# Minnesota MCA Grade 6 Math Practice

Reference Materials
Page 2

Exam Materials
Pages 3 - 19

Answer Key Materials
Pages 20 - 21

# 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 |

Name _____

# Minnesota Comprehensive Assessments-Series III

## Mathematics Item Sampler
## Grade 6

**Minnesota** Department of
# Education

# 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

**1.** Which is equivalent to $4^3$?

    **A.** 12

    **B.** 48

    **C.** 64

    **D.** 81

---

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

**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

---

**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.** $2 \times 5 \times 7 \times 9$
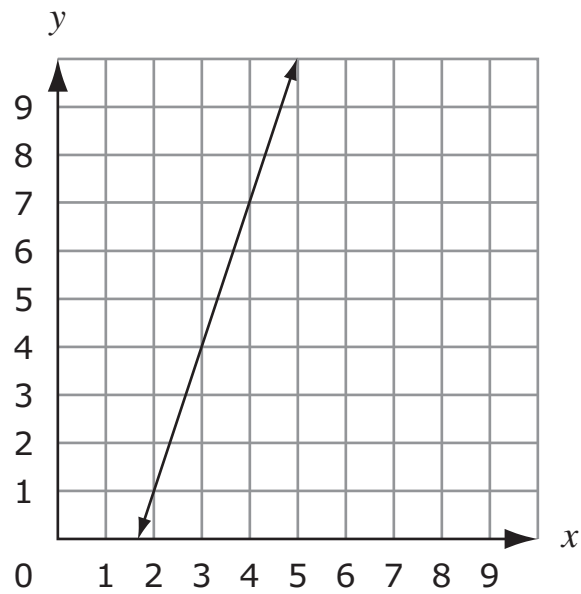
**5.** An equation is shown.

$$j = 7k + 5$$

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.** $y = 3x + 1$

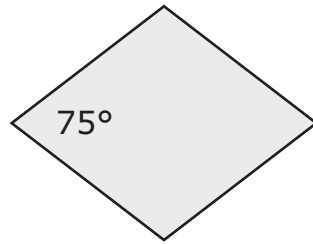**D.** $y = 3x - 5$

Go on to the next page.

**7.** Simplify.

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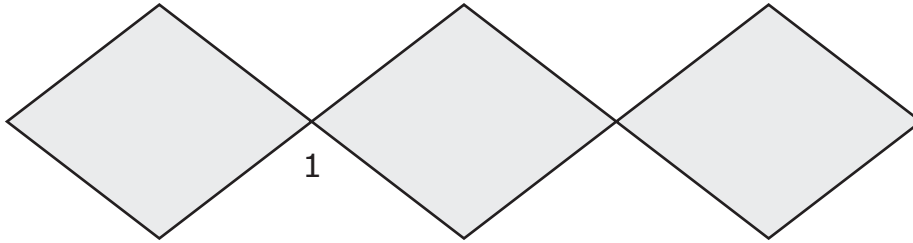
**A.** $1\frac{1}{8}$

**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**

---

**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

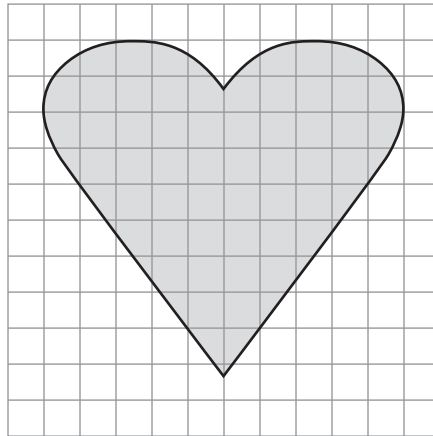    **B.** $0.19

    **C.** $0.22

    **D.** $0.64

**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%

---

**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

2

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



What is the approximate area of the heart?

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

---

**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?

---

**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**

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

**A.** 2

**B.** 8

**C.** 16

**D.** 24

**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
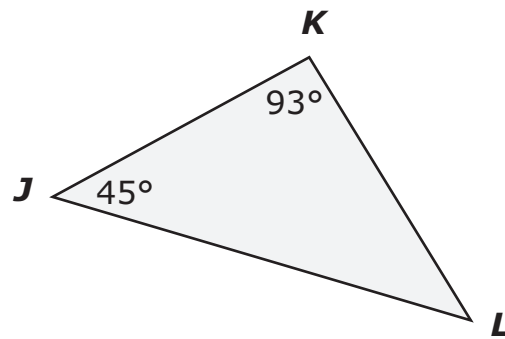
**D.** 506

---

**22.** A scale drawing of a kite is shown.
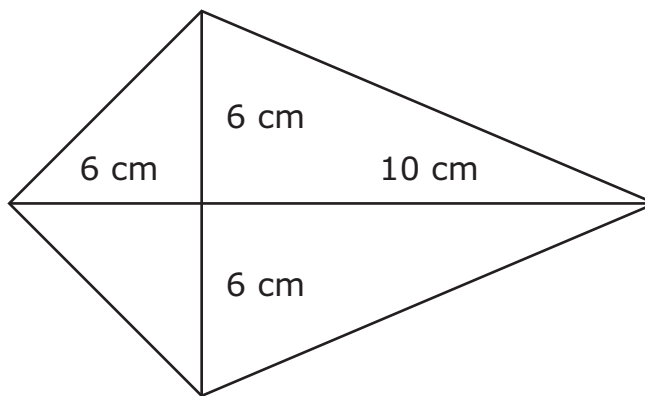


What is the area of the kite?

