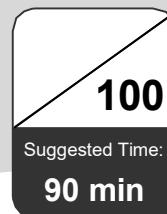


Assessment Guide

Mid-Year Benchmark Assessment



Section A Multiple-Choice Questions

(20 × 2 = 40 points)

- 1 Which is an irrational number that is between 7 and 7.5 on a number line?
- (A) $\sqrt{52}$
 - (B) $\sqrt{60}$
 - (C) 7.3
 - (D) $\frac{22}{3}$
- 2 A painting is 122.9 centimeters long and 82.6 centimeters wide. What is its area in square centimeters to 4 significant digits?
- (A) 10,200
 - (B) 10,152
 - (C) 10,151.5
 - (D) 10,150
- 3 What is the prime factorization of 720?
- (A) $3^2 \times 4^2 \times 5$
 - (B) $2^4 \times 3 \times 15$
 - (C) $2^4 \times 3^2 \times 5$
 - (D) $2^3 \times 3^2 \times 7$

- 4 Which expressions are equivalent to $7a - 8b + b - 3a$?
Choose **all** that apply.

(A) $7a - 3a + 8b + b$
(B) $7a - 3a - 8b + b$
(C) $4a + 7b$
(D) $4a - 7b$
(E) $4a - 9b$
(F) $-7b + 4a$

- 5 Which expression is equivalent to $0.4 \left(\frac{9}{2} - 5m \right)$?

(A) $4.9 - 5.4m$
(B) $1.8 - 2m$
(C) $\frac{5}{2} - 2m$
(D) $1.8 - 20m$

- 6 Which expression is equivalent to $-6e + 9f - 15$?

(A) $3(-2e + 9f - 15)$
(B) $3(-2e - 3f - 15)$
(C) $3(-2e + 3f - 5)$
(D) $3(-2e - 3f + 5)$

- 7 Which equation is equivalent to $3g - 2.5 = 6.5$?

(A) $3g = 4$
(B) $3g = 9$
(C) $3g - 4 = 0$
(D) $3g + 9 = 0$

- 8 Carlos has a flash drive that holds 2 gigabytes. He puts two documents onto his flash drive. One document is 1.2 megabytes, and the other document is 42 kilobytes. How much memory space does Carlos have left on his flash drive?

- (A) 199.87958 megabytes
(B) 1.998758 gigabytes
(C) 1.987958 megabytes
(D) 1.998842 gigabytes

- 9 The table shows the atomic mass in grams per mole of mercury, potassium, lead, and argon.

Element	Atomic Mass (g/mol)
Mercury	200.59
Potassium	$3.90983 \cdot 10^1$
Lead	$2.072 \cdot 10^2$
Argon	$3.9948 \cdot 10^1$

Which element has the highest atomic mass?

- (A) Mercury
(B) Potassium
(C) Lead
(D) Argon
- 10 Lily opened a savings account with a deposit of \$250 five months ago. Every month after that, she has been putting the same amount of money into the account. She has not taken any money out. The table shows the balance in her savings account each month since opening the account.

Number of Months After Opening the Account (m)	1	2	3	4	5
Balance (B)	\$295	\$340	\$385	\$430	\$475

Which of the following is a linear equation of B in terms of m ?

- (A) $B = 45m$
(B) $B = 250m + 45$
(C) $B = 45m + 250$
(D) $B = 250m$

- 11 Which is the solution of the equation $8 = \frac{2}{7}(14x - 28)$?
- (A) 0
(B) 5
(C) 4
(D) 9
- 12 What is the largest integer value of x that satisfies the inequality $11 - 2x > 5$?
- (A) 0
(B) 1
(C) 2
(D) 3
- 13 A positive number is $\frac{2}{5}$ of another number. The difference between the two numbers is 21. What is the larger number?
- (A) 35
(B) 14
(C) 15
(D) 40

- 14 Which table of values represents a linear function?

(A)

x	2	5	7	8
y	-14	-5	1	4

(B)

x	1	3	7	9
y	-3	-7	-11	-15

(C)

x	-3	2	4	5
y	-4	1	6	11

(D)

x	1	3	4	8
y	2	6	8	10

15

- (A)
- (B)
- (C)
- (D)

16 Which expression is equivalent to the expression $\frac{(3m)^{-5} \cdot (3m)^{-6}}{(3m)^{-8}}$?

- (A) $\frac{1}{27m^3}$
- (B) $27m^3$
- (C) $9m^3$
- (D) $\frac{1}{9m^3}$

17 Jesus and Kaylee are both tutors. Jesus charges an initial fee of \$25 plus \$30 per hour for his services. Kaylee charges an initial fee of \$40 plus \$25 per hour for her services. Let x be the number of hours of tutoring. Which inequality can determine the minimum value of x such that you will go with Kaylee as your tutor?

