3  3

Math Test – No Calculator

25 MINUTES, 20 QUESTIONS

Turn to Section 3 of your answer sheet to answer the questions in this section.

DIRECTIONS

For questions 1–15, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. **For questions 16–20**, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 16 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

NOTES

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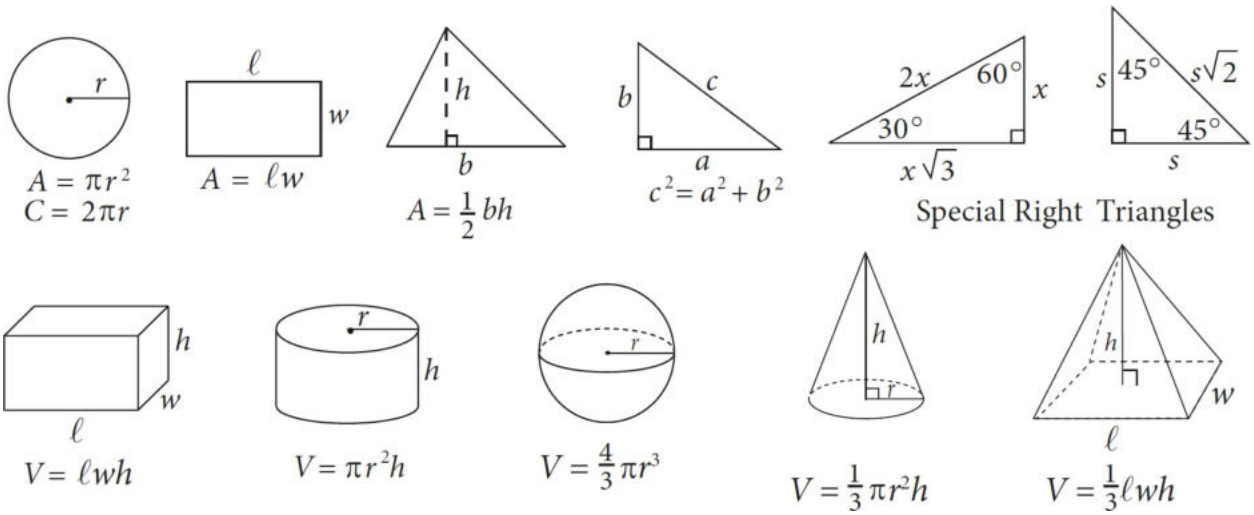
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated, the domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

REFERENCE



The number of degrees of arc in a circle is 360.

The number of radians of arc in a circle is 2π.

The sum of the measures in degrees of the angles of a triangle is 180.

1

If two times a number is equal to that number minus 4, what is the number?

A) −7

B) −6

C) −4

D) −3

2

The number of soil samples, s, that Sonal needs for an experiment must be greater than 6 but less than or equal to 13. Which of the following represents an acceptable number of soil samples for Sonal's experiment?

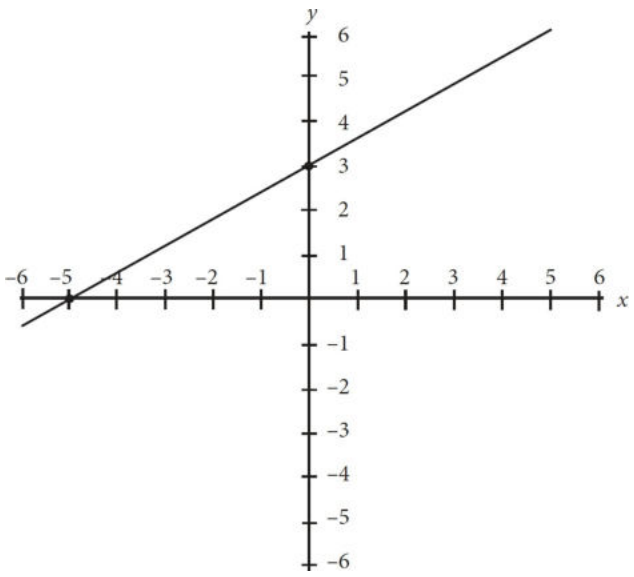
A) $6 < s < 13$

B) $6 \leq s < 13$

C) $6 < s \leq 13$

D) $6 \leq s \leq 13$

3



In the figure above, the graph of $y = f(x)$ is shown. Which of the following could be the equation of $f(x)$?

A) $f(x) = -\frac{3}{5}x + 3$

B) $f(x) = -\frac{3}{5}x - 3$

C) $f(x) = \frac{3}{5}x - 3$

D) $f(x) = \frac{3}{5}x + 3$

4

If $x + y = 0$, which of the following must be equivalent to $x - y$?

A) $-2y$

B) $\frac{x}{y}$

C) x

D) x^2

5

Which of the following is equivalent to $2x^2 - 6x - 8$?

A) $2(x - 4)(x + 1)$

B) $3(x + 4)(x - 1)$

C) $2(x - 3)(x + 2)$

D) $3(x - 4)(x - 2)$

6

Ryan and Allison build a ramp to help their elderly cat, Simms, walk up to their bed. They need the ramp to make a 35° angle with their bedroom floor. How long must the ramp be to reach the top of their bed that is exactly three feet off the ground?

A) $\frac{\sin 35°}{3}$

B) $\frac{\sin 55°}{3}$

C) $\frac{3}{\sin 55°}$

D) $\frac{3}{\sin 35°}$

7

If $3a + 2b = 24$ and $4a + 5b = 53$, what is the value of $a + b$?

A) 2

B) 7

C) 9

D) 11

8

Given the equation $y = 3x^2 + 4$, what is the function of the coefficient of 3 ?

