1. Which number is irrational?

A. $-\frac{4}{3}$

B. $\sqrt{121}$

C. 16.121314...

D. $0.00\overline{71}$

2. Which number is equivalent to $0.\overline{57}$?

A. 0.5757

B. 57%

C. $\frac{57}{999}$

D. $\frac{57}{99}$

3. Which comparison is true?

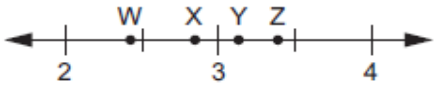
A. $4 < \sqrt{18} < 4.5$

B. $4.5 < \sqrt{18} < 5$

C. $8.5 < \sqrt{18} < 9.5$

D. $17 < \sqrt{18} < 19$

4. **Use the number line below to answer the question.**



Which point on the number line is the **best** approximation for $\sqrt{6}$?

A. point W

B. point X

C. point Y

D. point Z

5. Mr. Harrington wrote four irrational numbers on the board and asked Jared to choose the number closest to 3. Which irrational number should Jared choose?

A $\sqrt{6}$
B $\sqrt{10}$
C $\sqrt{12}$
D $\sqrt{14}$

6. A cube has a volume of 125 cm^3. Dani solved the equation below to find the side length of the cube. What is the correct method to solve the equation in order to find the side length?

$$x^3 = 125$$

A. $\frac{125}{3}$

B. $125(3)$

C. $\sqrt{125}$

D. $\sqrt[3]{125}$

7. In 1997, $7.2301\ x\ 10^4$ people attended the Super Bowl. In 1978, $7.5583\ x\ 10^4$ attended the Super Bowl. How many times greater was the attendance in 1978 than in 1997?

A. $\approx 0.96\ times$
B. $\approx 1.05\ times$
C. $\approx 2.43\ times$
D. $\approx 3.28\ times$

8. Mr. Loya stated that the circumference of Earth at the equator is 24,902.4 miles. Which expression represents this number in scientific notation?

A 2.49024×10^4
B 24.9024×10^4
C 249.024×10^4
D 2.49024×10^5

9.

Zeb used the rule listed below to rewrite the expression $10^2 \times 10^5$.

$$10^m \times 10^n = 10^{m+n}$$

Based on this rule, which of these is equivalent to the expression $8^{-4} \times 8^6$?

A 8^{-10}, because $8^{-4} \times 8^6 = 8^{-4-6}$

B 8^{10}, because $8^{-4} \times 8^6 = 8^{4+6}$

C 8^{-2}, because $8^{-4} \times 8^6 = 8^{4-6}$

D 8^2, because $8^{-4} \times 8^6 = 8^{-4+6}$

10.

Which of the following is equivalent to 3^3?

A $3^3 \bullet 3$

B $3^3 \bullet 3^3$

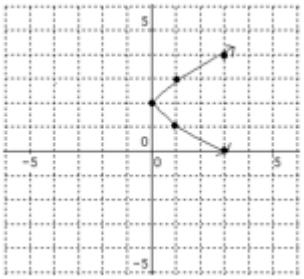
C $\frac{3^{18}}{3^2}$

D $\frac{3^6}{3^3}$

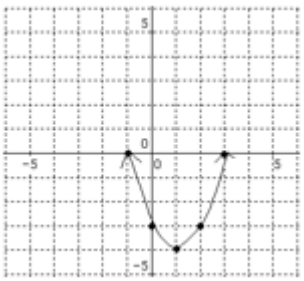
11.

Identify which of the following are functions.

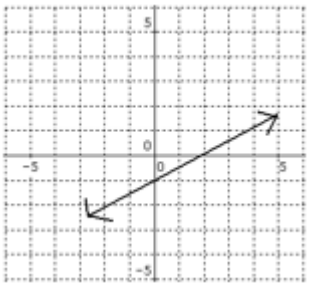
i.



ii.



iii.



