TEST NAME: **S-ID.7**
TEST ID: **844123**
GRADE: **09 - Ninth Grade**
SUBJECT: **Mathematics**
TEST CATEGORY: **School Assessment**

Student: _____

Class: _____

Date: _____

1. **The equation $T = 0.63s + 78$ can be used to determine *T*, the temperature in degrees, inside an oven *s* seconds after the oven is turned on. Which statement relative to this equation is true?**

   A. Each second the temperature increased 78 degrees.
   B. The initial temperature inside the oven was 78 degrees.
   C. The temperature inside the oven in one minute was 141 degrees.
   D. The temperature inside the oven increased by 78 degrees every 63 seconds.

2. **The graph shows the rate of exchange between the U.S. Dollar and the Euro over a five-week period.**

The slope of the line of best fit is 0.007. Which statement best explains the meaning of the slope?

   A. The exchange rate rose by 0.007 each week.
   B. For each 0.007 Euro, the exchange rate rose by $1.
   C. When the value of the week was zero, the exchange rate was 0.007.
   D. Each week, the value of the exchange rate was 0.007 of its value from the previous week.

3. The table below shows the amount of water in a bucket after different amounts of time.

Time (minutes)	**Amount of Water** (ml)
1	29.94
2	29.9
3	29.83
4	29.79
5	29.75

What is the meaning of the slope of the line of best fit for the data?

A. The bucket is predicted to lose 0.05 ml of water per minute.

B. The bucket is predicted to lose 5% of its water per minute.

C. The bucket is predicted to gain 0.05 ml of water per minute.

D. The bucket is predicted to gain 5% of its water per minute.

4. **A child attached a spool of string to a kite and started to fly the kite. The elapsed time in seconds and the length, in feet, of the string between the spool and the kite is shown in the table below.**

Elapsed Time, *x* (sec)	**Length of String, *y* (ft)**
0	50
2	60
4	70
6	80
8	90
10	100

What information is provided by the slope of the linear equation that models this data?

A. The kite ends up 50 feet from the spool.

B. The kite starts out 50 feet from the spool.

C. The kite is being released at a rate of 5 feet per second.

D. The kite is being reeled in at a rate of 5 feet per second.

5. The table below shows the length of time a plumber takes on a job and the price he charges.

Hours	1	2.5	4.75	6
Cost	$120	$180	$270	$320

What does the *y*-intercept represent?

A. the hourly cost of repairs

B. the total cost of the repair

C. the cost for the plumber to work one hour

D. the cost for the plumber to come to a house

6. Suppose the total cost of a ride in a taxi can be modeled by the function $T = 5 + 0.85x$, where T is the total cost and x is the total number of miles. What does the slope of the equation represent?

A. the initial cost of the taxi

B. the total cost of the trip

C. the charge for each mile of the trip

D. the total number of miles for the trip

7. As a part of a science experiment, Gary makes a small hole in the bottom of a bottle full of water. He records the amount of water left in the bottle at the end of each minute. He repeats this experiment several times and uses the data to develop the linear model $w = -50m + 1200$, which describes the amount of water remaining in the water bottle, in w milliliters, after m minutes. Which statement is a correct interpretation of this linear model?

A. The water bottle holds 1,200 milliliters of water and loses 50 milliliters per minute.

B. The water bottle starts with 1,200 milliliters of water and ends with 24 milliliters of water.

C. The water bottle holds 1,200 milliliters of water and loses 1 milliliter of water every 50 minutes.

D. The water bottle starts with 1,200 milliliters of water and loses exactly 50 milliliters of water.

8. The table below shows the number of calories burned per hour by a person running at different speeds.

Speed (mph)	2	3	4	5	6
Calories Burned	213	345	460	510	675

Using a line of best fit, what does the slope represent?

A. the average number of calories burned per hour as the speed increases by 1 mph

B. the average number of calories burned per hour as the speed decreases by 1 mph

C. the average number of calories burned per hour as the speed remains constant

D. the average number of calories burned per hour if no exercise takes place

9. The table below shows the fuel consumption per 100 miles for different car weights.

Fuel Consumption (in gallons per 100 miles)	Weight (1000 lbs)
3.4	5.5
3.8	5.9
4.1	6.5
2.2	3.3
2.6	3.6
2.9	4.6
2	2.9
2.7	3.6
1.9	3.1
3.4	4.9

Which of these statements is a **correct** approximation of the slope of the linear model that represents the data in this table?

