Name _____

Minnesota Comprehensive Assessments-Series III

Mathematics Item Sampler
Grade 5

Minnesota Department of
Education

Grade 5 Formula Sheet

You may use the following formulas to solve problems on this test.

Formulas	Variables
$A = b \times h$ $A = \frac{1}{2} \times b \times h$	A = area b = base h = height

Mathematics Test
General Directions

- This test contains four segments.

- You may write in this test book as scratch paper. Grid paper is also provided at the back of the test book.

- You will find a formula sheet at the beginning of this test book. You may tear it out of your test book to use while taking the test.

- For each question, choose the answer you think is best.

- Look at the samples that show how to answer the questions.

Sample Question Answered in Test Book:

$$20 - 8 =$$

- **A.** 8
- **B.** 10
- **C.** 12
- **D.** 16

Sample Question Answered in Test Book:

$$\$3.25 + \$1.10 = \$4.35$$

- You **may not** use a calculator for Segment 1.

- You **may** use a calculator for Segments 2, 3, and 4.

- When you finish a segment of the test, stop and check your answers. Then use the sticker given to you to seal it. Once you seal a segment, you cannot go back to it. Each segment must be sealed before you move on to the next segment.

STOP

Segment 1

You will be told when to begin this segment.

You **MAY NOT** use a calculator for this segment.

Mathematics Test — Segment 1

1. Divide.

$$2,564 \div 8$$

    A. 32 r4

    B. 308

    C. $320\frac{1}{5}$

    D. 320.5

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2. Which number has a 5 in the ten thousandths place?

    A. 0.20815
    B. 0.30256
    C. 0.40571
    D. 0.50098

3. Johan's race time was 45.03 seconds. Kyle's race time was 0.1 second less than Johan's time. What was Kyle's race time?

   A. 44.03 seconds

   B. 44.93 seconds

   C. 45.13 seconds

   D. 45.14 seconds

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4. What is 0.45831 rounded to the nearest thousandth?

   A. 0.45

   B. 0.458

   C. 0.459

   D. 0.4583
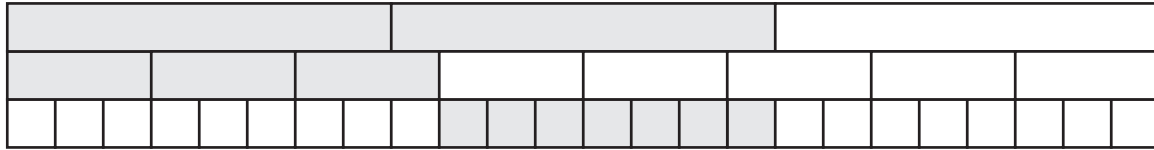
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5. Add.

$$45.908 + 3.26$$

   A. 46.234

   B. 49.168

   C. 49.24

   D. 78.508

6. A fraction model is shown.

What is represented by the model?

A. $\dfrac{2}{1} - \dfrac{3}{5}$

B. $\dfrac{2}{3} - \dfrac{3}{8}$

C. $\dfrac{2}{3} - \dfrac{1}{5}$

D. $\dfrac{3}{8} - \dfrac{7}{24}$

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7. Yesterday, Jamal read 17 pages in his book. Today, he read more pages than he read yesterday. Which inequality shows p, the number of pages Jamal could have read today?

A. $p < 17$

B. $p \leq 17$

C. $p > 17$

D. $p \geq 17$

8. How many edges does a hexagonal prism have?

    A. 6

    B. 8

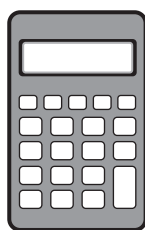   **C.** 12

    D. 18

This is the end of Segment 1.

Check your work. Then seal this segment.

STOP

Segment 2

You will be told when to begin this segment.

You **MAY** use a calculator for this segment.