A graph i

B graphs ii and iii

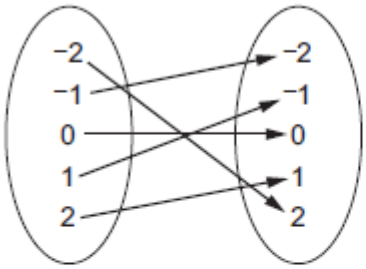
C graphs i and ii

D graph iii

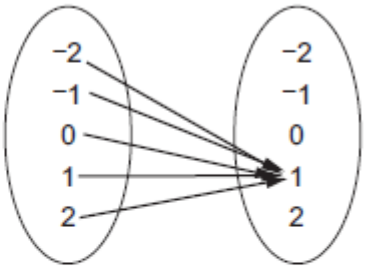
12.

Which model is **not** a function?

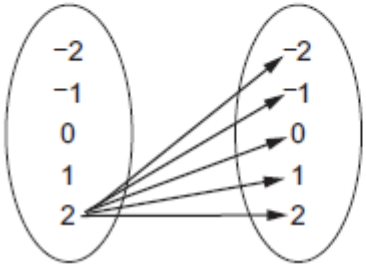
A.



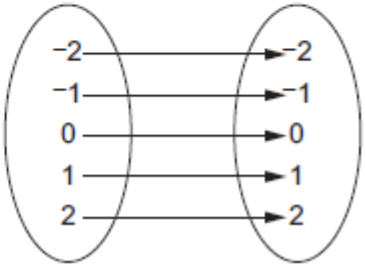
B.



C.

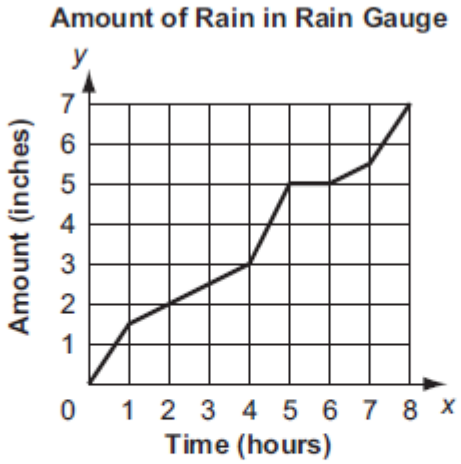


D.



13.

A weather station recorded the amount of rain that fell during an 8-hour time frame using a rain gauge. The findings are recorded in the graph below.



Between which hours was the rate at which the rain fell **greater** than the rate at which the rain fell between hours 0 and 1?

A. between hours 1 and 4

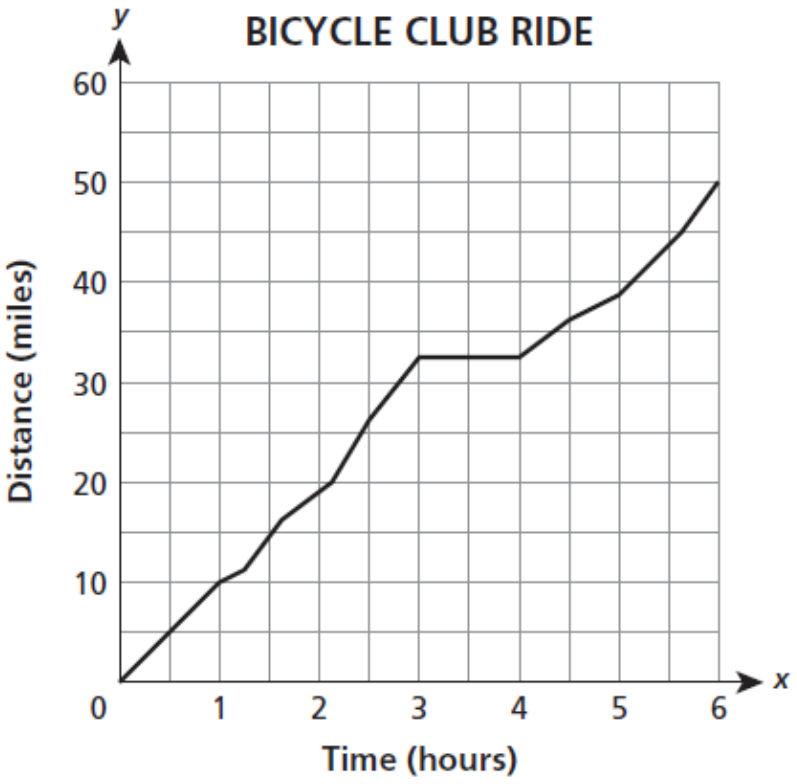
B. between hours 4 and 5

C. between hours 5 and 6

D. between hours 7 and 8

14.

