



# **RELEASED ITEMS**

**MATHEMATICS  
GRADE 6**

**Fall 2008**

- 4 Which of the following shows why the equation below is true?

$$47 \div 6 = 7 \text{ R}5$$

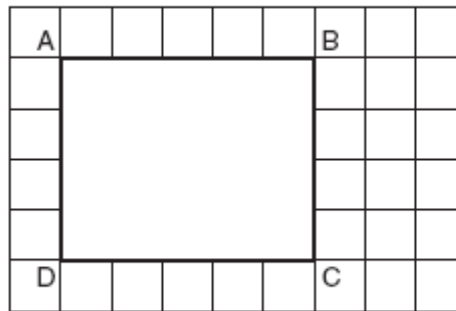
- A  $5 \cdot 6 + 7 = 47$
- B  $5 \cdot 7 + 6 = 47$
- C  $6 \cdot 5 + 7 = 47$
- D  $7 \cdot 6 + 5 = 47$
- 5 Multiply a multi-digit number by a two-digit number
- A correct
- B incorrect number sentence
- C incorrect number sentence
- D incorrect number sentence

- 6 Multiply 
$$\begin{array}{r} 609 \\ \times 87 \\ \hline \end{array}$$

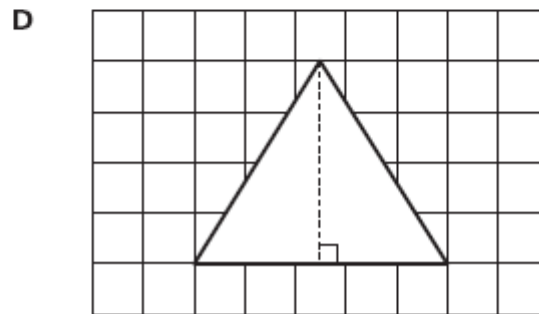
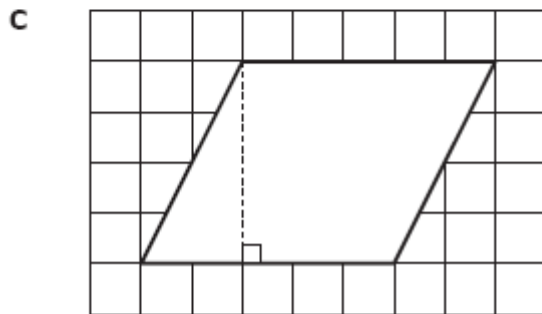
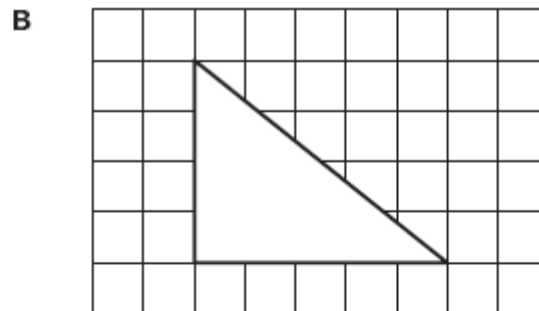
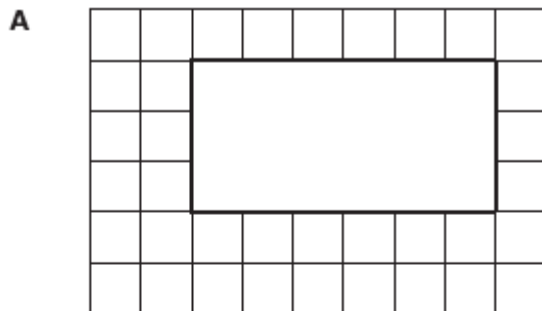
- A 9,075
- B 9,135
- C 52,923
- D 52,983

