Name _____

Minnesota Comprehensive Assessments-Series III

Mathematics Item Sampler
Grade 6

ITEM SAMPLERS ARE NOT SECURE TEST MATERIALS. THIS ITEM SAMPLER TEST BOOK MAY BE COPIED OR DUPLICATED.

Minnesota Department of Education

Grade 6 Formula Sheet

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

Formulas	Variables
$A = bh$ $A = \frac{1}{2}bh$ $A = \frac{1}{2}h(b_1 + b_2)$	A = area b = base h = height
$V = Bh$	B = area of base h = height V = volume
$s = 180(n-2)$	n = number of sides s = sum of angles

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.

1

1. Which is equivalent to 4^3?

A. 12
B. 48
C. 64
D. 81

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2. Divide.

$$1\frac{1}{10} \div 1\frac{1}{5}$$

A. $\frac{11}{12}$

B. $\frac{25}{33}$

C. $1\frac{8}{25}$

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

Go on to the next page.

3. Riley has 200 stamps.

- 35% are from Europe.
- 10% are from Asia.
- 20% are from Australia.

The rest of the stamps are from North America. How many of Riley's stamps are from North America?

A. 35
B. 65
C. 70
D. 130

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4. What is the prime factorization of 630?

A. $2 \times 3 \times 5 \times 7$

B. $2 \times 3^2 \times 5 \times 7$

C. $2 \times 3^2 \times 35$

D. $2 \times 5 \times 7 \times 9$

5. An equation is shown.

1

$$j = 7k + 5$$

When the value of k increases by 2, by what amount does the value of j increase?

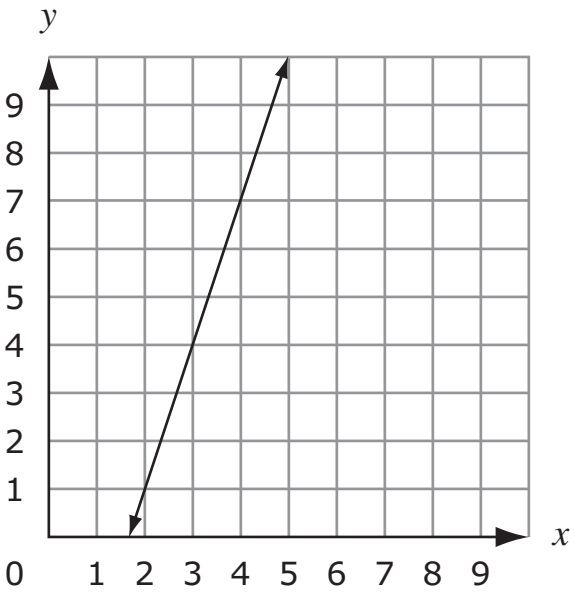
A. 2

B. 9

C. 12

D. 14

6. A graph is shown.



What is the equation of the line on the graph?

A. $y = x - 1$

B. $y = x + 3$

C. $y = 3x + 1$

D. $y = 3x - 5$

1

7. Simplify.

$$4\left(\frac{1}{2}+\frac{3}{8}\right)-\frac{5}{8}\cdot 2$$

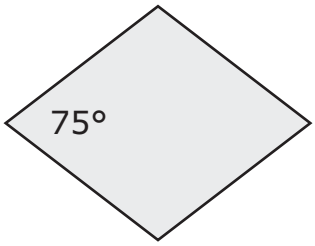
A. $1\frac{1}{8}$

B. 2

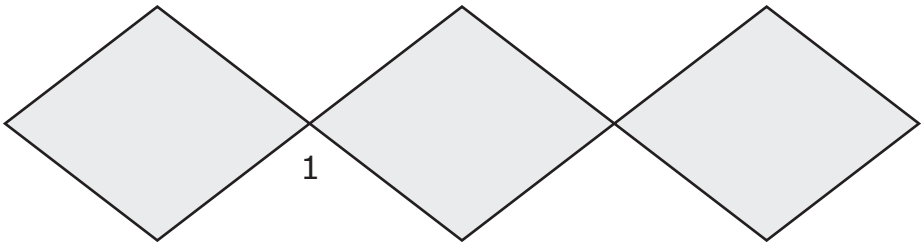
C. $2\frac{1}{4}$

D. $5\frac{3}{4}$

8. A rhombus is shown.



The rhombus is used to make a design.



What is m∠1?

A. 15°

B. 75°

C. 105°

D. 150°

9. Which statement is true?

A. $\frac{1}{6} = 0.16$

B. $0.08 = \frac{4}{5}$

C. $0.25 < \frac{1}{4}$

D. $\frac{1}{3} > 0.3$

2

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10. Kelly makes 12 candles in 3 hours. Lee makes 6 candles in 1 hour. What is the difference in the numbers of candles they each make in 8 hours?

A. 2
B. 8
C. 16
D. 48

---

11. A bottle of soap costs $3.45 for 64 ounces. What is the cost per ounce?

A. $0.05
B. $0.19
C. $0.22
D. $0.64

Go on to the next page.

12. A company is printing 250 calendars. In 1 hour, 75 calendars are printed. What percent of the calendars are printed in 1 hour?

A. 3%
B. 3.3%
C. 30%
D. 33%

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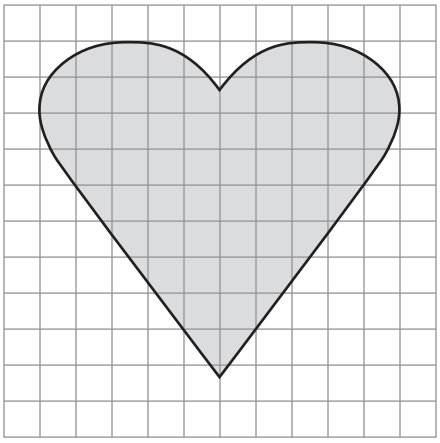
13. The surface area of a cube is 384 square inches. What is the volume of the cube?

