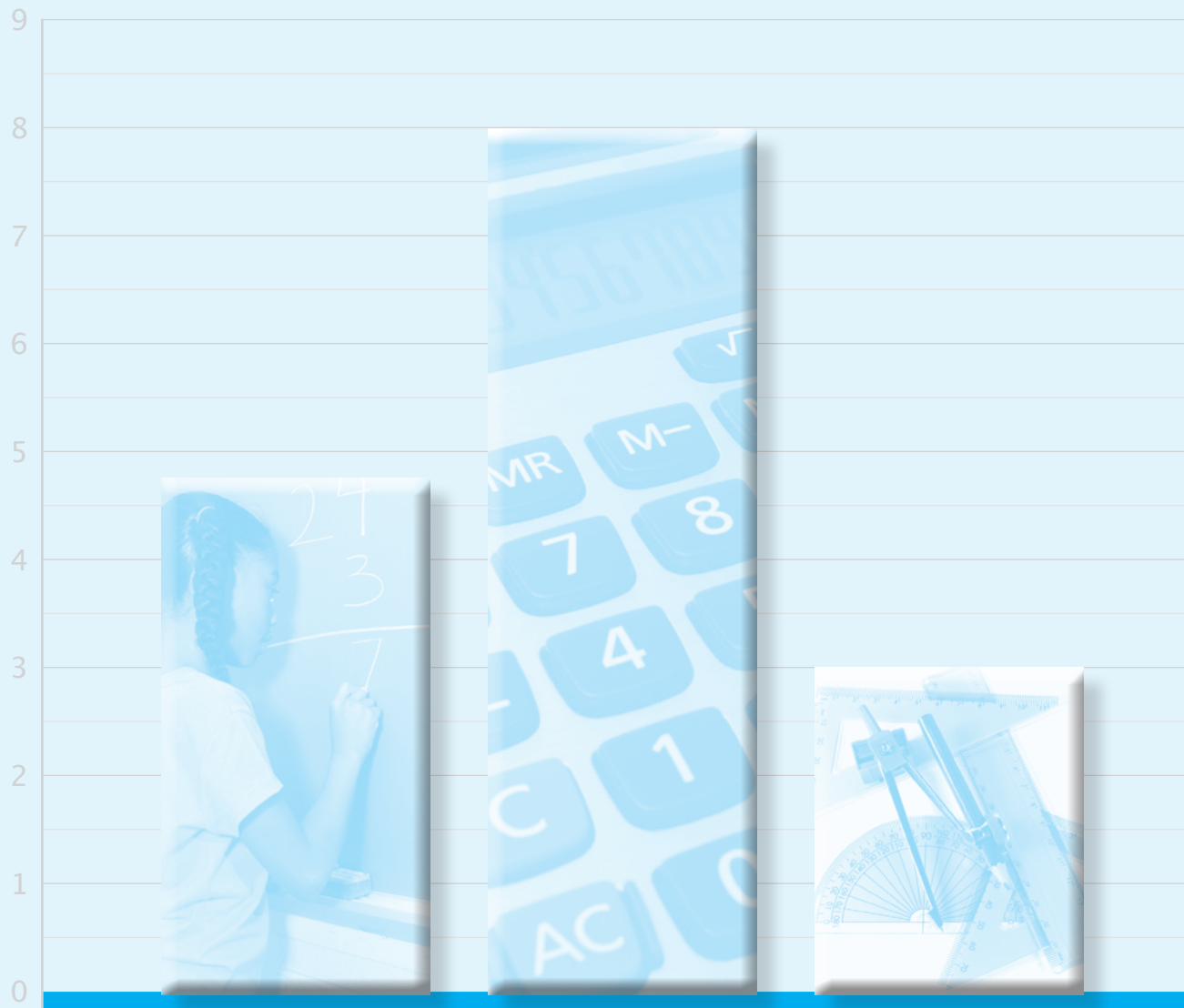


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meapTM
Michigan Educational Assessment Program

Item Descriptors



MATHEMATICS
FALL 2009

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Portions of this work were previously published.

Printed in the United States of America.