- 10 What is one way to represent the value of the digit 3 in the number 573.64?
- A three tenths
  - B thirty tenths
  - C three hundreds
  - D thirty ones
- 11 Write statements involving + and - of fractions
- A correct
  - B subtraction
  - C multiplication
  - D division
- 12 Gupta put sugar in glasses of iced tea for his mother and himself. He put  $\frac{1}{4}$  teaspoon of sugar in his glass and  $\frac{1}{8}$  teaspoon of sugar in his mother's glass. Which expression is equivalent to the total amount of sugar Gupta put in the glasses?
- A  $\frac{1}{8} \div \frac{1}{4}$
  - B  $\frac{1}{8} \times \frac{1}{4}$
  - C  $\frac{1}{4} - \frac{1}{8}$
  - D  $\frac{1}{4} + \frac{1}{8}$

16 In the models below, each small grid square represents 1 square unit.



Which of the shapes below has the same area as rectangle ABCD?



- 17 Trent's tire store has 96 tires. A set contains 4 tires. Which expression represents the *greatest* number of complete sets of tires that Trent can sell?
- A  $96 \div 4$
  - B  $96 + 4$
  - C  $96 \cdot 4$
  - D  $96 - 4$
- 18 Multiply  $5.70 \times 100$
- A 0.0570
  - B 57.0
  - C 570.0
  - D 5,700.0
- 19 Multiply  $57 \times 0.03$
- A 0.171
  - B 1.71
  - C 17.1
  - D 171.0
- 20 There are 100 cm in 1 meter. What is one way to determine the number of cubic centimeters in 1 cubic meter?
- A multiply 100 by 100
  - B multiply 100 by 100 by 100
  - C add 100 + 100
  - D add 100 + 100 + 100

25 Solve applied problems using fractions & decimals

- A incorrect product
- B correct
- C subtracted instead of multiplied
- D added instead of multiplied

26 While shopping, Maria puts the following items, with their actual prices shown, in her grocery cart. She keeps track of the total she will spend by rounding the cost of each item to the nearest dollar.

| Items  | Actual Price |
|--------|--------------|
| Juice  | \$3.21       |
| Bread  | \$0.89       |
| Butter | \$1.90       |
| Apples | \$0.75       |
| Chips  | \$2.54       |

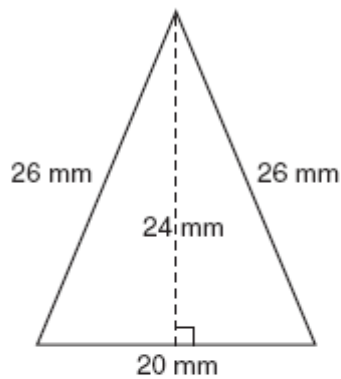
Which is *closest* to the amount Maria will spend on the items she put in her grocery cart?

- A \$ 6.00
  - B \$ 8.00
  - C \$10.00
  - D \$11.00
- 27 Express fractions and decimals as percentages
- A incorrect conversion
  - B incorrect conversion
  - C correct
  - D incorrect conversion

- 28 In a class of 25 students, 10 ran a race in nine minutes or less. What percent of the students ran the race in nine minutes or less?
- A 5%
  - B 10%
  - C 25%
  - D 40%

- 29 Know how to use the area formula of a triangle
- A incorrect variable
  - B incorrect variable
  - C correct
  - D incorrect variable

- 30 What is the area of the triangle below?



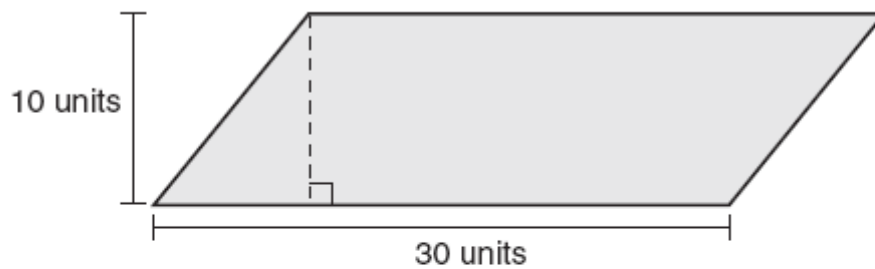
$$\left( A = \frac{1}{2}bh \right)$$

- A 192 mm<sup>2</sup>
- B 240 mm<sup>2</sup>
- C 260 mm<sup>2</sup>
- D 312 mm<sup>2</sup>

