Name _____

Minnesota Comprehensive Assessments-Series III

Mathematics Item Sampler
Grade 6

m DEPARTMENT OF EDUCATION

Grade 6 Formula Sheet

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

Formulas	Variables
$A = bh$ $A = \dfrac{1}{2}bh$ $A = \dfrac{1}{2}h(b_1 + b_2)$	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 two 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 sample questions that show how the different types of questions should be answered.

Multiple-choice Question Answered in Test Book:

$$20 - 8 =$$

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

- Answer each fill in the blank question by writing your answer in the space below the question. You may only use the digits 0–9 and the symbols for fraction (/) and decimal (.). Do not include a label on your answer. If your answer is a mixed number you must change it to an improper fraction or a decimal.

Fill in the Blank Question Answered in Test Book:

$$\frac{1}{4} + 1\frac{1}{4} = 6/4$$

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

- You **may** use a calculator for Segment 2.

- 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

On this test, do your own best work to show what you know and can do.

- Do not accept help finding answers to test questions.

- Do not give answers to other students.

- Do not tell others what is on the test.

- There may be consequences if you do not follow directions or if you behave dishonestly.

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

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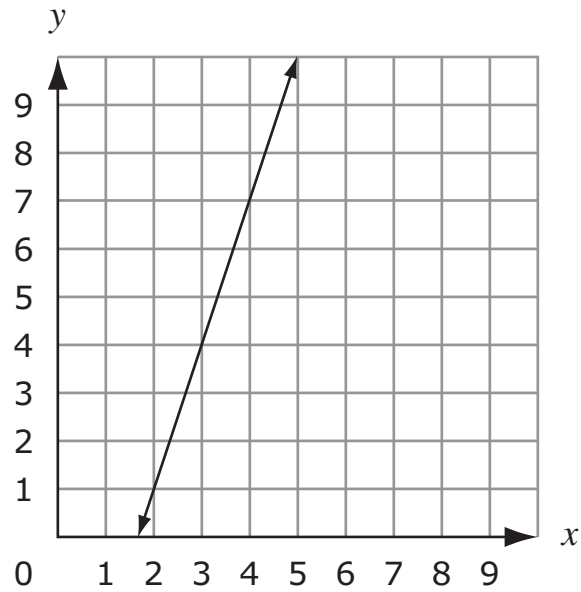
5. An equation is shown.

$$j = 7k + 5$$

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. $y = 3x - 5$
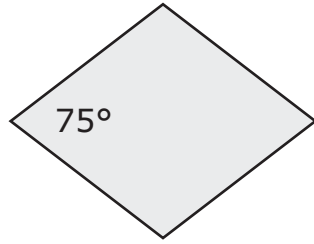
Go on to the next page.

7. Simplify.

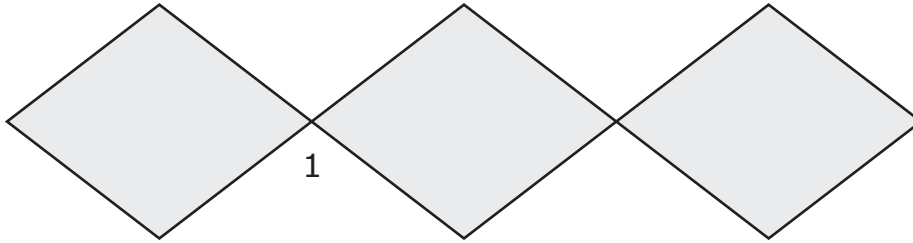$$4\left(\frac{1}{2}+\frac{3}{8}\right)-\frac{5}{8}\cdot 2$$

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°

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. 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

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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
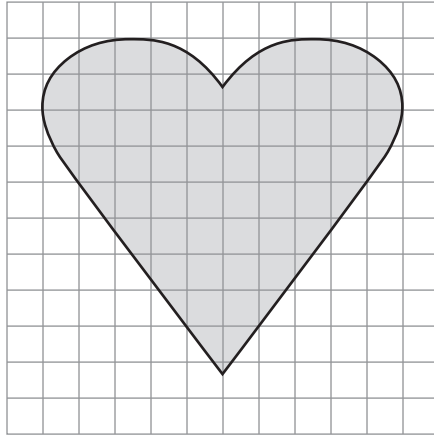
    D. \$0.64

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

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

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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 (.). If your answer is a mixed number you must change it to an improper fraction or 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

18. Which is equivalent to 1.4%?

    A. $\dfrac{1}{80}$

    B. $\dfrac{7}{500}$

    C. $1\dfrac{1}{4}$

    D. $1\dfrac{4}{10}$

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

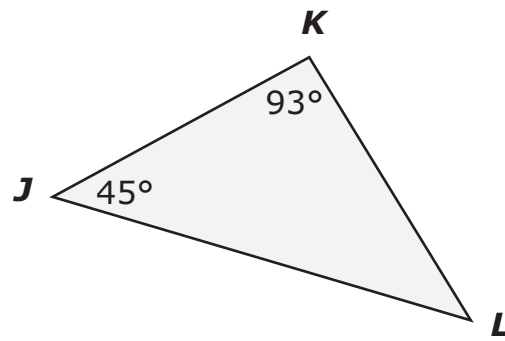**22.** A scale drawing of a kite is shown.

