MATHEMATICS TEST—NO CALCULATOR

25 MINUTES, 20 QUESTIONS

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

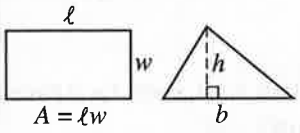
Directions: For questions 1–15, solve each problem and choose the best answer from the given options. Fill in the corresponding circle on your answer document. For questions 16–20, solve the problem and fill in the answer on the answer sheet grid.

Notes:

- Calculators are **NOT PERMITTED** in this section.
- All variables and expressions represent real numbers unless indicated otherwise.
- All figures are drawn to scale unless indicated otherwise.
- All figures are in a plane unless indicated otherwise.
- Unless indicated otherwise, the domain of a given function is the set of all real numbers x for which the function has real values.

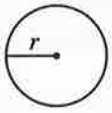
REFERENCE INFORMATION

Area Facts



$A = \ell w$

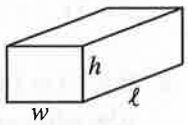
$A = \frac{1}{2}bh$



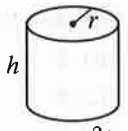
$A = \pi r^2$

$C = 2\pi r$

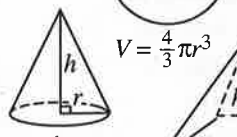
Volume Facts



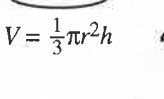
$V = \ell wh$



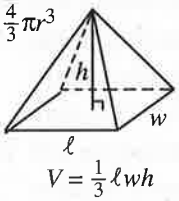
$V = \pi r^2 h$



$V = \frac{4}{3}\pi r^3$

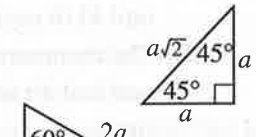


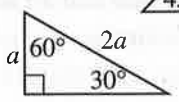
$V = \frac{1}{3}\pi r^2 h$

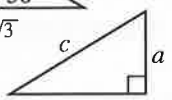


$V = \frac{1}{3}\ell wh$

Triangle Facts







$a^2 + b^2 = c^2$

The arc of a circle contains 360°.
The arc of a circle contains 2π radians.
The sum of the measures of the angles in a triangle is 180°.

GO ON TO THE NEXT PAGE

1. If $x^{-2} = 64$, what is the value of $x^{\frac{1}{3}}$?

   (A) $\frac{1}{8}$

   (B) $\frac{1}{4}$

   (C) $\frac{1}{2}$

   (D) 2

$$C(n) = 110n + 900$$

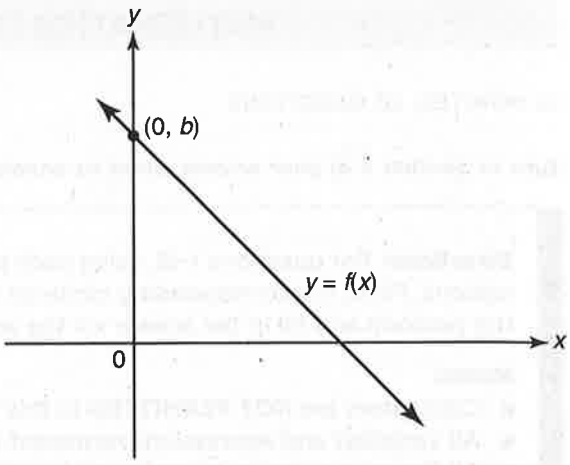
2. The cost of airing a commercial on television, C, is modeled by the function above where n is the number of times the commercial is aired. Based on this model, which statement is true?

   (A) The commercial costs \$0 to produce and \$110 per airing up to \$900.

   (B) The commercial costs \$110 to produce and \$900 each time it is aired.

   (C) The commercial costs \$900 to produce and \$110 each time it is aired.

   (D) The commercial costs \$110 to produce and can air an unlimited number of times.



Note: Figure not drawn to scale.

3. The figure above shows the graph of the linear function $y = f(x)$. If the slope of the line is -2 and $f(3) = 4$, what is the value of b?

   (A) 8

   (B) 9

   (C) 10

   (D) 11

4. If $x - 3$ is 1 less than $y + 3$, then $x + 2$ exceeds y by what amount?

   (A) 4

   (B) 5

   (C) 6

   (D) 7

5. The weights of 5 boxes of screws vary from 2.85 pounds to 3.45 pounds. If w represents the weight, in pounds, of one of these boxes, which of the following must be true?

   (A) $|w - 2.85| \leq 0.3$

   (B) $|w - 3.15| \leq 0.3$

   (C) $|w - 5| \leq 0.3$

   (D) $|w - 0.3| \leq 3.15$

GO ON TO THE NEXT PAGE

6. Mikala exercises in her gym by jogging on the treadmill at an average rate of 4 miles per hour and then pedaling on a stationary bicycle at an average rate of 8 miles per hour. In her workout, she jogs the equivalent of x miles and bicycles the equivalent of y miles. If Mikala works out for at least 45 minutes, which of the following is true?

(A) $\frac{x}{4}+\frac{y}{8}\geq\frac{3}{4}$

(B) $x+\frac{y}{2}\geq\frac{3}{4}$

(C) $4x+8y\geq 45$

(D) $\frac{4}{x}+\frac{8}{y}\geq 45$

7. If $7^k = 100$, what is the value of $7^{\frac{k}{2}+1}$?

(A) 18
(B) 51
(C) 57
(D) 70

$$3y + 6 = 2x$$

$$2y - 3x = 6$$

8. The system of equations above can best be described as having

(A) no solution.
(B) one solution with the graphs intersecting at right angles in the xy-plane.
(C) one solution with the graphs *not* intersecting at right angles in the xy-plane.
(D) infinitely many solutions.