31 Know how to use area formula for a parallelogram

- A added instead of multiplied
- B measure for perimeter
- C area of triangle
- D correct

32 What is the area of the parallelogram below?

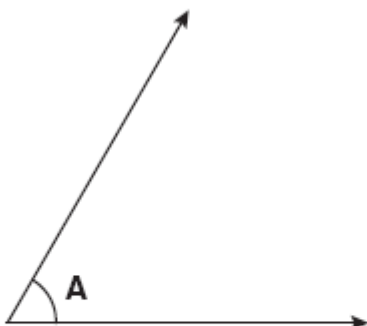


$$(A = bh)$$

- A 40 square units
  - B 80 square units
  - C 150 square units
  - D 300 square units
- 33 Measure angles with a protractor and classify
- A incorrect type of angle
  - B correct
  - C incorrect type of angle
  - D incorrect type of angle



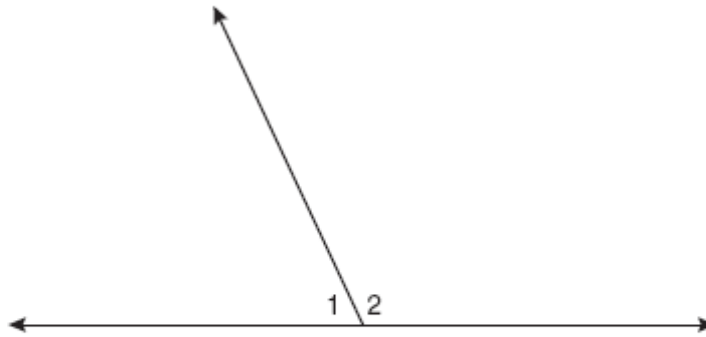
- 34 Which is closest to the degree measure of  $\angle A$  shown below?



- A  $45^\circ$   
B  $60^\circ$   
C  $120^\circ$   
D  $135^\circ$
- 35 Know straight angle and angles surrounding a point
- A supplementary angle  
B other angle shown  
C other angle shown  
D correct

36 Using the diagram below, which is closest to the value of the expression below?

$$m\angle 1 + m\angle 2$$



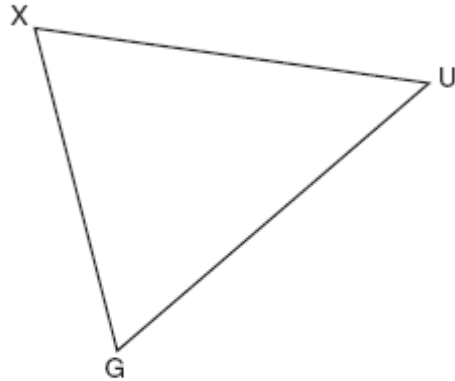
- A 90°
- B 100°
- C 180°
- D 360°

37 Know interior angles of a triangle & quadrilateral

- A correct
- B incorrect angle
- C other angle shown
- D other angle shown

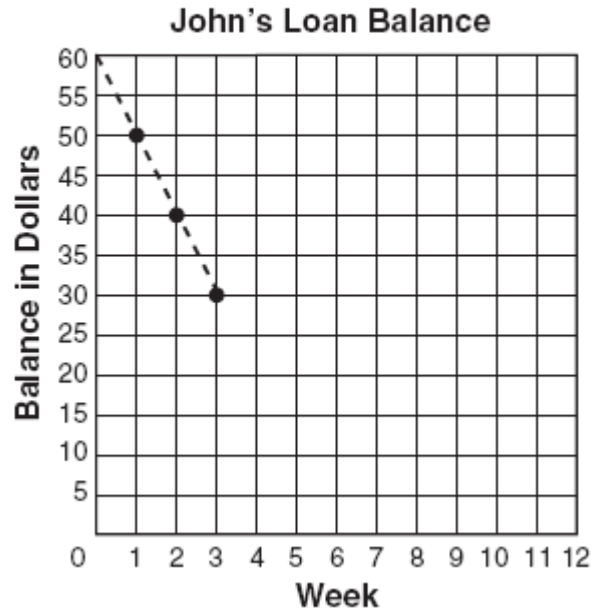
- 38 For triangle GXU, what is the value of the following expression?