A. For every 1.6 lb increase in the weight of the car, its fuel consumption increases by 1 gallon per mile.

B. For every 1 lb increase in the weight of the car, its fuel consumption increases by 1.6 gallons per mile.

C. For every 1,600 lb increase in the weight of the car, its fuel consumption increases by 1 gallon per 100 miles.

D. For every 1,000 lb increase in the weight of the car, its fuel consumption increases by 1.6 gallons per 100 miles.

10. The table below shows the number of miles a car has been driven and the number of times the oil has been changed in the car.

Miles (in thousands)	45	55	65	75	85
Number of oil changes	12	14	15	17	18

Which statement ***best*** represents the meaning of the slope of the line of best fit of the data?

A. The car averaged 1 oil change over 10,000 miles.

B. The car averaged 2 oil changes over 10,000 miles.

C. The car averaged 3 oil changes over 20,000 miles.

D. The car averaged 6 oil changes over 20,000 miles.

11. The chart outside a pediatrician's office lists the heights of different girls varying in age from 6 to 12 years old. The function $f(x) = 2.5x + 45.5$ models the line of best fit of the data in the chart where $f(x)$ represents the height x years after the child's sixth birthday. What does the slope of this function represent?

A. The average height of girls before turning 6 is about 45.5 inches.

B. The average height of girls who are 6 years old is about 45.5 inches.

C. On average, girls grow about 2.5 inches per year from 6 to 12 years old.

D. On average, girls grow about 2.5 inches per year starting from the time they are born.

12. Mark recorded the growth of a plant every day for a week. The table below shows the height of the plant in centimeters (cm) at the end of each day.

Day	Height (cm)
1	11.25
2	12.5
3	13.75
4	15
5	16.25
6	17.5
7	18.75

Which statement about the plant's growth rate and initial height is the most reasonable?

A. The plant grows at the rate of 7.5 cm per day, and its initial height was 10 cm.

B. The plant grows at the rate of 1.25 cm per day, and its initial height was 10 cm.

C. The plant grows at the rate of 10 cm per day, and its initial height was 1.25 cm.

D. The plant grows at the rate of 1.25 cm per day, and its initial height was 11.25 cm.

13. The height, h, (in cm) of a certain plant t days after it is planted can be best described by the linear model $h = 1.20t + 0.14$. What does the slope of this linear model represent in terms of the context?

A. The height of the plant increases by 1.20 cm each day.

B. The height of the plant increases by 0.14 cm each day.

C. The height of the plant at the time of planting was 0.14 cm.

D. The height of the plant at the time of planting was 1.20 cm.

14. **The data in the table represent the relative distance, in miles, between a car and a particular mile marker on a highway over time.**

Car Travel

Elapsed Time, *x* (hr)	Relative Distance, *y* (miles)
0	–20
0.5	12
1	45
1.5	74
2	104

What does the slope of the linear equation that models the data indicate?

A. The car traveled at 62 miles per hour.
B. The car traveled 59 miles the second hour.
C. The car started out 19 miles from the mile marker.
D. The car traveled away from the marker at 19 miles per hour.

15. Sara lit a new candle and then recorded its height in inches every hour as (time, height). Her results were
(0, 20), (1, 18.4), (2, 16.8), (3, 15.2), (4, 13.6), (5, 12), and (6, 10.4).

Which statement is true?

A. The height of the candle decreases by 1.6 inches every hour, and its original height was 20 inches.

B. The height of the candle decreases by 20 inches every hour, and its original height was 1.6 inches.

C. The height of the candle decreases by 9.6 inches every hour, and its original height was 20 inches.

D. The height of the candle decreases by 1.6 inches every hour, and its original height was 18.4 inches.

16. Laurie painted birdhouses. The table below shows the total number of birdhouses she has painted after different amounts of time.

Time (hours)	**Houses Painted**
1	12
2	21
3	33
4	42
5	55

What is the meaning of the slope of the line of best fit for the data?