9. Which of the following statements is true about the parabola whose equation in the xy-plane is $y = (2x - 6)(x + 1)$?

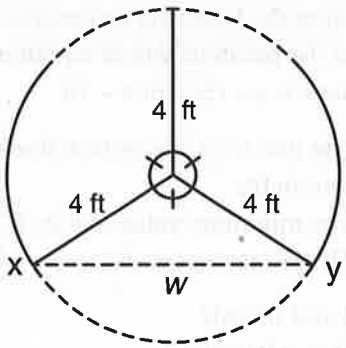
I. The line $x = 2$ is a vertical line of symmetry.
II. The minimum value of y is -8.
III. The y-intercept is -6.

(A) I and III only
(B) II and III only
(C) I and II only
(D) I, II, and III

10. A survey is conducted in which 60% of the individuals who responded indicated that they do *not* support issuing a bond to help raise money to fund the construction of a new sports arena in their city. A statistician calculates the confidence level to be 95% for an interval of 5% below and above the 60% mark. What conclusion is best supported by this information?

(A) 95% of the people surveyed do *not* support the issuing of the bond.
(B) The probability that a person selected at random from the sample does *not* support the issuing of the bond ranges from 0.57 to 0.63.
(C) The probability that a person selected at random from the sample supports the issuing of the bond is 0.4.
(D) If the survey were to be repeated 100 times, 95% of the time the number of people who would *not* support the issuing of the bond would range from 55% to 65% of those surveyed.

GO ON TO THE NEXT PAGE

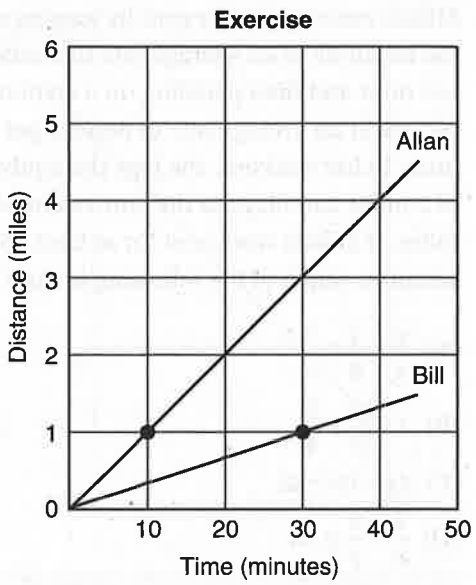


11. The accompanying diagram shows a revolving door with three panels, each of which is 4 feet long. What is the number of feet in the width, w, of the opening between points x and y?

(A) $\frac{4}{\sqrt{3}}$
(B) $4\sqrt{3}$
(C) $8\sqrt{2}$
(D) $8\sqrt{3}$

12. Impedance measures the opposition of an electrical circuit to the flow of electricity. The total impedance in a particular circuit is given by the formula $Z_T = \frac{Z_1 \cdot Z_2}{Z_1 + Z_2}$. What is the total impedance of a circuit, Z_T, if $Z_1 = 1 + 2i$ and $Z_2 = 1 - 2i$? [Note: $i = \sqrt{-1}$]

(A) $-\frac{3}{2}$
(B) $2i$
(C) $\frac{1}{2}$
(D) $\frac{5}{2}$

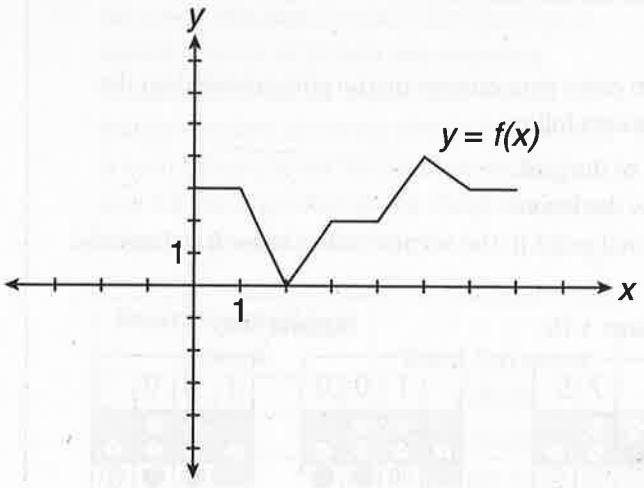


13. At 9:00 A.M. Allan began jogging and Bill began walking at constant rates around the same circular $\frac{1}{4}$ mile track. The figure above compares their times in minutes and corresponding distances in miles. Which statement or statements must be true?

I. Bill's average rate of walking was 2 miles per hour.
II. At 9:10 A.M., Allan had jogged $\frac{3}{5}$ mile more than Bill had walked.
III. At 9:30 A.M., Allan had completed 8 more laps around the track than Bill.

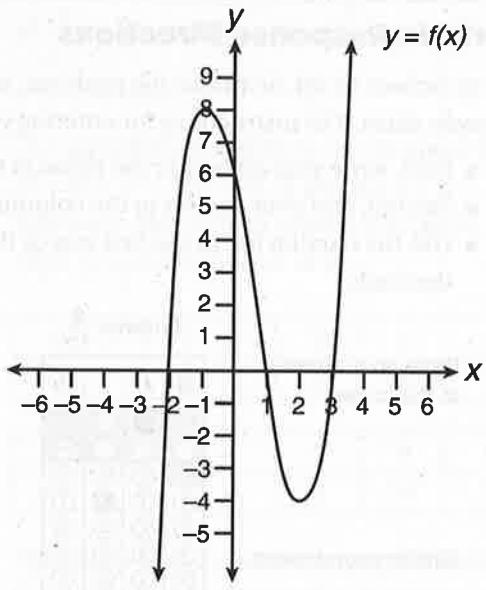
(A) I only
(B) II only
(C) I and II only
(D) I and III only

GO ON TO THE NEXT PAGE



14. The figure above shows part of the graph of function f. If $f(x + 6) = f(x)$ for all values of x, what is the value of $f(23)$?