Students were instructed to read the directions below silently as the test administrator read them aloud.

PART 1

DIRECTIONS

This test has two parts. You may **NOT** use a calculator on Part 1. You may use open space in this test booklet for scratch paper. No additional paper may be used.

Part 1 has only multiple-choice questions. You must choose the **best** answer from among four answer choices.

- 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 a question, be sure to mark the answer to the next question in the correct place in your **Answer Document**.

Sample Multiple-Choice Question:

Marty wants to put 75 CDs into cases. Each case holds exactly 8 CDs. What is the **least** number of cases that Marty will need to hold all his CDs?

- A** 8
- B** 9
- C** 10
- D** 11

For this sample question, the correct answer is **C**. Circle **C** is filled in on the sample question in your **Answer Document**.

Once you have reached the word **STOP** in your test booklet, do **NOT** go on to the next page.

If you finish early, you may check your work in Part 1 of the test **ONLY**. Do **NOT** look at questions in Part 2 of the test.

NOTE: For each item listed throughout this booklet, the first statement is a summary of the Michigan Grade Level Content Expectation (GLCE) and the second statement or problem is the descriptor for the item's stem or question.

- 1 N.MR.05.01:** Understand the meaning of division of whole numbers.

$$a \div b = c \text{ R}d$$

- A** correct
- B** transposed remainder and quotient
- C** transposed remainder and quotient, multiplied by remainder
- D** multiplied remainder by quotient, added divisor

- 2 N.MR.05.01:** Understand the meaning of division of whole numbers.

Translate the fraction to a division expression.

- A** correct
- B** $a/b = b/a, a \neq b$
- C** $a/b = a \times b$
- D** $a/b = a - b$

- 3 N.MR.05.03:** Write mathematical statements involving division.

Identify the operation in a contextualized setting.

- A** correct
- B** multiplication
- C** addition
- D** subtraction

- 4 N.MR.05.03:** Write mathematical statements involving division.

Identify the operation in a contextualized setting.

- A** multiplication
- B** addition
- C** correct
- D** subtraction

- 5 N.FL.05.04:** Multiply a multi-digit number by a 2-digit number.

Given a multiplication sentence, identify the incorrect digit in the product.

- A** not the incorrect digit of product
- B** correct
- C** not the incorrect digit of product
- D** not the incorrect digit of product

- 6 N.FL.05.04:** Multiply a multi-digit number by a 2-digit number.

Multiply the 3-digit number by the 2-digit number.

- A** added instead of multiplied
- B** multiplied first factor by $1/10$ of second factor
- C** multiplied first factor by half of second factor
- D** correct

- 7 N.UN.05.04:** Convert measurements within a given system.

Convert ounces to pounds.

- A** 32 ounces = 1 pound
- B** 24 ounces = 1 pound
- C** correct
- D** $32/3$ ounces = 1 pound

- 8 M.UN.05.04:** Convert measurements within a given system.

Convert hours and minutes to minutes.

- A** 1 hour = 10 minutes
- B** 1 hour = 30 minutes
- C** correct
- D** 1 hour = 100 minutes

- 9 N.FL.05.14:** Add and subtract fractions with unlike denominators.

Add fractions with unlike denominators.

- A** added numerators, multiplied denominators
- B** correct numerator, $a/x + b/x = (a + b)/2x$
- C** added numerators and denominators
- D** correct

- 10 N.FL.05.14:** Add and subtract fractions with unlike denominators.

Add fractions with unlike denominators.

- A** added numerators, multiplied denominators
- B** multiplied numerators, added denominators
- C** added numerators and denominators
- D** correct

- 11 N.FL.05.18:** Write statements involving the addition and subtraction of fractions.

Identify the operation in a contextualized setting.

- A divided
- B multiplied
- C correct
- D subtracted

- 12 N.FL.05.18:** Write statements involving the addition and subtraction of fractions.

Identify the operation in a contextualized setting.

- A subtracted one subtrahend from another
- B added subtrahends
- C correct
- D added one subtrahend to minuend

- 13 N.MR.05.19:** Solve contextual problems that involve adding and subtracting fractions.

