

Mathematics Session 1 (No Calculator)

This test session includes multiple-choice questions and questions for which you must show your work or write out your answer. You may NOT use a calculator during this session.

Mark your answers in the section marked "Mathematics—Session 1 (No Calculator)" in your Student Response Booklet.

- Taylor buys plain hats for \$2.50 each. He adds special designs and then resells the hats for 40% more than the price he paid for them. What is Taylor's selling price for the hats?
 - A. \$ 1.00
 - B. \$ 1.50
 - C. \$ 3.50
 - D. \$10.00

3.	Which	equation	is	equivalent	to	$\frac{2x}{3} + 4 = 10?$
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- A. 2x = 18
- B. 2x = 42
- C. x + 4 = 5
- D. x + 4 = 30

10. Study the inequality below.

$$3x + 26 < 11$$

Which graph represents the solution of this inequality?



13. One year, the budget for the United States government was 2.7 trillion dollars. Which expression shows 2.7 trillion written in scientific notation?

A. 0.27×10^{13} B. 2.7×10^{10} C. 2.7×10^{12} D. 27×10^{11}



15. Chad is running laps around a track. The table below shows the number of laps he runs over time.

Chad's Running Rate

Time (minutes)	Total Number of Laps		
2	5		
4	10		
12	30		
18	45		

If Chad runs laps at the same rate for another 28 minutes, how many **more** laps will he run?

- A. 56
- B. 60
- C. 70
- D. 115

- 16. Which equation is equivalent to 3(2x+3) = 10?
 - A. $(3 \cdot 2x) + 3 = 10$ B. $(3 \cdot 5)x = 10$ C. $(3 \cdot 2) + 3 \cdot (x + 3) = 10$ D. $(3 \cdot 2x) + (3 \cdot 3) = 10$



Write your answers in the spaces provided in your Student Response Booklet. Show all of your work.

19. Compute:

$$15\frac{2}{3} \div \frac{1}{6}$$

20. What is the value of the expression below when p = 80 and h = 76?

0.25p + h

Write your answer in the space provided for it in your Student Response Booklet. Show all of your work.

23. Sheryl compared these two formulas for making a dirt mix of peat moss and potting soil.

Formula 1	Formula 2
To make 5 cups of dirt mix:	To make 9 cups of dirt mix:
Mix 1 cup peat moss	Mix 2 cups peat moss
with 4 cups potting soil	with 7 cups potting soil

- a. In Formula 1, what percent of the dirt mix is made with potting soil? Show or explain how you found your answer.
- b. Determine which formula has the highest percentage of peat moss. Show or explain how you found your answer.
- c. Sheryl needs 45 cups of dirt mix. She decides to use Formula 2. How many cups of peat moss does she need to make 45 cups of dirt mix? Show or explain how you found your answer.



Mathematics Session 2 (Calculator)

This test session includes multiple-choice questions. You may use a calculator during this session.

Mark your answers in the section marked "Mathematics—Session 2 (Calculator)" in your Student Response Booklet.

24. Parallelogram *ROCK* is on the coordinate grid below.



The perimeter of parallelogram *ROCK* is 18 units. What is the length of $\overline{RO?}$

- A. 4 units
- B. 5 units
- C. 8 units
- D. 10 units

25. The school choir is selling candles to raise money. The director made this graph to show the amount of profit earned for selling different numbers of candles.



Number of Candles

Which equation represents this graph?

A. y = 500 - 4xB. y = 4x - 500C. $y = 500 - \frac{1}{4}x$ D. $y = \frac{1}{4}x - 500$

- 28. Edward is creating a painting from a photograph that is 6 inches long and 4 inches wide. The length and width of the painting will be proportional to the length and width of the photograph. The painting will be 12 inches wide. What will be the length of the painting?
 - A. 8 inches
 - B. 14 inches
 - C. 18 inches
 - D. 72 inches
- 30. The graph below shows the lunch waste produced by eighth-grade students at a middle school.



Which conclusion can be made based on the information in the graph?

- A. About 20% of the lunch waste is food.
- B. About $\frac{1}{3}$ of the lunch waste is Styrofoam.
- C. More Styrofoam is discarded than paper and plastic combined.
- D. Less plastic is discarded than food.