(A) 0
(B) 2
(C) 3
(D) 4



15. Which function could represent the graph above?

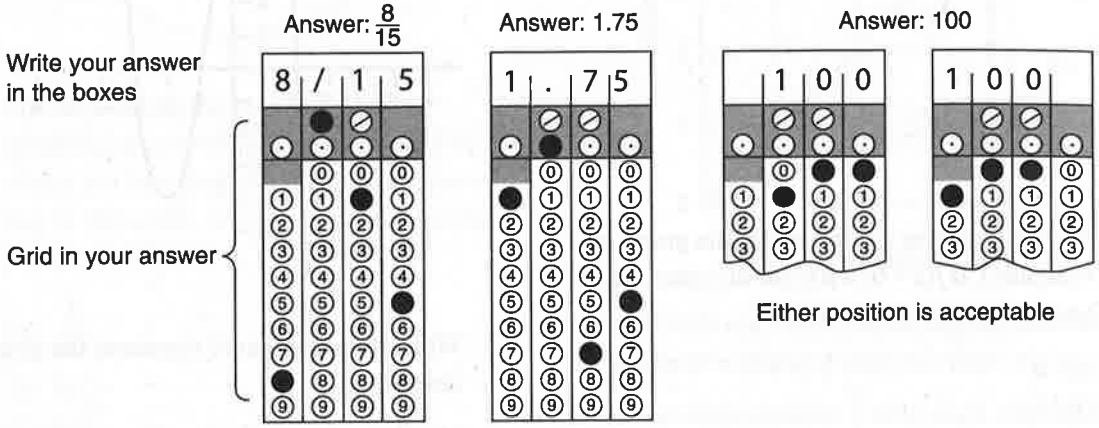
(A) $f(x) = (x - 6)(x^2 - 4x + 3)$
(B) $f(x) = (x - 3)(x^2 + x - 2)$
(C) $f(x) = (x - 1)(x^2 - 5x - 6)$
(D) $f(x) = (x + 2)(x^2 - 4x - 12)$

GO ON TO THE NEXT PAGE

Grid-in Response Directions

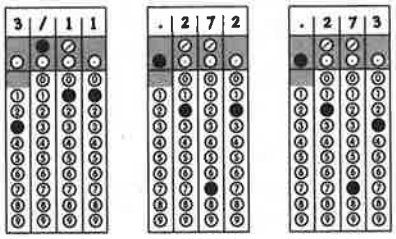
In questions 16–20, first solve the problem, and then enter your answer on the grid provided on the answer sheet. The instructions for entering your answers follow.

- First, write your answer in the boxes at the top of the grid.
- Second, grid your answer in the columns below the boxes.
- Use the fraction bar in the first row or the decimal point in the second row to enter fractions and decimals.



- Grid only one space in each column.
- Entering the answer in the boxes is recommended as an aid in gridding but is not required.
- The machine scoring your exam can read only what you grid, so you **must grid-in your answers correctly to get credit**.
- If a question has more than one correct answer, grid-in only one of them.
- The grid does not have a minus sign; so no answer can be negative.
- A mixed number *must* be converted to an improper fraction or a decimal before it is gridded. Enter $1\frac{1}{4}$ as 5/4 or 1.25; the machine will interpret 11/4 as $\frac{11}{4}$ and mark it wrong.
- **All decimals must be entered as accurately as possible.** Here are three acceptable ways of gridding

$$\frac{3}{11} = 0.272727\ldots$$



- Note that rounding to .273 is acceptable because you are using the full grid, but you would receive **no credit** for .3 or .27, because they are less accurate.

GO ON TO THE NEXT PAGE

16. On a test that has a normal distribution of scores, a score of 59 falls two standard deviations below the mean, and a score of 74 is one standard deviation above the mean. If x is an integer score that lies between 2.5 and 3.0 standard deviations above the mean, what is a possible value of x?

Hours Worked in a Week	Total Payment
8	$108.00
23	$310.50
17	$229.50

17. Andrew keeps track of his paychecks over the past several weeks, recording the number of hours he worked and his total payments as indicated in the table above. He wants to model the relationship between h hours worked and total payments p, in dollars, using an equation of the form $p = kh$ where k is a constant. Based on the data in the table, what value of k should he use?

18. If $\frac{-3}{x} + 4 \leq -11$ and $x > 0$, what is the *greatest* possible value for x?

19. The equation of a circle in the xy-plane is $x^2 + 4x + y^2 - 10y = 20$. If the line $x = k$ intersects the circle in exactly one point, what is a possible value of k?

x	1	2	3	4	5
$f(x)$	3	4	5	6	7

x	3	4	5	6	8
$g(x)$	4	6	8	10	7

20. The tables above give the values of functions f and g for several values of x. If $g(f(b)) = 8$, what is the value of b?

GO ON TO THE NEXT PAGE

MATHEMATICS TEST—CALCULATOR

55 MINUTES, 38 QUESTIONS

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

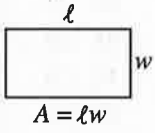
Directions: For questions 1–30, solve each problem and choose the best answer from the given options. Fill in the corresponding circle on your answer document. For questions 31–38, solve the problem and fill in the answer on the answer sheet grid.

Notes:

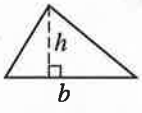
- Calculators **ARE PERMITTED** in this section.
- All variables and expressions represent real numbers unless indicated otherwise.
- All figures are drawn to scale unless indicated otherwise.
- All figures are in a plane unless indicated otherwise.
- Unless indicated otherwise, the domain of a given function is the set of all real numbers x for which the function has real values.

