

Mathematics Test Explanations

1. The correct answer is C. To answer this question, solve the first equation for x :

$$x + 3 = n$$

$$x = n - 3$$

Next, substitute $n - 3$ for x in the second equation:

$$2(n - 3) + 6$$

$$= 2n - 6 + 6$$

$$= 2n$$

2. The correct answer is G. This question tests your ability to recognize and apply the distributive property. According to the distributive property, for any numbers a , b , and c , $c(a + b) = ca + cb$. If you distribute the a value, you get $ab - a2c$, or $ab - 2ac$.
3. The correct answer is A. The first step in solving this problem is to determine what the difference is between the consecutive numbers. You are given 2 consecutive numbers, 3 and 10, which differ by 7. Think of the numbers as being on a number line. Since the first number must be 7 units from the number 3, and the numbers are in ascending order, the first number must be 7 units to the left of 3 on the number line. Count backwards 7 units from 3 and you will arrive at -4 . Since only answer choice A includes -4 in the first blank, answer choice A must be correct.
4. The correct answer is G. To find the average price that Diane paid per DVD, you must divide the total dollar amount that Diane paid for the DVDs by the number of DVDs that Diane bought. The total dollar amount that Diane paid for the DVDs can be set up like this:

1 DVD for \$20.00 + 5 DVDs for \$8.49 each

$$\$20.00 + 5(\$8.49)$$

You know from information in the problem that Diane purchased a total of 6 DVDs. Divide the total dollar amount that she paid, $\$20.00 + 5(\$8.49)$, by 6:

$$\frac{\$20.00 + 5(\$8.49)}{6}$$

5. The correct answer is C. One way to solve this problem is to convert feet into inches. There are 12 inches in 1 foot, so Roberto needs $(18 \times 12) + 3$, or 219 inches of lumber. He currently has $(10 \times 12) + 6$, or 126 inches of lumber. Therefore, he needs $219 - 126$, or 93 inches of

lumber. $93 \div 12 = 7.75$, which is equivalent to $7\frac{3}{4}$ feet.

6. The correct answer is J. The first step in solving this problem is to determine the value of x . You know that $3^2 = 9$, and $9^2 = 81$, so 3^4 must equal 81. Therefore, $x = 4$. Now, substitute 4 for x in the second equation and solve: $2^4 = 16$ and $16(2) = 32$.
- In addition, because you know that $3^2 = 9$, you know that x must be greater than 2, and you can eliminate answer choices F and G. This process of elimination will help you to narrow down the answer choices if you are not sure how to arrive at the correct answer.
7. The correct answer is B. According to the problem, the fence completely encloses the garden. This means that it goes all the way around the garden. Therefore, the length of the fence must be equal to the perimeter of the garden. One formula for calculating the perimeter of a rectangle is $2l + 2w$. Plug the numbers from the problem into this formula:

$$2(60) + 2(25)$$

$$= 120 + 50$$

$$= 170$$

8. The correct answer is G. Simply plug -6 in for x wherever x appears in the equation and solve the equation. Don't forget to keep track of the negative signs!

$$-(-6^2) - 2(-6) + 21$$

$$= -(36) - (-12) + 21$$

$$= -36 + 12 + 21$$

$$= -3$$

9. The correct answer is D. Substitute the value for the radius given in the problem, 2, into the equation and solve:

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

$$V = \frac{4}{3}\pi(2)^3$$

$$V = \frac{4}{3}\pi 8$$

$$V = (8)\left(\frac{4}{3}\right)\pi$$

$$V = \frac{32}{3}\pi$$

$$V = 10.67\pi$$

You also need to know that π is approximately equal to 3.14. Multiply 10.67 by 3.14 and round: $10.67 \times 3.14 = 33.5$, which means that the volume, to the nearest cubic inch, is 34, answer choice D.

