Practice Test 1

1. $-\frac{3}{4} + (-2\frac{1}{3}) =$

(A) $-3\frac{1}{12}$
(B) $-1\frac{7}{12}$
(C) $-4\frac{1}{12}$
(D) $1\frac{1}{12}$

2. $6 \div 2\frac{1}{4} =$

$\frac{6}{1} \div \frac{9}{4}$

$\frac{6}{1} \times \frac{4}{9} = \frac{24}{9} = 2\frac{6}{9}$

$= 2\frac{2}{3}$

(A) $13\frac{1}{2}$
(B) $12\frac{1}{4}$
(C) $2\frac{2}{3}$
(D) $3\frac{2}{3}$

3. $-0.058 - (-2.56) =$

$2.5\overset{5}{\cancel{6}}$
0.058
2.502

(A) -5.202
(B) -2.618
(C) $+2.058$
(D) $+2.502$

4. $-0.377 \times (-2.16) =$

.16
377

(A) -2.537
(B) -1.7832
(C) $+0.81432$
(D) $+5.73432$

5. If the original price is \$83.00, what would be the sale price if the sale took off 35%?

(A) \$136.25
(B) \$ 53.25
(C) \$ 53.95
(D) \$ 41.50

6. What percent of 125 is 105?

(A) 84%
(B) 0.84%
(C) 119%
(D) 1.19%

7. $(5^3)^4 =$

(A) 125^7
(B) 5^{12}
(C) 5^7
(D) 5^1

8. $\frac{8}{25} =$

(A) 0.32%
(B) 8%
(C) 32%
(D) 3.25%

9. Which symbol would make this a true statement?

$2.97 \square 2.970$

(A) =
(B) <
(C) ≤
(D) >

10. What is the missing term?
(15, 3) (14, 2.8) (10, 2) (5, __)

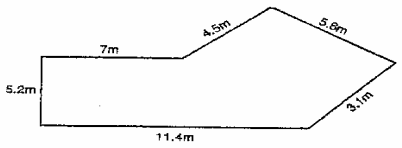
(A) 1.8
(B) 1
(C) 8
(D) 5

11. Miss Stendel's class is forming groups. When they form groups of 2, 3, or 4 students, there is never anyone left over. How many are in the class?

(A) 24
(B) 25
(C) 21
(D) 30

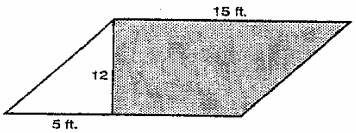
12. The length of a caterpillar would best be measured by

(A) cubic centimeters
(B) ounces
(C) square inches
(D) millimeters



13. What is the best estimate of the perimeter of this polygon?

(A) 39m
(B) 40m
(C) 73m
(D) 37m



14. What is the area of the shaded portion?

(A) 45 square feet
(B) 270 square feet
(C) 150 square feet
(D) 180 square feet

15. $\sqrt{12} - \sqrt{3} =$

(A) $\sqrt{36}$
(B) $\sqrt{9}$
(C) $\sqrt{3}$
(D) $2\sqrt{3}$

16. $9/\sqrt{10} =$

(A) $9/10\sqrt{10}$
(B) $9\sqrt{10}$
(C) $10\sqrt{9}$
(D) $5/9\sqrt{10}$

17. $2n + 3n^2 - 5n \times 3 - 6n^2 =$

(A) $-12n$
(B) $-13n - 3n^2$
(C) $13n + 3n^2$
(D) $-6n^2$

18. $(2.4 \times 10^8)(1.3 \times 10^{-5}) =$

(A) 312×10^4
(B) 31.2×10^3
(C) 3.12×10^3
(D) 3.12×10^{13}

19. Solve for x: $11x - 5 = -6 + 6x$

(A) $x = 5$
(B) $x = -5$
(C) $x = 1/6$
(D) $x = -1/6$

20. The formula for converting a kilogram weight (K) to a pound weight (P) is $P = 2.2\ K$. If a dog weighs 15.6 pounds, how many kilograms does the dog weigh?