A) It moves the graph of $y = 3x^2 + 4$ three units higher than the graph of $y = x^2 + 4$.

B) It moves the graph of $y = 3x^2 + 4$ three units lower than the graph of $y = x^2 + 4$.

C) It makes the graph of $y = 3x^2 + 4$ wider than the graph of $y = x^2 + 4$.

D) It makes the graph of $y = 3x^2 + 4$ narrower than the graph of $y = x^2 + 4$.

9

Steven needs to buy t theme park tickets for himself and his family. Each ticket costs \$80, and the number of tickets he needs to buy can be modeled by the expression $t^2 – 4t – 90 = 6$ when $t > 0$. What is the total cost of the theme park tickets that Steven purchased?

A) \$640

B) \$800

C) \$960

D) \$1,120

10

$$2c + 3d = 17$$
$$6c + 5d = 39$$

In the system of linear equations above, what is the value of $4c - 4d$?

A) -4

B) 1

C) 4

D) 13

11

If $x^2 + 2xy + y^2 = 64$ and $y - x = 12$, which of the following could be the value of x ?

A) -10

B) -4

C) 2

D) 10

12

Samantha offers two different packages of yoga classes at her yoga studio. She offers two hot yoga sessions and three zero gravity yoga sessions at a total cost of $400. She also offers four hot yoga sessions and two zero gravity sessions at a price of $440. Samantha wants to offer a larger package for long-time clients in which the cost must exceed $800. If Samantha does not wish to include more than 13 sessions for the long-time client package, will she be able to create this package for her clients?

A) No, because the closest package that she can offer consists of three hot yoga and three zero gravity yoga sessions.

B) No, because the closest package that she can offer consists of four hot yoga and four zero gravity yoga sessions.

C) Yes, because she can offer five hot yoga and five zero gravity yoga sessions.

D) Yes, because she can offer six hot yoga and six zero gravity yoga sessions.

13

Cuthbert is conducting a chemistry experiment that calls for a number of chemicals to be mixed in various quantities. The one amount of which he is unsure is grams of potassium, p . If Cuthbert is certain that $(3p^2 + 14p + 24) - 2(p^2 + 7p + 20) = 0$, what is one possible value of $3p + 6$, the exact number of grams of potassium that Cuthbert would like to use for this experiment?

A) 20

B) 18

C) 12

D) 10

14

What is the value of $(2 + 8i)(1 - 4i) - (3 - 2i)(6 + 4i)$?

(Note: $i = \sqrt{-1}$)

A) 8

B) 26

C) 34

D) 50

15

If $2\sqrt{x} = x - 3$, which of the following is the solution set for x ?

A) $\{-1, 9\}$

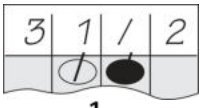
B) $\{1, -9\}$

C) $\{9\}$

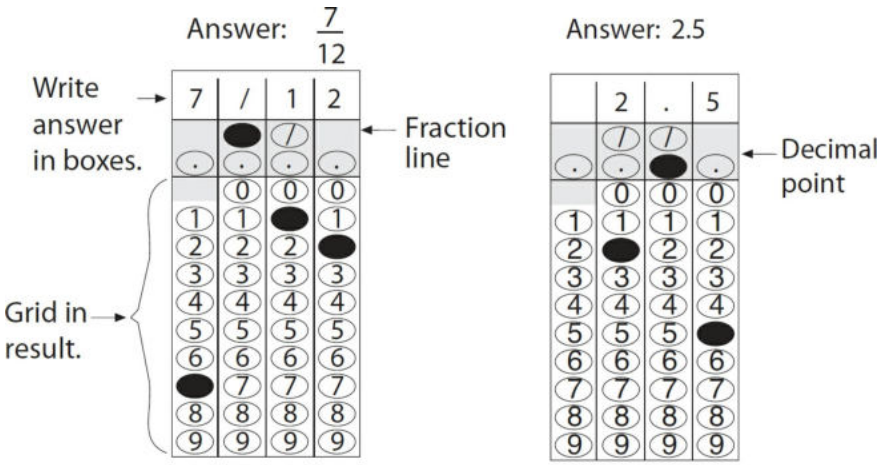
D) {1, 9}

DIRECTIONS

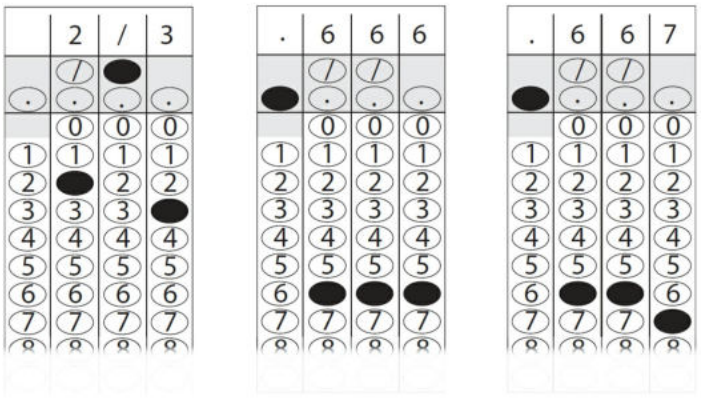
For questions 16–20, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

1. Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately. You will receive credit only if the circles are filled in correctly.
2. Mark no more than one circle in any column.
3. No question has a negative answer.
4. Some problems may have more than one correct answer. In such cases, grid only one answer.
5. **Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or 7/2. (If 

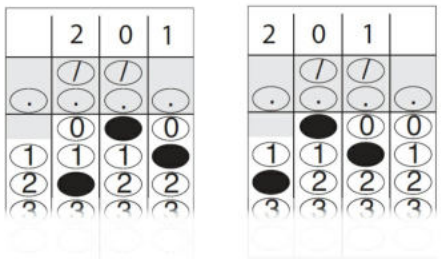
is entered into the grid, it will be interpreted as $\frac{31}{2}$, not as $3\frac{1}{2}$.)
6. **Decimal Answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.