10. The correct answer is K. This problem tests your ability to recognize and apply the distributive property; however, you must work backward. According to the distributive property, for any numbers a , b , and c , $c(a+b) = ca + cb$. In this problem, since 2 is the common factor for both 4 and 2, you can "factor out" 2. Eliminate answer choices F and J, which have incorrectly factored out 4. Once you factor out 2, the expression will look like this: $2(2c-d)$.

11. The correct answer is D. The first step in solving this problem is to calculate the amount of money that you earn each day for mowing lawns:

$$\begin{aligned} & \$95.00 \text{ (total amount earned per day)} \\ & - \$20.00 \text{ (fixed amount earned per day)} \\ & = \$75.00 \text{ (amount earned for lawns mowed).} \end{aligned}$$

Next, calculate the amount that you earn per lawn that you mow:

$$\begin{aligned} & \$75.00 \text{ (amount earned for lawns mowed)} \div 5 \\ & \text{(number of lawns mowed)} = \$15.00 \text{ (amount} \\ & \text{earned per lawn mowed).} \end{aligned}$$

Now determine the amount that you will earn today for mowing the extra lawns:

$$\begin{aligned} & 2 \text{ (additional number of lawns mowed)} \times \\ & \$15.00 \text{ (amount earned per lawn mowed)} \\ & = \$30.00 \text{ (additional income for the day).} \end{aligned}$$

Finally, add this amount to your current daily earnings:

$$\$95.00 + \$30.00 = \$125.00$$

12. The correct answer is G. In the expression $4x + 2x + y - x$, $4x$, $2x$, and $-x$ are like terms and can be added together:

$$4x + 2x + (-x) = 5x$$

The term with x and the term with y cannot be added because they contain different variables, so the simplified form of $4x + 2x + y - x$ is $5x + y$.

13. The correct answer is E. The slope-intercept form of the equation of a line is $y = mx + b$. If y equals 0, and the slope of the line is 1, then $x = 3$ could be the equation of a line, so eliminate answer choice A. Answer choice E is actually the equation for a parabola, which is NOT a line, so answer choice E is correct.

14. The correct answer is G. To solve this problem, first recall that the total measure of the interior angles of a triangle is 180° . Also, because the 2 sides of the triangle originating from the center of the circle are each equivalent to the radius of

the circle, the sides are congruent. This means that the angles opposite those sides are also congruent. You can set up an equation like the one shown next to solve for b :

$$a + 2b = 180$$

$$40 + 2b = 180$$

$$2b = 140$$

$$b = 70$$

15. The correct answer is D. To solve this equation, set each element of the equations in the answer choices equal to 0 and solve for x . When you get the solutions 5 and 6, that will be the correct answer.

$$(x-6)=0; x=6 \text{ and } (x+5)=0; x=-5; \text{ eliminate answer choice A.}$$

$$(x+6)=0; x=-6 \text{ and } (x+5)=0; x=-5; \text{ eliminate answer choice B.}$$

$$(x+6)=0; x=-6 \text{ and } (x-5)=0; x=5; \text{ eliminate answer choice C.}$$

$$(x-5)=0; x=5 \text{ and } (x-6)=0; x=6; \text{ answer choice D is correct.}$$

16. The correct answer is K. To solve this problem, substitute $1/2$ for x wherever it appears in the equation:

$$\frac{1}{\frac{1}{2}} + \frac{1}{\frac{1}{2}} - 1$$

Remember that $1 \div 1/2$ is equivalent to 1×2 .

$$= 2 + 2 - 1$$

$$= 3$$

17. The correct answer is E. The diagonals cross at the midpoint of line MO , which means that point O is as far away from the point $(5, -1)$ as M is. Starting with the x coordinates, $5 - (-1) = 6$, the distance from the midpoint to M on the x -axis. The y coordinates are $-1 - (-4) = 3$, the distance from the midpoint to M on the y -axis. The coordinates of point O , then, is $x = 5 + 6$, or 11 and $y = -1 + 3$, or 2. Point O is located at $(11, 2)$.