(A) 3.43 kg
(B) 34.32 kg
(C) 7.09 kg
(D) 70.9 kg

21. Given the following function, find $f(-1)$.

$$f(x) = -4x^3 - 5x^2 + x - 10$$

(A) $f(-1) = -12$
(B) $f(-1) = -18$
(C) $f(-1) = 0$
(D) $f(-1) = 10$

22. Which is a linear factor of the following expression?

$$6x^2 - x - 2$$

(A) $(3x - 2)$
(B) $(3x + 2)$
(C) $(2x + 3)$
(D) $(x + 2)$

23. What are the real roots of this equation?

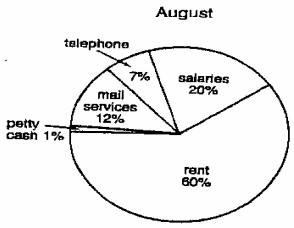
$$2x^2 - x = 3$$

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

24. Choose the correct solution set for the system of linear equations.

$$4x - 2y = -10$$
$$2x - 4y = 10$$

(A) $(\frac{1}{2}, -\frac{1}{2})$
(B) $\{(x,y): y = x + 3\}$
(C) $(5, -5)$
(D) the empty set



25. The pie chart above represents the monthly expenses of a small business for August. In what area is the most money spent?

(A) mail services, telephone, and salaries
(B) salaries, telephone, and petty cash
(C) petty cash and salaries
(D) rent

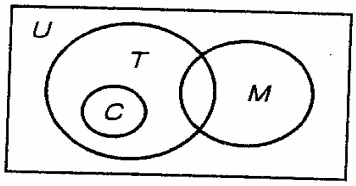
26. What number represents the median of the following set of data?

4, 10, 8, 7, 7, 6, 5, 0, 2

(A) 10
(B) 5.2
(C) 6
(D) 7

27. There are five parking spots in the lot in which eight cars have permits. How many combinations of five cars can park in the lot?

(A) 56
(B) 7,200
(C) 14,200
(D) 120



28. Which of the following statements is true about sets C, T, M, and U, assuming that no region is empty?

(A) An element that is a member of set C is a member of set M.
(B) An element of set T is a member of set M.
(C) An element is a member of C, T, and M.
(D) An element of set C is a member of set T.

29. $a(4 + 3) =$

(A) $(4)(4)(4) \times (3)(3)(3) \times (a) =$
(B) $a\,(4) + a\,(3)$
(C) $a(4) \times a(3) =$
(D) $a(4 \times 3) + a(4 \times 3) =$

30. Select the correct numeral for the following expanded notation.

$$(5 \times 10^{2}) + (2 \times 10^{0}) + (3 \times 10^{-1}) + (6 \times 10^{-2})$$

(A) 52.36
(B) 50,236
(C) 5,236
(D) 502.36

31. $0.63 =$

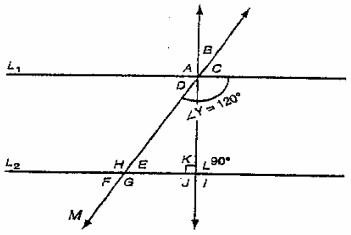
(A) $\frac{63}{100}$
(B) $\frac{100}{63}$
(C) $\frac{11}{40}$
(D) $\frac{36}{63}$

32. Which equation represents a true statement when $x = -2$?

(A) $3x - 1 \geq 6$
(B) $-4x - x = -3$
(C) $2x + 1 \leq -1$
(D) $x - 5 \geq 1$

33. What is the best estimate of the average of 38 and 104?

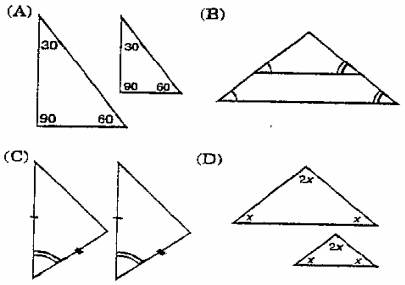
(A) 71
(B) 70
(C) 140
(D) 142

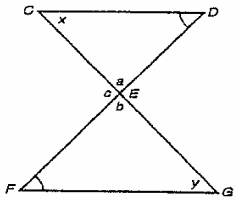


34. Which of the following statements is true about the diagram above?

(A) Since m $\angle Y$ = 120 degrees, m $\angle H$ = 120 degrees
(B) Since m $\angle L$ = 90 degrees, m $\angle D$ = 45 degrees
(C) m $\angle C$ = m $\angle B$
(D) None of the above statements is true.