- (A) $40 + 25x > 25 + 30x$
- (B) $25 + 40x > 30 + 25x$
- (C) $25 + 30x > 40 + 25x$
- (D) $30 + 25x > 25 + 40x$

- 18 What is the equation of the line that passes through the points $(-2, 8)$ and $(0, -2)$?

- (A) $y = 3x - 2$
(B) $y = 5x - 2$
(C) $y = -3x - 2$
(D) $y = -5x - 2$

- 19 Grace wants to rent a car. The cost to rent a car at Rental Place A and Rental Place B based on the number of days she wants to rent it are shown in the tables. Each rental place charges an initial fee plus a charge per day.

Number of Days (x)	Cost at Rental Place A (y dollars)
2	165
5	345
7	465

Number of Days (x)	Cost at Rental Place B (y dollars)
3	249
8	524
11	689

Which rental place charges less per day, and how much does it charge per day?

- (A) Rental Place A; \$60
(B) Rental Place B; \$55
(C) Rental Place A; \$82.50
(D) Rental Place B; \$83
- 20 A line has a slope of $-\frac{3}{4}$ and passes through the point $(-8, 4)$. What is the equation of the line in slope-intercept form?
- (A) $y = -\frac{3}{4}x - 2$
(B) $y = -\frac{3}{4}x + 10$
(C) $y = -\frac{3}{4}x + 7$
(D) $y = -\frac{3}{4}x + 1$

Section B Short Answer Questions

(21 to 40: 2 points each)

- 21 Fill in the table of values for the equation $\frac{3x-9}{2} = 2y + 5$.

x	1	5	
y			2

22

Equation		Solution
$6x - 9 = 21$		
$7x + 21 = 3x + 25$		
$9x + 11 = 119$		
$-5x + 15 = 90$		

- 23 Mr. Walker has a square carpet that has an area of 225 square feet. He wants to put trim around his carpet. How many feet of trim does Mr. Walker need?

Explain how you found the answer in the space below.

- 24 Solve the equation $x^2 = 2.89$.

Write your answer in the answer grid.

—						
•	•	•	•	•	•	•
0	0	0	0	0	0	0
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9

- 25 The table shows the inches of rain in a rain gauge each hour after it started raining.

Hours (x)	1	3	4	7
Inches of Rain (y)	0.5	1.5	2.0	3.5

The equation $y = -1.2x + 4.5$ shows the inches of rain in the rain gauge, y , each day, x , after it had rained. Compare the two functions by describing whether they are linear or nonlinear and whether they are increasing or decreasing.

Write your answer in the space below.

- 26 A relation has three points $(1, 2)$, $(2, 4)$, and another point. What is a third point that would make this relation a many-to-one relation and also a function?

Write your answer in the space below.

27 Evaluate $\frac{2^0 \cdot 4^3 \cdot 4^{-8}}{8^5 \cdot 3^0 \cdot 8^{-10}}$.

Write your answer in the answer grid.

—						
•	•	•	•	•	•	•
0	0	0	0	0	0	0
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9

- 28 The length of Owen's rectangular driveway from his garage to the street is 21 feet. Owen has his basketball goal on the driveway. The distance from the street to the basketball goal is 2.5 times the distance from the basketball goal to the garage. How many feet is Owen's basketball goal away from the street?

Explain how you found the answer in the space below.

- 29 A hot air balloon ascended at 0.85 meters per second for 7 seconds. It then descended at 0.75 meters per second for 9 seconds. What was the overall change of altitude in meters?

Write your answer in the answer grid.

−						
•	•	•	•	•	•	•
0	0	0	0	0	0	0
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9

30

- 31 Simplify $1.9x - 2 - 4x \cdot \frac{5}{2} - (-3.6x) + 3$.

Write your answer in the space below.

- 32 Anya had d flowers. She gave 6 of the flowers to her sister and divided the remaining flowers equally among 3 friends. Find an expression for the number of flowers each friend received.

Write your answer in the space below.

- 33 Solve the equation $\frac{1}{3}x - \frac{1}{8} = \frac{1}{2}$.

Write your answer as a fraction in the space below.