Acceptable ways to grid $\frac{2}{3}$ are:



Answer: 201 – either position is correct



NOTE: You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.

16

A group of students at Omega High School is using staples and

popsicle sticks to build a scale model of the Great Wall of China as part of a project detailing China's military history. The number of staples the students will need is three times the number of popsicle sticks they will need. If the students determine they need 84 staples for this particular project, how many popsicle sticks will they need?

17

A standard parabola in the x,y-coordinate plane intersects the x-axis at (5, 0) and (–5, 0). What is the value of the x-coordinate of this parabola's line of symmetry?

18

Danielle is a civil engineer for Dastis Dynamic Construction, Inc. She must create blueprints for a wheelchair accessible ramp leading up to the entrance of a mall that she and her group are building. The ramp must be exactly 100 meters in length and make a 20° angle with the level ground. What is the horizontal distance, in meters, from the start of the ramp to the point level with the start of the ramp immediately below the entrance of the mall, rounded to the nearest meter? (Note: Disregard units when inputting your answer, $\sin 20° \approx 0.324$, $\cos 20° \approx 0.939$, $\tan 20° \approx 0.364$)

19

If twice a number is equal to that number minus five, what is three times that number plus seventeen minus that number?

20

Given that the equation $3x^2 + 2x - 8 = 0$ has two distinct solutions, what is the value of the smaller solution subtracted

from the larger solution?

S T O P

If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.

Math Test – Calculator

55 MINUTES, 38 QUESTIONS

Turn to Section 4 of your answer sheet to answer the questions in this section.

DIRECTIONS

For questions 1–30, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. **For questions 31–38**, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 31 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

NOTES

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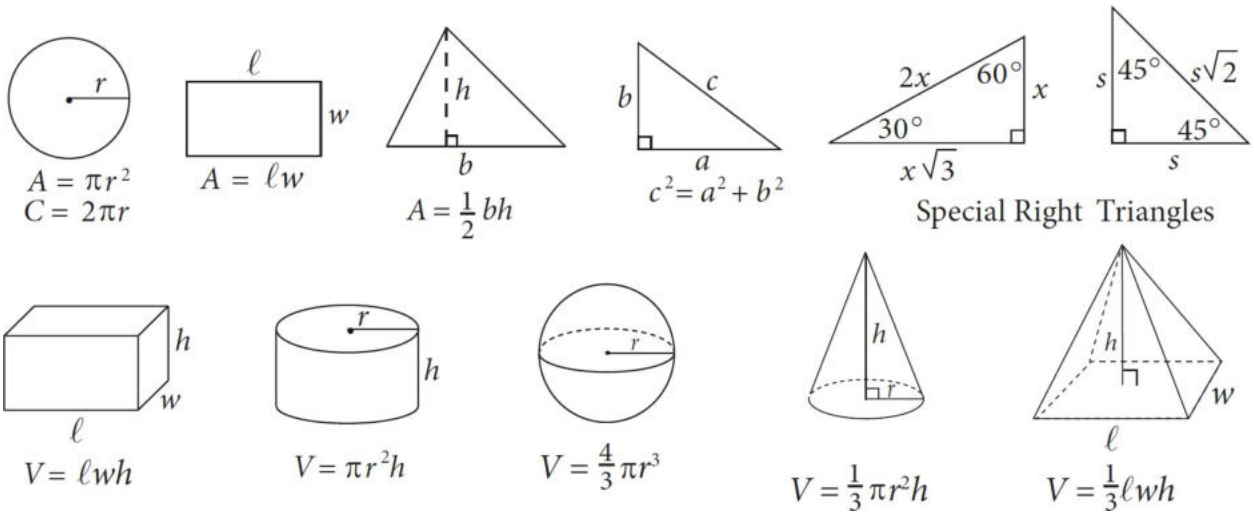
REFERENCE



The number of degrees of arc in a circle is 360.

The number of radians of arc in a circle is 2π.

πThe sum of the measures in degrees of the angles of a triangle is 180.

1

If $3y = y + 2$, what is the value of $2y$?

A) 1

B) 2

C) 3

D) 4

2

Merry joined an online community that charges a monthly fee of $15. A one-time enrollment fee of $50 was charged when she joined. Which of the following represents the total amount of fees that Merry has paid to the community organizers after m months, in dollars?

A) $15m + 50$

B) $15 + 50m$

C) $15m - 50$

D) $(15 + 50)m$

3

Rob has his favorite guitar tuned up and ready to take to a performance by his cover band at a local venue Saturday. He decides at the last minute to take x additional guitars, just in case his favorite guitar has an issue. If the total number of guitars that Robert takes to the performance can be modeled as $x + 1$, what does the "+ 1" account for in the expression?

A) It accounts for an additional guitar that Rob returns to his house and picks up in the middle of the performance.

B) It accounts for his favorite guitar, which Rob was taking from the beginning.

C) It accounts for the number of additional guitars that Rob decided to take.

D) It accounts for an additional non-guitar musical instrument that Rob decided to take.

4

A group of 24 students was polled as to whether they enjoy biology class, chemistry class, both, or neither. The results are shown in the table below:

	Biology	Chemistry
Enjoy	14	18
Don't Enjoy	10	6

Given the above data, which of the following conclusions is true?

A) The ratio of those who enjoy biology class to those who enjoy chemistry class is 7:8.