35. Which diagram shows a pair of congruent triangles?





36. Which of the statements is true for the diagram above?

(A) $\overline{CE} = \overline{EG}$
(B) m $\angle a$ = m $\angle b$
(C) $\overline{CD} \perp \overline{FG}$
(D) m $\angle x$ = m $\angle y$

37. Which of the following would be best measured in meters?

(A) the amount of carpet in a room
(B) the amount of water in a fish tank
(C) the depth of a swimming pool
(D) the weight of a television set

38. Which of the following properties is illustrated by $3 \times 4 = 4 \times 3$?

(A) distributive property
(B) associative property
(C) inverse property of multiplication
(D) commutative property

39. For each of the statements below, determine whether $x = 5$ is a possible solution.

i $\frac{1}{x} - \frac{1}{2} <= 0$
ii $(2x - 12)(-x + 3) = 4$
iii $-3x - 4 = -12x$

(A) i only
(B) ii only
(C) i and ii only
(D) ii and iii only

40. Find the volume of a right circular cone that is 12 cm high and has a diameter of 6 cm.

(A) $432\ \pi\ cm^3$
(B) $108\ \pi\ cm^3$
(C) $72\ \pi\ cm^3$
(D) $36\ \pi\ cm^3$

41. Elijah needs to buy enough fencing to enclose a 3 foot by 4 foot garden and to build a diagonal fence from one corner to the opposite corner. How much fencing is needed?

(A) 12 square feet
(B) 19 square feet
(C) 14 square feet
(D) 17 square feet

42. What expression is equivalent to $(x^2)^3$ (y^3) (y^2)

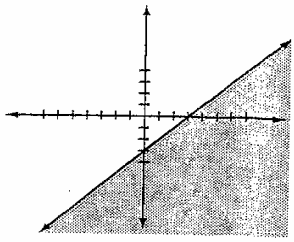
(A) $x^5 y^6$
(B) $x^6 y^6$
(C) $x^5 y^5$
(D) $x^6 y^5$

43. Which expression is equivalent to $-5 > 10p > 45$.

(A) $1 > -2p > -9$
(B) $10 > -20p > -90$
(C) $1 < -2p < -9$
(D) $-10 < 20p < 90$

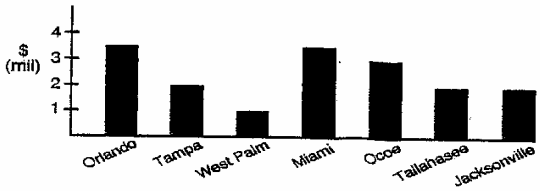
44. According to the National Weather Council, each inch of snowfall equals 0.175 inches of rain. If it snows five inches, what proportion best represents the amount of rain (r)?

(A) $1/.175 = r/5$
(B) $r/.175 = .1/5$
(C) $1/.175 = 5/r$
(D) $r/1.75 = 5/1$



45. Identify the conditions that correspond to the shaded region of the plane shown above.

(A) $x \geq 0$ and $y \geq 2$
(B) $y = -x$
(C) $x < 4, y > -2, y > x$
(D) $x \geq y + 3$



Federal Funding in 1994

46. The graph above represents the distribution of federal funding to Florida public schools in 1994. Which statement about the data is true?

(A) West Palm represents the median amount.
(B) Miami represents the mean.
(C) Orlando represents the mean.
(D) Jacksonville represents the mode.

47. The student council wants to conduct a survey to find out what seniors intend to do after graduation. What would be an appropriate sample for their survey?

(A) seniors on the student council
(B) a random sample of all students
(C) all student athletes seeking scholarships
(D) a random sample of seniors

48. Select the negation for this statement:

If I pass this test, I will apply to law school.

(A) I pass this test, and I do not apply to law school.
(B) If I do not pass this test, I will apply to law school.
(C) If I do not pass this test, I will not apply to law school.
(D) I passed this test and I do apply to law school.

49. A jar contains 3 cherry, 5 grape, and 4 lemon lollipops. Two lollipops are drawn from the jar without replacement. What is the probability that they are both lemon?

(A) $\frac{4}{12} \times \frac{3}{11}$
(B) $\frac{4}{12} \times \frac{3}{12}$
(C) $\frac{7}{12}$
(D) $\frac{8}{12} \times \frac{7}{11}$

50. Select the statement that is logically equivalent to:

If Kerry does not wear a hat, he will get sunburned.

(A) If Kerry wears a hat, he will not get sunburned.
(B) If Kerry does not get sunburned, then he wore a hat.
(C) If Kerry wears a hat, he will get sunburned.
(D) Kerry wears a hat and Kerry gets sunburned.

