Mathematics

SESSION 1

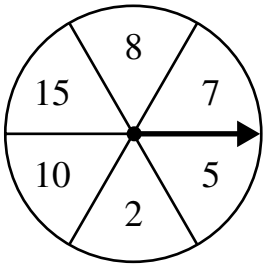
You may use your tool kit and MCAS ruler during this session.
*You may **not** use a calculator during this session.*

DIRECTIONS

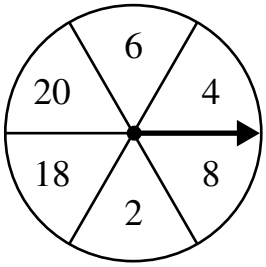
This session contains twelve multiple-choice questions, two short-answer questions, and three open-response questions. Mark your answers to these questions in the spaces provided in your Student Answer Booklet.

1 Diego made a spinner to use in a game. He marked each section of the spinner with an even number. Which of the following spinners has an even number marked in each section?

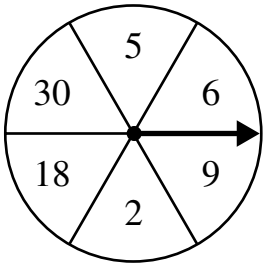
A.



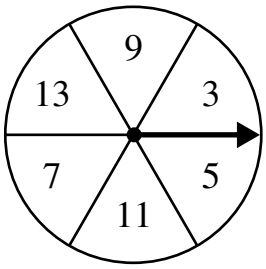
B.



C.



D.



2 Eric bought 2 pairs of mittens and 3 winter scarves.

- Each pair of mittens costs $10.00.
- Each winter scarf costs $5.00.

Which of the following could be used to find the total cost of the mittens and scarves that Eric bought?

A. $(2 + 3) \times (\$10.00 + \$5.00)$

B. $(2 \times \$10.00) + (3 \times \$5.00)$

C. $2 + 3 + \$10.00 + \$5.00$

D. $2 \times 3 \times \$10.00 \times \$5.00$

3 Ms. Roland measured the length of a board she was using to make a shelf. Which of the following could be the length of the board?

A. 6 square feet

B. 6 pounds

C. 6 gallons

D. 6 feet

4 Which of the following is a three-dimensional shape?

A. quadrilateral

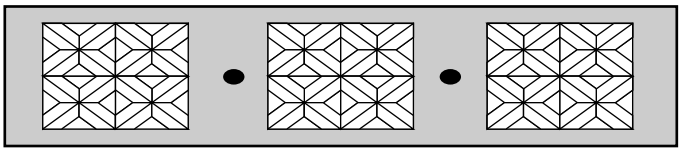
B. pyramid

C. triangle

D. rectangle

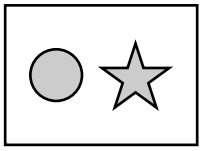
Use your MCAS ruler to answer question 5.

5 Lysella made the bookmark shown below.

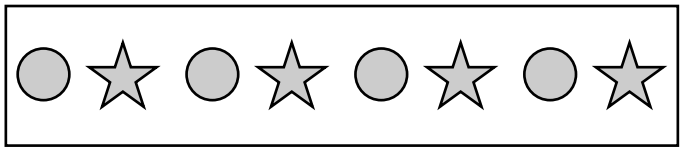


Which of the following is 1 inch **longer** than the bookmark Lysella made?

A.



B.



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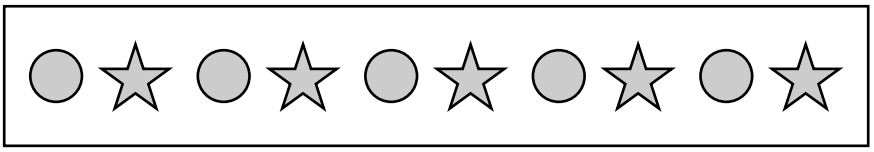

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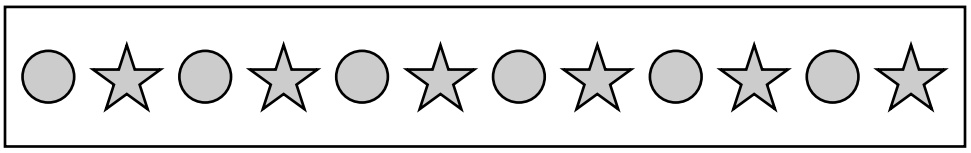


6 The chart below shows the number of college athletes who participated in four different sports in the academic year 1998–1999.

Sports Participation 1998–1999

Sport	Women	Men
Indoor Track	15,460	16,943
Outdoor Track	18,220	20,401
Soccer	17,520	18,238
Basketball	14,365	15,710

According to the chart, how many men and women participated in soccer in 1998–1999?

A. 25,758

B. 33,230

C. 35,758

D. 37,921

7 Which of the following is a true statement?

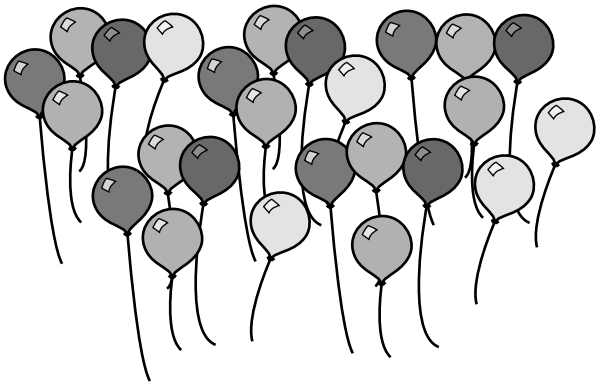
A. $\frac{1}{2} = 0.12$

B. $\frac{1}{2} = 1.2$

C. $\frac{1}{2} = 0.05$

D. $\frac{1}{2} = 0.5$

8 Each person at Yi Kun's party will choose one of the balloons pictured below. There is a concert ticket hidden inside one of the balloons.