18. The correct answer is G. The first step in solving this problem is to calculate the amount of money Tony's friend will donate for the first 25 miles that Tony runs:

$$25 \text{ miles} \times \$0.09 = \$2.25$$

Next, calculate the amount of money Tony's friend will donate for the remaining miles:

$$63 \text{ miles (Tony's goal)} - 25 \text{ miles} = 38 \text{ miles}$$

$$38 \text{ miles} \times \$0.07 = \$2.66$$

Now, add the 2 amounts together to get the total:

$$\$2.25 + \$2.66 = \$4.91$$

19. The correct answer is D. The only instance in which the absolute value of x could possibly be greater than the absolute value of y is when x is not equal to y , answer choice D. If $x = y$, then $|x|$ cannot be greater than $|y|$.

20. The correct answer is G. An expression is undefined when the denominator equals 0. Set the denominator equal to 0 and solve for x :

$$100 - 4x^2 = 0$$

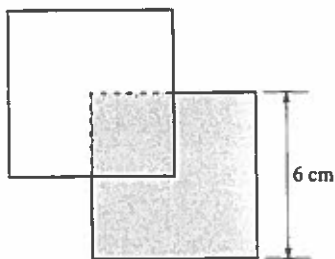
$$100 = 4x^2$$

$$25 = x^2$$

$$5 = x$$

21. The correct answer is C. The slope-intercept form is expressed as $y = mx + b$. The equation given is $-3x + y + 8 = 0$. Isolate y on the left side of the equation: $y = 3x - 8$.

22. The correct answer is H. The best approach to this problem is to extend the sides of the shaded square into the nonshaded square, as shown below:



By doing this you will see that the shaded region is $\frac{3}{4}$ of one of the squares. Since the squares have the same dimensions, calculate the area of the shaded square: Area of a square = side². Each side is equal to 6 centimeters, so the area is 6², or 36 square centimeters. Multiply the total area of the square, 36, by $\frac{3}{4}$ to get the area of the shaded region: $36 \cdot \frac{3}{4} = \frac{108}{4}$, which is 27, answer

choice H. Once you determined that the shaded region was $\frac{3}{4}$ of the total area, 36, you could have eliminated answer choices F and G as being too small, and answer choices J and K as being too big, leaving you with answer choice H.

23. The correct answer is B. Similar triangles have the same shape and the same proportions. The perimeter of the first triangle is $3 + 4 + 5$, or 12 inches. You are given that a similar triangle has a perimeter of 36, which is 3 times the perimeter of the first triangle. Therefore, each side in the second triangle must be 3 times the length of the corresponding side in the first triangle. Since the shortest side of the first triangle is 3 inches, the shortest side of the second triangle must be 3×3 , or 9 inches.

24. The correct answer is K. This first step in solving this problem is to simplify the equation by dividing both sides by 4:

$$4(a + b)(a - b) = 40$$

$$(a + b)(a - b) = 10.$$

Next, substitute 20 for $a - b$ and solve for $a + b$:

$$(a + b)20 = 10$$

$$a + b = \frac{10}{20} = \frac{1}{2}$$

25. The correct answer is A. To solve this problem, simply substitute the given values into the equation, as follows:

$$p(x) = 17x - (10x + c)$$

$$1,900 = 7x - c$$

$$1,900 = 7 \times 300 - c$$

$$1,900 = 2,100 - c$$

$$c = 200$$

26. The correct answer is G. When exponents are raised to an exponential power, the rules state that you must multiply the exponents by the power to which they are raised. In this problem, x is raised to the $(7a - 2)$ power. This exponent is then cubed, so you should multiply $7a - 2$ by 3: $3(7a - 2) = 21a - 6$. You now have the equation $x^{21a - 6} = x^{57}$. Since the bases are equal (x), the exponents must also be equal, so $21a - 6 = 57$. Solve for a :

$$21a - 6 = 57$$

$$21a = 63$$

$$a = 3$$

27. The correct answer is D. In order for the result to be negative, $3n$ must be less than 9. When you add any negative number larger than 9 to 9, the result will be negative. Therefore, n must be less than -3 .
28. The correct answer is J. To solve this problem you should use the Midpoint Formula. The midpoint of a line, M , is equal to the average of the x -coordinates and the average of the y -coordinates. The formula looks like this:

