
<td>D</td>
<td>G.GS.03.02</td>
<td>Future Core</td>
<td>Identify perpendicular lines and parallel lines</td>
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<tr>
<td>77</td>
<td>D</td>
<td>M.PS.03.10</td>
<td>Future Core</td>
<td>Add and subtract lengths, weights and times</td>
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<tr>
<td>78</td>
<td>D</td>
<td>M.TE.03.09</td>
<td>Future Core</td>
<td>Estimate perimeter &amp; area of square &amp; rectangle</td>
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<td>Future Core</td>
<td>Place &amp; compare fractions on number line</td>
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<tr>
<td>80</td>
<td>D</td>
<td>N.MR.03.12</td>
<td>Future Core</td>
<td>Find solutions to open sentences that use x and ÷</td>
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<tr>
<td>81</td>
<td>C</td>
<td>N.MR.03.14</td>
<td>Future Core</td>
<td>Solve division problems involving remainders</td>
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</tbody>
</table>

Updated 2/20/08