Karl was the first one to choose a balloon. Which of the following best describes the chances that he will choose the balloon with the ticket inside?

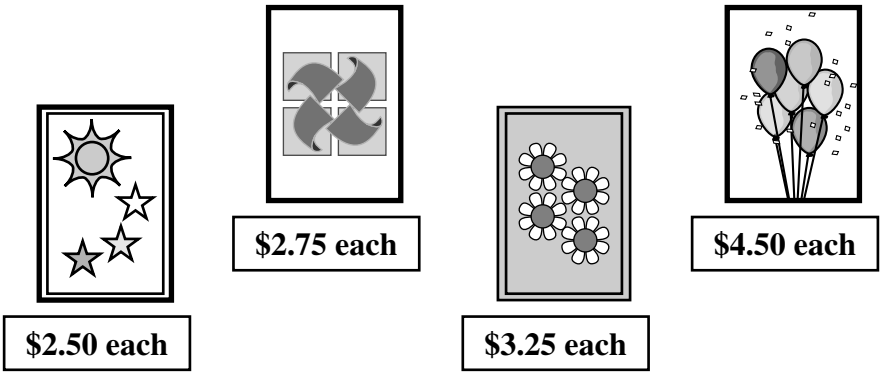
A. impossible

B. unlikely

C. likely

D. certain

9 The picture below shows four different cards and the price of each.



Ms. Erickson bought all 4 cards. What was the total price of all 4 cards?

A. $11.75

B. $12.00

C. $13.00

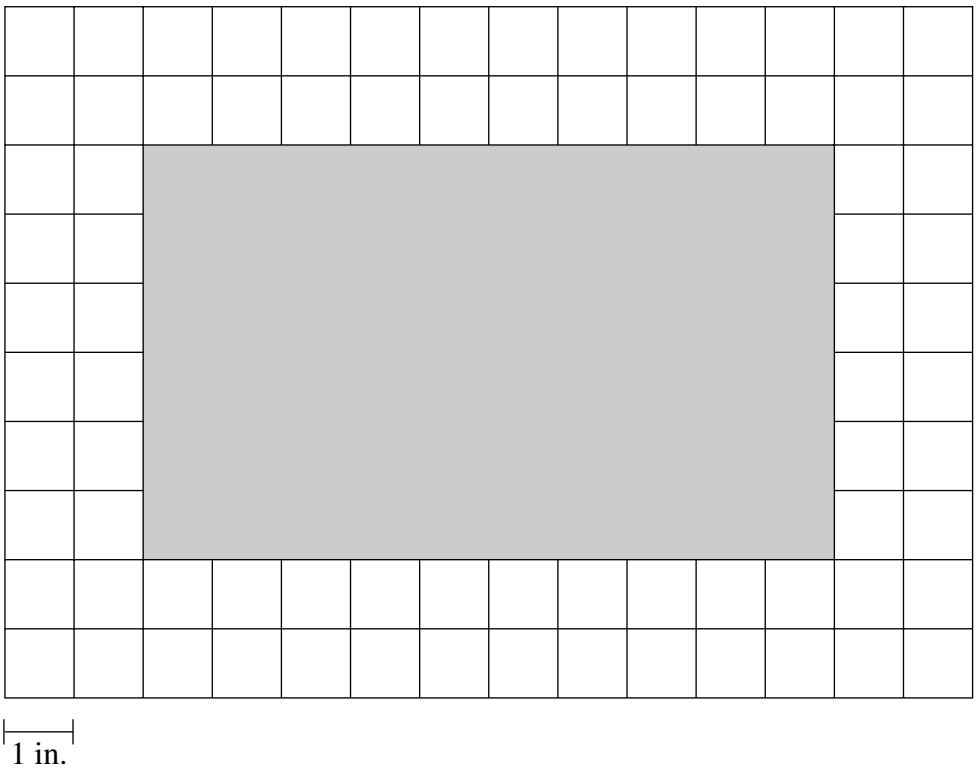
D. $14.50

Question 10 is an open-response question.

- **BE SURE TO ANSWER AND LABEL ALL PARTS OF THE QUESTION.**
- **Show all your work (diagrams, tables, or computations) in your Student Answer Booklet.**
- **If you do the work in your head, explain in writing how you did the work.**

Write your answer to question 10 in the space provided in your Student Answer Booklet.

10 Thyra has a rectangular piece of colored paper. The shaded shape on the grid below represents Thyra's piece of paper.



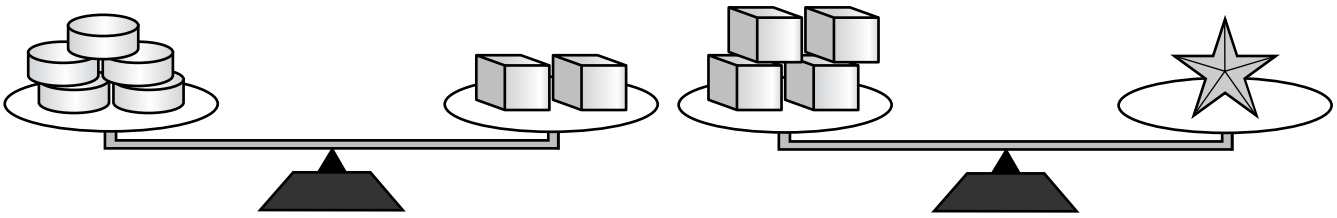
a. What is the area, in square inches, of the piece of paper? Show your work or explain how you got your answer.

b. What is the perimeter, in inches, of the piece of paper? Show your work or explain how you got your answer.

c. Thyra cut the paper into 2 smaller rectangles that were each the same size. What is the perimeter, in inches, of each of the smaller rectangles? Show your work or explain how you got your answer.