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

You are given 1 point on the line $(-5, 3)$ and the midpoint of the line $(9, -1)$. Since the midpoint is $(9, -1)$ the average of the x -coordinates is 9, and the average of the y -coordinates is -1 . Set up equations to solve for the other endpoint:

$$9 = \frac{-5 + x_2}{2}$$

$$18 = -5 + x_2$$

$$23 = x_2$$

The x -coordinate of the other endpoint is 23. Since only answer choice J includes an x -coordinate of 23, it must be the correct answer. If you solve for the y -coordinate in the same way that you solved for the x -coordinate, you will get -5 .

29. The correct answer is C. A circle centered at (a, b) with a radius r , has the equation $(x - a)^2 + (y - b)^2 = r^2$. Based on this definition, a circle with the equation $(x - 3)^2 + (y - 4)^2 = 25$ would have a radius of $\sqrt{25}$. If $r^2 = 25$, then $r = \sqrt{25}$, or 5.
30. The correct answer is J. The tangent of any acute angle is calculated by dividing the length of the side opposite the acute angle by the length of the side adjacent to the acute angle $\left(\tan = \frac{\text{opp}}{\text{adj}} \right)$. In this problem, the length of the side opposite angle α is r , and the length of the side adjacent to angle α is s . Therefore, the \tan of angle α is $\frac{r}{s}$.
31. The correct answer is E. When you subtract fractions you must first find the common denominator. Multiply the denominators to get $4x$ as the common denominator, then solve for x :

$$\begin{aligned} \frac{1}{x} - \frac{3}{4} \\ &= \frac{(4)(1)}{(4)(x)} - \frac{(3)(x)}{(4)(x)} \\ &= \frac{4}{4x} - \frac{3x}{4x} = \frac{4 - 3x}{4x} \end{aligned}$$

32. The correct answer is J. The figure in the problem represents 2 parallel lines cut by 2 parallel transversals. The angles created as a result have special properties. Where each of the parallel lines is cut by a transversal, there are 2 pairs of vertical, or opposite angles. Each angle in the pair is congruent to, or equal to, the other angle in the pair. Therefore, where m cuts o and also where it cuts p , two 40° angles are formed, which means that angle $\alpha = 40^\circ$; in addition, two 140° angles are formed that are adjacent to the 40° angles, since a straight line has 180° . So, since the same angles are created where n cuts o and p , and angle β is opposite of the 140° angle that is adjacent to angle α , angle β must be equal to 140° .

33. The correct answer is D. Because there are 2π radians in the circumference of every circle and a circle consists of 360° , π radians $= 180^\circ$. Divide 4.25π radians by π to get 4.25; multiply $4.25(180^\circ)$ to get the degree measure of the angle, 765° .

34. The correct answer is K. In order to solve this problem you must recognize that $1\frac{3}{4}$ is exactly halfway between 1.5 (which equals $1\frac{1}{2}$) and 2 on the number line. This means that the point closest to $1\frac{3}{4}$ on the number line is point E.

35. The correct answer is D. By definition, the legs of a $45^\circ-45^\circ-90^\circ$ have the same length, and the hypotenuse is $\sqrt{2}$ times as long as either leg. Since you are given that the length of 2 legs is 3 meters, and the length of the third leg, the hypotenuse, is $3\sqrt{2}$ meters, this must be a $45^\circ-45^\circ-90^\circ$ triangle, answer choice D. Also, since the measure of the angles in a triangle must equal 180° , you can eliminate answer choices B and E.

36. The correct answer is H. The median is the middle value in a list that is in either ascending or descending order. Your first step is to put the data in order, as follows:

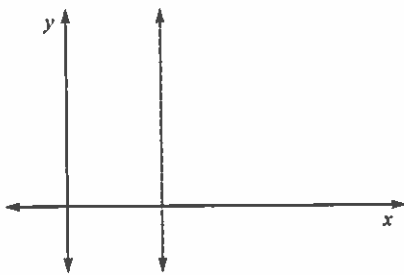
9, 13, 13, 20, 22, 27, 31

Because the list includes an odd number of values, simply pick the middle value which is 20.