REFERENCE INFORMATION

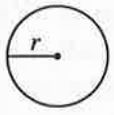
Area Facts



$A = \ell w$



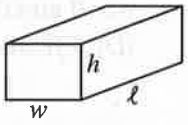
$A = \frac{1}{2}bh$



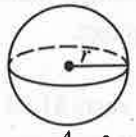
$A = \pi r^2$

$C = 2\pi r$

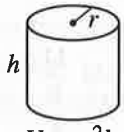
Volume Facts



$V = \ell wh$

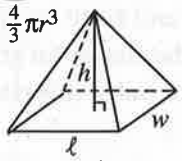


$V = \frac{4}{3}\pi r^3$



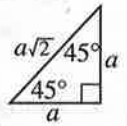
$V = \frac{1}{3}\pi r^2 h$

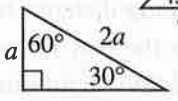
$V = \pi r^2 h$

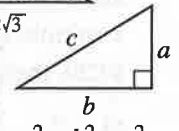


$V = \frac{1}{3}\ell wh$

Triangle Facts







$a^2 + b^2 = c^2$

The arc of a circle contains 360°.

The arc of a circle contains 2π radians.

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

GO ON TO THE NEXT PAGE

1. If $(2b - 7)(2b + 7) = 1$, what is the value of $2b^2$?

   (A) 15
   (B) 25
   (C) 32
   (D) 50

2. The number of donation pledges, p, made to a charity d days after the charity began a campaign for donations can be approximated by the equation $p = 117 + 32d$. What is the best interpretation of the number 32 in this equation?

   (A) The number of donation pledges received before the campaign for donations started.
   (B) The total number of donation pledges received during the campaign.
   (C) The number of donation pledges received each day of the campaign.
   (D) The number of donation pledges made on the last day of the campaign.

3. A long-distance telephone call costs \$1.80 for the first 3 minutes and \$0.40 for each additional minute. If the charge for an x-minute long-distance call at this rate was \$4.20, then $x =$

   (A) 7
   (B) 8
   (C) 9
   (D) 10

	Type of College				
Gender	**4-Year Same State**	**2-Year Same State**	**4-Year Out-of-State**	**None**	**Total**
Male	64	26	22	7	119
Female	41	19	15	6	81
Total	105	45	37	13	200

4. Based on the data in the table above, which of the following statements must be true?

   I. For every 3 men who applied to a same state college, 2 women applied to a same state college.
   II. If a female student is selected at random, the probability that she did not apply to a 2-year college is greater than 75%.
   III. Of the students who applied to a same state college, 40% were females.

   (A) I and II only
   (B) I and III only
   (C) II and III only
   (D) I, II, and III

5. If $3x - 1 = x - \frac{7}{9}$, what is the value of $2x + 1$?

   (A) $\frac{11}{9}$
   (B) $\frac{4}{3}$
   (C) $\frac{25}{9}$
   (D) $\frac{10}{3}$

GO ON TO THE NEXT PAGE

6. The price of gas increased by 12% per gallon sometime during the first fiscal quarter and then decreased by 25% per gallon by the end of the second fiscal quarter. The final price of gas per gallon at the end of the second quarter decreased by what percent compared to the starting price at the beginning of the first fiscal quarter?

(A) 13%
(B) 16%
(C) 18.5%
(D) 20%

7. A population, $T(x)$, of wild turkeys, in a certain rural area is represented by the function $T(x) = 17(1.15)^{2x}$, where x is the number of years since 2010. According to this model, how many more turkeys are in the population for the year 2015 than were available for 2010?

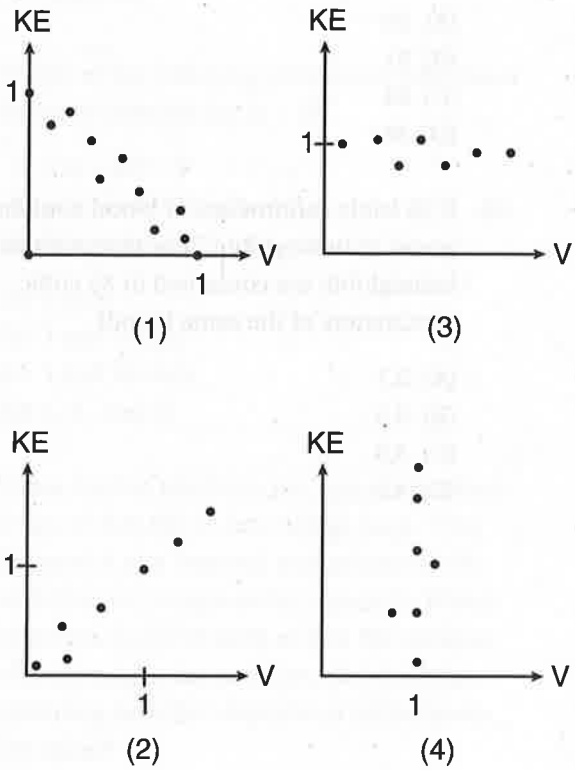
(A) 46
(B) 49
(C) 51
(D) 68

8. If an equation of a parabola in the xy-plane is $f(x) = -(x + 2)^2 - 1$, what are the coordinates of the vertex of the parabola defined by $g(x) = f(x - 2)$?

(A) (0, –1)
(B) (4, –1)
(C) (–2, –3)
(D) (–2, 1)

9. A city planner estimates that due to lower birth rates and changing demographics, enrollment in city's public schools will decrease at the rate of 16% per year for the next 5 years. If the city planner uses the equation $P = P_0(r)^n$ to estimate the school enrollment, P, after n years, what value should be used for the value of r?