Questions 11 and 12 are short-answer questions. Write your answers to these questions in the boxes provided in your Student Answer Booklet. Do not write your answers in this test booklet. You may do your figuring in the test booklet.

11 Both of the scales shown below are balanced.



5 cans balance 2 blocks.

4 blocks balance 1 star.

How many cans are needed to balance 1 star?

Use your MCAS ruler to answer question 12.

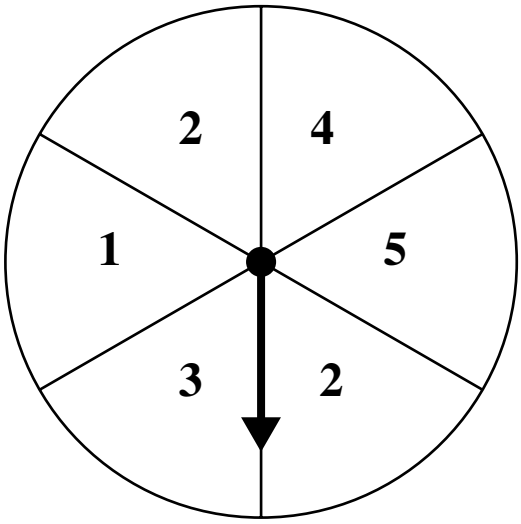
12 Draw a triangle with 1 obtuse angle.

Question 13 is an open-response question.

- **BE SURE TO ANSWER AND LABEL ALL PARTS OF THE QUESTION.**
- **Show all your work (diagrams, tables, or computations) in your Student Answer Booklet.**
- **If you do the work in your head, explain in writing how you did the work.**

Write your answer to question 13 in the space provided in your Student Answer Booklet.

13 Lark and Elroy are playing a game with a spinner like the one pictured below. All the sections of the spinner are the same size.



a. If Lark spins the arrow 1 time, what is the probability that the arrow will land on a section labeled with the number 2? Show or explain how you got your answer.

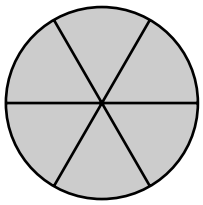
b. If Elroy spins the arrow 1 time, what is the probability that the arrow will land on a section labeled with a number **greater than** 2? Show or explain how you got your answer.

c. Elroy earns a point if the arrow lands on a section labeled with an odd number. Lark earns a point if the arrow lands on a section labeled with an even number. Do Elroy and Lark each have an equal chance of winning, or does one of the players have a better chance of winning than the other? Explain the reason for your answer.

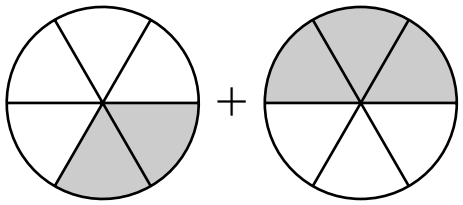
Mark your answers to multiple-choice questions 14 through 16 in the spaces provided in your Student Answer Booklet. Do not write your answers in this test booklet. You may do your figuring in the test booklet.

14 All the sections of the models below are the same size.

The model below is shaded to represent 1 whole.



A fractional part of each model below has been shaded. Which fraction should you get if you add the fractions represented by the shaded parts of the models?



A. $\frac{5}{6}$

B. $\frac{5}{7}$

C. $\frac{5}{12}$

D. $\frac{6}{36}$

15 Which of the following is read "fifty-three hundredths"?

A. 5300

B. 53.00

C. 0.53

D. 0.053

16 What value for  makes the number sentence shown below true?

A. 27,962

B. 28,962

C. 32,162

D. 36,208

Question 17 is an open-response question.

- **BE SURE TO ANSWER AND LABEL ALL PARTS OF THE QUESTION.**
- **Show all your work (diagrams, tables, or computations) in your Student Answer Booklet.**
- **If you do the work in your head, explain in writing how you did the work.**

Write your answer to question 17 in the space provided in your Student Answer Booklet.

17 The picture below shows the playing board for the new game show Guess What. In each game, players win points by answering questions about five different categories. Each category has 5 questions to be answered. The number of points that a question is worth is shown on the playing board. (For example, the first question in each category is worth 25 points.)

GUESS WHAT				
States	**People**	**Dates**	**Rivers**	**Books**
25	25	25	25	25
50	50	50	50	50
100	100	100	100	100
200	200	200	200	200
400	400	400	400	400

a. How many points will a player earn if he or she answers all the questions in the "States" category correctly? Show your work or explain how you got your answer.

b. What is the fewest number of questions a player could answer correctly and earn exactly 375 points? Show your work or explain how you got your answer.

c. Mr. Anderson earned exactly 1250 points. He answered more than 5 questions correctly. Show one way that Mr. Anderson could have answered more than 5 questions correctly to earn exactly 1250 points. Explain how you got your answer.