37. The correct answer is D. To solve this problem, first list all of the distinct factors of 45: 1, 3, 5, 9, 15, 45. All of these numbers divide evenly

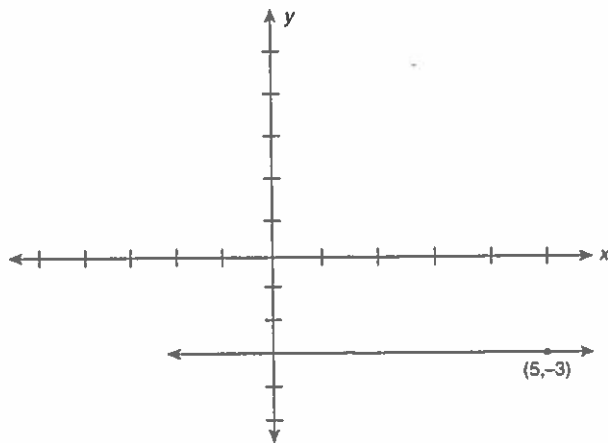
into 45. Next, list all of the distinct factors of 60: 1, 2, 3, 4, 5, 6, 10, 12, 15, 30, 60. All of these numbers divide evenly into 60. The only factors that both 45 and 60 have in common are 1, 3, 5, and 15. Since you are told that p is NOT a factor of either 9 or 10, you can eliminate 1, 3, and 5, which factor evenly into either 9 or 10. This leaves you with a value for p of 15. When you add the digits ($1 + 5$) you get 6.

38. The correct answer is J. The slope of a line is defined as the change in the y -values over the change in the x -values in the standard (x, y) coordinate plane. Slope can be calculated by using the following formula: $\frac{(y_1 - y_2)}{(x_1 - x_2)}$. Any line perpendicular to the x -axis is a vertical line: The x values do not change (see diagram).



The slope of a vertical line is undefined, answer choice J, because there is no change in x , which means that the denominator $(x_1 - x_2)$ is 0.

39. The correct answer is C. To solve this problem, it is helpful to draw a picture like the one shown below:



Because you are given that the line is perpendicular to the y -axis, you know that the y -intercept must be -3 .

40. The correct answer is F. The tangent of any acute angle is calculated by dividing the length of the side opposite the acute angle by the length of the side adjacent to the acute angle ($\tan = \frac{\text{opp}}{\text{adj}}$). The sine of any acute angle is calculated by dividing the length of the side opposite the acute angle by the hypotenuse ($\sin = \frac{\text{opp}}{\text{hyp}}$). In this problem, the tangent of angle β is $\frac{3}{4}$. This means that the length of the side opposite angle β is 3 units, and the length of the side adjacent to angle β is 4 units. Therefore, by definition, the sine must be 3 units (the length of the side opposite angle β) over some number greater than 4, since the hypotenuse is always the longest side. The only answer choice that will work is $\frac{3}{5}$.

41. The correct answer is D. This problem requires you to set up a simple proportion and solve for a variable. According to information in the problem, Jenny can walk 4 miles in $m + 3$ minutes. This means that she can walk 4 miles per $m + 3$ minutes, or $\frac{4}{m + 3}$. The question asks you to calculate the number of miles that she can walk in 15 minutes. In other words, Jenny can walk x miles per 15 minutes, or $\frac{x}{15}$; what is the value of x ? Set up a proportion and solve for x :

$$\frac{4}{m + 3} = \frac{x}{15}$$

$$15 \frac{(4)}{m + 3} = x$$

$$\frac{60}{m + 3} = x$$

42. The correct answer is F. The best approach to this problem is to pick some numbers for n , substitute them into the answer choices, and eliminate the answer choices that do not always yield an even number:

F: If $n = 1$, then $4n^2 = 4(1)^2 = 4$, which is even. If $n = 2$, then $4n^2 = 4(2)^2 = 16$, another even number. Because you are multiplying n^2 by 4, an even number, the result will always be even.