Subtract fractions in the same family, in context.

- A correct
- B multiplied numerators, multiplied denominators
- C subtrahend, not difference
- D subtracted numerators and denominators, simplified

- 14 N.MR.05.19:** Solve contextual problems that involve adding and subtracting fractions.

Subtract fractions with the same denominator, in context.

- A multiplied numerators and denominators
- B multiplied numerators, added denominators
- C added numerators
- D correct

- 15 M.PS.05.05:** Show relationships between areas of polygons.

Show the relationship between areas of quadrilaterals.

- A incorrect relationship between areas of quadrilaterals
- B incorrect relationship between areas of quadrilaterals
- C incorrect relationship between areas of quadrilaterals
- D correct

- 16 M.PS.05.05:** Show relationships between areas of polygons.

Show the relationships between areas of different polygons.

- A** correct
- B** incorrect relationship between areas of polygons
- C** incorrect relationship between areas of polygons
- D** incorrect relationship between areas of polygons

- 17 G.GS.05.02:** Measure angles with a protractor and classify.

Measure the angle with a protractor and classify.

- A** incorrect classification of angle
- B** correct
- C** incorrect classification of angle
- D** incorrect classification of angle

- 18 G.GS.05.05:** Know straight angle and angles surrounding a point.

Know the measure of a straight angle.

- A** straight angle measures 360°
- B** straight angle measures 270°
- C** straight angle measures 200°
- D** correct

- 19 G.GS.05.05:** Know straight angle and angles surrounding a point.

Know the measure of a straight angle.

- A** correct
- B** complementary angle of correct angle
- C** straight angle measures 270°
- D** straight angle measures 360°

- 20 G.GS.05.02:** Measure angles with a protractor and classify.

Measure the angle with a protractor and classify.

- A** 5° too small
- B** correct
- C** 20° too large
- D** supplementary angle of correct angle

- 21 N.MR.05.02:** Know division of whole numbers in the form $a = bq + r$.

List remainders when dividing a whole number by b .

- A** correct
- B** remainders are multiples of divisor
- C** 3 possible remainders, divisor
- D** 1 possible remainder, 3 multiples of divisor

- 22 G.GS.05.04:** Find unknown angles in problems.

Identify the name of the vertical angle.

- A** incorrect angle
- B** correct
- C** incorrect angle
- D** incorrect angle

- 23 G.GS.05.04:** Find unknown angles in problems.

Find the measure of the vertical angle.

- A** complementary angle
- B** correct
- C** twice the measure of the vertical angle
- D** supplementary angle

- 24 N.MR.05.15:** Multiply a whole number by powers of 10; identify patterns.

Given the unit cost and number of units, find the total cost.

- A** multiplied by $1/100$, not $1/10$
- B** correct
- C** multiplied by 0.11
- D** multiplied by 1

- 25 N.ME.05.12:** Multiply two unit fractions using an area model.

Find the product using an area model.

- A** factor
- B** factor
- C** ratio of intersection to number of marked squares
- D** correct

- 26 N.MR.05.13:** Divide using fractions and whole numbers.

Divide the fraction by the whole number.

- A** correct
- B** $1/(\text{whole})$, ignored fraction
- C** multiplied by whole, instead of divided
- D** reciprocal multiplied by whole, instead of divided

- 27 N.MR.05.21:** Solve for the unknown in equations with fractions.

$$a/b + x = c/d$$

- A** correct
- B** subtracted original numerators, correct denominator
- C** subtracted numerators and denominators
- D** added addend to sum

- 28 N.FL.05.05:** Solve problems involving the multiplication and division of whole numbers.

Multiply in context.

- A** divided
- B** subtracted
- C** incorrect multiplication
- D** correct

- 29 N.FL.05.05:** Solve problems involving the multiplication and division of whole numbers.

Divide in context.

- A** correct
- B** divided incorrectly
- C** divided incorrectly
- D** subtracted

- 30 N.MR.05.07:** Find the prime factorization of numbers; show it exponentially.

Find the prime factorization of a number; show it exponentially.