Mathematics

SESSION 2

You may use your tool kit and MCAS ruler during this session.
*You may **not** use a calculator during this session.*

DIRECTIONS

This session contains seventeen multiple-choice questions, three short-answer questions, and two open-response questions. Mark your answers to these questions in the spaces provided in your Student Answer Booklet.

18 Max and Sam wrote a number sentence to show that Max is older than Sam. In their number sentence,

- M represents Max's age in years, and
- S represents Sam's age in years.

Which number sentence shows that Max is older than Sam?

A. $M < S$

B. $M > S$

C. $M = S$

D. $M + S = 10$

19 A factory made 13,424 ice cream sandwiches in an 8-hour period. What is 13,424 rounded to the nearest hundred?

A. 10,000

B. 13,000

C. 13,400

D. 13,500

20 What is the remainder for the division problem shown below?

$$496 \div 6 = ?$$

A. 0

B. 1

C. 3

D. 4

21 Abner's Market has lemons on sale. The table below shows the number of lemons that can be bought for different amounts of money.

Lemon Prices

Number of Lemons	Total Price
10	$1.00
20	$2.00
30	$3.00
40	$4.00
50	$5.00

Based on the information in the table, what happens to the number of lemons each time the total price goes up by $1.00?

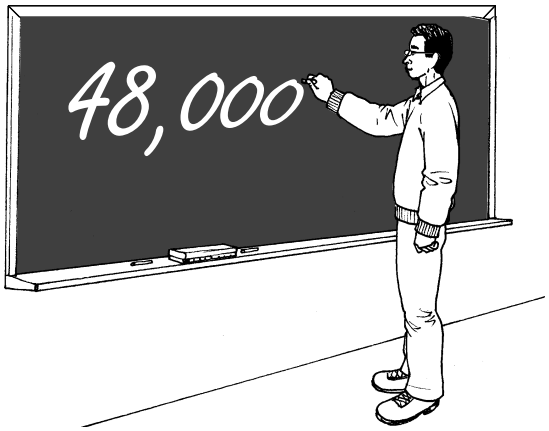
A. The number of lemons doubles.

B. The number of lemons is multiplied by 10.

C. The number of lemons increases by 60.

D. The number of lemons increases by 10.

22 Mr. Bingham wrote the correct answer to one of the homework problems on the board, as shown below.



Which of the following could have been the homework problem?

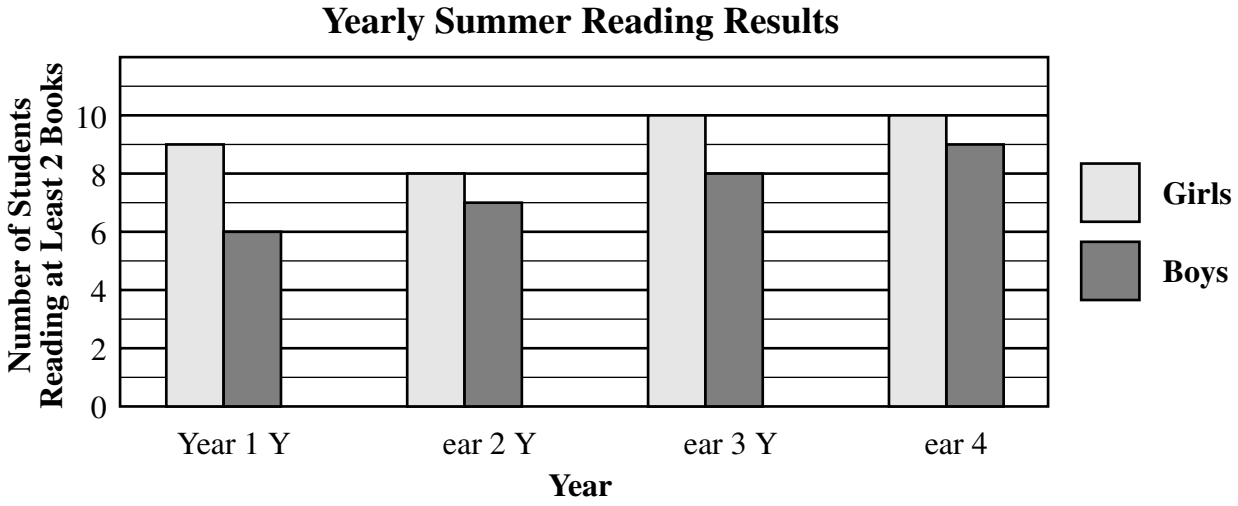
A. 6×800

B. 60×80

C. 60×800

D. 600×8

23 On the first day of school, Ms. Forsythe always asks her students, "How many of you read at least 2 books over the summer?" The graph below shows the data she has collected over the last four years.



Based on the data in the graph, which of the following is a reasonable conclusion?

A. The number of girls reading at least 2 books increased each year.

B. The number of boys reading at least 2 books increased each year.

C. The number of boys reading at least 2 books in Year 1 is half the number of girls reading at least 2 books in Year 1.

D. The number of students in the class increased each year.

24 The chart below shows the height, in feet, of four different mountains in Colorado.

Mountain Heights

Mountain	Height (in feet)
Mt. Shavano	14,229
Mt. Antero	14,269
Mt. Cameron	14,238
Mt. Wilson	14,246

The height of Mt. Evans is between the two greatest heights shown on the chart above. Which of the following could be the height of Mt. Evans?