Answer choice F is correct. Check the other answer choices:

G: If $n = 2$, then $3n^2 + 1 = 3(2)^2 + 1 = 12 + 1 = 13$, which is odd. Eliminate answer choice G.

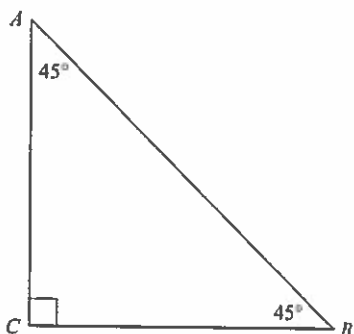
H: If $n = 1$, then $5n^2 = 5(1)^2 = 5$, which is odd. Eliminate answer choice H.

J: If $n = 1$, then $3n = 3(1) = 3$, which is odd. Eliminate answer choice J.

K: If $n = 3$, then $n^2 - 2n = (3)^2 - 2(3) = 3$, which is odd. Eliminate answer choice K.

Answer choice F is the only choice that will always give you an even number for any value of n .

43. The correct answer is D. The perimeter of a triangle is calculated by adding together the lengths of all 3 sides. Based on the measures of the angles given, you can draw triangle CAB as shown below:



You are given that \overline{AC} , one of the legs, is 12 units long. Because this is a 45° - 45° - 90° triangle, the length of the other leg, \overline{CB} is also 12 units long. In a 45° - 45° - 90° triangle, the hypotenuse is $\sqrt{2}$ times longer than either leg. Therefore, the length of the hypotenuse is $12\sqrt{2}$. Add together the lengths of all 3 sides to find the perimeter:

$$12 + 12 + 12\sqrt{2} = 24 + 12\sqrt{2}$$

44. The correct answer is G. The best approach to this question is to test each answer choice:

F: The increase from 1999 to 2000 was $176 - 152$, or 24.

G: The increase from 2001 to 2002 was $422 - 231$, or 191.

H: The increase from 2002 to 2003 was $516 - 422$, or 94.

J: The increase from 2004 to 2005 was $780 - 647$, or 133.

K: The increase from 2005 to 2006 was $825 - 780$, or 45.

The increase from 2001 to 2002 was the greatest, so answer choice G is correct.

45. The correct answer is B. To solve this problem, first look at the table to see that there were 176 households in Potterville that had high-speed Internet connection in 2000. Next, set up a ratio comparing the number of households to the percent of households, as follows:

176 is to 652 as $x\%$ is to 100%

$$\frac{176}{652} = \frac{x}{100}$$

$$17,600 = 652x$$

$$26.99 = x$$

The number of Potterville households with a high-speed Internet connection was approximately 27% of the total number of households in Eaton County with a high-speed Internet connection in 2000.

46. The correct answer is F. Systems of equations will have an infinite number of solutions when the equations are equal to each other. The first step in solving this problem is to recognize that the second equation is exactly 3 times the value of the first equation: $36x = 3(12x)$, $57y = 3(19y)$, so $30a$ must equal $3(20)$. Solve for a :

$$30a = 3(20)$$

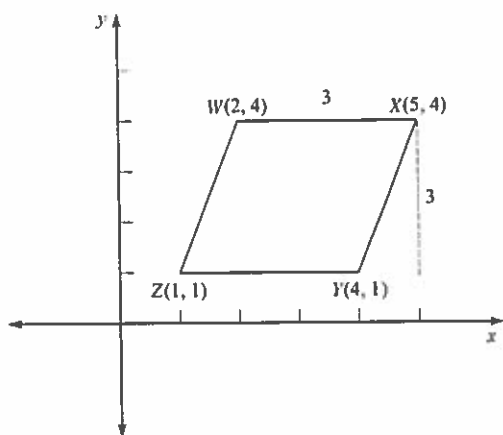
$$30a = 60$$

$$a = 2$$

47. The correct answer is B. Logarithms are used to indicate exponents of certain numbers called bases. This problem tells you that log to the base x of 2 equals 169. By definition, $\log_a b = c$ if $a^c = b$. So, the question is, when x is raised to the power of 2, you get 169; what is x ? By definition, $\log_x 169 = 2$ when $x^2 = 169$. The square root of 169 is 13.