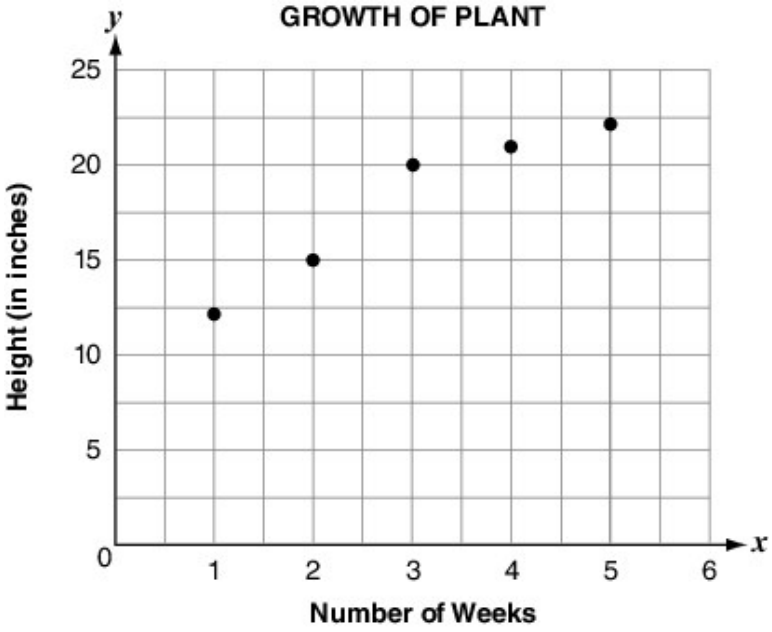
A. the total number of birdhouses painted

B. the total amount of time spent painting birdhouses

C. the approximate amount of time it takes to paint each birdhouse

D. the approximate number of birdhouses painted each hour

17. The scatter plot below represents the growth of a plant each week.



Which statement is a correct interpretation of the linear model that represents these data?

A. The initial height of the plant is about 2.5 inches.

B. The initial height of the plant is about 12 inches.

C. The plant grows about 2.5 inches every week.

D. The plant grows about 10 inches every week.

18. The equation, $C = 0.15(x - 200) + 9.95$, represents a cell phone company's monthly charge, C, for a text messaging service, where x represents the number of text messages per month. What is the ***best*** interpretation of the slope?

A. The company charges \$9.95 for each text message over 200 per month.

B. The company charges \$0.15 for each text message over 200 per month.

C. The initial fee for text messaging is \$9.95.

D. The cost for each text is \$0.15.

19. James borrowed some money from his mother. Each month, James pays back some of the money that he owes. The equation $y = 200 - 40x$ represents y, the amount James owes his mother, after x months. What does the y-intercept of the equation represent?

A. the amount of money James owes to his mother

B. the amount of money James borrowed from his mother

C. the number of months since James borrowed from his mother

D. the amount of money James pays back to his mother each month

20. The table below shows the height of a tree after different amounts of time since it was planted.

Time (months)	**Height** (inches)
0	24
1	27
2	31
3	35
4	40

What is the meaning of the slope of the line of best fit for the data?

A. The tree grew about 4 inches every month.

B. The tree grew about 1 inch every 4 months.

C. The tree grew about 3 inches every month.

D. The tree grew about 1 inch every 3 months.

21. The table below shows the number of apples an orchard harvested in different years.

Years Since 1985 (x)	**Thousands of Apples Harvested** (y)
5	875
7	1,065
11	1,445
15	1,825
17	2,015

What is the meaning of the y-intercept of the line of best fit for the data?

A. The farm harvested about 95,000 apples each year.

B. The orchard harvested about 95,000 apples in 1985.

C. The orchard harvested about 400,000 apples in 1985.

D. The farm harvested about 400,000 apples the year it opened.

22. Anna is studying body proportions for a science project. She measured the height and head circumference of 10 people in her class. The results are shown in the table below.

Height (inches)	**Head Circumference** (inches)
60	8.5
67	9.5
68	9.5
62	9.0
71	10.5
70	10.0
61	8.5
70	10.0
65	9.0
66	9.5

What is the meaning of the slope of the line of best fit for the data?

A. For every 1 inch increase in height, there is about a 6 inch increase in head circumference.

B. For every 1 inch increase in head circumference, there is about a 6 inch increase in height.

C. For every 1 inch increase in head circumference, there is about a 1 inch increase in height.

D. For every $\frac{1}{6}$ inch increase in height, there is about a 6 inch increase in head circumference.

23. The table below shows the population of a state in different years.

Years since 2005	Population
1	8,347,873
2	8,500,104
3	8,640,000
4	8,790,022
5	8,938,124

What is the meaning of the *y*-intercept of the line of best fit for the data?