9. Jan has 500 pieces of paper. She prints as many copies as possible of a 16-page report. How many pieces of paper are left?
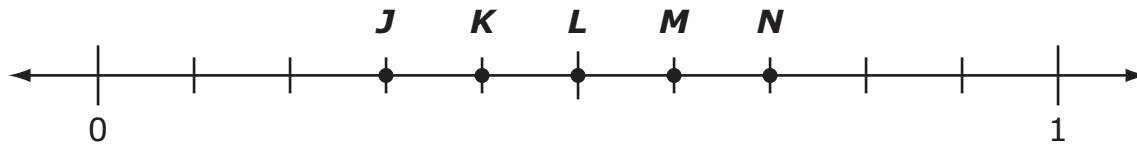
    A. 4

    B. 9

    C. 25

    D. 31

2

10. A bookcase has 4 shelves. The bottom shelf has 10 books. Each of the other shelves has 5 more books than the shelf below it. How many books are in the bookcase?

    A. 25

    B. 40

    C. 55

    D. 70

11. Five points are shown on a number line.

Between which 2 points is $\frac{7}{16}$ located?

A. *J* and *K*

B. *K* and *L*

C. *L* and *M*

D. *M* and *N*

2

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12. Lydia used $\frac{1}{25}$ of her notebook paper. What decimal amount did she use?

A. 0.04

B. 0.4

C. 1.25

D. 2.5

Go on to the next page.

13. Jill is $48\frac{5}{8}$ inches tall. Lei is 47.5 inches tall. What is the difference in their heights?

- **A.** 0.125 inches
- **B.** 1.08 inches
- **C.** 1.125 inches
- **D.** 1.62 inches

2

14. At a movie store, Erin pays a monthly fee and is charged for each movie she rents. The table shows the monthly cost when Erin rents different numbers of movies.
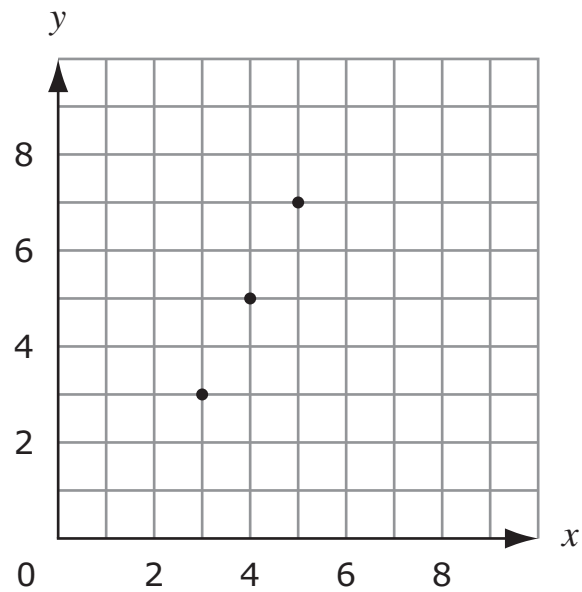
Monthly Cost

Number of Movies	Total Cost (dollars)
6	33
8	39
10	45

How much is the monthly fee that Erin pays?

- **A.** $3
- **B.** $6
- **C.** $15
- **D.** $18

15. Three points are shown on a grid.

Which rule was used to plot the points?

A. $y = x$

B. $y = x + 2$

C. $y = \frac{1}{2}x + 3$

D. $y = 2x - 3$

Go on to the next page.

16. An expression is shown.

$$4 + 3(6 + 10) \div 2$$

What is the value of the expression?

A. 16
B. 26
C. 28
D. 56

2

---

17. Which value makes the equation $5b + 15 = 30$ true?

A. $b = 3$
B. $b = 9$
C. $b = 10$
D. $b = 75$

18. What is the value of $4k + 6(j-2)$ when $k = 3$ and $j = 5$?

    A. 26
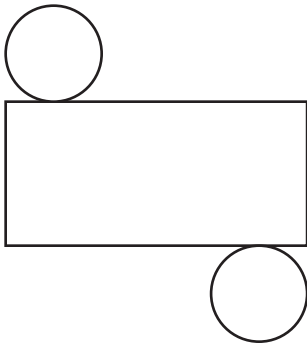
    B. 30

    C. 40

    D. 108

2

Please write your answer in the space below the question. You may use the digits: 0-9 and the symbols: slash for a fraction bar (/) and a decimal (.).