(A) 1.16
(B) 0.84
(C) 0.80
(D) 0.16



10. In the physics lab, a student determined the kinetic energy, *KE*, of an object at various velocities, *V*, and found a strong positive association between *KE* and *V*. Which of the above scatterplots show this relationship?

(A) Graph (1)
(B) Graph (2)
(C) Graph (3)
(D) Graph (4)

GO ON TO THE NEXT PAGE

11. The average (arithmetic mean) of a, b, c, and d is 3 times the median. If $0 < a < b < c < d$, what is a in terms of b, c, and d?

(A) $5(b + c) - d$
(B) $3(b + c) + d$
(C) $5(b + c) + d$
(D) $3(b + c) - d$

12. A person spent a total of \$720 for dress shirts and sport shirts, each priced at \$35 and \$20, respectively. If the person purchased two \$35 dress shirts for each \$20 sport shirt, what is the total number of shirts purchased?

(A) 16
(B) 21
(C) 24
(D) 28

13. If 10 cubic centimeters of blood contains 1.2 grams of hemoglobin, how many grams of hemoglobin are contained in 35 cubic centimeters of the same blood?

(A) 2.7
(B) 3.0
(C) 3.6
(D) 4.2

Players' Salaries (in millions of dollars)					
0.5	0.5	0.6	0.7	0.75	0.8
1.0	1.0	1.1	1.25	1.3	1.4
1.6	1.8	2.5	3.7	3.8	4.0
4.2	4.6	5.1	6.0	6.3	7.2
Total = 61.7 Million					

14. The table above shows the annual salaries for the 24 members of a professional sports team in terms of millions of dollars. If the team signs an additional player to a contract worth 7.3 million dollars per year, which statement about the median and mean is true?

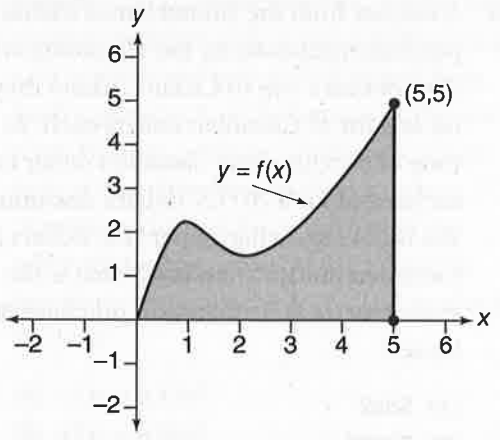
(A) The median and mean will increase by the same amount.
(B) The median will increase by a greater amount.
(C) The mean will increase by a greater amount.
(D) Neither will change.

$$m = \frac{M}{\sqrt{1 - \frac{v^2}{c^2}}}$$

15. The equation above describes, according to Einstein's theory of relativity, how the mass of an object increases with velocity where m is the mass of a moving object, M is the mass the object when it is not moving, v is the velocity of the object relative to a stationary observer, and c is the speed of light. Which of the following expresses v in terms of m, M, and c?

(A) $c\sqrt{1 - \left(\frac{M}{m}\right)^2}$
(B) $c\sqrt{1 + \left(\frac{M}{m}\right)^2}$
(C) $\sqrt{c^2 + \left(\frac{M}{m}\right)^2}$
(D) $\sqrt{\left(c + \frac{M}{m}\right)^2 - 1}$

GO ON TO THE NEXT PAGE



16. Function f is defined for $0 \le x \le 5$, as shown in the accompanying figure. If (r, s) is a point inside the shaded region bounded by the x-axis, the line $x = 5$, and $y = f(x)$, which statement must be true?

I. $r + s \le 5$
II. $s \le f(r)$
III. $r \ne s$

(A) I only
(B) II only
(C) III only
(D) I and III only

17. Natalie is planning a school celebration and wants to have live music and food for everyone who attends. She has found a band that will charge her \$750 and a caterer who will provide snacks and drinks for \$2.25 per person. If her goal is to keep the average cost per person between \$2.75 and \$3.25, how many people, p, must attend?

(A) $225 < p < 325$
(B) $325 < p < 750$
(C) $500 < p < 1{,}000$
(D) $750 < p < 1{,}500$

18. If $p(x)$ is a polynomial function with $p(3) = 0$, which statement must be true?

(A) $p(x)$ is divisible by 3.
(B) $x - 3$ is a factor of $p(x)$.
(C) $p(x)$ is divisible by $x + 3$.
(D) The highest power of x in $p(x)$ is 3.

19. A group of p people plan to contribute equally to the purchase of a gift that costs d dollars. If n of the p people decide not to contribute, by what amount in dollars does the contribution needed from each of the remaining people increase?

(A) $\frac{d}{p-n}$
(B) $\frac{pd}{p-n}$
(C) $\frac{pd}{n(p-n)}$
(D) $\frac{nd}{p(p-n)}$

20. Which of the following statements includes a function divisible by $2x + 1$?

I. $f(x) = 8x^2 - 2$
II. $g(x) = 2x^2 - 9x + 4$
III. $h(x) = 4x^3 + 2x^2 - 6x - 3$

(A) I only
(B) I and II only
(C) I and III only
(D) I, II, and III

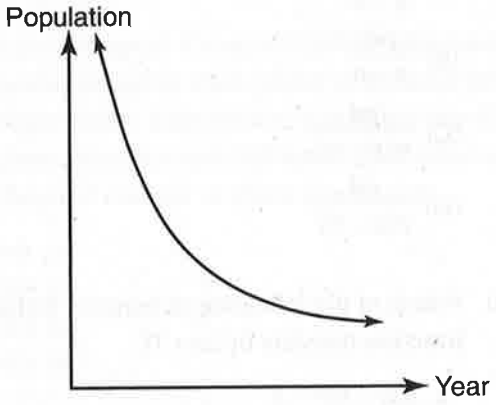
21. When Sophie was born her parents invested a sum of \$20,000 in her college fund. They invested it at a nominal annual rate of 5% with interest compounded quarterly. Which equation could be used to find the number of dollars, y, in the account, after 18 years assuming no other deposits or withdrawals are made?