6 cm

6 cm   10 cm

6 cm
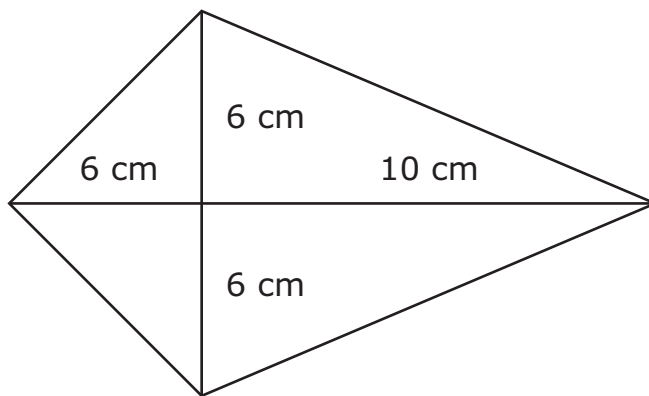
What is the area of the kite?

    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.
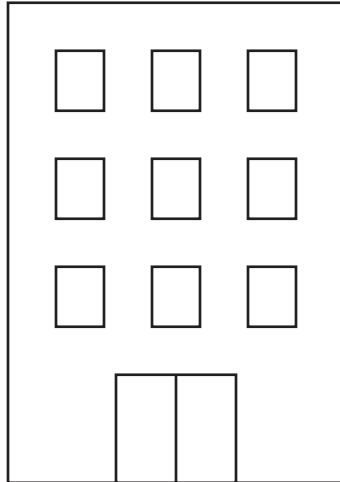
About how tall is the building?

A. 15 feet

B. 25 feet

C. 40 feet

D. 45 feet

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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?
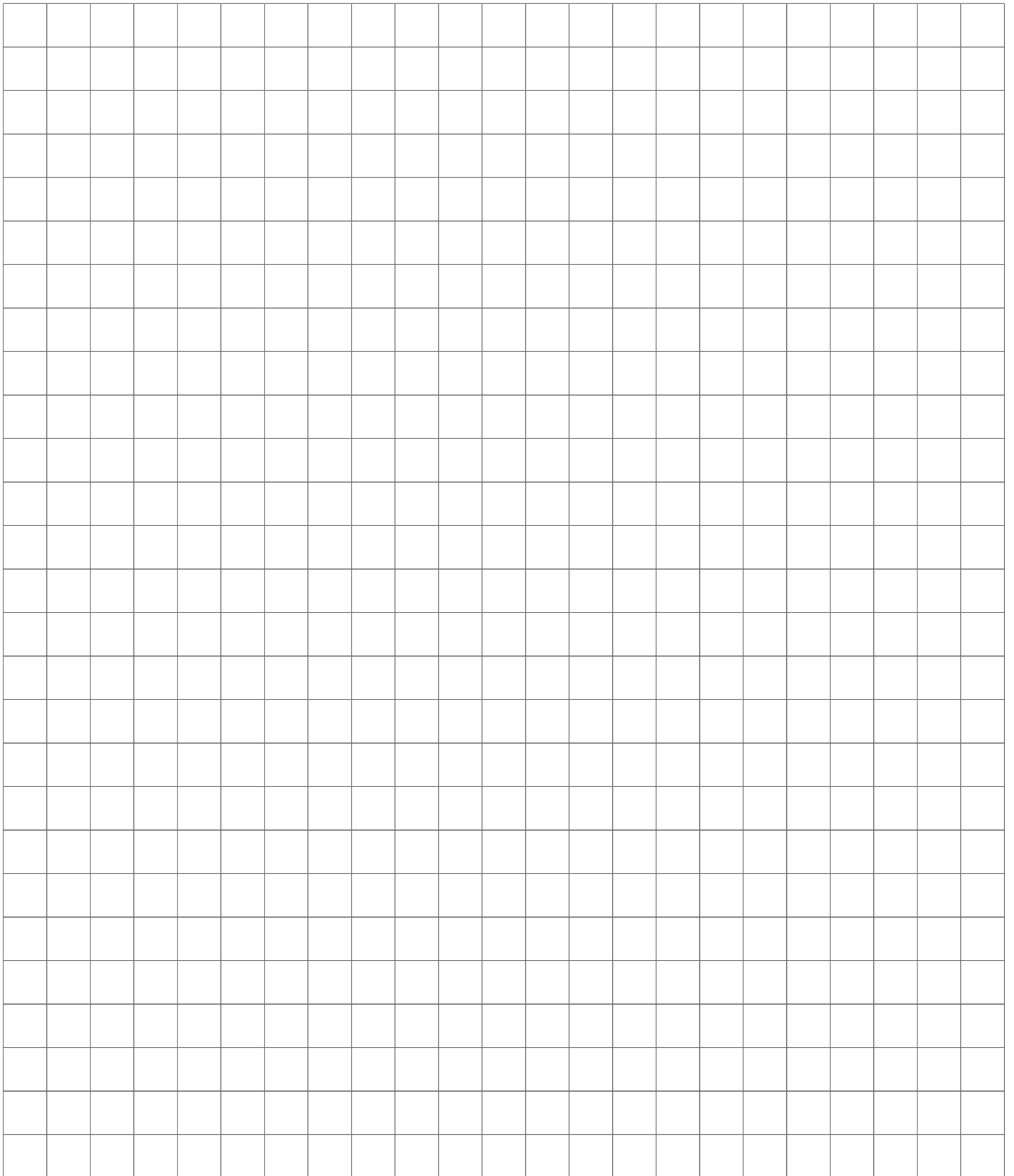
A. 0.14

B. 0.23

C. 0.40

D. 2.50

This is the end of Segment 2.

Check your work. Then seal this segment.

STOP