51. Given that:

i. If a person believes in UFOs, they are gullible.
ii. Max is not gullible.

What can logically be deduced from these statements?

(A) UFOs may still exist.
(B) Max does not believe in UFOs.
(C) Max may believe in UFOs.
(D) Max will have to see a UFO before he believes.

52. Choose the logical rule used to transform statement i to statement ii.

i. If the road is wet, the car will skid.
ii. It is not wet or the car will skid.

(A) If p then q $\leftrightarrow$ p or not q
(B) If p then q $\leftrightarrow$ p and q
(C) If p then q $\leftrightarrow$ not p or q
(D) If p then q $\leftrightarrow$ p and not q

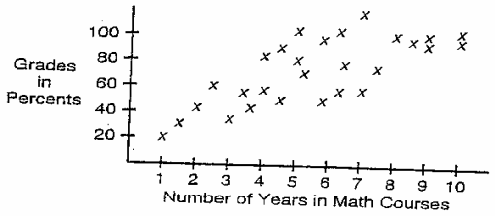
53. Identify the missing term in the following geometric progression.

$15, -5, 1\frac{2}{3}, -\frac{5}{9}, \_\_\_\_\_$

(A) $\frac{5}{27}$
(B) $-\frac{5}{27}$
(C) $\frac{1}{3}$
(D) $-1\frac{4}{9}$

54. Which of the following inequalities means the same as $9 < x + 4 < 10$?

(A) $9 < x < 10$
(B) $4 > x > 5$
(C) $5 < x < 6$
(D) $16 > x > 18$



55. The graph shows the grade distribution on a standardized mathematics test. Which of the following best describes the relationships between test score and number of years in mathematics courses?

(A) People who took fewer years of math scored highest.
(B) People who took more math courses scored lower.
(C) There is a negative relationship.
(D) There is a positive relationship.

 Practice Test 1 - Answers

28. **A** Author's Tone. The final statement, *That's discrimination*, is evidence of anger.
29. **B** Main Idea. The author says and gives an example of how both men and women are discriminated against.
30. **B** Organizational Pattern. A general statement is made in sentence one; then support is given with examples in sentence three.
31. **A** Valid or Invalid. The supporting details of the passage make this statement valid.
32. **B** Main Idea. A and D are true but they do not represent the main idea. Choice C is not true.
33. **A** Fact or Opinion. This historical fact can be checked.
34. **B** Details. Choice B is the only detail not listed in the passage. In fact, it is refuted.
35. **C** Organizational Pattern. The statement is made in the initial sentence and the explanation follows.
36. **C** Logical Inference. He must have survived and lived in America because his song is our national anthem. All other choices are not likely.
37. **D** Word in Context. *Sacked* means to attack and damage. *Ravaged* has the most similar meaning.
38. **D** Relationship Between Sentences. *However* is the only logical choice. It provides an explanation for a conditional detail.
39. **A** Relationship Between Sentences. *In fact* works best because it precedes an example.
40. **B** Details. The fourth sentence in the first paragraph explains that the author likes having a program to perform the mechanical aspects.
41. **B** Author's Purpose. Johnson's achievements were a result of Kennedy's ideas, therefore choice B is the purpose.

Mathematics

1. **A** $-\frac{3}{4} + (-2\frac{1}{3}) = -\frac{3}{4} - 2\frac{1}{3} = -\frac{9}{12} - 2\frac{4}{12} = -2\frac{13}{12} = -3\frac{1}{12}$
   To add fractions of the same sign, combine the fractions and keep the sign.

2. **C** To divide two fractions, invert the second fraction (the divisor) and multiply. Leave answer in lowest terms.
   6 divided by $2\frac{1}{4} = \frac{6}{1} \times \frac{4}{9} = \frac{24}{9} = 2\frac{6}{9} = 2\frac{2}{3}$

3. **D** When combining decimals, line up the decimals and subtract. Keep sign of larger number.

   +2.560
   −0.058
   +2.502

4. **C** When multiplying decimals, multiply and then count the total number of decimal places.