(A) $y = 20{,}000(1.05)^{18}$
(B) $y = 20{,}000(0.21)^{18\times4}$
(C) $y = 20{,}000(1.0125)^{\frac{18}{4}}$
(D) $y = 20{,}000(1.0125)^{18\times4}$

GO ON TO THE NEXT PAGE

22. If function g is defined by $g(x) = x - 1$ and $2g(c) = 10$, what is the value of $g(3c)$?

(A) 6
(B) 9
(C) 15
(D) 17



23. The graph above shows how the size of a country's population has changed over time. Which of the following are the most likely underlying reasons for the type of graph shown?

(A) A moderate increase in annual birthrates and a liberal immigration policy.
(B) A large increase in annual birthrates and increased life expectancy rates.
(C) A liberal immigration policy and a thriving economy with increased job opportunities.
(D) The spread of a highly contagious fatal disease and a history of political strife and unrest.

24. A teacher from the United States wishes to purchase textbooks for her classroom when she goes on a trip to Canada, where they are on sale for 45 Canadian dollars each. At the time of purchase one Canadian dollar can be exchanged for 0.76 U.S. dollars. Assuming she is able to exchange her U.S. dollars for Canadian dollars at no cost, what is the exact cost, in U.S. dollars, to purchase 30 books?

(A) $849
(B) $1026
(C) $1350
(D) $1776

Age (years)	Average Pupil Diameter (mm)
20	4.7
40	3.9
60	3.1
80	2.3

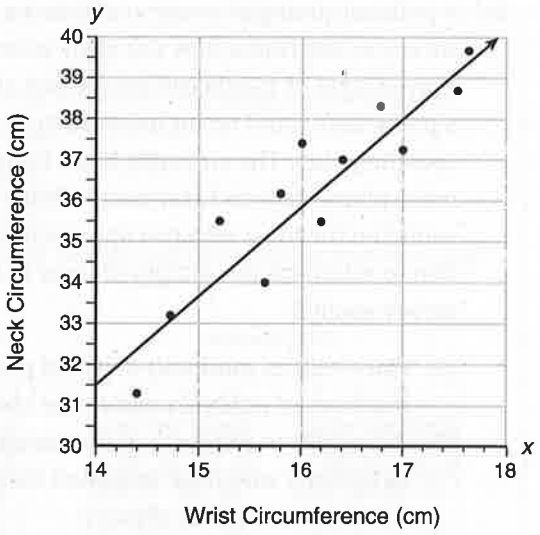
25. The table above shows the average diameter, in millimeters, of a pupil in a person's eye as she or he grows older from age 20 to age 80. Which equation expresses the relationship between pupil diameter, p, and age, a?

(A) $p = -0.04a + 5.5$
(B) $p = 0.04a + 3.9$
(C) $p = -0.04a + 34.3$
(D) $p = 0.235a$

GO ON TO THE NEXT PAGE

26. A small, open-top packing box, similar to a shoebox without a lid, is three times as long as it is wide, and half as high as it is long. Each square inch of the bottom of the box costs \$0.08 to produce, while each square inch of any side costs \$0.03 to produce. If x represents the number of inches in the width of the box, which of the following functions represent the cost, C, of producing the box?

(A) $C(x) = 0.42x^2$
(B) $C(x) = 0.60x^2$
(C) $C(x) = 0.72x^2$
(D) $C(x) = 0.96x^2$



27. The scatterplot above summarizes the wrist and neck circumference measurements, in centimeters, for 12 people. The line of best fit is drawn. What proportion of the 12 measurements satisfy the inequality $|o - p| \leq d$ where o is the observed measurement, p is corresponding measurement predicted by the line of best fit, and d is 0.5 cm?

(A) $\frac{1}{6}$
(B) $\frac{1}{4}$
(C) $\frac{1}{3}$
(D) $\frac{1}{2}$

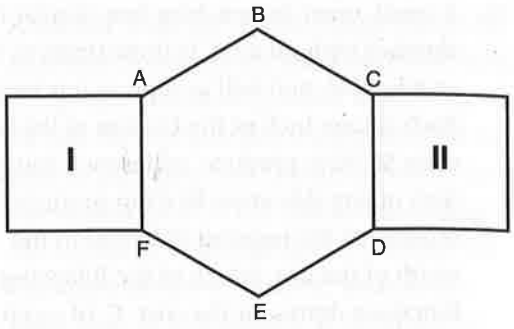
28. An arch is built so that it has the shape of a parabola with the equation $y = -3x^2 + 24x$ where y represents the height of the arch in meters. How many times greater is the maximum height of the arch than the width of the arch at its base?

(A) 4
(B) 6
(C) 8
(D) 12

GO ON TO THE NEXT PAGE

29. A political strategist wants to conduct a survey to determine how the likely voters in a given state of 10,000,000 people feel about a politician's stand on an infrastructure spending plan. The strategist has a budget to make phone calls to 1,000 people. What would be the most effective approach for him to minimize the margin of error in his survey results?

(A) Place calls to randomly selected phone numbers of residents within the state.
(B) Place calls to residents of the state's largest city who have indicated they are members of a political party.
(C) Place calls to rural residents of the state who have demonstrated political activism.
(D) Place calls to places of business so that people can more likely be reached during the work day.