- 31. The city transportation commission is conducting a survey to determine riders' opinions about the quality of the public bus system. Which sample population is the **most** appropriate to survey?
 - A. the people at one bus stop over a thirty-day period
 - B. every fifth rider on one bus one day
 - C. the people at one bus stop one day
 - D. riders on different buses during a thirty-day period
- 35. You may use the grid below to answer this question.



Point Q is located at (4, 6). Which transformation of point Q results in an image at (4, -6)?

- A. a reflection over the *y*-axis
- B. a reflection over the x-axis
- C. a 90° clockwise rotation about the origin
- D. a 180° rotation about the origin

36. Glenda went scuba diving. She dove below the surface of the water three times, coming up to the surface between each dive. Each dive was deeper than the one before. Which graph **best** represents this situation?



38. Steven's new board game uses the spinners shown below.



Each spinner is spun once. What is the probability the spinners will land on North and 4?



41. Values of m and n are defined below.

n > 1

Which expression is true?

A.
$$\frac{m}{n} > 1$$

B. $\frac{m}{n} < m$
C. $\frac{m}{n} > n$
D. $\frac{m}{n} < 0$

Please go on to the next page.

42. Rhombus PQRS is on the coordinate grid below.



What is the area of the rhombus?

- A. 32 square units
- B. 24 square units
- C. 16 square units
- D. 8 square units

- 43. A 2-inch-long grasshopper can jump 160 inches. If a 6-foot-tall man had the same ratio of height to jump length, how far could he jump?
 - A. 480 feet
 - B. 320 feet C. 27 feet

 - D. 13 feet
- 47. The length and width of rectangle S are twice those of rectangle R. How many times as great is the area of rectangle S than the area of rectangle *R*?
 - A. 2
 - B. 4
 - C. 6
 - D. 8



Mathematics Session 3 (Calculator)

This test session includes multiple-choice questions. You may use a calculator during this session.

Mark your answers in the section marked "Mathematics—Session 3 (Calculator)" in your Student Response Booklet.

49. Fifty students were asked which type of milk they like best. The results are shown in the chart below.

Type of Milk	Number of Students	
Chocolate	28	
White	22	

Based on the chart, if 600 students are asked the same question, how many can be expected to choose chocolate milk?

- A. 336
- B. 300
- C. 264
- D. 200

- 50. Jake packed 12 jars of paint in a box. Each jar and its contents weigh 10 ounces. The empty box weighs 1 pound, 14 ounces. What is the total weight of the packed box?
 - A. 7 pounds, 8 ounces
 - B. 9 pounds, 2 ounces
 - C. 9 pounds, 6 ounces
 - D. 10 pounds, 2 ounces



56. Janice created this logo for her bicycle shop.



Which figure shows her logo after a 45° clockwise rotation about the center?



- 59. Fred drew a triangle. Sam wants to draw a triangle that has a base that is twice as long as the base of Fred's triangle but has the same area. By what amount does Sam need to multiply the height of Fred's triangle?
 - A. $\frac{1}{4}$ B. $\frac{1}{2}$
 - C. 2
 - D. 4
- 61. Three vertices of parallelogram *RSTU* are plotted on this coordinate plane.



Which ordered pair could be the coordinates of point R?

- A. (4, 9)
- B. (5, 8)
- C. (6, 8)
- D. (1, 8)

62. The list below shows the purchase prices of four homes sold in a town one week.

\$155,000 \$165,000 \$170,000 \$170,000

It was later discovered that a fifth home was sold that week for \$450,000. By how much does the **mean** purchase price for that week **increase** with the inclusion of the purchase price of the fifth home?

- A. \$ 57,000
- B. \$165,000
- C. \$222,000
- D. \$280,000
- 66. At Eagle School, kindergarten enrollment increased from 253 students ten years ago to 312 students this year. The principal is making a bar graph to emphasize that this increase is very large. Which scale and interval would be **best** for the principal to use for the graph?
 - A. scale: 0 to 400; interval: 50
 - B. scale: 0 to 800; interval: 100
 - C. scale: 250 to 320; interval: 10
 - D. scale: 250 to 425; interval: 25

67. The structure shown below is made of cubes.



Which diagram shows the left side view of this structure?