   −.377 (3 decimal places)
   × −2.16 (2 decimal places)
   .81432 (5 decimal places)

5. **C** Use formula $a\%$ of b is c.
   35% × $83.00 = ?
   .35 × $83 = $29.05
   $83 − $29.05 = $53.95

6. **A** $84\% = 0.84$ $0.84 \times 125 = 105$

7. **B** $(5^3)^4 = (5^{3 \times 4}) = 5^{12}$

8. **C** $\frac{8}{25} = \frac{32}{100} = 0.32 = 32\%$

9. **A** Drop the trailing 0 from 2.970.

10. **B** To find the second term, divide the first term by 5.

11. **A** This is the only number in the answer choice divisible by 2, 3, and 4.

12. **D** Choice D is the only measurement of length.

13. **D** Perimeter is calculated by adding measures of all sides. Round the measures and add, to get the best estimate.

14. **C** To find the area of a triangle use the formula $A = \frac{1}{2}\,bh = 30$.
To find the area of a parallelogram use the formula $A = (bh) = 180$.
Subtract: Area (parallelogram) – Area (triangle) = Area (shaded portion)
$180 - 30 = 150$

15. **C** Simplify the radical, then subtract.
$\sqrt{12} - \sqrt{3} = \sqrt{4 \times 3} - \sqrt{3} = 2\sqrt{3} - \sqrt{3} = \sqrt{3}$

16. **A** Multiply numerator and denominator by $\sqrt{10}$.

17. **B** Use the order of operations to combine to simplest terms.
$2n + 3n^2 - 5n \times 3 - 6n^2 =$
$2n + 3n^2 - 15n - 6n^2 =$
$-13n - 3n^2$

18. **C** Multiply numbers and add exponents.
$(2.4 \times 1.3) = 3.12$
$(10^8 \times 10^{-5}) = 10^3$

19. **D** Subtract $6x$ from both sides.
$11x - 5\,(-6x) = -6 + 6x\,(-6x)$
$5x - 5 = -6$
Add 5 to both sides.
$5x - 5\,(+5) = -6\,(+5) 5x = -1$
Divide both sides by 5.
$5x/5 = -\frac{1}{5}\ x = -\frac{1}{5}$

20. **C** Use formula $P = 2.2K$
$15.6/2.2 = 15.6/2.2 = K$
$7.09 = K$

21. **A** Plug in the value of x and combine terms.
$f(-1) = -4(-1)$ to the 3rd $-5(-1)$ squared $+ (-1) - 10 = +4 - 5 - 1 - 10$
$f(-1) = -12$

22. **A** $(3x - 2)\,(2x + 1) = 6x^2 - x - 2$

23. **D** Set the equation equal to zero.
$2x^2 - x - 3 = 0$
Factor out and set each equal to zero.
$2x^2 - x - 3 = 0$
$(2x - 3)\,(x + 1) = 0$
$2x - 3 = 0 \qquad x + 1 = 0$
$2x = 3 \qquad\quad x = -1$
$2x/2 = \frac{3}{2}$
$x = 1\frac{1}{2}$ Real Roots = $\{-1, 1\frac{1}{2}\}$

24. **B** Follow the steps given on page 170.

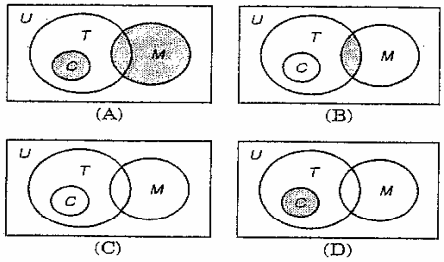
25. **D** Rent represents 60% of the monthly expenses.

26. **C** Organize the numbers in order:
0, 2, 4, 5, 6, 7, 7, 8, 10.
The item that occurs as the middle term is 6. 6 is the median of this set of data.

27. **A** How many combinations of 5 of 8 cars?

$$\frac{8!}{3!5!} = \frac{8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{3 \cdot 2 \cdot 1 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1} = 56$$

28. **D**



(A) Not true.

(B) Only those items in the shaded area fit the conditions.

(C) Not true—no item can be a member of all sets (C, T, M).

(D) All members of set C are also members of set T.

29. **B** This problem illustrates the distributive property.

$a(4 + 3) = a(4) + a(3)$

30. **D**
$5 \times 10^2 = 500$
$+2 \times 100 = 2$
$+3 \times 10 = .3$
$+6 \times 10 = .06$
502.36

31. **A** 0.63 is read 63 hundredths.

32. **C** Substitute value of x in each equation to check for a true statement.