19. A triangle has a height of 25 feet. The length of its base is 12 feet. What is the area of the triangle?
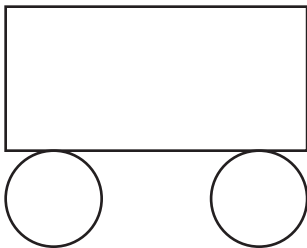
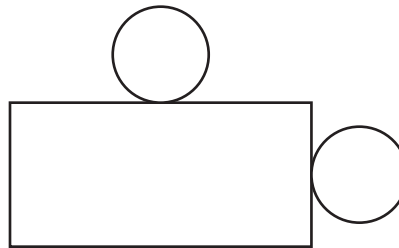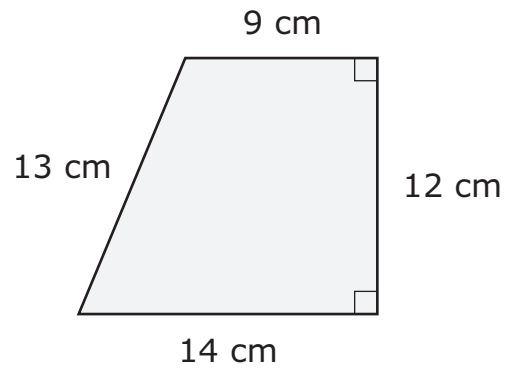**20.** Which net makes a cylinder?

A.

B.

C.

D.

21. A trapezoid is shown.

9 cm

13 cm

12 cm

14 cm

What is the area of the trapezoid?

A. 48 cm^2

B. 138 cm^2

C. 168 cm^2

D. 173 cm^2

Go on to the next page.

22. Amy covers the box shown with paper.

12 cm

8 cm

10 cm
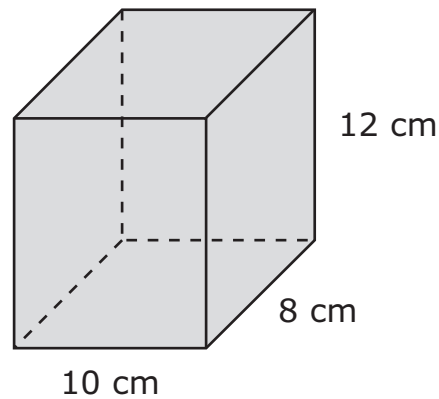
What is the surface area of the box?

A. 180 sq. cm

B. 296 sq. cm

C. 592 sq. cm

D. 960 sq. cm

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23. A rectangular prism has a height of h cm. The area of its base is B cm^2. How much does the volume of the prism increase when the height is increased by 1 cm?

A. 1 cm^3

B. $h+1 \text{ cm}^3$

C. $B \text{ cm}^3$

D. $B+1 \text{ cm}^3$

24. Anya listed the prices of meals on a menu.
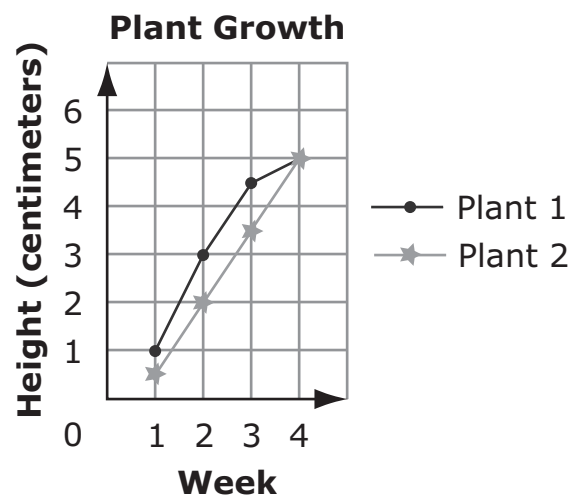
$14.85 $10.75 $8.50 $12.45 $9.20

What is the mean price of the meals?

