

Mathematics

SESSION 1

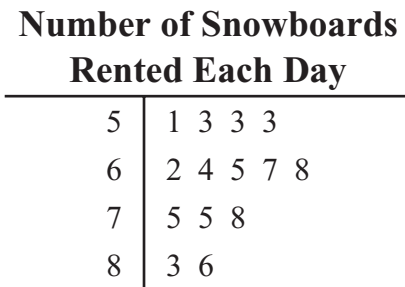
You may use your reference sheet and MCAS ruler during this session.
You may **not** use a calculator during this session.



DIRECTIONS

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

- 1 Jillian works at a ski resort. She recorded the number of snowboards that were rented each day for two weeks in the stem-and-leaf plot below.



Key
6 3 represents 63

What is the mode of the data in the stem-and-leaf plot?

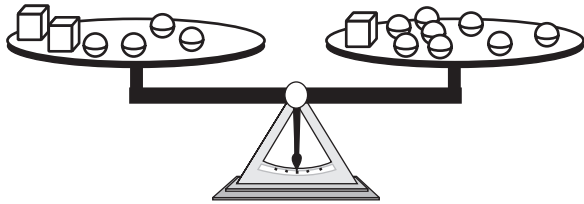
- A. 53
- B. 66
- C. 75
- D. 86

- 2 Which of the following is equivalent to the expression below?

$$6^5$$

- A. $6 \times 6 \times 6 \times 6 \times 6 \times 6$
- B. $5 \times 5 \times 5 \times 5 \times 5 \times 5$
- C. $6 \times 6 \times 6 \times 6 \times 6$
- D. 5×6

- 3 The scale shown below is balanced.



Based on this scale, which of the following shows the correct relationship between the mass of one cube and the mass of the spheres?

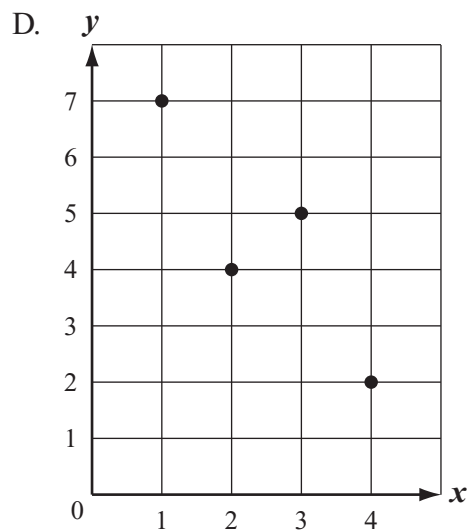
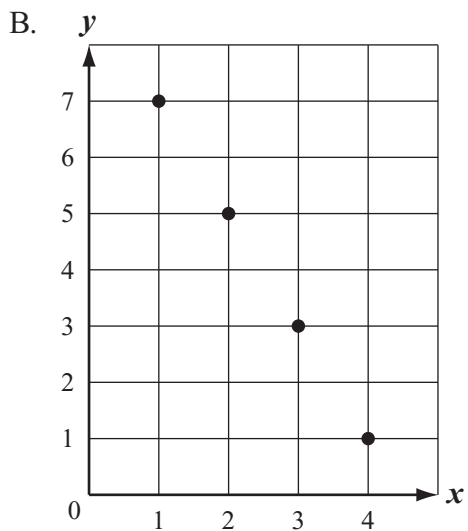
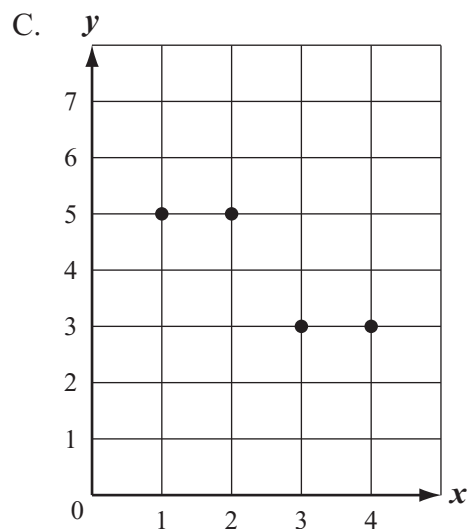
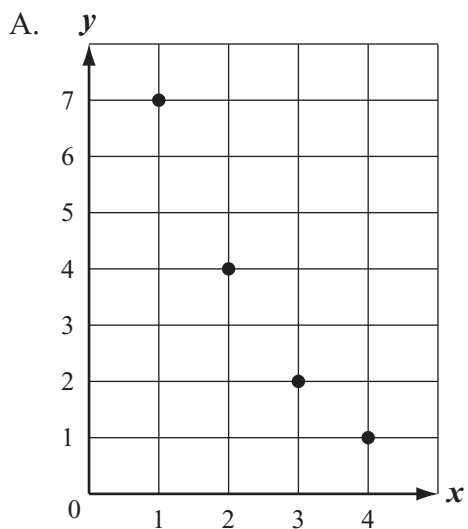
- A. $\square = \circ \circ$
- B. $\square = \circ \circ \circ$
- C. $\square = \circ \circ \circ \circ$
- D. $\square = \begin{matrix} \circ & \circ & \circ & \circ \\ \circ & \circ & \circ & \circ \end{matrix}$