(A) $3(-2) - 1 \geq 6$
$-6 - 1 \geq 6$
$-7 \geq 6$ [not true]

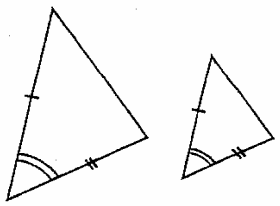
(B) $-4(-2) - (-2) = -3$
$8 + 2 = -3$
$10 = -3$ [not true]

(C) $2(-2) + 1 \leq -1$
$-4 + 1 \leq -1$
$-3 \leq -1$ [true]

(D $-2 - 5 \geq 1$
$-7 = 1$ [not true]

33. **B** To find an estimated average round.
$40 + 100 = 140/2 = 70$

34. **A** m $\angle Y$ = m $\angle H$ because they are alternate interior angles formed by transversal m.



35. **C** These triangles are congruent because one triangle exactly matches the other. Triangles cannot be proven congruent if they have only equal angles.

36. **B** $\angle$A and $\angle$B are vertical angles and their measures are equal.

37. **C** Meters are a measure of length. The depth of a swimming pool would best be measured in meters.

38. **D** The commutative property of multiplication states $a \times b = b \times a$.

39. **C** Substitute the value of x in each of the equations.

i. $\frac{1}{5} - \frac{1}{2} \leq 0$
$\frac{2}{10} - \frac{5}{10} \leq 0$
$-\frac{3}{10} \leq 0$ [true] $x = 5$ is a solution

ii. $(2x - 12)(-x + 3) = 4$
$(2(5) - 12)(-(5) + 3) = 4$
$(10 - 12)(-5 + 3) = 4$
$(-2)(-2) = 4$
$4 = 4$ [true] $x = 5$ is a solution

iii. $-3x - 4 = -12x$
$-3(5) - 4 = -12(5)$
$-15 - 4 = -60$
$-19 = -60$ [not true] $x = 5$ is not a solution.

40. **D** $\frac{1}{3}\pi r^2 h^2 = \frac{1}{3}\pi(3)^2(12) = \frac{1}{3}\pi(9)(12) = \pi(3)(12) = 36\pi$

41. **B** Find the length of the diagonal
$3^2 + 4^2 = x^2$ $25 = x^2$ $x = 5$ feet
Find the perimeter. $3 + 3 + 4 + 4 =$ 14 feet.
Add the perimeter and the length of the diagonal. $14 + 5 = 19$ feet.

42. **D** $(x^2)^3 = x^6$ $(y^3)(y^2) = y^5$
$(x^2)^3(y^3)(y^2) = x^6 y^5$

43. **C** Divide each term by -5.

44. **C** 1 inch of snow is equal to 01.75 inches of rain [1/1.75]
5 inches of snow is equal to r inches of rain.
$1/.175 = 5/r$

45. **D** (A) Many points meet neither condition.
(B) y never equals $-x$.
(C) x is not always less than 4.
(D) Correctly describes the graph.

46. **D** Figure out what the mean, median, and mode are for the data shown in the graph. The mode is 2 million (Tampa, Tallahassee, and Jacksonville). The mean (the average) of the funding is 2.4 million. The median of the data is 2 million. Given this information, only choice D can be true.

47. **D** The survey's target is all seniors. Therefore, choice D is the best answer.

48. **C** The statement given can be written as $p \rightarrow q$.
The negation of the statement can be written as p and not q.
This translates as *If I pass this test, I will not apply to law school.*

49. **A** There are 12 lollipops all together, and 4 of them are lemon.
$\frac{4}{12}$ equals probability of choosing a lemon on the first try. After taking out one lemon, there are 11 lollipops, 3 of them lemon. $\frac{3}{11}$ = probability of choosing a lemon on the second try. $\frac{4}{12} \times \frac{3}{11}$ = probability of 2 lemons.

50. **A** *If Kerry does not wear a hat, he will get sunburned.* The logically equivalent statement would be not q not p.

51. **B** $p \rightarrow q$, not $q \rightarrow$ not p.

52. **C** If p then q is equivalent to p or not q.

53. **A** Each term is multiplied by $-\frac{1}{3}$; therefore, the next term would be $-\frac{5}{9} \times -\frac{1}{3} = \frac{5}{27}$

54. **C** Subtract 4 from the inequality.
$9 - 4 < x + 4 - 4 < 10 - 4$
$5 < x < 6$

55. **D** There is a positive relationship between the test score and the number of years in math courses.