- A** factorization, but not prime factorization
- B** incorrect factorization, exponent on wrong base
- C** correct
- D** factorization, but not prime factorization

- 31 N.MR.05.07:** Find the prime factorization of numbers; show it exponentially.

Find the prime factorization of a number; show it exponentially.

- A** correct
- B** correct bases, incorrect exponents
- C** factorization, but not prime factorization
- D** factorization, but not prime factorization

- 32 N.FL.05.20:** Solve applied problems using fractions and decimals.

Solve the applied problem, in context of money, using the whole number and the fraction.

- A** incorrect product
- B** incorrect product
- C** correct
- D** factor

- 33 N.FL.05.20:** Solve applied problems using fractions and decimals.

Solve the applied problem, in context of money, using decimals.

- A** truncated all decimals, then added
- B** rounded correctly with 2 of 3 decimals, then added
- C** correct
- D** rounded all decimals up, then added

- 34 D.AN.05.03:** Given a set of data, find and interpret the mean and mode.

Calculate the mean of the data set.

- A** mode
- B** incorrect mean
- C** correct
- D** range

- 35 D.AN.05.03:** Given a set of data, find and interpret the mean and mode.

Calculate the mode of the data set.

- A** minimum
- B** neither mean nor mode
- C** false median (middle number of unordered list)
- D** correct

- 36 M.TE.05.06:** Know how to use the area formula of a triangle.

Given the formula, identify the properly labeled triangle.

- A** height incorrectly labeled
- B** base incorrectly labeled
- C** height incorrectly labeled
- D** correct

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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 paper may be used.

This part of the test has only multiple-choice questions. You must choose the **best** answer from among four answer choices.

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Sample Multiple-Choice Question:

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- D** 11

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- 37 M.TE.05.06:** Know how to use the area formula of a triangle.

Given a triangle with all measurements, identify the expression for area.

- A** correct
- B** $(1/2) \times (h) \times (\text{non-base side length})$
- C** $(1/2) \times (h) \times (\text{non-base side length})$
- D** $(1/2) \times (b) \times (\text{non-base side length})$

- 38 M.TE.05.07:** Know how to use the area formula for a parallelogram.

Given the labeled parallelogram, calculate its area.

- A** $A = b + h$
- B** $A = 2(b + h)$, false perimeter measure
- C** correct
- D** incorrect area

- 39 M.TE.05.07:** Know how to use the area formula for a parallelogram.

Given the area and height of a parallelogram, find its length.

- A** correct
- B** length = length + height
- C** length = area - height
- D** length = area + height

- 40 G.GS.05.06:** Know the interior angles of a triangle and quadrilateral.

Know the interior angles of a triangle to find the angle measure.

- A** interior angles of triangle sum to 150°
- B** correct
- C** interior angles of triangle sum to 210°
- D** interior angles of triangle sum to 270°

- 41 G.GS.05.06:** Know the interior angles of a triangle and quadrilateral.

Know the interior angles of a quadrilateral sum to 360° .

- A** incorrect sum of interior angles of quadrilateral
- B** incorrect sum of interior angles of quadrilateral
- C** incorrect sum of interior angles of quadrilateral
- D** correct

- 42 G.GS.05.07:** Find unknowns using the properties of triangles and quadrilaterals.

Find the measure of an angle of a quadrilateral, given the adjacent angle.

- A** measure of adjacent angle,
 $x = 360^\circ - x$
- B** correct
- C** adjacent angles in all quadrilaterals are congruent
- D** measure of adjacent angle = measure of complementary angle

- 43 G.GS.05.07:** Find unknowns using the properties of triangles and quadrilaterals.

Find the measure of an angle in the isosceles triangle.

- A** angle measures sum to more than 180°
- B** correct
- C** angle measures sum to less than 180°
- D** angle measures sum to less than 180°

- 44 D.RE.05.02:** Construct line graphs from tables of data.

Construct a line graph from the table with months and temperatures.

- A** incorrect values, missing labels
- B** correct
- C** incorrect values
- D** correct values, missing labels

- 45 N.FL.05.06:** Divide up to a 4-digit number by a 2-digit number.