A bicycle club went on a six-hour ride. The graph below shows the relationship between the number of hours spent on the trails and the number of miles traveled.



Which statement best interprets information provided by the graph?

A The club members rode at a constant speed for the entire ride.

B The club members stopped for a rest during their ride.

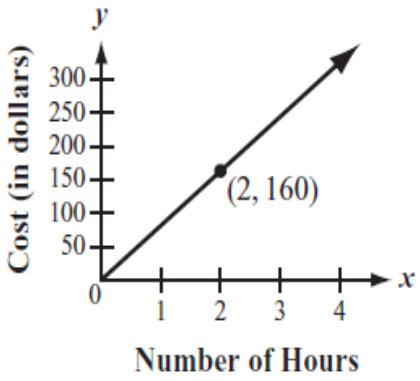
C The number of miles traveled increased continuously throughout the ride.

D The number of miles traveled increased some of the time and decreased some of the time.

15.

The students at a middle school want to hire a DJ for an end-of-the-year dance. The information below can be used to find the total cost of hiring a DJ at each of four different companies.

Awesome Entertainers



Turntable Tunes

Number of Hours	Cost (in dollars)
1	200
2	240
3	280
4	320

Cool Beats

$300 plus an additional $35 per hour

Rock-N-Sounds

The cost of hiring a DJ is represented by the equation

$c = 45h + 250$,

where c is the total cost, in dollars, and h is the number of hours the DJ works.

Which company's cost has the greatest rate of change?

A. Awesome Entertainers
B. Cool Beats
C. Turntable Tunes
D. Rock-N-Sounds

16. Angela earns money doing yard work. She made this graph to show m, the amount of money she can make for working h hours.

Which equation best represents the graph Angela drew?

A. $m = 6h$

B. $m = h + 6$

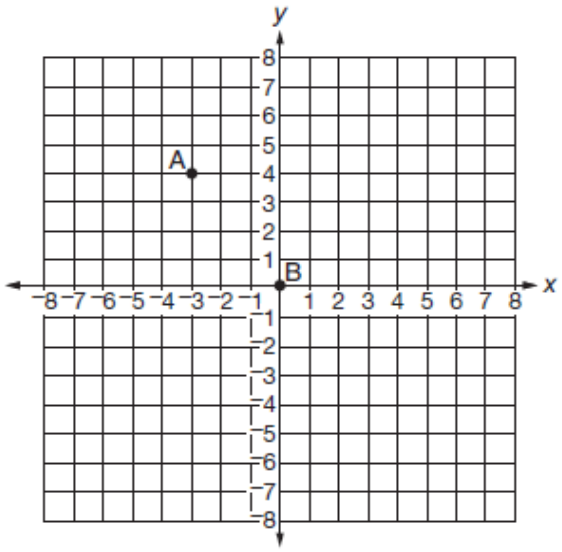
C. $h = 6m$

D. $h = m + 6$

17. Which of the functions represented below is NOT linear?

A. $y = 3x$ B. $x = y$ C. $\frac{1}{2}x = 2y$ D. $x^3 = 81$

18.



Which equation represents a line that passes through points A and B plotted on the graph?

A. $y = -\frac{4}{3}x$

B. $y = -\frac{3}{4}x$

C. $y = \frac{3}{4}x$

D. $y = \frac{4}{3}x$

19.

Use the two functions below to answer the question.

Function A

$$y = \frac{1}{4}x - \frac{2}{3}$$

Function B

x	y
2	−8
4	−9
6	−10
8	−11

Which statement about the slopes of the functions is true?