B) The ratio of those who enjoy chemistry class to those who don't enjoy chemistry class is 9:4.

C) The ratio of those who enjoy biology class to those who don't enjoy chemistry class is 7:2.

D) The ratio of those who don't enjoy biology class to those who enjoy chemistry class is 5:9.

5

Dr. Goldberg, a noted dietician, mixes different solutions as part of her research into sugar substitutes. By weight, she mixes 40% of a sample of substitute A and 70% of a sample of substitute B to create substitute C. If Dr. Goldberg initially had 60 grams of substitute A and 110 grams of substitute B, then what would be the weight, in grams, of substitute C ?

A) 24

B) 77

C) 101

D) 170

6

Which of the following is equivalent to the expression $x^4 - x^3 - x^2$?

A) $x(x^2 - x - 1)$

B) $x(x - x^2 - x^3)$

C) $x(x^3 - x^2)$

D) $x^2(x^2 - x - 1)$

7

Officer Blake drives his squad car 1 mile per minute while patrolling local highways during his shift. If he has driven 480

miles by the end of his shift, how many total hours did he drive his car at the above rate?

A) 8

B) 12

C) 16

D) 20

8

In the inequality $37 \leq -2x + 1$, what is the appropriate order of steps needed to solve the inequality for x ?

A) Add 1 to both sides, divide both sides by 2, and flip the inequality sign to ≥.

B) Subtract 1 from both sides, divide both sides by −2, and flip the inequality sign to ≥.

C) Add 1 to both sides, divide both sides by −2, and keep the original inequality sign.

D) Subtract 1 from both sides, divide both sides by 2, and keep the original inequality sign.

9

What is the value of $(2x^2 + 4x + 8) - (2x^2 - 4x + 7)$?

A) $4x^2 + 8x + 15$

B) $2x^2 + x + 1$

C) $8x + 1$

D) $8x + 15$

10

As part of a project for his cartography elective, Adam climbs several hills to create a relief map for the woods surrounding his house. He records the vertical heights of the five hills he climbed

at 55 feet, 42 feet, 38 feet, 50 feet, and 48 feet. For his project, Adam must convert his measurements to inches. If 1 foot = 12 inches, what is the measurement, in inches, of the *tallest* hill Adam will have on his map?

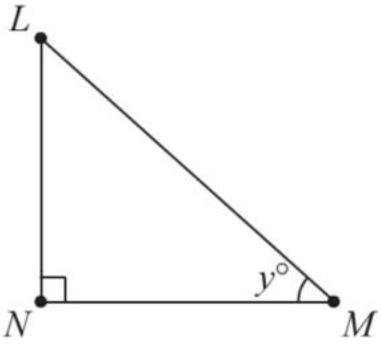
A) 660

B) 600

C) 576

D) 456

11



In the figure above, if $y = 40$ and $\overline{LN} = 8$, which of the following most closely approximates the length of $\overline{MN}$?

A) 0.10

B) 9.53

C) 10.44

D) 12.45

12

McCoy Max Speed, Inc. makes custom skateboards for its customers. Two wooden skateboards and three composite skateboards cost $650. Three wooden skateboards and one composite skateboard cost $450. How much would McCoy Max Speed charge a customer who purchases five wooden skateboards and four composite skateboards?

A) $500
B) $600
C) $1,000
D) $1,100

13

The chart below shows data about the number of employees at Cuda Cola, a popular beverage company.

	2012	2013	2014
Total Employees	1,670	1,890	2,110
Percent Male	65%	60%	55%
Percent Female	35%	40%	45%

Assuming the employee total grows at the same rate each year, and male and female percentages continue to decrease and increase by 5%, respectively, approximately how many male employees will work at Cuda Cola in 2015 ?

A) 1,515
B) 1,398
C) 1,282
D) 1,165

14

John Croxley, the mayor of Black Rock, NY, is counting the number of restaurants that have opened in his town per month for the last seven months. He compiles the seven numbers into Set F, which contains the elements 4, 5, 11, 13, 16, 18, and x. If both the median and average (arithmetic mean) of Set F equal 11, what must be the value of x, the unknown number of restaurants that opened in Mayor Croxley's town last month?

A) 9

B) 10

C) 11

D) 12

15

$$17s + 20t = 59$$
$$30s + 40t = 110$$

In the system of equations above, what is the value of t in terms of s ?

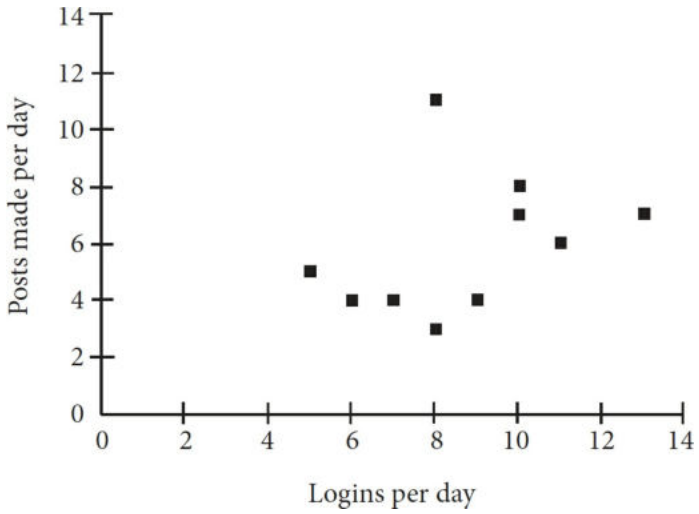
A) $\frac{2s}{5}$

B) $\frac{s}{5}$

C) $\frac{5}{2s}$

D) $\frac{5}{s}$

16



Given the scatterplot graph above, ten students at Welton Academy were polled at random about their usage of the school's new physics-centered social media app, E = MC Shared. The app was developed to encourage students to discuss physics curricula and concepts in ways that mirrored social media trends in 2013. Students were asked how many times they logged into the app each day as well as how many posts they actually made using the app. With the given data, what conclusions can be drawn about this group of students?