A. 14,208 feet

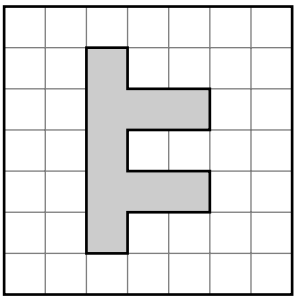
B. 14,241 feet

C. 14,275 feet

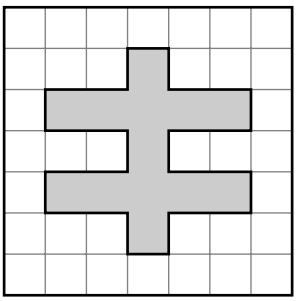
D. 14,264 feet

25 Which of the shaded shapes shown below appears to have **exactly** 1 line of symmetry?

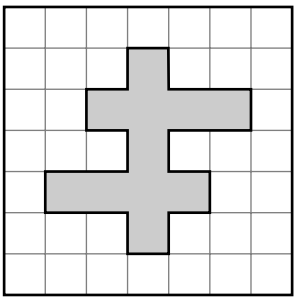
A.



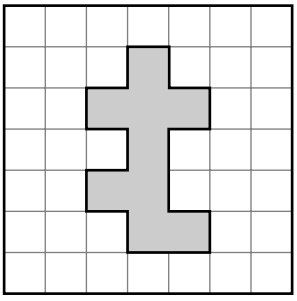
B.



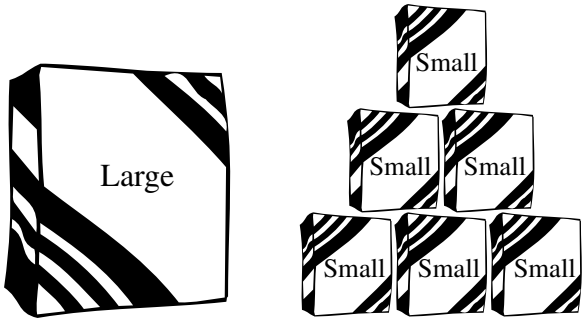
C.



D.



26 One large box of cookies contains the same number of cookies as 6 small boxes. Each small box contains an equal number of cookies. The boxes of cookies are shown below.



A large box of cookies contains 84 cookies. What is the total number of cookies that a small box contains?

A. 9

B. 11

C. 14

D. 20

Question 27 is an open-response question.

- **BE SURE TO ANSWER AND LABEL ALL PARTS OF THE QUESTION.**
- **Show all your work (diagrams, tables, or computations) in your Student Answer Booklet.**
- **If you do the work in your head, explain in writing how you did the work.**

Write your answer to question 27 in the space provided in your Student Answer Booklet.

27 Lillian used a rule to make the number pattern shown below.

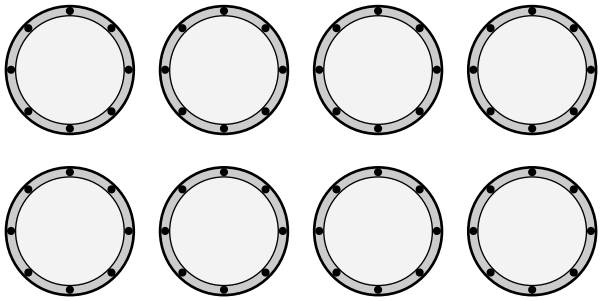
3	**7**	**12**	**16**	**21**	**25**	**30**	**?**

a. If the pattern continues in the same way, what will be the next number in the pattern? Show or explain how you got your answer.

b. Jenna used the same rule as Lillian to make a number pattern. She began her pattern with the number 10. Should the number 25 be one of the numbers in Jenna's pattern? Show or explain how you got your answer.

Questions 28 and 29 are short-answer questions. Write your answers to these questions in the boxes provided in your Student Answer Booklet. Do not write your answers in this test booklet. You may do your figuring in the test booklet.

28 Tyler has the group of plates shown below. He used exactly $\frac{3}{4}$ of the plates to set the table for a family dinner. How many plates did he use?



Use your MCAS ruler to answer question 29.

29 What is the perimeter, in inches, of the rectangle shown below?

Question 30 is a short-answer question. Write your answer to this question in the box provided in your Student Answer Booklet. Do not write your answer in this test booklet. You may do your figuring in the test booklet.

30 The tally chart below shows the number of red, gold, and orange leaves that Ann collected one weekend.

Leaves Collected

Color	Number Collected
Red	𝍸 𝍸 𝍸 /
Gold	𝍸 //
Orange	////

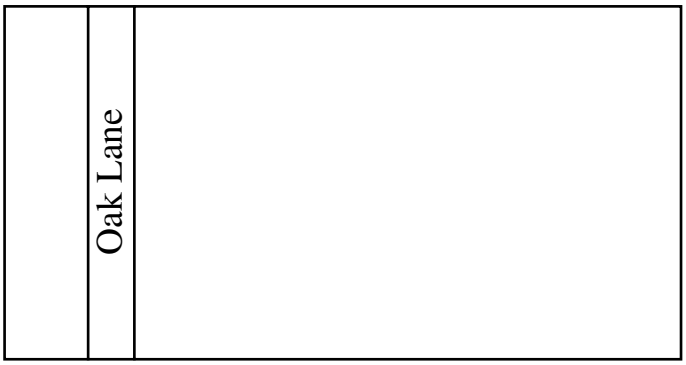
How many leaves did Ann collect altogether?

Question 31 is an open-response question.