- 4 Jonas sold a total of 319 cups of lemonade in June and July. He sold 136 cups of lemonade in June.

Which of the following represents the number of cups of lemonade Jonas sold in July?

- A. $183 + 319$
- B. $183 - 319$
- C. $319 + 136$
- D. $319 - 136$

5 Which of the following graphs shows a constant rate of change between the variables x and y ?



Questions 6 and 7 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.

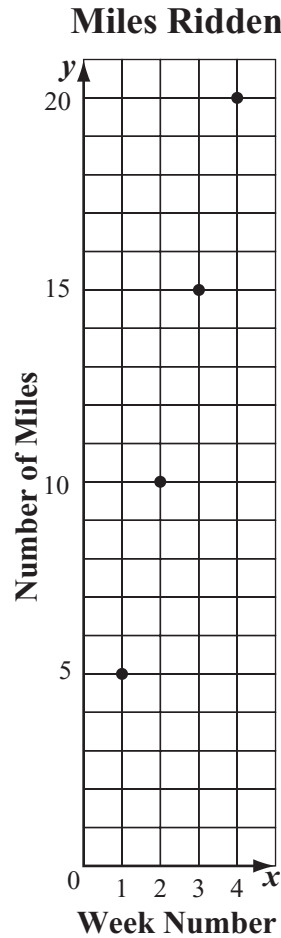
6 What is 5% written as a fraction in **simplest form**?

7 What is the value of the expression below when $\square = 5$?

$$\frac{55}{\square} - 2$$

Mark your answers to multiple-choice questions 8 through 11 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.

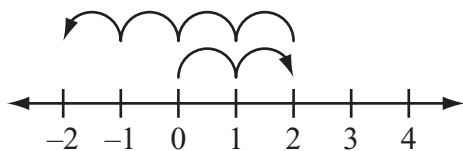
- 8 The graph below shows the number of miles Michael rode his bike each week for four weeks.



What is the relationship between the number of miles Michael rode his bike and the week number?

- A. Number of Miles = Week Number \div 5
- B. Number of Miles = Week Number \times 5
- C. Number of Miles = Week Number $-$ 5
- D. Number of Miles = Week Number $+$ 5

- 9 Which of the following equations is best represented on the number line below?



- A. $2 + (-4) = -2$
- B. $2 + (-2) = 0$
- C. $4 + (-2) = 2$
- D. $0 + (-2) = -2$

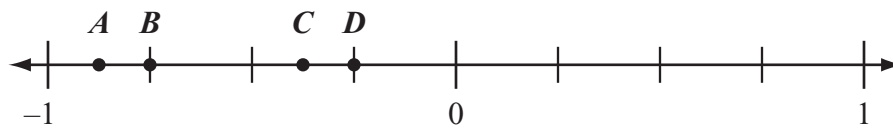
- 10 Vicky wrote the equation shown below in her notebook.

$$x - 9 = 26$$

In order for Vicky's equation to be true, which of the following equations must also be true?

- A. $x = 9 - 26$
- B. $x = 9 \times 26$
- C. $x = 26 - 9$
- D. $x = 26 + 9$

- 11 Points A , B , C , and D are shown on the number line below.



Which point is located at -0.75 on the number line?

- A. point A
- B. point B
- C. point C
- D. point D

Question 12 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 12 in the space provided in your Student Answer Booklet.

- 12 Jan is using a map to plan a two-day hiking trip. The scale for the map she is using is shown below.

Scale
1 inch : $\frac{1}{2}$ mile

- The distance that Jan will hike on the first day is equal to 12 inches on the map. What is the actual distance, in miles, that Jan will hike on the first day? Show or explain how you got your answer.
- The actual distance that Jan will hike on the second day is $5\frac{1}{2}$ miles. What distance on the map, in inches, represents $5\frac{1}{2}$ miles? Show or explain how you got your answer.
- Based on the scale Jan used, how many feet are represented by 1 inch on the map? Show or explain how you got your answer. (1 mile = 5280 feet)

Mathematics

SESSION 2

You may use your reference sheet and MCAS ruler during this session.