$$m\angle G + m\angle X + m\angle U$$



- A 360°  
B 180°  
C 100°  
D 90°
- 39 Read and interpret line graphs, and solve problems
- A incorrect interpretation of line graph  
B incorrect interpretation of line graph  
C incorrect interpretation of line graph  
D correct

- 40 John is graphing his loan balance for the loan his brother gave him. He pays his brother the same amount of money on the first day of each week as shown in the graph below.



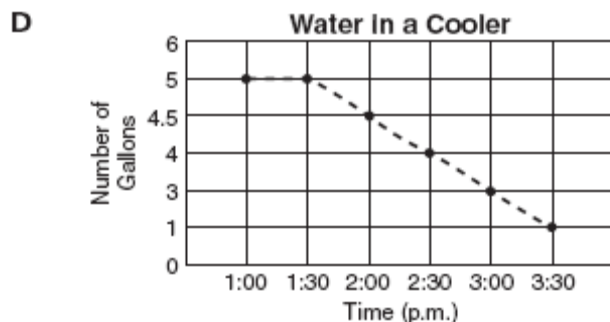
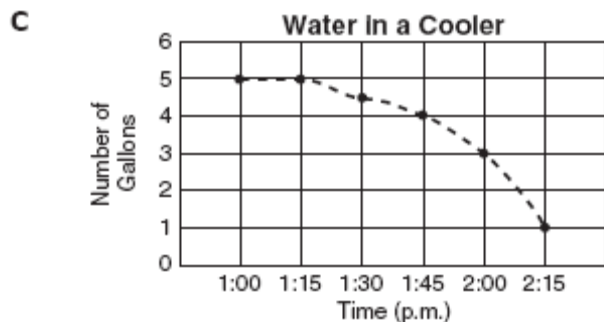
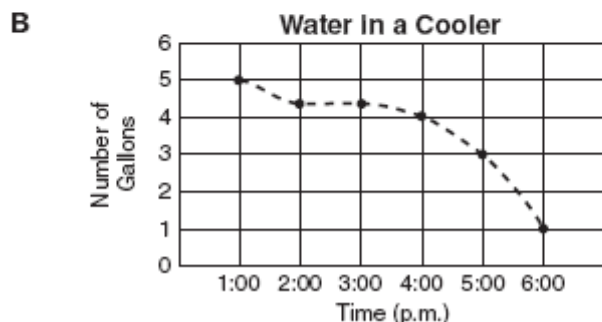
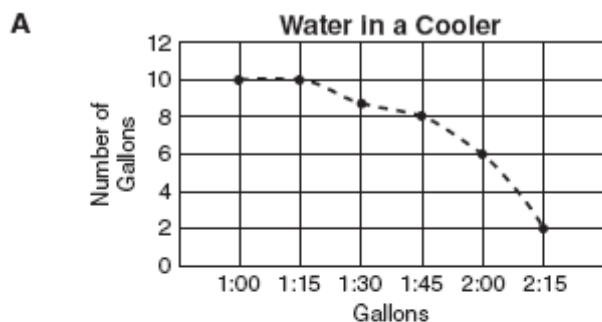
What will be the first week that John's balance will be \$0?