A. $6.35
B. $8.50
C. $10.75
D. $11.15

2

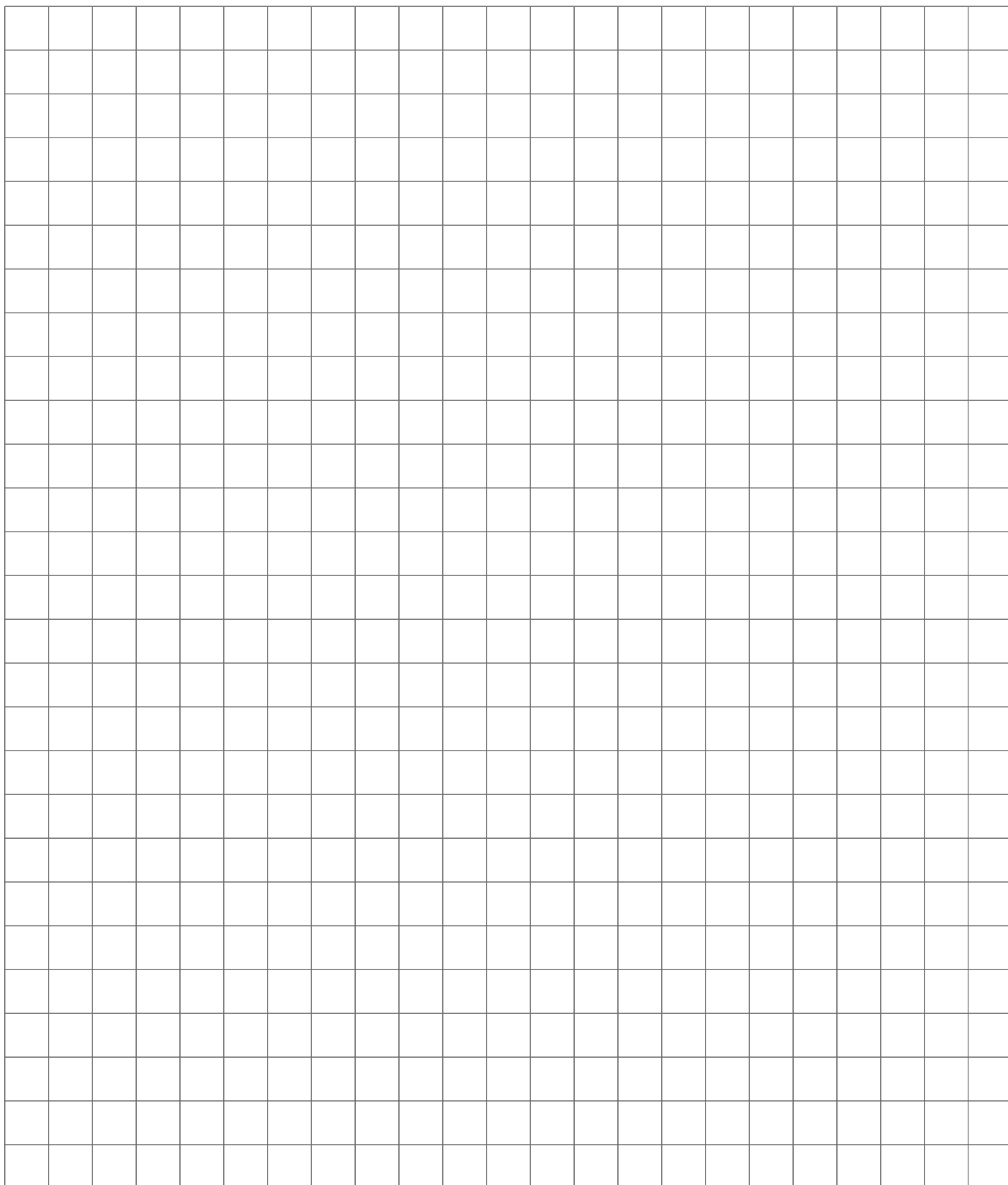**25.** Maria recorded the heights of 2 plants for 4 weeks.

How much did plant 2 grow from week 1 to week 2?

A. 1 cm

B. $1\frac{1}{2}$ cm

C. 2 cm

D. $4\frac{1}{2}$ cm

This is the end of Segment 2.

Check your work. Then seal this segment.