You may **not** use a calculator during this session.



DIRECTIONS

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

- 13** The table below shows the distance, in miles, Mr. Klein drove each day for 5 days.

Mr. Klein's Driving Distances

Day	1	2	3	4	5
Number of Miles	65	142	76	98	139

What was the mean number of miles per day Mr. Klein drove for the 5 days?

- A. 76
- B. 98
- C. 104
- D. 142

- 14** Jean and Clint stack boxes at a warehouse. Jean stacks 50 boxes per hour. Clint stacks 60 boxes per hour. Which of the following expressions represents the total number of boxes that both Jean and Clint stack in h hours, where h is any number of hours?

- A. $50h + 60$
- B. $50 + 60h$
- C. $50h + 60h$
- D. $50 + h + 60 + h$

- 15 Which of the following represents the fraction of Figure X that is shaded?

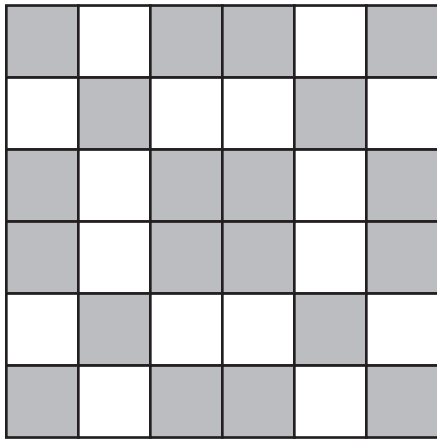


Figure X

- A. $\frac{1}{2}$
- B. $\frac{2}{3}$
- C. $\frac{4}{5}$
- D. $\frac{5}{9}$

16 Joe wants to enter a racing game.

- It costs \$5 to enter the first race.
- It costs \$2 to enter each additional race.

Which of the following tables correctly represents the costs of entering races in the game?

A. **Racing Game Costs**

Number of Races	Cost
1	\$2
2	\$4
3	\$6
4	\$8

C. **Racing Game Costs**

Number of Races	Cost
1	\$ 5
2	\$10
3	\$15
4	\$20

B. **Racing Game Costs**

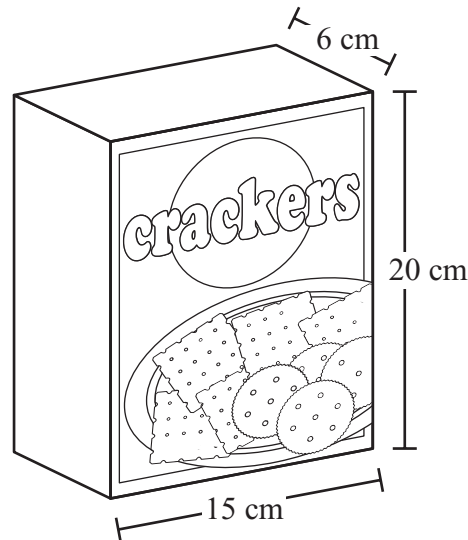
Number of Races	Cost
1	\$ 5
2	\$ 7
3	\$ 9
4	\$11

D. **Racing Game Costs**

Number of Races	Cost
1	\$ 5
2	\$12
3	\$19
4	\$26

Question 17 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.

- 17 A box of crackers is in the shape of a rectangular prism and has the dimensions shown in the diagram below.



What is the surface area, in square centimeters, of the box of crackers?

Question 18 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 18 in the space provided in your Student Answer Booklet.

- 18** Ms. Diaz works at a zoo. She created an exhibit with the animals listed in the table below.

Animal Exhibit

Type of Animal	Number
elephant	8
giraffe	12
rhino	4

- a. What fraction of the animals are giraffes? Simplify your answer to lowest terms. Show or explain how you got your answer.

Ms. Diaz plans to add more animals to the exhibit.

- She will add 2 more elephants.
 - She will add more giraffes and rhinos so that the ratio of elephants to other animals is the same as before.
- b. What is the new total number of animals that will be in the exhibit? Show or explain how you got your answer.

Mark your answers to multiple-choice questions 19 through 21 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.

- 19 Ms. Jarman had a box of 120 pencils.
- She gave 6 pencils to each student in her class.
 - There were 12 pencils left over.