A. 8 cubic inches
B. 16 cubic inches
C. 256 cubic inches
D. 512 cubic inches

14. A heart shape is cut from a gridded piece of paper.



2

What is the approximate area of the heart?

A. 50 square units
B. 70 square units
C. 90 square units
D. 144 square units

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15. Joleen bought 12 apples. Each apple weighed 1.8 ounces. How many pounds of apples did Joleen buy?

A. 1.35 pounds
B. 2.4 pounds
C. 21.6 pounds
D. 28.8 pounds

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 (.).

16. Eli has a cube with sides numbered 1–6 and a spinner with 3 equal sections labeled A, B, and C. He rolls the cube and spins the spinner. How many outcomes are possible?

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17. Four students each flipped a coin 50 times and recorded the results in the table.

Student	Heads	Tails
Mai Ka	31	19
Heather	15	35
Jose	21	29
Tyrone	20	30

Who had a relative frequency of $\frac{3}{5}$ of flipping tails?

A. Mai Ka

B. Heather

C. Jose

D. Tyrone

2

18. Which is equivalent to 0.04%?

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

B. $\frac{1}{25}$

C. $\frac{1}{400}$

D. $\frac{1}{2{,}500}$

2

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19. What is the greatest common factor of 48 and 64?

A. 2
B. 8
C. 16
D. 24

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20. A paint color is made using 4 drops of red and 5 drops of blue for each 5 gallons of paint. How many gallons of paint are being colored when 45 drops of color are used?

A. 9
B. 25
C. 45
D. 81

21. A phone company uses the equation $y = 0.15x + 10$ to find y, the monthly charge for a customer sending x text messages. How many text messages are sent if the monthly charge is $77.50?

A. 10

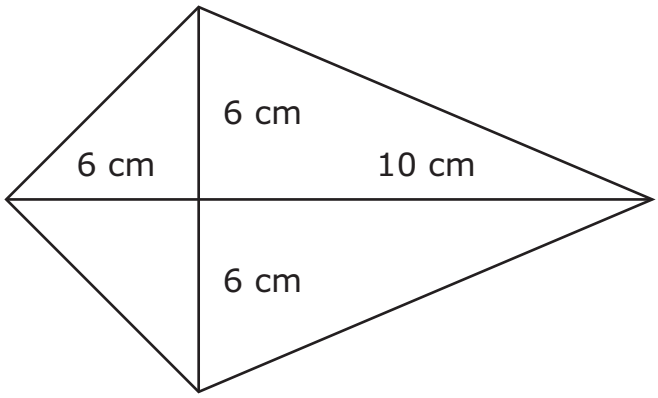
B. 21

C. 450

D. 506

2

22. A scale drawing of a kite is shown.



What is the area of the kite?

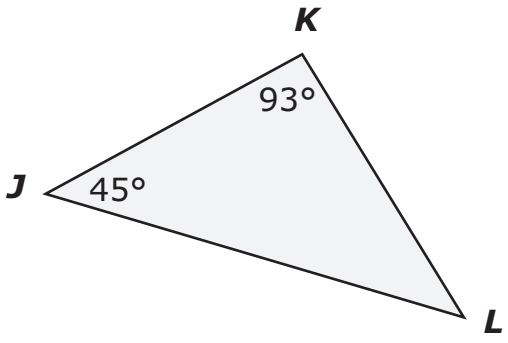
A. 28 cm^2

B. 60 cm^2

C. 96 cm^2

D. 192 cm^2

23. A triangle is shown.



What is m∠*L*?

2

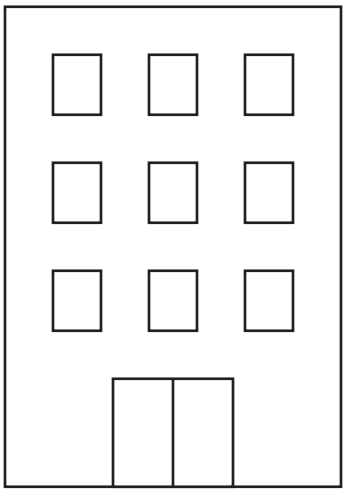
A. 42°

B. 45°

C. 48°

D. 138°

24. A building has 9 windows. Each window is 5 feet tall.



About how tall is the building?

A. 15 feet
B. 25 feet
C. 40 feet
D. 45 feet

2

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25. Tyler has a stack of cards. He picks a card, records the color, and returns the card to the stack. He repeats this 60 times and chooses a red card 24 times. What is the experimental probability of choosing a red card from the stack?

A. 0.14
B. 0.23
C. 0.40
D. 2.50

Grade 6 Teacher's Guide

Mathematics MCA Item Sampler Answer Key
Grade 6 Math

Item #	Correct Answer	Item Type	Strand	Standard	Benchmark
1	C	MC	1	1	07
2	A	MC	1	3	01
3	C	MC	1	1	03
4	B	MC	1	1	05
5	D	MC	2	1	01
6	D	MC	2	1	02
7	C	MC	2	2	01
8	C	MC	3	2	01
9	D	MC	1	1	02
10	C	MC	1	2	01
11	A	MC	1	2	03
12	C	MC	1	3	03
13	D	MC	3	1	01
14	A	MC	3	1	03
15	A	MC	3	3	01
16	Grid	GR	4	1	01
17	D	MC	4	1	03
18	D	MC	1	1	04
19	C	MC	1	1	06
20	B	MC	1	2	02
21	C	MC	2	3	02
22	C	MC	3	1	02
23	A	MC	3	2	02
24	C	MC	3	3	02
25	C	MC	4	1	04

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.