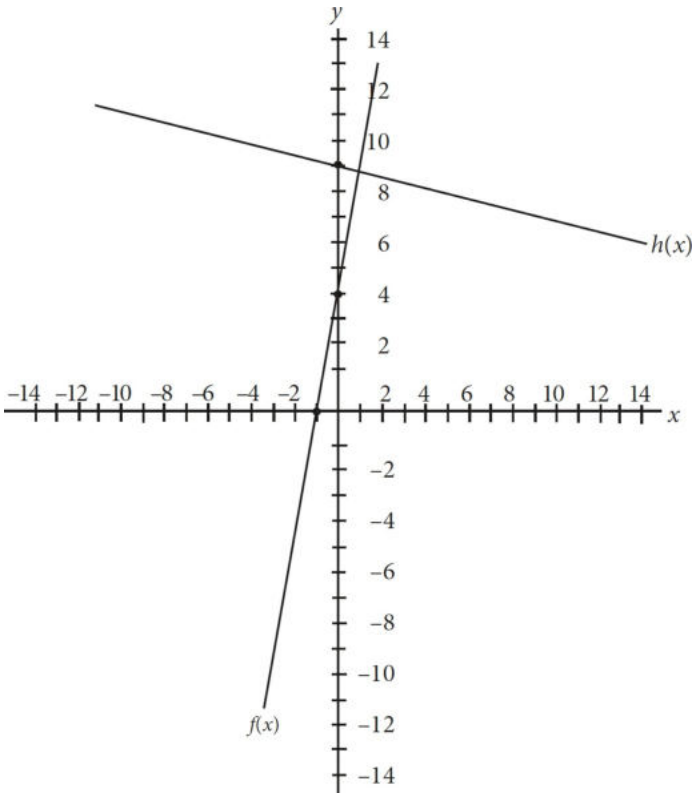
A) The majority of students polled logged in more times per day than they posted.

B) The majority of students polled posted more times per day than they logged in.

C) The majority of students polled logged in and posted an equal number of times.

D) No relationship can be drawn between logins per day and posts per day.

17



Two graphs, $f(x)$ and $h(x)$, are shown above. If $f(x) = 3x + 4$ and $f(x)$ and $h(x)$ are perpendicular, which of the following could be the equation of $h(x)$?

A) $h(x) = \frac{1}{3}x + 9$

B) $h(x) = -\frac{1}{3}x + 9$

C) $h(x) = 3x + 9$

D) $h(x) = -3x + 9$

18

The number of eggs that Farmer Jones has in his chicken coop will grow exponentially as Farmer Jones buys more chickens to increase production. The number of eggs Farmer Jones has in the coop can be modeled by the equation $y = 3^x$ beginning on Day 1,

where x is given by $x = 1$, and y is the number of eggs currently in the coop. If the coop can support only 4,000 eggs, and Farmer Jones empties the coop every day, on which day will the chickens produce too many eggs for the coop to support?

A) Day 6

B) Day 7

C) Day 8

D) Day 9

19

If $a = \frac{4a^2}{16}$ and a is a nonzero integer, which of the following is equivalent to a ?

A) $4a$

B) $4\sqrt{a}$

C) $2\sqrt{a}$

D) $2\sqrt{a}$

20

Three different chefs work together to prepare meals for 280 dinner guests. Each works at a different speed, and their combined output throughout the night is modeled by the equation $8x + 4x + 2x = 280$. If x is a positive integer, which of the following could $8x$ represent in the equation?

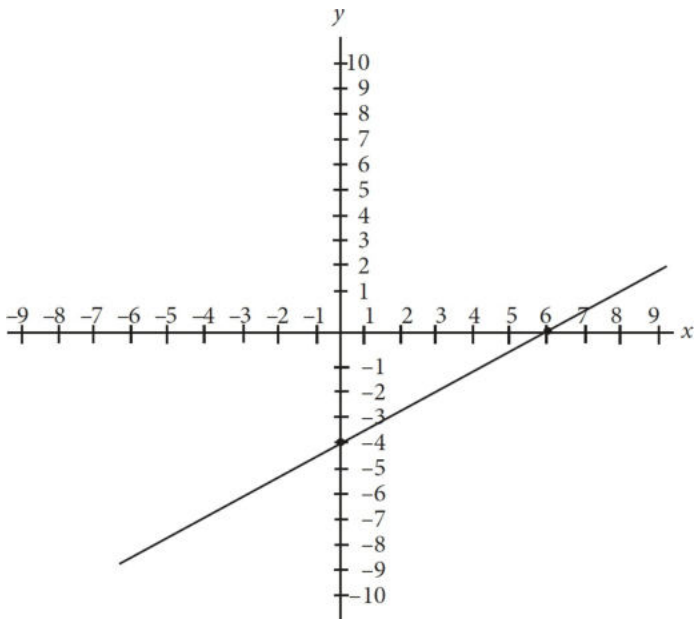
A) The total meal output by the slowest chef, who made 40 meals

B) The total meal output by the fastest chef, who made 160 meals

C) The total meal output by the fastest chef, who made 80 meals

D) The difference between the output between the slowest and fastest chef, which would be 120 meals

21



The graph, $y = f(x)$, shown above models the performance of a certain crop, where x is the nutrients subtracted or added to the soil and y is the gain or loss of pieces of fruit added to the total harvest. A more powerful fertilizer that is used causes the graph $y = f(x)$ to be reflected over the line $y = x$. Which of the following best describes the behavior of the crop with the new fertilizer?