- **BE SURE TO ANSWER AND LABEL ALL PARTS OF THE QUESTION.**
- **Show all your work (diagrams, tables, or computations) in your Student Answer Booklet.**
- **If you do the work in your head, explain in writing how you did the work.**

Write your answer to question 31 in the space provided in your Student Answer Booklet.

31 Ursula is drawing a map of the area near her school. The first part of her map is shown below. Copy Ursula's map into your Student Answer Booklet. Use your copy of the map to complete the following tasks.



a. Rose Street is perpendicular to Oak Lane. On your map, draw Rose Street so that it is perpendicular to Oak Lane.

b. Shady Glen is parallel to Rose Street. On your map, draw Shady Glen so that it is parallel to Rose Street.

c. Broadway intersects Shady Glen to form an acute angle. Draw Broadway on your map. Mark the acute angle on your map.

Mark your answers to multiple-choice questions 32 through 39 in the spaces provided in your Student Answer Booklet. Do not write your answers in this test booklet. You may do your figuring in the test booklet.

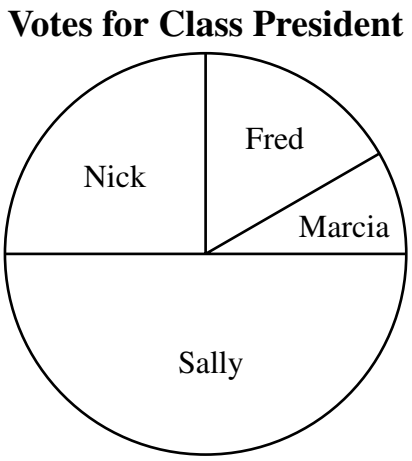
32 The chart below shows the votes for class president.

Votes for Class President

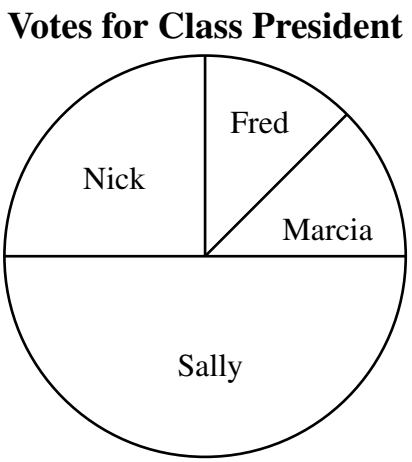
Candidate	Number of Votes
Marcia	10
Fred	20
Nick	30
Sally	60

Which graph below most accurately reflects this information?

A.



C.



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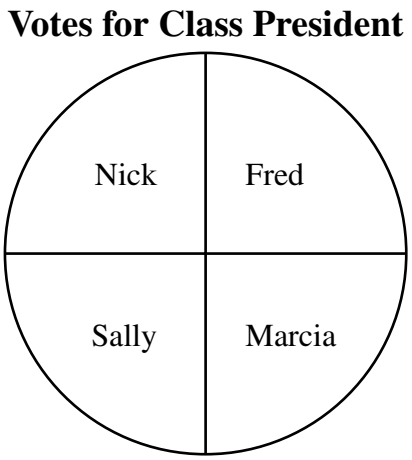

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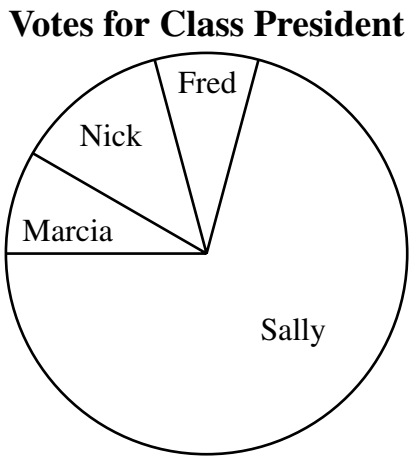
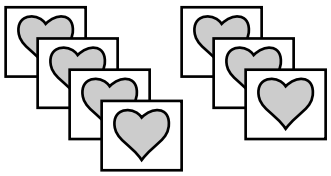
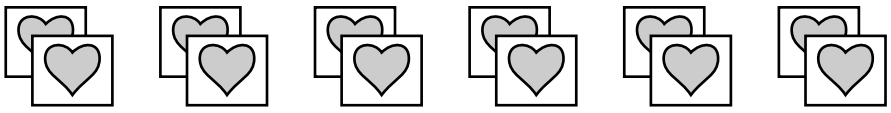
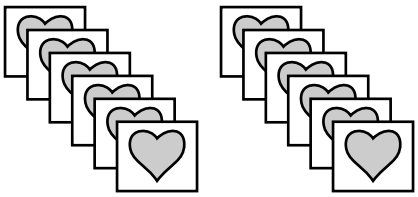
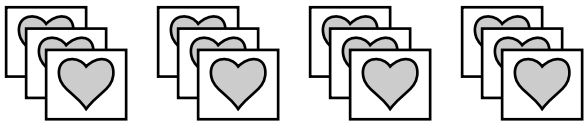


33 Which of the following is a model of 4×3?

A. 

B. 

C. 

D. 

34 Mr. Mitchell is ordering special sweatshirts for his students. The chart below shows his choices for size, color, and pattern.

Choices for Sweatshirts

Size	Color	Pattern
Small Medium Large	White Yellow	Flowers Animals

What is the total number of different combinations of 1 size, 1 color, and 1 pattern that Mr. Mitchell can order?