48. The correct answer is J. The question states that the operation $a \boxplus b = (a + b)^3$ for all integers a and b . Therefore, if $a = 2$ and $b = 4$, then $(2 + 4)^3 = 6^3 = 216$.

49. The correct answer is C. One way to solve this problem is to plot the points and draw a figure like the one shown below:



After plotting the points, you see that the figure is a parallelogram, whose area is equal to $(b)(h)$. The base is equal to 3, and the height is equal to 3. Therefore, the area is 3×3 , or 9.

50. The correct answer is G. You can express the phrase the x -coordinate is 3 more than twice the corresponding y -coordinate as follows: $x = 2y + 3$. The slope-intercept form for the equation of a line is $y = mx + b$, where m is the slope. Put the equation in the slope-intercept form:

$$\begin{aligned} x &= 2y + 3 \\ -2y &= -x + 3 \\ y &= \frac{1}{2}x - \frac{3}{2}; \text{ the slope is } \frac{1}{2}. \end{aligned}$$

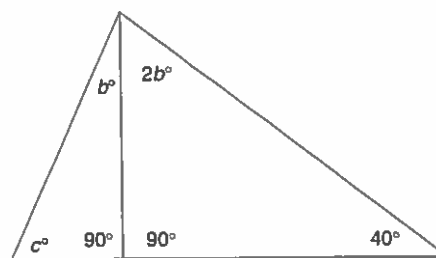
51. The correct answer is C. The length of the diameter is equal to $\sqrt{(4 - (-2))^2 + (-4 - 0)^2}$ or $\sqrt{(36 + 16)}$, or $\sqrt{52}$, which can be simplified to $2\sqrt{13}$. The radius is then half the length of that diameter, or $\sqrt{13}$.

52. The correct answer is F. If $XYZ = 1$, then Z cannot equal 0. If Z (or X or Y , for that matter) were 0, then XYZ would equal 0. Both sides of the equation can be divided by Z , which gives you $XY = \frac{1}{Z}$, answer choice F. Answer choice G is incorrect because 2 of the values *could* be -1 . Answer choice H is incorrect because 2 of the values *could* be fractions and the third value *could* be a whole number, that, when multiplied by the fractions equals 1.

53. The correct answer is D. The slope-intercept form of a line is $y = mx + b$, where m is the slope and b is the y -intercept. Put the equation given in the problem in the slope-intercept form:

$$\begin{aligned} 5x + y &= 9 \\ y &= -5x + 9; \text{ the } y\text{-intercept is } 9. \end{aligned}$$

54. The correct answer is H. If the average of 7 integers is 24, then the total must be $7 \cdot 24$, or 168. If the average of 8 integers is 31, then the total must be $8 \cdot 31$, or 248. Since you are adding an 8th integer to the set, the value of the 8th integer will be the difference between 248 and 168: $248 - 168 = 80$, answer choice H.
55. The correct answer is C. To solve this problem, first recall that the total measure of the interior angles of a triangle is 180° . It might be helpful to fill in values for the right angles, as shown below:



Next, set up an equation to solve for b :

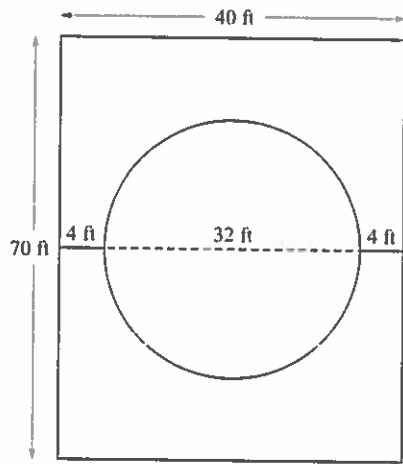
$$\begin{aligned} 2b + 90 + 40 &= 180 \\ 2b &= 180 - 130 \\ b &= 25 \end{aligned}$$