A) For every three nutrients added to the soil, the crop loses two additional fruits for the total harvest.

B) For every two nutrients added to the soil, the crop loses two additional fruits for the total harvest.

C) For every three nutrients added to the soil, the crop adds two additional fruits to the total harvest.

D) For every two nutrients added to the soil, the crop adds three additional fruits to the total harvest.

22

George and Joe both interview the same 20 fellow students regarding their interest in their school's new Model UN Club.

George asked the students to respond with Interested, Sort of Interested, and Not Interested. Joe asked the students to rate their interest on a scale of 1 to 5. The results of the polls are below.

George's Poll

Response	Number of Students
Interested	8
Sort of Interested	5
Not Interested	7

Joe's Poll

Rating	Number of Students
1	5
2	4
3	3
4	4
5	4

After reviewing the data, the Model UN advisors determine that Joe informed the students of whether a 1 or a 5 was the best rating, but neglected to report to them whether it was a 1 or a 5

that was the best rating in the report. What additional piece of information would most help the advisor determine whether a 1 or 5 was the best rating?

A) Requesting that George redo his poll with the same rating system as Joe's poll

B) Requesting that Joe redo his poll with the same rating system as George's poll

C) Polling all of the students who said "Interested" in George's Poll and asking them to choose between "Extremely Interested" and "Very Interested"

D) Polling all of the students who gave a "1" rating in Joe's poll and ask them if they are interested in Model UN

23

Each winter, Captain Dan's Ski Lodge rents both pairs of skis and snowboards to its guests for a flat daily rate per pair of skis and a flat daily rate per snowboard. Five pairs of skis and two snowboards will cost a family $370. Three pairs of skis and four snowboards will cost a family $390. During a particularly slow season, Captain Dan announces a 10% discount on all skis and snowboards. What would be the cost of renting two pairs of skis and two snowboards if they were rented during this discount period?

A) $99

B) $110

C) $198

D) $220

24

If $8x + 8y = 18$ and $x^2 - y^2 = -\frac{3}{8}$, what is the value of $2x - 2y$?

A) $-\frac{1}{3}$

B) $-\frac{1}{6}$

C) $\frac{1}{3}$

D) $\frac{1}{6}$

25

Shaun is developing a weight loss regimen, which includes both a workout plan and a calorie-restriction plan. Shaun wants to work out for no less than 30 minutes and no more than 60 minutes a day and consume no less than 2,000 and no more than 2,500 calories. If each minute, m, of his workout time burns 50 calories, which of the following inequalities represents the number of minutes, m, that Shaun can work out each day to burn off as many calories as he consumes?

A) $30 \leq m \leq 60$

B) $30 \leq m \leq 50$

C) $40 \leq m < 50$

D) $40 \leq m \leq 50$

26

A professional baseball team wishes to average 45,500 ticket purchases per game for the entire 162-game season. Through the first 60 games of the season, the team has averaged 43,000 ticket purchases per game. Which of the following most closely approximates how many ticket purchases per game the team must average for the remainder of the season in order to hit its overall goal of an average of 45,500 ticket purchases per game for

the season?

A) 46,970

B) 47,880

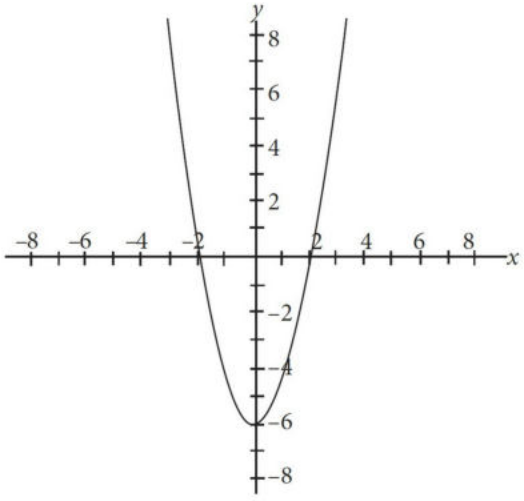
C) 48,000

D) 48,220

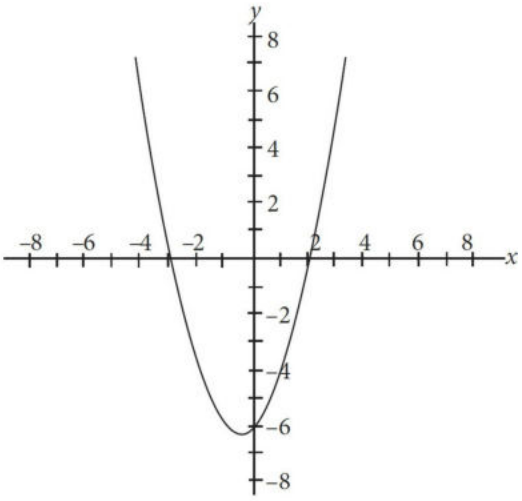
27

A certain polynomial, P, has a degree of 2. Polynomial P has zeros of 2 and -3, and $a > 0$ when the function of polynomial P is written in the form of $y = ax^2 + bx + c$. Given this information, which of the following could be the graph of polynomial P ?