- A 10
  - B 8
  - C 6
  - D 4
- 41 Construct line graphs from tables of data
- A incorrect table
  - B correct
  - C incorrect table
  - D incorrect table

- 42 The amount of water in a water cooler at different times during a baseball game is shown in the table below.

| Time (p.m.)       | 1:00 | 1:15 | 1:30 | 1:45 | 2:00 | 2:15 |
|-------------------|------|------|------|------|------|------|
| Number of Gallons | 5    | 5    | 4.5  | 4    | 3    | 1    |

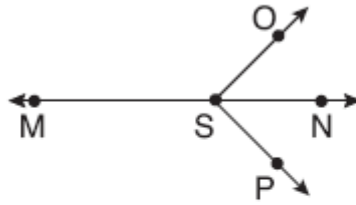
Which graph *best* represents the data in the table?



- 43 Given set of data, find & interpret mean, mode
- A mean
  - B correct
  - C range
  - D maximum
- 44 What is the mean for this set of data?  
12, 9, 16, 17, 9, 10, 11
- A 9
  - B 11
  - C 12
  - D 17
- 45 For every 6 boys in Mrs. Getty’s class, there are 7 girls. Which shows three correct ways to express the ratio of boys to girls?
- A  $\frac{7}{6}$ ; 7:6; 7 to 6
  - B  $\frac{6}{13}$ ; 6:13; 6 to 13
  - C  $\frac{6}{7}$ ; 6:7; 6 to 7
  - D  $\frac{13}{6}$ ; 13:6; 13 to 6

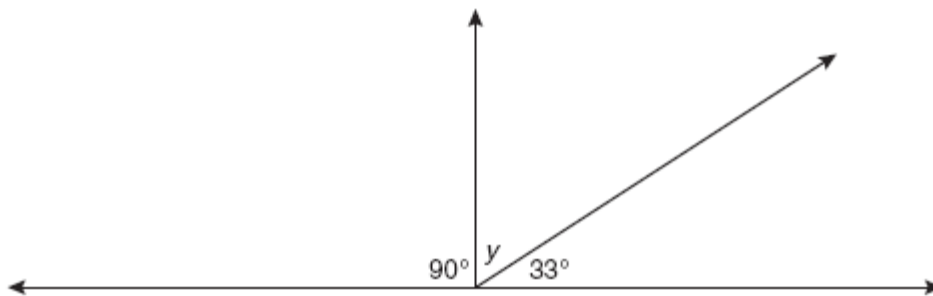
- 46 Denise found the volume of a cylinder that had a height of 12 centimeters. Which unit should she use to express the volume of the cylinder?
- A cm
  - B  $\text{cm}^2$
  - C  $\text{cm}^3$
  - D  $\text{cm}^4$
- 47 Jeff had to rotate a picture  $\frac{1}{2}$  turn to show to his friend. Exactly how many degrees did Jeff rotate the picture?
- A  $90^\circ$
  - B  $180^\circ$
  - C  $270^\circ$
  - D  $360^\circ$
- 48 Joe wants the mean of his 5 test scores to be 90. Below are his scores on the first four tests.
- 92, 86, 95, 83
- What score does Joe need on the fifth test to get a mean of exactly 90?
- A 88
  - B 90
  - C 92
  - D 94

- 49 In the diagram below  $\overline{MN}$  intersects  $\angle OSP$  at point S.



Which angles when combined have the same degree measure as a straight angle?

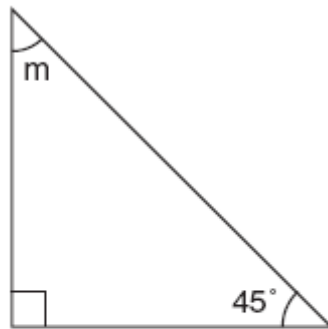
- A  $\angle OSN$  and  $\angle NSP$
  - B  $\angle OSM$  and  $\angle PSM$
  - C  $\angle OSN$  and  $\angle OSM$
  - D  $\angle NSM$  and  $\angle NSO$
- 50 In the diagram below, what is the measure of  $\angle y$ ?