STOP

Minnesota Department of
Educati⊙n

MCA Item Sampler Teacher's Guide

An Introduction to the MCA

The Minnesota Comprehensive Assessments are reading, mathematics and science tests that help schools and districts measure student progress toward the state's academic standards. The grades 3–8 mathematics assessments became operational in 2011 as the Minnesota Comprehensive Assessments-Series III (MCA-III) and are aligned to the 2007 Minnesota Academic Standards. In 2012, the science assessments became operational as the Minnesota Comprehensive Assessments-Series III (MCA-III) and are aligned to the 2009 Minnesota Academic Standards. In 2013, the grades 3-8 and 10 reading assessments are aligned to the 2010 Minnesota Academic Standards as the Minnesota Comprehensive Assessments-Series III (MCA-III). In 2014, the grade 11 mathematics assessment is aligned to the 2007 Minnesota Academic Standards as the Minnesota Comprehensive Assessments-Series III (MCA-III).

The Purpose of the MCA Item Samplers

An item sampler is not a complete test. It contains a smaller number of the items that students will see on a full-length test in the spring. The MCA Item Samplers were developed to familiarize students and teachers with the format of the MCA and the kinds of items that will appear on them.

This MCA Item Sampler is not a real test. It should not be used to predict how well students will do on the tests. However, students may feel more comfortable with the tests if they have reviewed the Item Samplers prior to the test.

How the MCA Item Samplers Were Created

The Item Samplers mirror the format of the MCA. The student directions, segment layouts, and answer sheet each reflect the way the test will look in the spring, except that the Item Sampler is shorter than the actual test. As with all MCAs, the reading passages and the math and reading questions have been thoroughly reviewed by Minnesota teachers prior to testing. Minnesota students have answered these questions on previous tests.
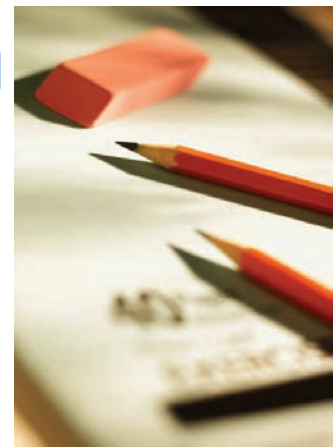
The distribution of question types and their aligned content selected for the Item Sampler generally reflects a range of items from each strand in the Minnesota Academic Standards. Whenever possible, the Item Samplers have the following designs:

Math:
- Two segments
    - Segment One does not allow a student to use a calculator.
    - The actual MCA has four segments
- Approximately twenty-four multiple-choice items

The Contents of This Teacher's Guide

The Answer Key identifies the answers and solutions to the questions. It also identifies the strand/sub-strand/benchmark from the Minnesota Academic Standards for the question.

State Standards & Test Specifications

The Item Samplers are primarily intended to familiarize teachers and students with the **format** of the MCA. The best preparation for the **content** of the MCA is done as a part of your curriculum planning. When doing that, reference the Minnesota Academic Standards and the test specifications for the MCA. For further questions about the MCAs, email us at mde.testing@state.mn.us.

Grade 5 Teacher's Guide

Mathematics MCA Item Sampler Answer Key
Grade 5 Math

Item #	Correct Answer	Item Type	Strand	Standard	Benchmark
1	D	MC	1	1	01
2	B	MC	1	2	01
3	B	MC	1	2	02
4	B	MC	1	2	05
5	B	MC	1	3	01
6	B	MC	1	3	02
7	C	MC	2	3	02
8	D	MC	3	1	01
9	A	MC	1	1	02
10	D	MC	1	1	04
11	B	MC	1	2	03
12	A	MC	1	2	04
13	C	MC	1	3	04
14	C	MC	2	1	01
15	D	MC	2	1	02
16	C	MC	2	2	01
17	A	MC	2	3	01
18	B	MC	2	3	03
19	Grid	GR	3	2	01
20	A	MC	3	1	02
21	B	MC	3	2	01
22	C	MC	3	2	02
23	C	MC	3	2	04
24	D	MC	4	1	01
25	B	MC	4	1	02

Grade 5 Teacher's Guide

Item # — The number of the question in the Item Sampler.

Correct Answer — Answers to multiple-choice questions are listed.

Item Type — Multiple Choice **(MC)** and Gridded Response **(GR)**

Strand — In mathematics, the MCA-III measures four strands:

1. Number and Operation
2. Algebra
3. Geometry and Measurement
4. Data Analysis and Probability

Standard — Each strand has one or more standards

Benchmark — Each standard has one or more benchmarks. See the Academic Standards or test specification for further explanation of each benchmark.