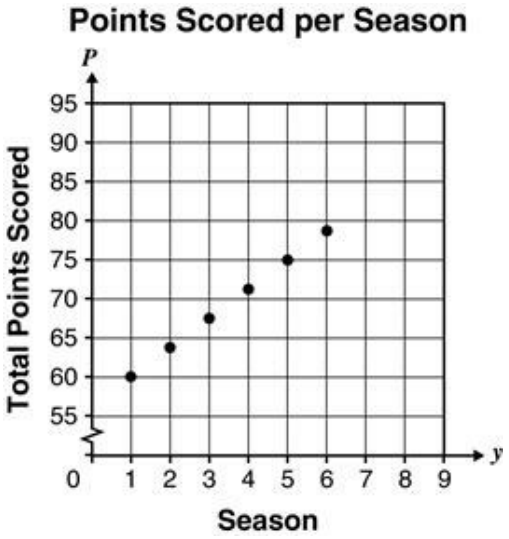
A. the total population of the city when it was founded

B. the average increase in population each year

C. the total population increase per year

D. the approximate population in 2005

24. **The graph displays the total points scored by a hockey team for several seasons.**



The equation of the line of best fit of the data is $P = 5t + 46.5$, where *P* is the total points earned during each season, *t*. Which statement best describes the slope of the graph of this equation?

A. The team scored an average of five points per game.

B. Every five games, the number of points scored each game increased by one.

C. Every five seasons, the number of points scored during the season increased by one.

D. The number of points scored in a season increased by an average of five points each season.

25. The table below shows the size and the selling price of several homes in a housing development.

Size (square feet)	**Selling Price**
2,000	$169,500
2,234	$180,000
2,305	$185,000
2,398	$189,000
2,420	$190,000

What is the meaning of the slope of the line of best fit for the data?

A. the average increase in square feet for each additional dollar in price

B. the average increase in price for each additional square foot

C. the average number of square feet in a house

D. the minimum price of a house

26. The number of calories burned, C, after t minutes of exercise can be modeled by the equation $C = 4.5t$. What does the number 4.5 represent in this equation?

A. time spent exercising

B. calories burned per minute

C. time taken to burn each calorie

D. total number of calories burned

27. **A person is waiting in line to get into a sporting event. The data in the table represents the relative position, in feet, of the person to the entry gate over time in seconds.**

Elapsed Time, *x* (sec)	Relative Position, *y* (ft)
0	10
1	8.5
2	7
3	5.5
4	4
5	2.5
6	1

What does the slope of the linear equation that models the data represent?

A. The person's speed is increasing as the person approaches the entry gate.
B. The person's speed is decreasing as the person approaches the entry gate.
C. The person is moving closer to the entry gate at a rate of 1.5 feet per second.
D. The person is moving farther away from the entry gate at a rate of 1.5 feet per second.

28. Tony drives from his home in Tallahassee to Miami. The table below shows the distance he had left to travel after certain periods of time.

Time (in hours)	Distance to travel (in miles)
2	400
4	300
6	200
8	100
9	50

Which statement is true?

A. Tony traveled 400 miles over the entire trip.
B. Tony traveled 1,050 miles over the entire trip.
C. Tony drove at an average speed of 50 miles per hour.
D. Tony drove at an average speed of 100 miles per hour.

29. **The table below shows the depth of water in a bathtub as it is being filled over time. The data can be modeled by a linear equation where *x* is the elapsed time in minutes and *y* is the depth of the water in inches.**

Filling Bathtub

Elapsed Time, *x* (min)	Depth of Water, *y* (in.)
1	3
2	5
3	7
4	9
5	11
6	13

What does the *y*-intercept of the linear equation that models the data indicate?

A. The water level rose at a rate of 1 inch per minute.
B. The tub was empty when the elapsed time was at 0 minutes.
C. There was 1 inch of water in the tub when the water was turned on.
D. The water was running for 2 minutes before the depth was measured.

30. The table below shows the number of residents in a neighborhood who received new water meters over several weeks.

Weeks (w)	0	1	2	3	4
Number of Residents (R)	8	15	29	54	102

What is the meaning of the *y*-intercept of a linear model for the data?

A. the initial number of residents with meters
B. the initial rate at which residents received meters
C. the maximum number of residents that received meters
D. the rate of change in the number of residents that received meters

31. The table below shows the number of hours 6 different students studied and the students' grades on a midterm exam.

Hours Studied (x)	0.5	2	4	1.5	3	5
Midterm Grade (y)	64	79	92	82	85	95

This data can be best represented by a linear model. What does the y-intercept of this equation represent?

A. The grade of a student who did not study.

B. The grade of a student who studied for one hour.

C. The rate at which a student's grade improved for every half hour studied.

D. The rate at which a student's grade improved for every hour studied.

32. A realtor earns a base salary and a commission based on a percentage of the value of the properties sold. The data below show the value of the property sold and the monthly earnings for the realtor.