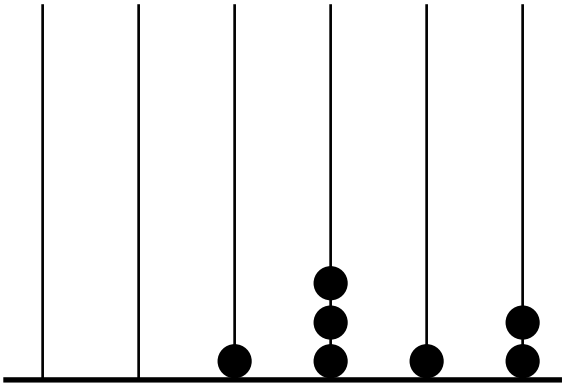
A. 3

B. 7

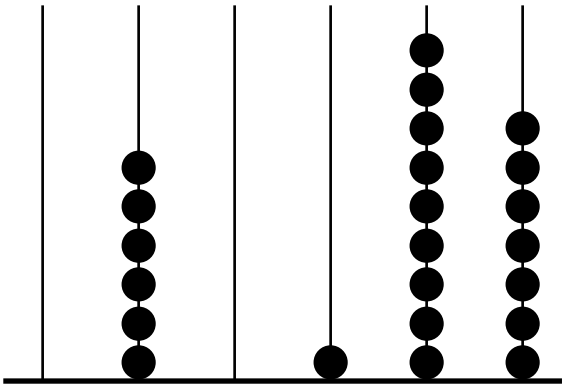
C. 12

D. 15

35 The beads on the counting frame shown below represent the number 1,312.



Which number is represented by the beads on the counting frame below?



A. 61,097

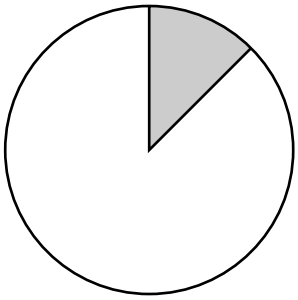
B. 60,197

C. 6,197

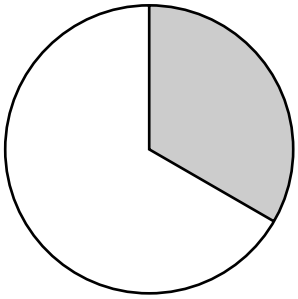
D. 6,097

36 Which of the following is shaded to represent $\frac{1}{8}$ of the circle?

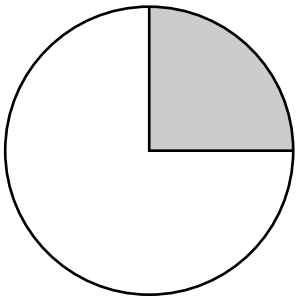
A.



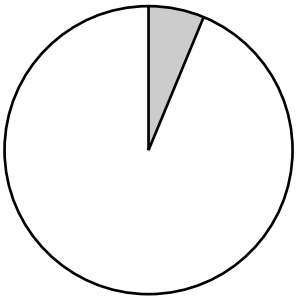
B.



C.



D.



37 Each new number in the pattern shown below was determined by adding the same value to the number just before it.

2, 9, 16, 23, . . .

If the pattern continues in the same way, what will be the 8th number?

A. 30

B. 46

C. 51

D. 56

38 Hong wanted to take the 5:10 P.M. bus. She arrived at the bus stop 25 minutes before 5:10 P.M. What time did Hong arrive at the bus stop?

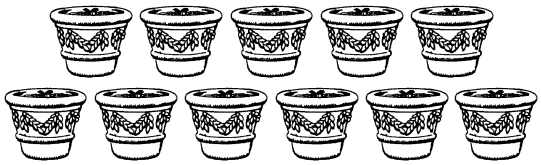
A. 5:35 P.M.

B. 4:45 P.M.

C. 4:40 P.M.

D. 4:25 P.M.

39 Libby planted seeds in each of the identical pots shown below. She planted seeds for pink flowers in 2 of the pots and seeds for yellow flowers in the rest of the pots.