A. The slopes of both functions are negative.

B. The slopes of both functions are positive.

C. The slope of function A is negative and the slope of function B is positive.

D. The slope of function A is positive and the slope of function B is negative.

20. An equation is incorrectly solved below.

Equation: $2x + 3 = -4$

Step 1: $2x + 3 - 3 = -4 - 3$

Step 2: $2x = -1$

Step 3: $\frac{2x}{2} = -\frac{1}{2}$

Step 4: $x = -\frac{1}{2}$

What is the first step that shows an error in the solution to the equation?

A. Step 1
B. Step 2
C. Step 3
D. Step 4

21. $$\frac{8(x+1)}{\square} = 2(x+1)$$

Choose the value that will correctly replace the missing part of the equation.

A. x
B. 2
C. 4
D. 8

22.

Barb purchased a loaf of bread for \$2 and p pounds of sliced ham at \$5 per pound for a total of \$13.25. The relationship between what she purchased and her total purchase price is represented by the equation below.

$$5p + 2 = 13.25$$

What was the total number of pounds of ham that Barb purchased?

A. 2.25 pounds
B. 2.65 pounds
C. 3.05 pounds
D. 4.65 pounds

23.

Solve the equation:

$$3(r + 4) - 7r = -16$$

A. $r = 7$

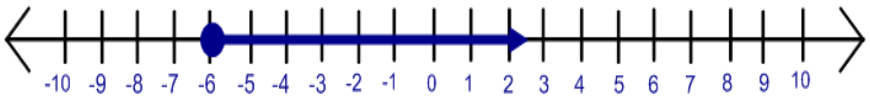
B. $r = \frac{20}{3}$

C. $r = -7$

D. $r = -\frac{20}{3}$

24.

What is the inequality shown in the graph below?

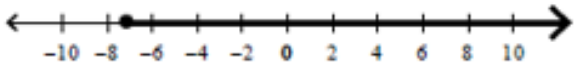


A. $x > -6$
B. $x < -6$
C. $x \leq -6$
D. $x \geq -6$

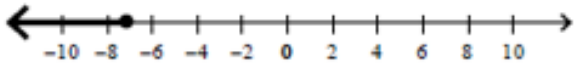
25.

Solve and graph.
$3t - 12 \leq -9$

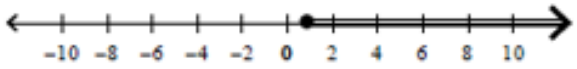
A. $t \geq -7$



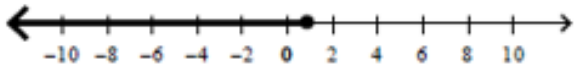
B. $t \leq -7$



C. $t \geq 1$



D. $t \leq 1$



Key

Item #	Answer
1	C
2	D
3	A
4	A
5	B
6	D
7	B
8	A
9	D
10	D
11	B
12	C
13	B
14	B
15	A
16	A
17	D
18	A
19	D
20	B
21	C
22	A
23	A
24	D
25	D

Assessment Matrix- Mid-Year Assessment Math-8

Standard Number	Standard	Item #	Mastery
8.NS.A.1 Unit 8A	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	1, 2	
8.NS.A.2 Unit 8A	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π2). For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.	3, 4, 5	
8.EE.A.2 Unit 8A	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.	6	
8.EE.A.1 Unit 8B	Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = \frac{1}{3^3} = \frac{1}{27}$.	9, 10	

8.EE.A.3 Unit 8B	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3 times 10^8 and the population of the world as 7 times 10^9, and determine that the world population is more than 20 times larger.	7	
8.EE.A.4 Unit 8B	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	8	
7.EE.B.4B Unit 8C	(Supporting Standard) Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	24, 25	
8.EE.C.7A Unit 8C	Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x=a, a=a, or a=b results (where a and b are different numbers).	21, 22	
8.EE.C.7B Unit 8C	Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	20, 23	
8.F.A.1 Unit 8D	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the	11, 12	

	set of ordered pairs consisting of an input and the corresponding output.		
8.F.A.2 Unit 8D	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.	15, 19	
8.F.A.3 Unit 8D	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function $A = s^2$ is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.	16, 17, 18	
8.F.B.5 Unit 8D	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	13, 14	