Divide a 4-digit number by a 2-digit number.

- A** correct
- B** incorrect quotient
- C** incorrect quotient
- D** incorrect quotient

- 46 N.ME.05.08:** Understand the relative magnitude of the base-10 system.

Convert tenths to wholes.

- A** incorrect by factor of 1000
- B** incorrect by factor of 100
- C** incorrect by factor of 10
- D** correct

- 47 N.ME.05.09:** Understand percentages as parts out of 100.

Convert the fraction to a percentage.

- A** numerator = percentage
- B** correct
- C** denominator = percentage
- D** numerator + denominator = percentage

- 48 N.ME.05.10:** Understand and show fractions as a statement of division.

Translate the division expression to a fraction.

- A** reciprocal
- B** correct
- C** division = subtraction, $a/b = a - b$
- D** $a \div b = b \div a$, $a \neq b$

- 49 N.ME.05.11:** Compare two fractions using common denominators.

Given two fractions, find two equivalent fractions.

- A** a/b , $c/d = a/(b + d)$, $c/(b + d)$
- B** a/b , $c/d = (a + d)/(b + d)$, $(c + b)/(b + d)$
- C** a/b , $c/d = a/bd$, c/bd
- D** correct

- 50 N.MR.05.17:** Multiply decimals up to 100ths by whole numbers.

Multiply whole number by a decimal in hundredths

- A** incorrect by factor of 100
- B** incorrect by factor of 10
- C** correct
- D** incorrect by factor of $1/10$

- 51 N.MR.05.22:** Express fractions and decimals as percentages.

Translate the fraction to a percentage.

- A** $a/b = b0\%$
- B** correct
- C** $a/b = ab\%$
- D** $a/b = a0\%$

- 52 N.ME.05.23:** Express ratios in the forms a to b , $a:b$, and a/b .

Given a ratio in context, determine the ratio as a fraction.

- A** correct
- B** $a/b = b/a$, $a \neq b$
- C** $a/b = a/(a + b)$, $a \neq b$
- D** $a/b = b/(a + b)$, $a \neq b$

- 53 M.UN.05.01:** Know the equivalence of 1 liter, 1000 milliliters, and 1000 cubic centimeters.

Convert liters to milliliters.

- A** 1 liter = 50 mL
- B** 1 liter = 100 mL
- C** 1 liter = 500 mL
- D** correct

- 54 M.UN.05.02:** Know the units of measure of volume.

Select the unit of measure of volume.

- A** weight
- B** correct
- C** area
- D** length

- 55 M.UN.05.03:** Compare the relative sizes of cubic measures.

Identify the greatest volume using standard units.

- A** 3rd greatest volume, greatest measure
- B** smallest volume, 2nd greatest measure
- C** 2nd greatest volume, least measure
- D** correct

- 56 M.PS.05.10:** Solve volume problems of rectangular prisms.

Given the length, width, and height, find the portion of volume.

- A** correct
- B** incorrect quotient
- C** incorrect quotient
- D** incorrect quotient

- 57 G.TR.05.01:** Associate an angle with a certain amount of turning.

Determine the number of degrees that the arrow on the spinner moved.

- A** correct
- B** incorrect number of degrees
- C** incorrect number of degrees
- D** incorrect number of degrees

- 58 G.GS.05.03:** Identify angles on a straight line and vertical angles.

Identify the pair of vertical angles.

- A** adjacent
- B** adjacent
- C** correct
- D** adjacent

- 59 D.RE.05.01:** Read and interpret line graphs, and solve problems.

Determine the difference between two categories.

- A** incorrect difference
- B** correct
- C** subtrahend
- D** incorrect difference

- 60 D.AN.05.04:** Solve multi-step problems involving means.

Given the mean, find the missing value in the table.

- A** correct
- B** mean
- C** incorrect mean
- D** 5 days = one week

3rd

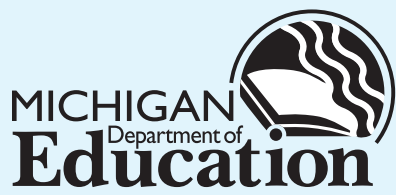
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