30. A metal belt buckle is being designed so that it has the shape of a regular hexagon in the center and squares at opposite ends as shown in the figure above where *ABCDEF* is a regular hexagon and figures I and II are squares. The hexagon will be gold plated and the two squares silver plated. The length of a side of each square is 6 centimeters. Which of the following is closest to the percent of the total surface area of the buckle that will be silver plated?

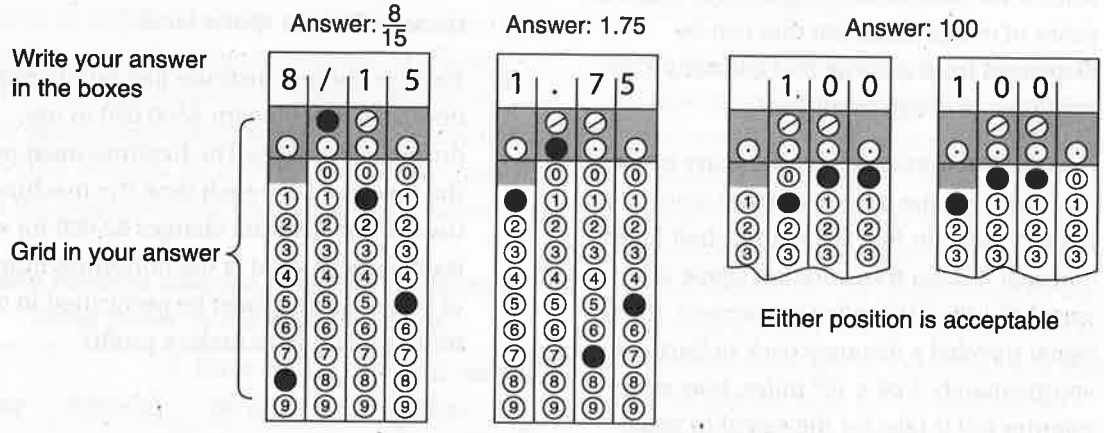
(A) 41
(B) 44
(C) 47
(D) 49

GO ON TO THE NEXT PAGE

Grid-in Response Directions

In questions 31–38, first solve the problem, and then enter your answer on the grid provided on the answer sheet. The instructions for entering your answers follow.

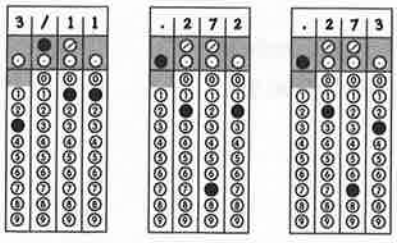
- First, write your answer in the boxes at the top of the grid.
- Second, grid your answer in the columns below the boxes.
- Use the fraction bar in the first row or the decimal point in the second row to enter fractions and decimals.



- Grid only one space in each column.
- Entering the answer in the boxes is recommended as an aid in gridding but is not required.
- The machine scoring your exam can read only what you grid, so you **must grid-in your answers correctly to get credit**.
- If a question has more than one correct answer, grid-in only one of them.
- The grid does not have a minus sign; so no answer can be negative.
- A mixed number *must* be converted to an improper fraction or a decimal before it is gridded.

  Enter $1\frac{1}{4}$ as $\frac{5}{4}$ or 1.25; the machine will interpret 11/4 as $\frac{11}{4}$ and mark it wrong.
- **All decimals must be entered as accurately as possible.** Here are three acceptable ways of gridding

$$\frac{3}{11} = 0.272727\ldots$$



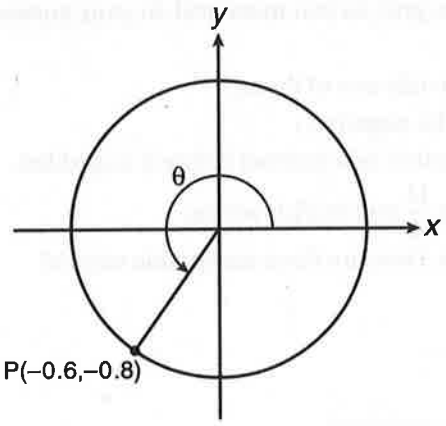
- Note that rounding to .273 is acceptable because you are using the full grid, but you would receive **no credit** for .3 or .27, because they are less accurate.

GO ON TO THE NEXT PAGE

3 teaspoons = 1 tablespoon
16 tablespoons = 1 cup
1 cup = 8 ounces
29.6 milliliters = 1 ounce

31. Using the conversion relationships above, what is the maximum number of 2-teaspoon doses of cough medicine that can be dispensed from a bottle that contains 225 milliliters of cough medicine?

32. NASA's *New Horizons* interplanetary probe has been making its way to Pluto since January 2006. In July 2015, it reached Pluto and sent a radio transmission signal at a speed of 1.86×10^5 miles per second. If the signal traveled a distance back to Earth of approximately 3.06×10^9 miles, how many minutes did it take for the signal to reach Earth, *correct to the nearest 5 minutes*?



33. If $P(-0.6, -0.8)$ is a point on the unit circle in the figure above, what is the *exact* value of $\tan\theta + \sin\theta$?

34. If $a + 2b = 13$ and $8a + b = 20$, what is value of $3a + b$?

35. An opinion poll survey was conducted in which 120 sports fans and 75 non-sports fans participated. If the sample size was increased by 65 non-sports fans, how many sports fans should be added so that $\frac{3}{5}$ of those polled are sports fans?

36. The Eye Surgery Institute just purchased a new laser machine for $500,000 to use during eye surgery. The Institute must pay the inventor $550 each time the machine is used. If the Institute charges $2,000 for each laser surgery, what is the *minimum* number of surgeries that must be performed in order for the Institute to make a profit?