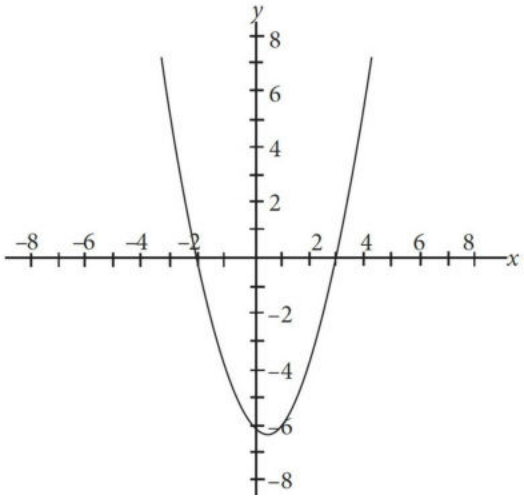
A)



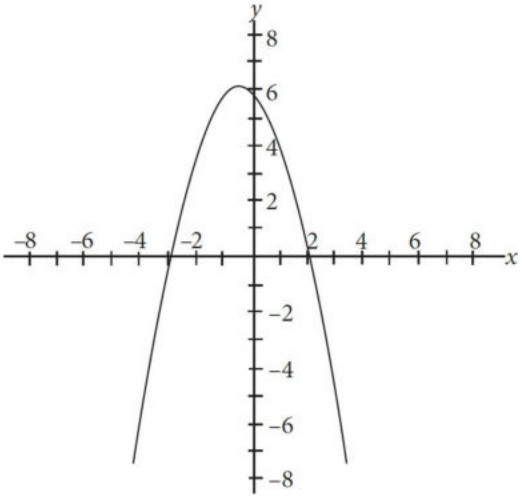
B)



C)



D)



28

Circle *O* (not shown) is divided into three sectors. Points *P, Q,* and *R* are on the circumference of the circle. Sector *POR* has an area of 8π, and sector *ROQ* has an area of 6π. If the radius of circle *O* is 4, what is the measure of the central angle of sector *QOP*, in degrees?

A) 45

B) 90

C) 135

D) 180

29

Medical residents at Lakewood Hospital are choosing their individual specialties. Among them, 40% choose cardiology, 16% choose oncology, 34% choose endocrinology, and the remaining x% choose hematology. Once the doctors pick their first specialty, they are then each asked to choose a second specialty from the previous four options in case their original specialty is already filled. They may not pick their original specialty again. 20% of those who originally picked cardiology choose oncology as their second choice. If no other field chooses oncology as their second choice, and the hospital boasts 200 medical residents, then what is the total number of residents who named oncology as either their first or second choice, in terms of x ?

A) $8x - 128$

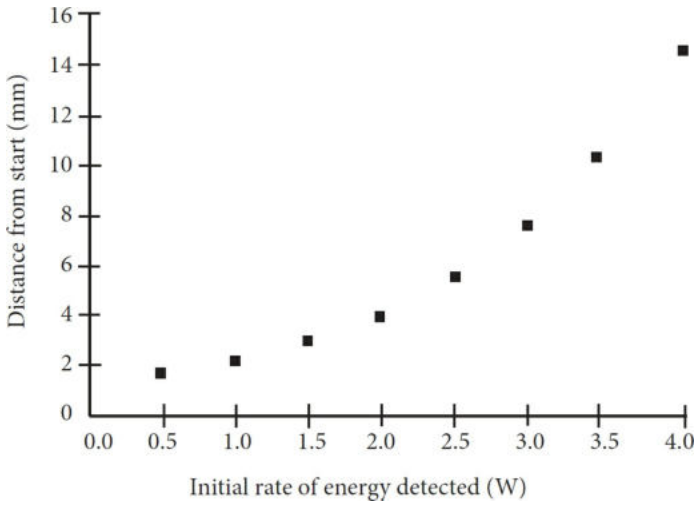
B) $8x - 144$

C) $x^2 + 24x - 188$

D) $x^2 - 24x + 188$

30

Mr. Lastorka's science class is running experiments with an energy-efficient model electric car. As the initial rate of energy delivered to the car, measured in watts, increases, the number of millimeters moved by the car from its starting position increases exponentially. The results of several trial runs are shown on the scatterplot graph below.



Based on the data, the students in Mr. Lastorka's class determine the exact equation involving Watts, x, and total distance from start, y . They call the function $y = f(x)$. Mr. Lastorka then instructs his class to reflect $y = f(x)$ over the x-axis. He challenges each student to determine the new function and what it would mean from a physics perspective. Four student pairs gave their answers below. Who is correct, and for what reasons?

A) Charles and Shannon, who identify the new equation as $y = -2^x$ and explain that the new graph indicates that the car is still moving forward at the same rate as before

B) Michael and Lauren, who identify the new equation as $y = -2^x$ and explain that the new graph indicates the car is now moving in reverse at the same rate as before

C) Matthew and Karen, who identify the new equation as $y = 2^{-x}$ and explain that the new graph indicates that the car is now moving forward more rapidly than before

D) Andy and Joanie, who identify the new equation as $y = 2^{-x}$ and explain that the new graph indicates that the car is no longer moving in any direction

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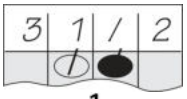
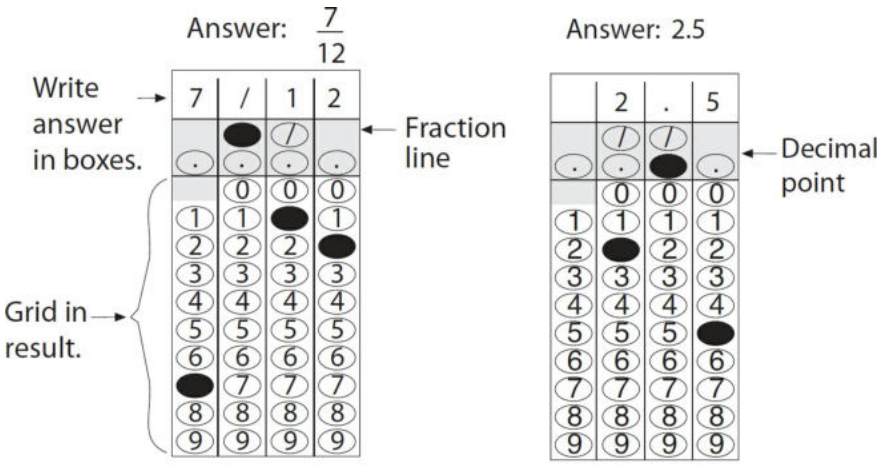
DIRECTIONS