Value of Property	$102,000	$227,000	$75,200	$52,000
Monthly Earnings	$3,807	$6,930	$3,134	$2,556

Which statement ***most accurately*** describes the y-intercept of the line of best fit?

A. The y-intercept of 0.025 represents the commission rate.

B. The y-intercept of 0.025 represents the base salary.

C. The y-intercept of 1,255 represents the commission rate.

D. The y-intercept of 1,255 represents the base salary.

33. **Wheat was emptied from a grain silo. The heights, in feet, of the wheat relative to the elapsed time in minutes are shown in the table.**

Elapsed Time, *x* (min)	Height of Wheat, *y* (ft)
10	82
20	77
30	72
40	67
50	62
60	57

Which information is provided by the *y*-intercept of the linear equation that models this data?

A. The wheat reached a height of –0.5 feet in the silo.
B. The silo was empty after an elapsed time of 87 minutes.
C. The wheat was emptied from the silo at a rate of 0.5 feet per minute.
D. The wheat was at a height of 87 feet when the silo began to be emptied.

34. The table below shows the number of hours per week six students spend online and their current grades in math.

Hours Online (per week)	12	8	15	25	4	1	9
Current Math Grade	78	82	73	68	90	93	85

Using a line of best fit, which statement ***best*** describes the *y*-intercept of the equation?

A. the number of hours spent online if a student's grade were zero
B. the average change in the grade of a student per hour spent online
C. the grade a student should expect when no time is spent online
D. the point at which a student's grade is the lowest

35. **The data in the table represents the volume of helium, in cubic feet, inside a balloon relative to the elapsed time in minutes.**

Elapsed Time, *x* (min)	Volume of Helium, *y* (cu ft)
5	5.5
10	5
15	4.5
20	4
25	3.5
30	3
35	2.5
40	2

What does the slope of the linear equation that models the data indicate?

A. A balloon can contain a maximum of 6 cubic feet of helium.
B. A time of 6 minutes is required for each cubic foot decrease in a balloon's volume.
C. The volume of helium inside the balloon increased at a rate of 0.1 cubic feet per minute.
D. The volume of helium inside the balloon decreased at a rate of 0.1 cubic feet per minute.

36. **An elementary school consists of kindergarten (grade 0) through grade 5. The equation** $n = -38g + 378$ **can be used to determine the number of students, *n*, who started the school in kindergarten and who are still in the school at grade *g*. Which description represents the meaning of 378?**

A. the number of students who started at the school in kindergarten
B. the number of students who were at the school at the end of grade 1
C. the number of students who started at the school in kindergarten but who left at each grade
D. the number of students who started at the school in kindergarten and who were still there at the end of grade 5

37. The table below shows the charge for different numbers of shirts from an online website. The company charges a cost per shirt and a setup fee per order.

Shirts Ordered (x)	**Total Cost** (y)
100	$345
125	$363
150	$354
175	$339

What does the y-intercept of the equation of the line of best fit for the data represent?

A. the cost per shirt

B. the setup fee

C. the number of shirts ordered

D. the maximum cost of an order

38. Data were collected regarding the prices plumbers charge for their services in a certain area. Most of their charges include a flat fee and then an hourly charge. Based on the data gathered, the amount, A, a plumber charges for t hours of work can be modeled by the equation $A = 50 + 80t$. Which statement is **correct**?

A. On average, plumbers in this area charge a flat fee of $80 and $50 for each hour they work.

B. On average, plumbers in this area charge a flat fee of $50 and $80 for each hour they work.

C. On average, plumbers in this area charge a flat fee of $130 and $80 for each hour they work.

D. On average, plumbers in this area charge a flat fee of $80 and $130 for each hour they work.

39. Henry baked cookies to sell at a fundraiser for his school band. The equation $r = 0.65c$ represents r, the amount of money Henry raises, based on c, the number of cookies he sells. What does the slope of the equation represent?

A. the number of cookies Henry sells

B. the total amount of money Henry raises

C. the amount of money Henry raises for each cookie he sells

D. the amount of money Henry raises when he sells 65 cookies

40. The table below shows the time in minutes and the distance a person ran on different days.

Time (minutes)	50	89	96	114
Distance (miles)	6.5	11	12.25	14.5

What does the rate of change for this data represent?

A. An average increase of 0.12 miles in distance for every minute longer a person runs

B. An average decrease of 0.12 miles in distance for every minute longer a person runs

C. An average increase of 0.18 miles in distance for every minute longer a person runs

D. An average decrease of 0.18 miles in distance for every minute longer a person runs