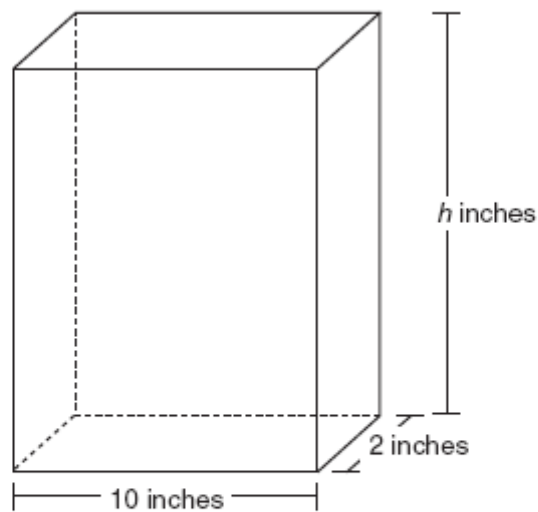
- A  $33^\circ$
- B  $57^\circ$
- C  $90^\circ$
- D  $180^\circ$



- 51 What is the measure of  $\angle m$  in the right isosceles triangle shown below?



- A  $35^\circ$
  - B  $45^\circ$
  - C  $90^\circ$
  - D  $180^\circ$
- 52 If the volume of the rectangular prism-shaped box below is 280 cubic inches, what is its height?



- A 12 inches
- B 14 inches
- C 28 inches
- D 140 inches

53 A bottle is filled with 1 liter of lemonade. Which measurement is equivalent to 1 liter?

A 0.001 milliliter

B 0.01 milliliter

C 1,000.0 milliliters

D 10,000.0 milliliters

54 Subtract  $\frac{2}{3} - \frac{1}{4}$

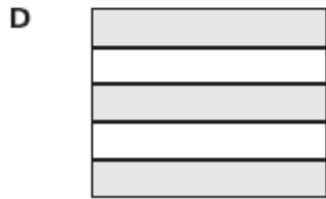
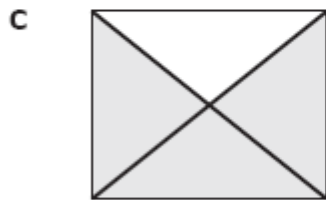
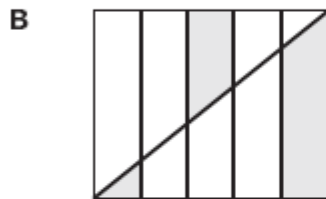
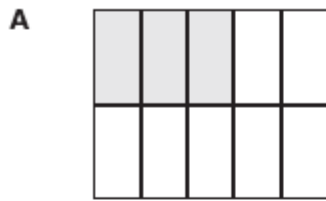
A  $\frac{1}{1}$

B  $\frac{5}{12}$

C  $\frac{1}{4}$

D  $\frac{1}{12}$

55 Which shape below appears to be exactly  $\frac{3}{5}$  shaded?



56 Which of the following is equivalent to  $\frac{3}{5}$ ?

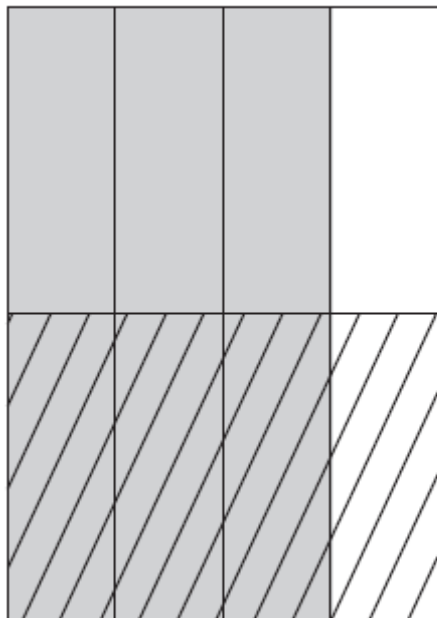
A  $\frac{5}{3}$

B  $\frac{13}{15}$

C  $\frac{5}{10}$

D  $\frac{15}{25}$

- 57 The rectangular diagram below represents 1 whole.