For questions 31–38, solve the problem and enter your answer in the

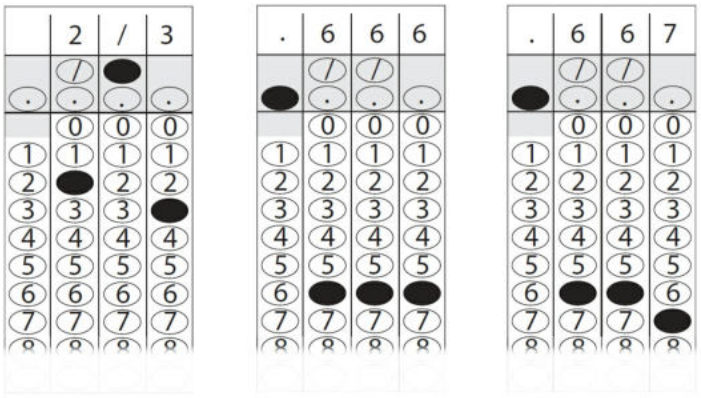
grid, as described below, on the answer sheet.

1. Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately. You will receive credit only if the circles are filled in correctly.
2. Mark no more than one circle in any column.
3. No question has a negative answer.
4. Some problems may have more than one correct answer. In such cases, grid only one answer.
5. **Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or 7/2. (If 

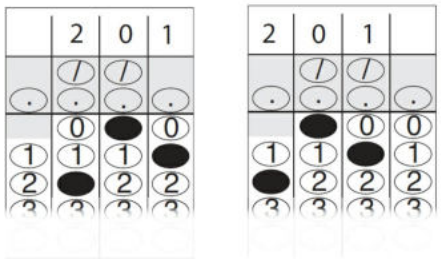
is entered into the grid, it will be interpreted as $\frac{31}{2}$, not as $3\frac{1}{2}$.)
6. **Decimal Answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.



Acceptable ways to grid $\frac{2}{3}$ are:



Answer: 201 – either position is correct



NOTE: You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.

31

What number divided by two is equal to that same number minus

15 ?

32

The number of hours Robert spends in his game room is proportional to the number of hours he spends playing *Call of Destiny IV: Modern Battlefield*. If he plays *Call of Destiny IV* for 6 hours, he will spend 8 hours in his game room. How many hours will Robert spend in his game room if he plays *Call of Destiny IV* for only 3 hours?

33

Twelve Smooth-Glide pens and eight Easy-Write pencils cost exactly $16.00 at Office World. Six Smooth-Glide pens and ten Easy-Write pencils cost $11.00 at the same location. How much will nine Smooth-Glide pens and nine Easy-Write pencils cost at Office World? (Disregard the dollar sign when gridding your answer.)

34

In the equation $3x^2 - 16x = -20$, what is one possible value of x ?

35

Anthropologists determine that new dwellings in an ancient farming community were constructed monthly as modeled by the function $f(x) = 2x + 100$, where x is the current month of the year and $f(x)$ is the number of dwellings constructed by the end of that month. Additionally, they determine that the population grew exponentially each month, thanks to the discovery of more fertile land for farming. This growth is modeled by the equation $g(x) = 3^x$, where $g(x)$ represents the current population at the end of a given month. What is the smallest integer value of x, with 1

representing the end of January and 12 representing the end of December, at which the population surpasses the number of dwellings built?

36

In a school-wide competition held at Saul C. Tigh Memorial High School, Olympiad teams are challenged to come up with different circuits involving both real and imaginary currents. Imaginary currents exist in spots where the electrical energy encounters zero resistance, such as through a coil or wire. Real currents exist only where the electrical energy headed through the circuit encounters resistance, such as when a light bulb "resists" the current and takes up some of the energy carried throughout the circuit.

The members of Team Charlie develop a circuit in which the total current, real and imaginary, can be measured at $50 + 12i$ amps. They then add the current together with the current produced by Team Delta's circuit, $40 - 9i$ amps. Finally, they decide to multiply the resulting current, in amps, by Team Epsilon's total current, $60 - 2i$ amps. What is the final current, in amps, after the entire process is completed?

Questions 37 and 38 refer to the following information.

The chart below shows the population distribution for the 2,400 occupants of the city of Centre Hill.

	Adult Male	Adult Female	Child
% Living in Uptown	9	8	6
% Living in Midtown	22	20	15

% Living in Downtown	21	22	12
% Living in Suburbs	48	50	67

37

If there are an equal number of adults and children, and adult females outnumber adult males by 200, what is the sum of the women living uptown and the children living in the suburbs of Centre Hill?

38

Centre Hill plans to annex the area around a nearby lake. This new part of Centre Hill will be called, appropriately, The Annex. The Annex will add to the current population of Centre Hill. The percent of adult males living in Uptown will decrease to 6% after incorporating The Annex into Centre Hill. If the information from Part 1 holds true for the original four districts of the city of Centre Hill, then how many adult males live in The Annex?

S T O P

If you finish before time is called, you may check your work on this section only.

Do not turn to any other section in the test.