Now, set up an equation to solve for c , substituting 25 for b :

$$\begin{aligned} b + c + 90 &= 180 \\ 25 + c + 90 &= 180 \\ b &= 180 - 115 = 65 \end{aligned}$$

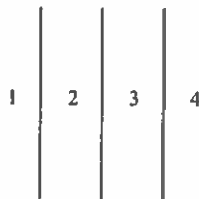
56. The correct answer is H. You are given that $l/m = \frac{3}{4}$ and $p/m = \frac{1}{2}$. The ratio of l/p is equivalent to $\frac{3}{4} \times \frac{2}{1}$, or $\frac{6}{4}$, which can be reduced to $\frac{3}{2}$.
57. The correct answer is A. First, draw the picture of the wading pool according to the information given in the problem, where the distance from the edge of the pool to the edge of the long side of the rectangular region is 4 feet. The distance from

the edge of the pool to the edge of the short side of the rectangular region can be anything greater than 4, but it is not necessary to know this distance to solve the problem:



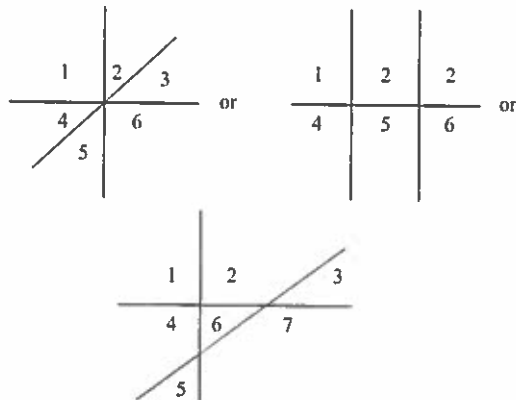
Now you can determine the diameter of the circular pool. The diameter is the maximum distance from 1 point on a circle to another (the dashed line). Since the short side of the rectangular region is 40 feet, and the distance from the edge of the circular pool to each edge of the long sides of the rectangular region is set at 4 feet, the diameter of the circle must be 40 feet $- 2(4\text{ feet})$, or 40 feet $- 8\text{ feet}$, or 32 feet. The question asks for the radius of the pool, which is $\frac{1}{2}$ of the diameter. $32 \div 2 = 16$.

58. The correct answer is G. To solve this problem, start by drawing 3 parallel lines.



This creates 4 distinct regions, so the minimum number of distinct regions must be 4. Eliminate answer choices H, J, and K, which give the minimum number of distinct regions as 3. Now, try drawing 3 lines in other configurations, and

you will see that there will always be either 6 or 7 regions:



Therefore, the correct answer is 4, 6, or 7 distinct regions, answer choice G.

59. The correct answer is D. To solve this problem, you can apply some logic: because each number between -22 and 22 will cancel each other out, you can start with the next consecutive integer, 23. Now, simply begin adding consecutive integers until you reach 72: $23 + 24 + 25 = 72$. Therefore, n must equal 25.

You can also solve this problem mathematically by using the following formula:

$$\frac{(-22 + n)(23 + n)}{2} = 72$$

By expanding this equation and simplifying it, you can reach the equation $(2n + 1)^2 = 2,601$. Therefore, $2n + 1 = 51$ and $n = 25$.

60. The correct answer is F. The median is the middle number in an ordered list of numbers. Therefore, the value of the median *can* be changed by increasing each number by 10 or by doubling each number, so eliminate answer choices J and K. Likewise, if you increase the smallest number or decrease the largest number, you could potentially change the order of the numbers in the list, thereby potentially changing the value of the median; eliminate answer choices G and H. However, if you increase the largest number, it will still remain in the last position in the list, so the value of the median will not change.