Which expression is represented by the model above?

A  $\frac{3}{4} \cdot \frac{3}{4}$

B  $\frac{3}{4} \cdot \frac{1}{8}$

C  $\frac{3}{8} \cdot \frac{1}{2}$

D  $\frac{3}{4} \cdot \frac{1}{2}$

58 For which number is  $2^4 \times 3$  the prime factorization?

- A 48
- B 36
- C 24
- D 18

59 Divide  $\frac{1}{4} \div 2$

- A  $\frac{1}{8}$
- B  $\frac{2}{4}$
- C 2
- D 8

- 60 After a concert, a white cake, a chocolate cake, and a strawberry cake were served. The following shows how much of each of these same-sized cakes was eaten.

- $\frac{5}{8}$  of the white cake
- $\frac{7}{8}$  of the chocolate cake
- $\frac{1}{4}$  of the strawberry cake

What was the total amount of cake eaten?

- A  $1\frac{3}{4}$  cakes
- B  $1\frac{5}{8}$  cakes
- C  $1\frac{3}{8}$  cakes
- D  $\frac{13}{20}$  cake
- 61 What value of  $m$  makes the equation below true?

$$\frac{1}{6} + m = \frac{3}{4}$$

- A 1
- B  $\frac{4}{12}$
- C  $\frac{7}{12}$
- D  $\frac{4}{10}$

## Scoring Key: Part 1

| Item No. | Correct Answer | GLCE       | Type     | Description  |
|----------|----------------|------------|----------|--|
| 1        | C              | N.MR.05.01 | Core     | Understand the meaning of division of whole numbers        |
| 2        | C              | N.MR.05.01 | Core     | Understand the meaning of division of whole numbers        |
| 3        | A              | N.MR.05.02 | Core     | Know division of whole numbers in form $a = bq + r$        |
| 4        | D              | N.MR.05.02 | Core     | Know division of whole numbers in form $a = bq + r$        |
| 5        | A              | N.FL.05.04 | Core     | Multiply a multi-digit number by a two-digit number        |
| 6        | D              | N.FL.05.04 | Core     | Multiply a multi-digit number by a two-digit number        |
| 7        | C              | N.FL.05.06 | Core     | Divide up to a 4-digit number by a two-digit number        |
| 8        | D              | N.FL.05.06 | Core     | Divide up to a 4-digit number by a two-digit number        |
| 9        | C              | N.ME.05.08 | Core     | Understand the relative magnitude base-10 system           |
| 10       | B              | N.ME.05.08 | Core     | Understand the relative magnitude base-10 system           |
| 11       | A              | N.FL.05.18 | Core     | Write statements involving + and - of fractions            |
| 12       | D              | N.FL.05.18 | Core     | Write statements involving + and - of fractions            |
| 13       | B              | M.UN.05.04 | Core     | Convert measurements within a given system                 |
| 14       | C              | M.UN.05.04 | Core     | Convert measurements within a given system                 |
| 15       | A              | M.PS.05.05 | Core     | Show relationships between areas of polygons               |
| 16       | C              | M.PS.05.05 | Core     | Show relationships between areas of polygons               |
| 17       | A              | N.MR.05.03 | Extended | Write mathematical statements involving division           |
| 18       | C              | N.MR.05.15 | Extended | $\times$ a whole number by powers of 10, identify patterns |
| 19       | B              | N.MR.05.17 | Extended | Multiply decimals to 100ths by whole numbers               |
| 20       | B              | M.UN.05.03 | Extended | Compare relative sizes of cubic measures                   |