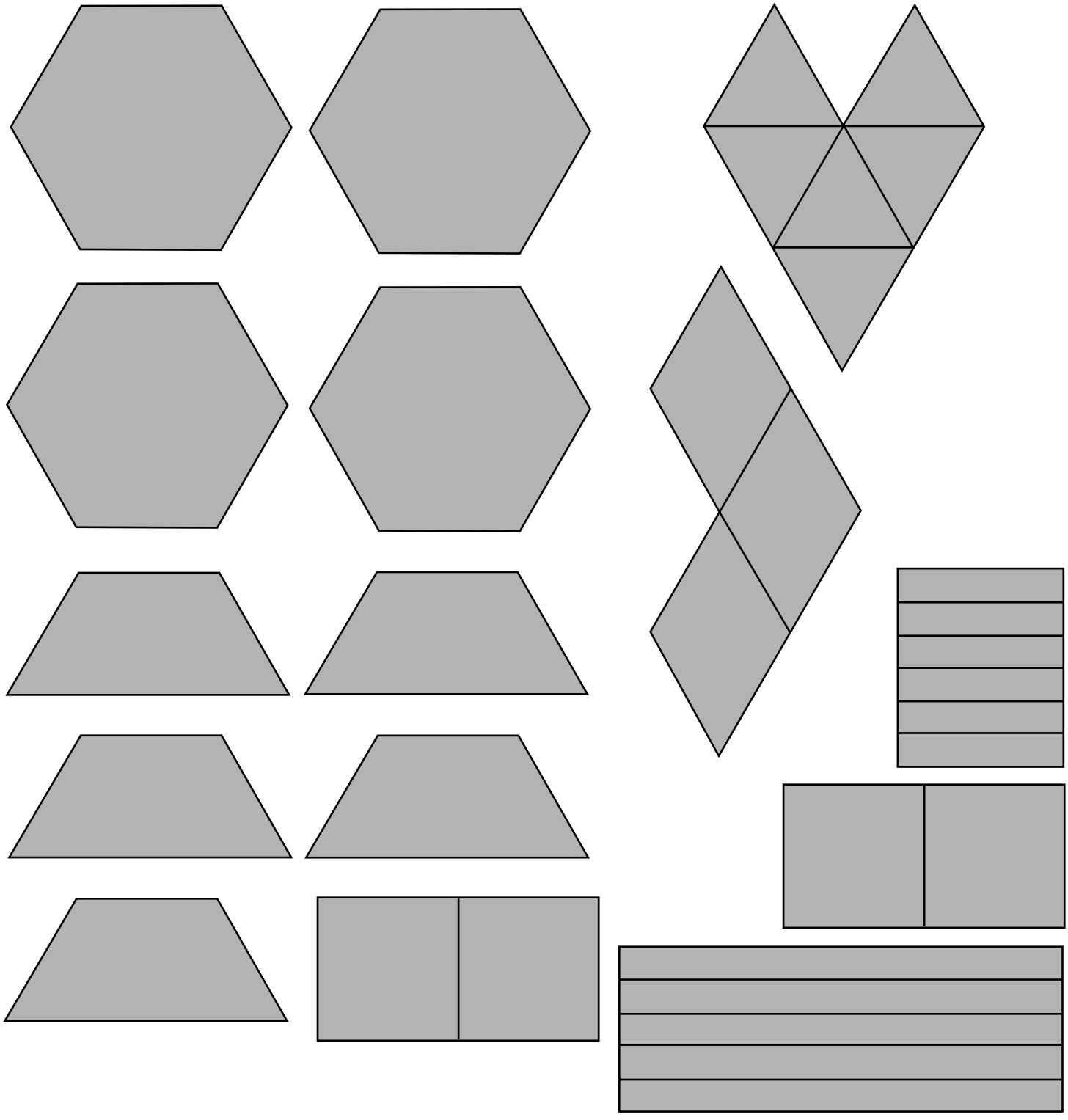
Libby let Amy pick 1 pot. Amy picked her pot without knowing which seeds were planted in it. What is the probability that Amy's pot had seeds for pink flowers in it?

A. $\frac{1}{11}$

B. $\frac{2}{11}$

C. $\frac{2}{9}$

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



Grade 4 Mathematics
Spring 2005 Released Items:
Reporting Categories, Standards, and Correct Answers

Item No.	Page No.	Reporting Category	Standard	Correct Answer (MC/SA)*
1	129	*Number Sense and Operations*	4.N.7	B
2	129	*Patterns, Relations, and Algebra*	4.P.4	B
3	130	*Measurement*	4.M.1	D
4	130	*Geometry*	4.G.2	B
5	131	*Measurement*	4.M.5	C
6	132	*Number Sense and Operations*	4.N.12	C
7	132	*Number Sense and Operations*	4.N.5	D
8	132	*Data Analysis, Statistics, and Probability*	4.D.6	B
9	133	*Number Sense and Operations*	4.N.10	C
10	134	*Measurement*	4.M.4	
11	135	*Patterns, Relations, and Algebra*	4.P.5	10
12	135	*Geometry*	4.G.2	drawing of any triangle with 1 obtuse angle
13	136	*Data Analysis, Statistics, and Probability*	4.D.4	
14	137	*Number Sense and Operations*	4.N.18	A
15	137	*Number Sense and Operations*	4.N.6	C
16	137	*Patterns, Relations, and Algebra*	4.P.3	A
17	138	*Number Sense and Operations*	4.N.9	
18	139	*Patterns, Relations, and Algebra*	4.P.2	B
19	139	*Number Sense and Operations*	4.N.16	C
20	139	*Number Sense and Operations*	4.N.13	D
21	140	*Patterns, Relations, and Algebra*	4.P.6	D
22	140	*Number Sense and Operations*	4.N.11	C
23	141	*Data Analysis, Statistics, and Probability*	4.D.3	B
24	142	*Number Sense and Operations*	4.N.1	D
25	142	*Geometry*	4.G.8	A
26	143	*Patterns, Relations, and Algebra*	4.P.5	C
27	144	*Patterns, Relations, and Algebra*	4.P.1	
28	145	*Number Sense and Operations*	4.N.3	6
29	145	*Measurement*	4.M.4	14 inches
30	146	*Data Analysis, Statistics, and Probability*	4.D.3	27
31	147	*Geometry*	4.G.5	
32	148	*Data Analysis, Statistics, and Probability*	4.D.2	A
33	149	*Number Sense and Operations*	4.N.8	D
34	150	*Data Analysis, Statistics, and Probability*	4.D.5	C
35	150	*Number Sense and Operations*	4.N.1	B
36	151	*Number Sense and Operations*	4.N.3	A
37	151	*Patterns, Relations, and Algebra*	4.P.1	C
38	151	*Measurement*	4.M.3	B
39	152	*Data Analysis, Statistics, and Probability*	4.D.4	B

* Answers are provided here for multiple-choice and short-answer items only. Sample responses and scoring guidelines for open-response items, which are indicated by shaded cells, will be posted to the Department's Web site later this year.