**A.** 28 cm$^2$

**B.** 60 cm$^2$

**C.** 96 cm$^2$

**D.** 192 cm$^2$

**23.** A triangle is shown.
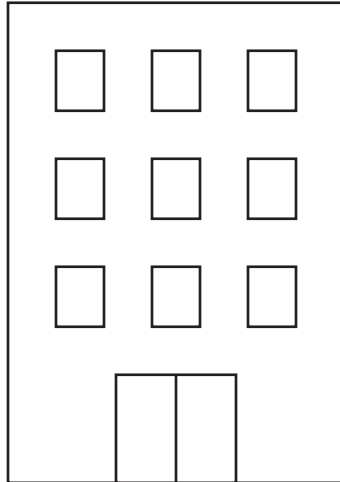


What is m∠L?

**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

---

**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
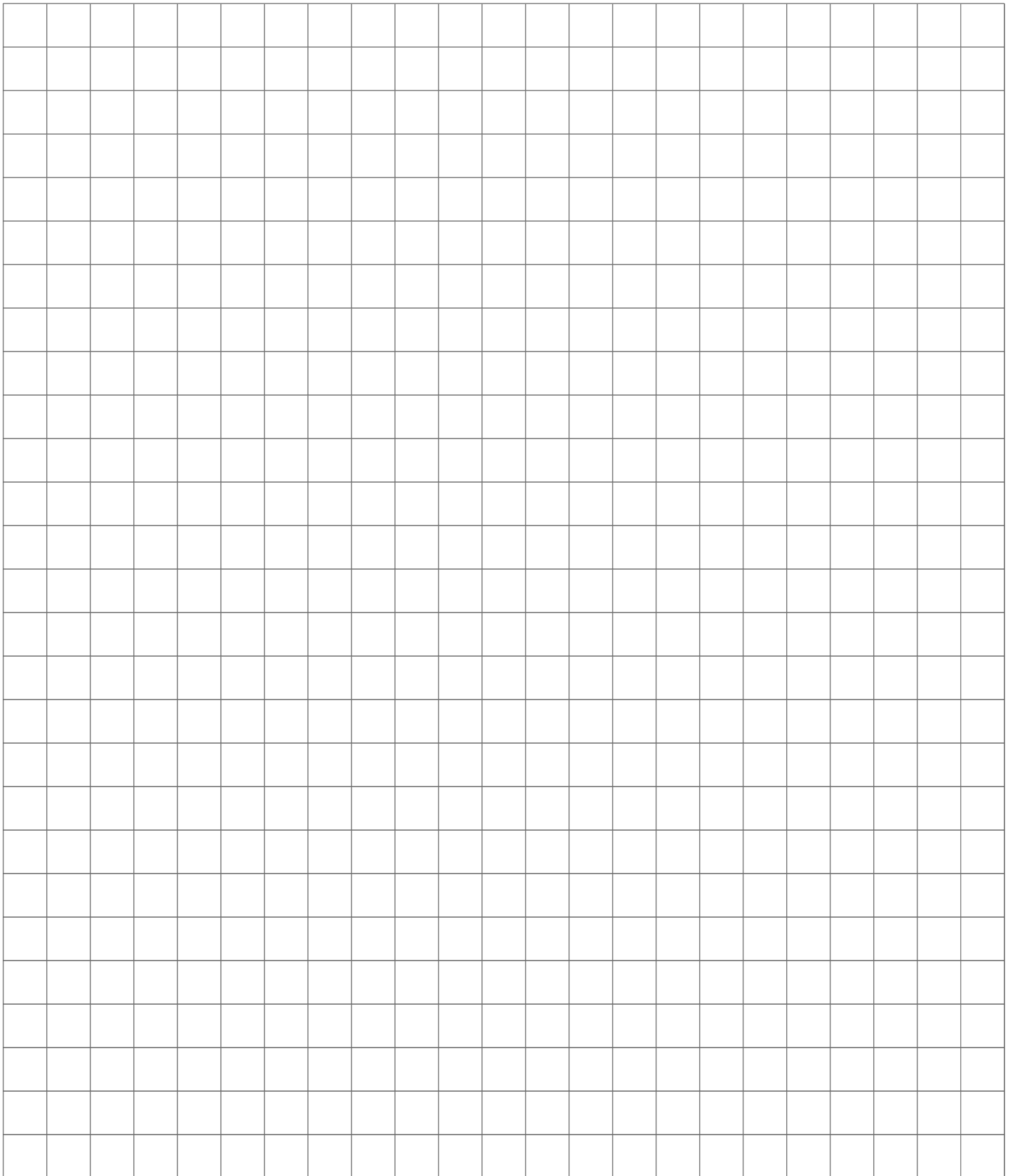
# Grade 6 Teacher's Guide

## 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 |

# Grade 6 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.