GO ON TO THE NEXT PAGE

Questions 37 and 38 refer to the following information

The U.S. Federal Government tracks the Consumer Price Index (CPI)—a comprehensive standard used to estimate the average price change for the typical goods and services purchased by consumers. This measure gives economists a useful way to estimate the rates of inflation or deflation, which reflects the respective general increase or decrease of prices of goods and service in the economy. The accompanying tables summarizes the changes in the CPI for the years 2005 through 2014, which can be assumed to be the corresponding percent rates of inflation.

Yearly Percent Change in Urban Consumer Price Index in the United States

Year	Annual	First Half of Year	Second Half of Year
2005	3.4	3.0	3.8
2006	3.2	3.8	2.6
2007	2.8	2.5	3.1
2008	3.8	4.2	3.4
2009	–0.4	–0.6	–0.1
2010	1.6	2.1	1.2
2011	3.2	2.8	3.5
2012	2.1	2.3	1.8
2013	1.5	1.5	1.4
2014	1.6	1.7	1.5

Source: United States Bureau of Labor and Statistics

37. An economist purchases a kitchen appliance at the beginning of 2014 for $3,000. The salesperson advises him that the only changes in price for the appliance since the beginning of 2012 have been due to inflation. Assuming that is the case, what would have been the purchase price for the appliance at the beginning of 2012 *correct to the nearest dollar*?

38. At the beginning of 2015, a retired person is shopping for a retirement annuity, which is an investment policy that will give him fixed monthly payments for the rest of his life. He would like the amount of his annuity payments to more than keep up with the rate of inflation. He decides that he will choose a policy that issues payments that increase annually at a rate that is at least 1.5% greater than the *average* yearly compounded rate of inflation calculated from the period that extends from the second half of 2005 through the first half of 2008. What should be the minimum annual rate of increase in his monthly annuity payments, *correct to the nearest tenth*?

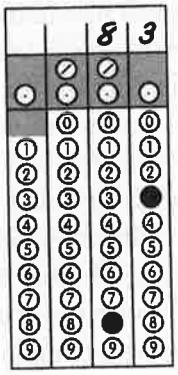
GO ON TO THE NEXT PAGE

Answer Key
For Practice Test 1

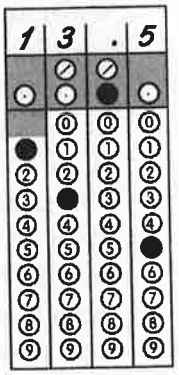
Math (No Calculator)

1. **C**
2. **C**
3. **C**
4. **D**
5. **B**
6. **A**
7. **D**
8. **C**
9. **B**
10. **D**
11. **B**
12. **D**
13. **D**
14. **D**
15. **B**

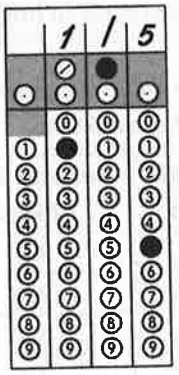
16.



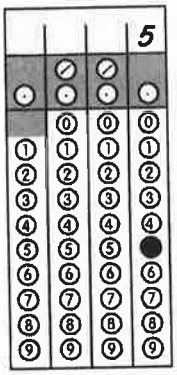
17.



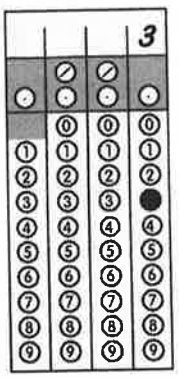
18.



19.



20.

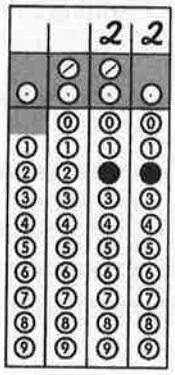


Answer Key For Practice Test 1

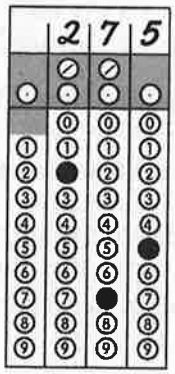
Math (Calculator)

1.	**B**	9.	**B**	17.	**D**	25.	**A**
2.	**C**	10.	**B**	18.	**B**	26.	**B**
3.	**C**	11.	**A**	19.	**D**	27.	**C**
4.	**D**	12.	**C**	20.	**C**	28.	**B**
5.	**A**	13.	**D**	21.	**D**	29.	**A**
6.	**B**	14.	**C**	22.	**D**	30.	**B**
7.	**C**	15.	**A**	23.	**D**		
8.	**A**	16.	**B**	24.	**B**		

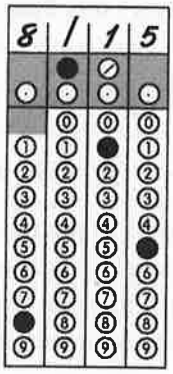
31.



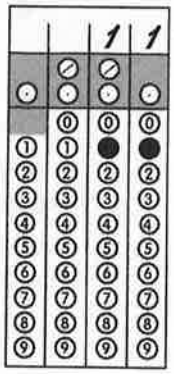
32.



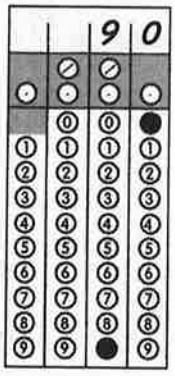
33.



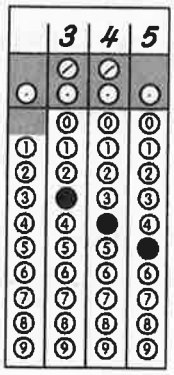
34.



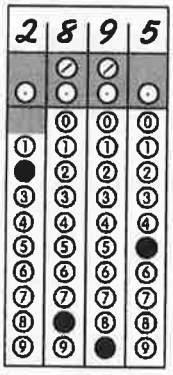
35.



36.



37.



38.