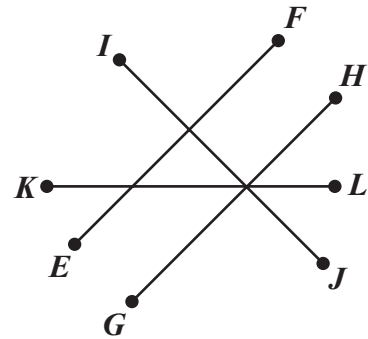
Ms. Jarman chose n to represent the number of students in her class. She wrote the equation below to represent this situation.

$$6 \times n + 12 = 120$$

What value of n makes Ms. Jarman's equation true?

- A. 6
- B. 10
- C. 12
- D. 18

- 20 Michelle drew the line segments shown below on a piece of paper.



Which of the following pairs of line segments appear to be perpendicular?

- A. \overline{GH} and \overline{KL}
- B. \overline{GH} and \overline{IJ}
- C. \overline{EF} and \overline{KL}
- D. \overline{EF} and \overline{GH}

- 21 Which of the following three-dimensional shapes has 1 rectangular face and 4 triangular faces?

- A. rectangular pyramid
- B. triangular pyramid
- C. rectangular prism
- D. triangular prism

Grade 6 Mathematics
Spring 2012 Released Items:
Reporting Categories, Standards, and Correct Answers*

Item No.	Page No.	Reporting Category	Standard	Correct Answer (MC/SA)*
1	196	<i>Data Analysis, Statistics, and Probability</i>	6.D.1	A
2	196	<i>Number Sense and Operations</i>	6.N.1	C
3	197	<i>Patterns, Relations, and Algebra</i>	6.P.5	C
4	197	<i>Number Sense and Operations</i>	6.N.9	D
5	198	<i>Patterns, Relations, and Algebra</i>	6.P.7	B
6	199	<i>Number Sense and Operations</i>	6.N.5	$\frac{1}{20}$
7	199	<i>Patterns, Relations, and Algebra</i>	6.P.2	9
8	200	<i>Patterns, Relations, and Algebra</i>	6.P.6	B
9	201	<i>Number Sense and Operations</i>	6.N.10	A
10	201	<i>Patterns, Relations, and Algebra</i>	6.P.3	D
11	202	<i>Number Sense and Operations</i>	6.N.6	B
12	203	<i>Measurement</i>	6.M.3	
13	204	<i>Data Analysis, Statistics, and Probability</i>	6.D.1	C
14	204	<i>Patterns, Relations, and Algebra</i>	6.P.4	C
15	205	<i>Number Sense and Operations</i>	6.N.4	D
16	206	<i>Patterns, Relations, and Algebra</i>	6.P.4	B
17	207	<i>Measurement</i>	6.M.6	1,020 square centimeters
18	208	<i>Number Sense and Operations</i>	6.N.4	
19	209	<i>Patterns, Relations, and Algebra</i>	6.P.5	D
20	209	<i>Geometry</i>	6.G.3	B
21	209	<i>Geometry</i>	6.G.2	A

* Answers are provided here for multiple-choice items 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 website later this year.

Grade 6 Mathematics
Spring 2012 Unreleased Common Items:
Reporting Categories and Standards

Item No.	Reporting Category	Standard
22	<i>Patterns, Relations, and Algebra</i>	6.P.4
23	<i>Number Sense and Operations</i>	6.N.5
24	<i>Number Sense and Operations</i>	6.N.7
25	<i>Number Sense and Operations</i>	6.N.14
26	<i>Patterns, Relations, and Algebra</i>	6.P.4
27	<i>Geometry</i>	6.G.1
28	<i>Patterns, Relations, and Algebra</i>	6.P.2
29	<i>Geometry</i>	6.G.9
30	<i>Measurement</i>	6.M.1
31	<i>Measurement</i>	6.M.6
32	<i>Measurement</i>	6.M.4
33	<i>Patterns, Relations, and Algebra</i>	6.P.6
34	<i>Number Sense and Operations</i>	6.N.14
35	<i>Number Sense and Operations</i>	6.N.8
36	<i>Number Sense and Operations</i>	6.N.4
37	<i>Geometry</i>	6.G.4
38	<i>Patterns, Relations, and Algebra</i>	6.P.5
39	<i>Number Sense and Operations</i>	6.N.7
40	<i>Number Sense and Operations</i>	6.N.13
41	<i>Number Sense and Operations</i>	6.N.13
42	<i>Data Analysis, Statistics, and Probability</i>	6.D.2