## Scoring Key: Part 2

| Item No. | Correct Answer | GLCE       | Type     | Description   |
|----------|----------------|------------|----------|---|
| 21       | C              | N.FL.05.05 | Core     | Solve problems involving $\times$ and $\div$ of whole numbers |
| 22       | B              | N.FL.05.05 | Core     | Solve problems involving $\times$ and $\div$ of whole numbers |
| 23       | C              | N.ME.05.09 | Core     | Understand percentages as parts out of 100                    |
| 24       | C              | N.ME.05.09 | Core     | Understand percentages as parts out of 100                    |
| 25       | B              | N.FL.05.20 | Core     | Solve applied problems using fractions & decimals             |
| 26       | C              | N.FL.05.20 | Core     | Solve applied problems using fractions & decimals             |
| 27       | C              | N.MR.05.22 | Core     | Express fractions and decimals as percentages                 |
| 28       | D              | N.MR.05.22 | Core     | Express fractions and decimals as percentages                 |
| 29       | C              | M.TE.05.06 | Core     | Know how to use the area formula of a triangle                |
| 30       | B              | M.TE.05.06 | Core     | Know how to use the area formula of a triangle                |
| 31       | D              | M.TE.05.07 | Core     | Know how to use area formula for a parallelogram              |
| 32       | D              | M.TE.05.07 | Core     | Know how to use area formula for a parallelogram              |
| 33       | B              | G.GS.05.02 | Core     | Measure angles with a protractor and classify                 |
| 34       | B              | G.GS.05.02 | Core     | Measure angles with a protractor and classify                 |
| 35       | D              | G.GS.05.05 | Core     | Know straight angle and angles surrounding a point            |
| 36       | C              | G.GS.05.05 | Core     | Know straight angle and angles surrounding a point            |
| 37       | A              | G.GS.05.06 | Core     | Know interior angles of a triangle & quadrilateral            |
| 38       | B              | G.GS.05.06 | Core     | Know interior angles of a triangle & quadrilateral            |
| 39       | D              | D.RE.05.01 | Core     | Read and interpret line graphs, and solve problems            |
| 40       | C              | D.RE.05.01 | Core     | Read and interpret line graphs, and solve problems            |
| 41       | B              | D.RE.05.02 | Core     | Construct line graphs from tables of data                     |
| 42       | C              | D.RE.05.02 | Core     | Construct line graphs from tables of data                     |
| 43       | B              | D.AN.05.03 | Core     | Given set of data, find & interpret mean, mode                |
| 44       | C              | D.AN.05.03 | Core     | Given set of data, find & interpret mean, mode                |
| 45       | C              | N.ME.05.23 | Extended | Express ratios in the forms $a$ to $b$ , $a:b$ , $a/b$        |
| 46       | C              | M.UN.05.02 | Extended | Know the units of measure of volume                           |
| 47       | B              | G.TR.05.01 | Extended | Associate an angle with a certain amount of turning           |
| 48       | D              | D.AN.05.04 | Future   | Solve multi-step problems involving means                     |
| 49       | C              | G.GS.05.03 | Future   | Identify angles on a straight line & vertical angles          |
| 50       | B              | G.GS.05.04 | Future   | Find unknown angles in problems                               |
| 51       | B              | G.GS.05.07 | Future   | Find unknowns using properties of triangles, quads.           |
| 52       | B              | M.PS.05.10 | Future   | Solve volume problems of rectangular prisms                   |
| 53       | C              | M.UN.05.01 | Future   | Know equivalence of 1 liter, 1000 ml and 1000 cc              |
| 54       | B              | N.FL.05.14 | Future   | Add and subtract fractions with unlike denominators           |
| 55       | D              | N.ME.05.10 | Future   | Understand & show fractions as a statement of $\div$          |
| 56       | D              | N.ME.05.11 | Future   | Compare two fractions using common denominators               |
| 57       | D              | N.ME.05.12 | Future   | Multiply two unit fractions using area model                  |
| 58       | A              | N.MR.05.07 | Future   | Find prime factorization of $\#$ s, show exponentially        |
| 59       | A              | N.MR.05.13 | Future   | Divide using fractions and whole numbers                      |
| 60       | A              | N.MR.05.19 | Future   | Solve contextual problems involving $+/-$ fractions           |
| 61       | C              | N.MR.05.21 | Future   | Solve for the unknown in equations with fractions             |