- 34 Solve the inequality $-7c - 3 \leq 4$, and graph the solution set on a number line.

Show your drawing and answer in the space below.

- 35 Solve the inequality $2.5(x + 9) \leq 4.5x + 1.5(3x - 11)$, and graph the solution set on a number line.

Write your answer and show your drawing in the space below.

- 36 The diameter of a circular pool is 15 feet. How many square feet does the pool cover?
Use 3.14 as an approximation for π .

Write your answer in the answer grid.

—					
•	•	•	•	•	•
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

- 37 The air (flying) distance from Sacramento, CA, to Orlando, FL, is $2.393 \cdot 10^3$ miles. The air (flying) distance from New York City, NY, to Orlando, FL, is $9.4 \cdot 10^2$ miles. How much closer to Orlando, FL, in air distance is New York City than Sacramento?

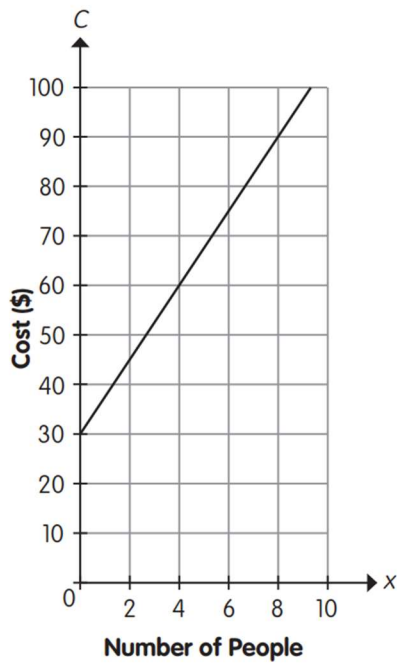
Write your answer in scientific notation in the space below.

- 38 A proton's mass is approximately $2 \cdot 10^{-24}$ gram. An electron's mass is approximately $9 \cdot 10^{-28}$ gram. How many times greater is the mass of the proton than the mass of the electron rounded to the nearest whole number?

Write your answer in the answer grid.

—						
•	•	•	•	•	•	•
0	0	0	0	0	0	0
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9

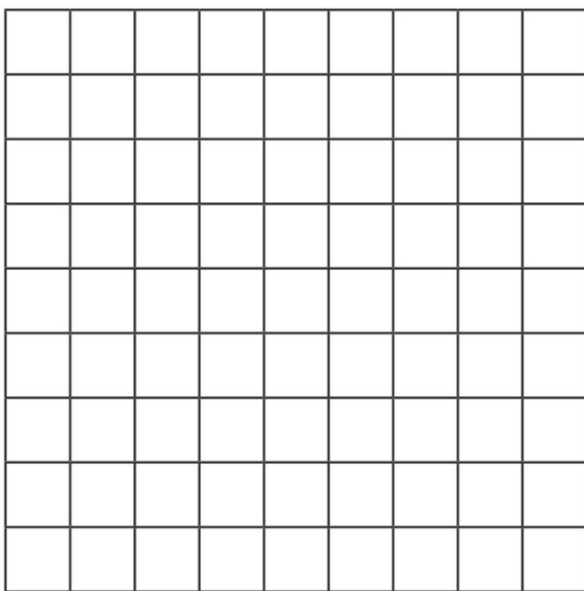
- 39 A roller skating rink hosts birthday parties. They charge a fixed amount. They also charge a certain amount per person. The graph shows the amount, C dollars, it costs to have a party at the skating rink based on x number of people attending the party.



Find the vertical intercept and the slope of the graph, and explain what information each of them gives about the situation.

Write your answer and explanation in the space below.

- 40 Graph a line with slope $-\frac{5}{4}$ that passes through the point $(-2, -1)$ on a coordinate grid. Use 1 grid square to represent 1 unit on both axes for the x interval from -4 to 3 and the y interval from -6 to 1 .



Section C Constructed Response

(5 × 4 = 20 points)

- 41 This question has two parts.
A company offers two salary options for its sales staff.

Option A	Option B
Fixed pay of \$680 per week	\$300 per week plus \$45 per sale

Part A

Liam is choosing Option B. What would his weekly sales need to be for him to make at least as much as he would for Option A?

Write your answer and your work or explanation in the space below.

Part B

If Liam makes $(x + 1)$ sales in a week and is paid \$1,155, what is the value of x ?

Write your answer and your work or explanation in the space below.